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Master Thesis Report

Breaking the cycle of Addiction by Design

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Summary

As the smartphone has increasingly transcended from a communication- and productivity device to a popular source for entertainment, it is now increasingly part of our everyday usage and routines. This is raising questions about the role technology plays in our lives and our relationships to our mobile devices. This research study reflects on the possibility of addiction in engaging user experiences and the related design challenges put forward.

University students' use of, and relationship to, their smartphones are at the center of this design research. As part of a mixed-methods approach, qualitative and quantitative methods were adopted to allow a richer understanding of the daily narratives and personal incentives underlying students' engagement with their mobile devices as well as the areas potentially promoting problematic engagement in their smartphone usage.

This rich understanding was further embodied into actionable insight shaping the conceptualisation and further development of a technological solution to the challenge of realising healthier relationships to our mobile devices. This is reflected in our final prototype solution, the Alone Mode (see Explainer Video), aiming to increase individuals' capacity to shape their own behaviour and mode of interaction with their smartphone, as an act of autonomous choice within the frame of mindfulness.

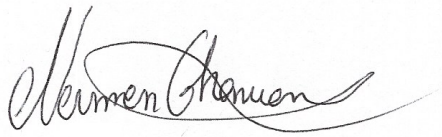
Areas shaping the design choices leading to the final proposal were also discussed, particularly research participants' ecology of personal values as well as the reflexive nature of our primarily qualitative insights. In conclusion, this research study describes five distinct phases of design research leading us step-by-step to an empowering technological solution, recognizing the complex human and subjective experience of device usage.

Preface

This Master thesis was prepared at the Department of Applied Mathematics and Computer Science at the Technical University of Denmark in fulfillment of the requirements for acquiring a Master of Science in Engineering degree in Human-Centered Artificial Intelligence. This study has been supervised by Kevin Doherty, Jakob Bardram and Per Bækgaard during the spring semester of 2020.

Kongens Lyngby, July 18, 2020

Margarita Genova, s183214



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CHAPTER 1

Introduction

Sixty percent of young people aged 18 - 34 today report feeling that they use their smartphone too much [17]. Seven out of every ten of us now sleep with our phones, and up to two-thirds demonstrate signs of addiction to our devices [4]. Debate rages over the role technology plays in our lives, our relationships to our mobile devices, and even the possibility of addiction [32]. These are important points of reflection which pose significant design challenges for those of us building these systems.

In the dictionary, 'addiction' is characterized as a condition in which an individual is unable to control the consumption of a product or certain behaviors despite knowledge of their negative consequences [63]. While at times a contested term in the context of technology use (See Section 6), addiction, and addictive behaviours can undoubtedly impact many parts of a person's life [2]. Herein, repercussions comprise psychological, behavioral, and performance issues [37], with extensive burden on our mental health and quality of life [10] [19].

University students are often at the center of studies on smartphone addiction, as they are considered among the largest and most important consumer group of cell phone technology [31][53] [64]. Furthermore, evidence, on addictive behaviors stemming in adolescence and young adulthood [48], further points university students as a suitable representative population for the study of problematic smartphone usage [3].

Habit-forming design plays a large factor in encouraging users to spend more time with the technologies we create [43]. The problem of excessive smartphone usage is therefore created and exacerbated by technology developers' need to engage users. Hence, current interfaces are consciously designed to keep us engaged and entertained through their infinite content loops; leveraging a desire for social interaction through addicting illusions of control and bright distracting colors [28].

Research studies often aim to either predict the development of addictive behaviors in university students or identify reactive measures for the potential aftermath. Thereby, research focus varies between studying the cause, the indicators and/or the effect of smartphone addiction among university students and their learning environments. Heretofore, studies have attempted to link smartphone addiction to academic performance, life satisfaction, cyber-loafing, the field of study, age, gender and social stress [5] [58] [29] [24].

A human- and design-centred approach to research in contrast strives to understand the relationship between design choice and user behaviour, as exemplified in the work of O'Hara et al. around WhatsApp [55]. This angle highlights a need for a forward-looking and design-centred approach within this research area, as we lack a rich understanding of the role of design within the complex human and subjective experience of device usage.

This is further exemplified by the limited versatility of university students' solution strategies for overcoming smartphone addiction [51]. Currently, smartphone users have select simple built-in device alternatives at their disposal (i.e grayscale display, app limits, remove notifications, change app positioning). Yet, the choice and effectiveness of any one strategy may well depend upon the point at which smartphone usage becomes problematic for the individual; and all points in between (Figure 1.1).

In moderate and severe cases, these simpler strategies might only address the problem within a limited scope and time frame (Figure 1.2). Thereby, more targeted methods may be more valuable in the attempt to break the cycle of addictive smartphone behaviors by design.

Therefore, this report aims to perform design-oriented research on university students' smartphone usage, in order to enable a richer understanding of students' relationships to their devices and the creation of alternative design solutions. Throughout this creative process, we conduct 5 design research iterations to collect input from university students. The first and second iterations attempt to determine the daily situations and personal incentives which promote university students' smartphone usage, with an emphasis on the areas that university students find problematic. Thereby, we identify the daily narratives that encapsulate the effects of interface design in

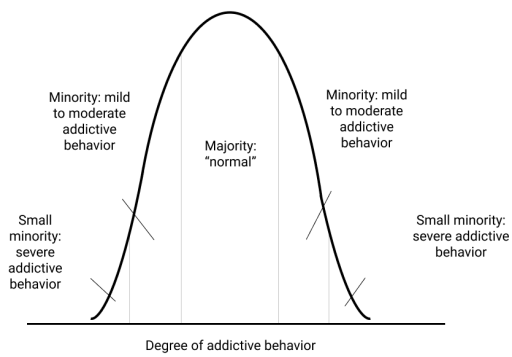


Figure 1.1: Degree of addictive behavior

Figure 1.2: Degree of addictive behavior

practice and that could potentially promote an addictive smartphone behavior. Here, narratives represent concise definitions of the roles smartphones play in mediating and determining students' lived experiences. This helps guide the creative process of the research. Throughout the remaining iterations, we design, develop and evaluate alternative concepts in a co-creative process with the university students to attempt to break the cycle of addictive smartphone behavior by design. This design process results in the creation of a final solution, the Alone Mode, which aims at reshaping our mode of interaction in our state of aloneness to potentially promote a healthier relationship with our smartphone devices.

CHAPTER 2
Problem Definition

> *"I have a lot of unhealthy relationships with this device like when I go to sleep is the last thing I look at, when I wake up is the first thing. When I am outside - it is in my hand."*
>
> ***- Participant 20***

The primary aim of this research study is to gain insight into students use of, and relationship to, their smartphones to identify in which areas and respects they find usage problematic. During this design research process, we employ the term 'problematic', as 'addiction' could be perceived as a potentially controversial or deterministic term, which might impact research participants' stance and contributions during this process of design research. Where we employ the term 'addiction', we do not do so in a clinical sense but to support understanding of problematic habitual behaviours as encouraged by design.

Thus, as part of a design-oriented approach, the focus is, more specifically, on identifying potentially problematic engagements in university students' smartphone usage. This led the formulation of the following research question:

> *Which aspects of their daily smartphone usage do university students view as problematic?*

We defined three sub-questions to further guide the design research process, in light of the main research question. The first sub-question was directed towards the themes and reasons underlying students' engagement with their mobile devices. We wanted to gain a rich understanding of the daily narratives and personal incentives that could potentially promote addictive smartphone behaviors amongst university students.

> ***Sub-question 1:*** *Which daily situations and personal incentives promote addictive smartphone behaviour?*

Next, the second sub-question allowed us to develop a richer understanding of university students' personal experiences with their smartphone usage. Here, it was important to understand at what point their smartphone usage begins to be perceived as problematic.

> ***Sub-question 2:*** *How do university students feel about their own smartphone behavior?*

Finally, the third sub-question helped us frame our findings within a broader context for increased impact. Thereby, we aimed to gather actionable insight for the conceptualisation and further development of a technological solution to the challenge of realising healthier relationships to our mobile devices. These insights would be iterated upon to fully embody students' reflections and needs as well as maximize the relevance of the final prototype solution.

> ***Sub-question 3:*** *Can a digital or tangible, prototype technology promote a healthier smartphone relationship amongst university students?*

CHAPTER 3

Methodology

This design research adopts a *mixed-methods* approach, by combining qualitative and quantitative insights. The purpose of this mixed-methods approach is to triangulate a richer and more complete understanding, as the results from the online survey will be used to clarify findings from the qualitative interviews [13]. Additionally, the insights collected from the online survey, in combination with those from the initial user studies, serves as the foundation for the subsequent creation and analysis of several novel design solutions to participants' challenges.

Population and Sample

The term *population* applies to individuals and communities investigated in the broader context of the research question, whilst the term sample addresses the selection of this population, actively studied in the frame of this specific research study [7]. As noted in the problem definition, we wish to investigate the student population's use of, and relationship to, their smartphones. Due to limited resources, the selected sample will primarily consist of university students in Denmark, both locals and internationals, with occasional outliers from other universities around the world.

The anonymity of the research participants and survey respondents were preserved throughout the documentation of this process of design research. Additionally, a number system was established to assign a number to each research participant by their order of appearance. Thereby, participants that had appeared more than once in the qualitative interviews would keep their number.

Sampling Strategy

Participants for the five distinct phases of design research were reached through a *non-probability sampling* strategy [11], as students were exclusively targeted. More precisely, a *convenience sampling* was adopted, as this would facilitate the access to and recruitment of research participants, as our closest contacts belonged to this demographic group.

Qualitative Methods

In-depth qualitative interviews were performed to develop a rich understanding of the challenges smartphone use poses for students today through elaborate discussions (Figure 3.1). This type of methodology allowed us to fully understand the research

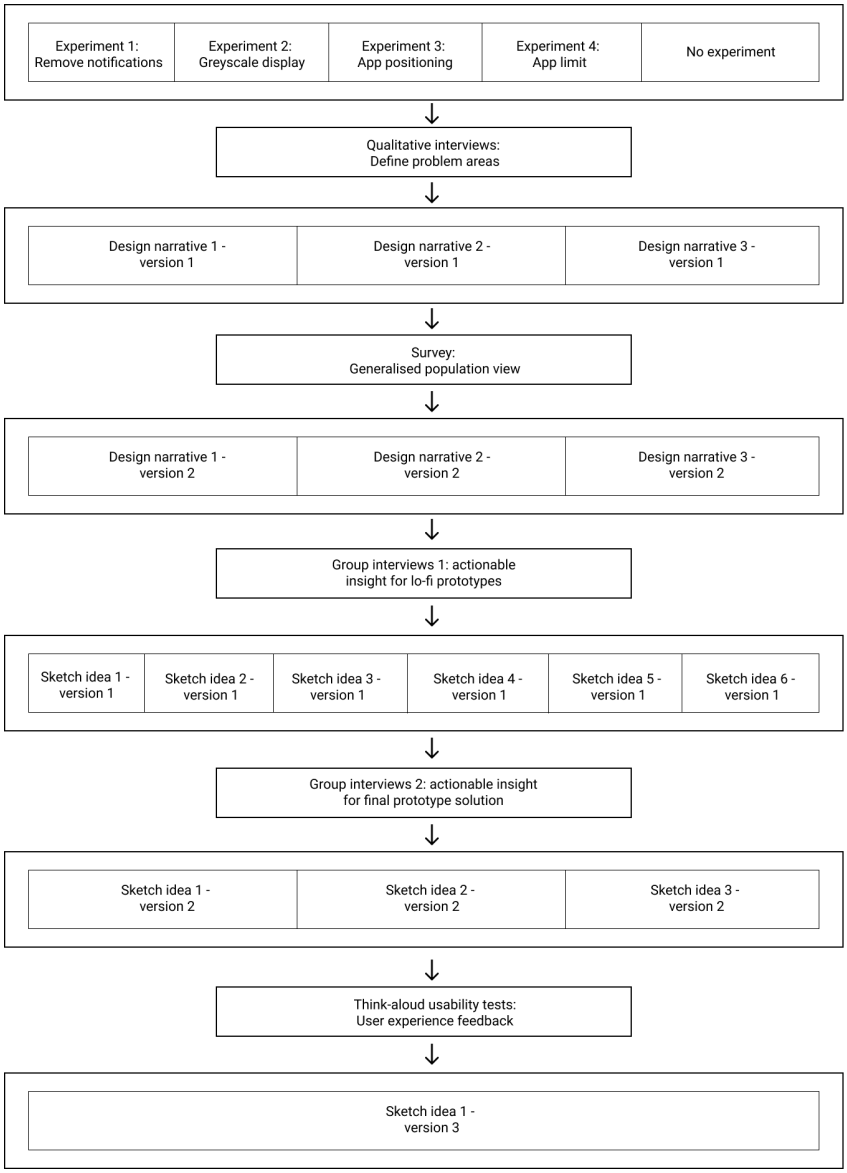


Figure 3.1: Diagram of how the different methods contributed to design process

participants' personal experiences as well as worldviews [44].

In the first phase of the design research process, individual interviews were employed as part of the initial user studies to gain initial insight into daily situations and personal incentives underlying students' engagement with their mobile devices. Then, in the third and fourth phases of this process of design research, focus group interviews were conducted to gain actionable insights for the conceptualisation and further development of our final proposal for a technological solution to the challenge of realising healthier relationships to our mobile devices. We combined the individual interviews in the initial user studies with the subsequent group interviews to complement further the depth and richness of the qualitative insights [39]. Finally, Think-Aloud usability tests were adopted in the last phase of this process of design research to easily test and evaluate the prototype solution in terms of its user experience before realising its final form [69]. An ensuing qualitative retrospection further affirmed the challenges addressed and embodied in the prototype solution [69].

Quantitative Survey

As part of this mixed-methods approach, we also chose to extend and validate our understanding of our qualitative insights by conducting an online survey. An online survey was chosen in this second phase of this process of design research, as it allowed easy access to a larger and more diverse sample of the student population in a short amount of time [70]. Prior to the execution of the online survey, a pilot test was conducted with a Postdoctoral researcher to simplify the phrasings in the questionnaire and eliminate potential ambiguity in the questions.

Insights from 114 respondents were collected in the context of this online survey. These primarily quantitative insights allowed us to gain a richer understanding of the daily situations and personal incentives promoting university students' smartphone usage. Furthermore, it enabled us to approach a closer definition of 'smartphone addiction' or at least 'potentially problematic engagements' in the words of research participants.

CHAPTER 4

Related Work

What alternatives are there to habitual and addictive forms of smartphone behavior?

Initial efforts to address these questions have been undertaken across both industry and academia, and within the fields of Human-Computer Interaction, Sociology, and Psychology, in particular [46] [6] [22] [41] [47]. In this chapter, we provide an overview, and specific examples, of approaches to understanding the problems which exist and approach their resolution through design.

4.1 Addiction by Design

Thanks to advancements in technology, smartphones have now become smaller and cheaper, making them the preferred tools for everyday life use, ranging from entertainment-focused to communication- and productivity-driven interactions. As a matter of fact, according to comScore's 2017 report, people between 18 and 24 spend over 3 hours on their smartphones every day [45].

This overexposure to the smartphone drives short attention-spans amongst their users, as each month, a user accesses up to 30 applications in total [54]. Moreover, based on comScore's 2017 report, 21% of individuals aged 18-24 even delete applications because they didn't like how they look on their Home Screen [45]. Thus, designing immersive smartphone experiences for user retention has become increasingly important for technology developers. This new focus area is also clear in the surge of diverse articles and studies, aiming to explain different approaches for a more engaging design of smartphone applications [28][14] [65] .

Business Insider's Your Brain on Apps report separates these tactics into different categories - from sending dozens of push notifications each week to using specific colors in order to grab users' attention [9]. Ultimately, an engaging design helps technology developers create valuable and sustainable customer relationships through immersive experiences.

4.2 Immersion

The key for user retention through design depends on the level of immersion. Although the term immersion is still vaguely defined, it is commonly used by gamers and those who study the gaming world [8]. Here, immersion refers to a mental state, in which players lose awareness of their surroundings and day-to-day concerns [35]. One research article, published in 2008, suggests that the experienced level of immersion is closely related to how addictive or engaging people find videogames [62]. More recently, another research has also shed light on the compelling link between on- and offline social connections, in the form of an online questionnaire which asks respondents to reflect on their social media usage, by addressing "Facebook" as "spending time with friends". [60].

This research was motivated by the ethnographic work of Natasha Schull in particular within the context of addictive behavior in the world of gambling. Shull spent more than a decade in and around Las Vegas observing the design of 'addiction' through the gambling environments, its technologies and players' interactions [33]. In her book "Addiction By Design", Schull introduces the theory of "the zone", which she later describes as a dissociative trance-like state where everything seems to disappear [61]. The zone describes a mental state of hyperfocus, in which gamblers' are fully immersed in playing the game, causing them to forget about their social demands and daily worries. Here, the notion of 'losing yourself' appears to be regarded in a positive light, both within the context of gambling and video games. Still, Schull argues that gamblers are not playing to win. The reward system might play some role in attracting people to play, but repeated interaction with the device is what drives players to keep playing, as this encourages them to stay in their "zone" as long as possible [61]. Here, comparisons can be drawn between the design of smartphone interfaces and slot machines, as elements like colors, sounds and "the spinning wheel effect", when loading new content, encourage people to stay in their "zone" and lose track of time.

In alignment with this, in 2016, Tristan Harris, co-founder of the Center for Humane Technology, compares smartphones to pocket slot machines - driven by colors, sound, and a Fear of Missing Out (FOMO) [28]. Harris explains that these elements are widely used by designers in order to influence people's behavior without them realizing it [28].

In summary, immersion is often discussed within the frame of addictive behaviours, in which it is closely connoted to a heightened level of engagement. Therefore, the immersive experience is a relevant factor to recognize in the study of problematic smartphone usage.

4.3 Addiction

In alignment with the widespread use of cell phone technology, individuals are increasingly developing a dependency on communication devices, as a means to escape feelings of stress, anxiety and discomfort [36]. As users become accustomed to these immersive experiences, they start showing signs of addictive behavior, which are formally defined as habits turning into obligations [2]. According to comScore's 2017 report, millennials are most prone to showing signs of app addiction. This is further supported by 74% of participants between 18 and 34 indicating an 'urge' to open an app on their smartphones as soon as they feel bored. [45]

Many different methods and resources have been used for the identification of addictive behavior in smartphone users. In 2013, a self-diagnostic Smartphone Addiction Scale (SAS) was designed and developed to identify smartphone addicts on the basis of data collected from 197 participants, with ages ranging from 18 to 52 years old [38]. Furthermore, in 2014, a system called SAMS (Smartphone Addiction Management System) was developed in order to monitor users' application usage. The study was conducted with 14 users ranging from 19 to 50 years old [40]. This study suggests that social network and messaging applications play a key role in addictive behaviours since they have frequent but short usage time.

Additionally, in 2014, a pattern analysis was conducted with 60 anonymous users on the basis of their smartphone usage patterns. The SAMS (Smartphone Addiction Management System) application continuously monitored and stored the users' application usage and their usage records [1]. This study underlines the temporal characteristics of addictive smartphone behaviors, as 'addicts' demonstrated a considerably higher usage around nighttime, whereas 'non-addicts' mainly used their smartphones in the afternoon. [1]

Also, in 2017, emotion regulation strategies were studied within 262 high school students as a method to predict internet and smartphone addiction in adolescents [71]. This study suggests that smartphone addiction amongst young people might be increasing because they are not able to regulate their emotions against daily stressors, and in order to avoid negative emotions. In 1999, Dr. Kimberly Young described behaviors associated with Internet use, as means of preventing problems and providing mental escape in the same way as involved in alcohol, substance and gambling [72]. Mark Griffiths, a behavioral addiction researcher, at the same time suggested that individuals who are using their smartphone to regulate their emotions normally do not notice the time they have spent on their devices [27].

These studies are a small part of what has been conducted in the area of smartphone addiction, but at the same time show that research is actively being performed to explain and identify potential causes of addictive smartphone behavior.

4.4 How do technology developers hold themselves accountable?

Thereby, as studies demonstrate the addictive nature of user experiences designed to be immersive, the question is: how do technology developers hold themselves accountable for these design choices? This will further be investigated by studying the digital wellbeing tools offered by some of the most popular smartphone-based apps. According to a report by Sensor Tower, the mobile apps which users spent the most time on in 2019 are WhatsApp, TikTok, Facebook and Instagram [68]. These applications therefore form the basis of this small case study (Table 4.1).

4.4.1 WhatsApp

WhatsApp is a text and voice messaging app owned by Facebook that allows both messages and calls on desktop and mobile devices. The app is available for iPhone and Android smartphones [1].

The application provides its users with communication-based features. Users primarily use the application to initiate conversations with individuals or a group of people, wherein elements such as their activity status, contacts, images and videos appear [18]. Other prominent options in the application also include the opportunity to share your location [18]. By default, the user is always logged into the application, so whenever somebody wants to contact them, the app sends them a notification and informs them about incoming messages or calls. These features appear to address particular user needs, since WhatsApp is ranked as the most downloaded app in 2019 with more than 250M downloads [68].

Despite an increasing number of individuals using WhatsApp, the app does not provide an option for its users to manage their time spent on the application. Mainly strategies in the smartphone's built-in settings can be used to minimize their smartphone usage on Whatsapp. Strategies range from switching off their WhatsApp notifications; removing the WhatsApp shortcut icon from their home screen, to muting their WhatsApp chats [59]. An external application has also been developed to help users create a time schedule for their Whatsapp usage to restrict it [2].

However, these strategies heavily rely on users' willpower, as users must themselves be willing and able to identify and take measures to counteract behaviours they find as problematic.

[1] https://www.whatsapp.com/
[2] https://play.google.com/store/apps/details?id=com.shutsapp&hl=en

Apps	**Description**	**Addictive design features**	**Digital wellbeing features**
Whatsapp	Text and voice messaging app that allows both messages and calls on desktop and mobile devices	• Illusion of availability	Does not provide additional option for managing screen time on the application
TikTok	Application for making and sharing short videos	• Infinite scroll and endless content • Leveraging a desire for social interactions	• Screen time management lets the user to limit their screen time per day • Restricted Viewing Mode feature where users can limit the appearance of content
Facebook	Social networking site that allows people to connect with other people worldwide	• Infinite scrolling and endless content • Leveraging a desire for social interactions • Illusion of availability	• Activity dashboard shows users their average time on the app for specific days • Daily reminder allows individuals to set daily reminders for alerting them when they have reached the desired amount of time they wanted to spend on the app.
Instagram	Platform where people can upload photos and videos and share them with other people	• Endless content • Leveraging a desire for social interactions • Illusion of availability	• Activity dashboard shows users their average time on the app for specific days • Daily reminder allows individuals to set daily reminders for alerting them when they have reached the desired amount of time they wanted to spend on the app.
Digital Wellbeing (Android)	Android tool that gives a daily view of how often individuals have checked their phones and how frequently they have used different apps	-	• Set applications limits • Activity dashboard displaying users' average time • Provide different experiments that cover different parts of users' smartphone usage activities
Screen Time (iOs)	iOS tool that aim to make people aware of their time spent on their devices	-	• Set applications limits • Activity dashboard displaying users' average time • Schedule downtime • Block inappropriate content

Table 4.1: Case Study: Addictive features in most used applications of 2019

4.4.2 TikTok

TikTok is an entertainment-focused application for video-based content creation and sharing. Challenges and hashtags shape the individual experience of the application. Additionally, the interface design of TikTok incorporates a frictionless experience with infinite scrolling, as users navigate through the never-ending content by scrolling up or down [3]. TikTok is ranked as the second most downloaded app for 2019 with nearly 220M installs [68].

Currently, TikTok provides its users with a "Digital Wellbeing" feature, in which the user has two different options - Screen time management and Restricted Viewing mode [67]. Within the Screen time management feature, users have the opportunity to limit their screen time per day according to their preferences. When their time limit has been reached, individuals are required to enter the password of their TikTok account to continue using the app. Hereby, users have the option to incorporate design frictions [16] in the originally frictionless interaction design of TikTok.

On the other hand, within the Restricted Viewing Mode feature, users are able to filter and control their content streams by limiting the appearance of content that they find inappropriate. This feature is again activated by entering the password of the user's TikTok account [67]. According to the company, this feature was designed, in partnership with a number of family-oriented safety organisations, such as Family Online Safety Institute [4], the National Center for Missing and Exploited Children [5] and the National Parent Teacher Association [6], to ensure safety and privacy standards.

4.4.3 Facebook

Facebook is a social networking site, which allows users to connect with other people, as well as share pictures, videos, articles and their own thoughts [7]. According to Sensor Tower, Facebook is the third most downloaded application in 2019 with more than 150M installations [68].

Similar to TikTok, Facebook displays their content in the form of infinite scrolling. Once the user opens their Facebook Home Page, endless content is provided to the user, which could potentially hold their attention for hours. The company had originally included different settings and features to allow users to manage what type of notifications they receive and from whom. In 2018, Facebook introduced an activity dashboard and a daily reminder to help users manage their time better [20]. According to the company, they developed these tools based on collaboration with mental health experts and organisations [20]. The activity dashboard shows users an average

[3] https://www.tiktok.com/
[4] https://www.fosi.org/
[5] https://www.icmec.org/
[6] https://www.pta.org/
[7] https://www.facebook.com/

of their weekly activities on the app, with an additional option to check a specific day's screen time. Below the dashboard, individuals can also set daily reminders to alert them when they have reached their desired amount of time spent on the app.

The company has shared that they hope that these tools will help people further understand their smartphone behavior on the platform to help them manage their experience more effectively [20].

4.4.4 Instagram

Instagram is a platform where users can upload photos and videos to share with their followers or browse through the uploaded content [8]. Instagram is part of the top five most downloaded applications for 2019 with more than 100M worldwide downloads on iPhone and Android devices [68].

Instagram belongs to Facebook, so they initially shared the same digital wellbeing tools - the activity dashboard and the daily reminder - to help users manage their time better on the platform [20]. However, in 2018, the platform also introduced the "You're All Caught Up" feature to people's feeds [34]. This component conveys to the user that they have seen every post shared by their followers within the last two days. This element is challenging the regular frictionless design of Instagram, by creating design frictions encouraging the user to stop scrolling. This has the potential to reduce users' smartphone usage on the platform, but, as noted in our process of design research, this can also push users to explore content through the platform's other features (See Section Entertainment or People 5.1.2.5).

4.4.5 Digital Wellbeing (Android)

Google provides Android users with a tool supporting the creation of healthy smartphone habits to help them achieve their personal goals. The Digital Wellbeing tool gives a daily overview over the user's screen time on the device and individual apps. Moreover, this tool also allows the user to set daily app limits according to their needs as well as disconnect from their phone at night or during the day through productivity- and mindfulness- focused modes [26].

In 2019, Google also introduced a set of digital wellbeing experiments, designed to help users reduce their screen time and be more aware of their smartphone usage [25]. The experiments cover different challenges of users' smartphone relationships such as:

- Frequent smartphone usage (Unlock Clock);
- Fear of missing out and spending too much time on your phone (Screen Stopwatch, We Flip and Activity Bubbles);

[8] https://www.instagram.com/

- Infinity scroll loop (Anchor and Digital Detox);
- Having difficulties staying focused (Desert Island, Morph and Post Box).

These Android based experiments are open sourced to inspire more developers and designers to consider digital wellbeing in their future technological solutions [25].

4.4.6 Screen Time (iOS)

Similar to Google's Digital Wellbeing tool, Apple has addressed the growing concern around increased smartphone usage with their Screen Time tool [50]. The goal of this feature is to make people aware of how much time they are spending on their devices, which applications they are using the most and how many times they have picked their iPhones up in a given time. The tool is accessible through the smartphone built-in settings. This feature also allows users to set app limits, schedule downtime, disable or enable apps as well as block inappropriate content. Similar to Google's Digital Wellbeing, Screen Time aims to help users understand and control their smartphone behavior and activities [50].

4.5 In Summary

Smartphones offer a wide range of functionalities and are therefore popular amongst university students. Amidst the competitive app market, smartphone activities are increasingly designed to be engaging to ensure user retention [28]. Many different elements are used by designers to grab users' attention - from colors and sound to infinite scrolling, etc [28]. These immersive experiences can easily lead to addictive smartphone behaviors, which have been found to correlate with high levels of anxiety, depression, poor time management and sleep issues [10].

Technology developers have started to provide different in-app tools for users to limit their screen time and promote meaningful interactions. Of these attempts, Instagram's recent "You're all caught up" feature is the most notable, as it revolutionizes the typically frictionless user experience of social media apps. Still, a majority of the remaining strategies created by Facebook, TikTok, Google and Apple are not easily visible or accessible through the interface design, as they are usually hidden in the settings section. Furthermore, Facebook's, TikTok's and Instagram's features are solely focused on their own in-app interactions.

Additionally, despite Google's efforts at establishing healthier smartphone relationships through their Digital Wellbeing Experiments, their solutions are more concentrated on creating additional innovative platforms, rather than adjusting existing platforms to healthier standards. Also, Google's and Apple's attempts at creating smartphone-based modes of interaction are still premature, as the productivity- and

mindfulness- focused modes are not customisable to users' needs and preferences, and the modes do not prevent users from accessing any of their smartphone apps.

Despite these initial attempts to support digital wellbeing, many young people and students continue to report concerns relating to the time spent in interaction with these devices [51]. Therefore, there is more potential to shape the individual's interaction with the smartphone according to their personal context of smartphone usage, as this could lead to better experience of the technology and healthier smartphone relationships.

CHAPTER 5

Design Process

Analysis of the literature and industry approaches therefore suggests a need for strategies based on a rich understanding of users' needs and values. We undertook five distinct phases of design-oriented research to enable a richer understanding of students' relationships to their devices in order to create alternative design solutions to the challenge of realising healthier relationships to our mobile devices.

5.1 First Iteration: Initial User Studies

The main goal of the first iteration is to gain initial insight into students use of, and relationship to, their smartphones to identify areas that the university students find problematic. We adopt this angle, as part of a user-centric approach, to gain a richer understanding of the daily narratives that could potentially promote an addictive smartphone behavior amongst university students.

Thus, we ask thirteen students from Danish and international higher education institutions to describe and reflect upon their daily smartphone behavior as well as their screen time.

5.1.1 Methods

5.1.1.1 Before the interview

Harris' research on ethics of human persuasion by design [28] was adopted in the preparation of the initial user studies. Therein, Harris explains that the smartphone is designed to "keep us hooked". He proposes a set of concrete revisions to selected design elements within the smartphone for a more mindful interaction with our devices [1]. These design revisions will be employed as experiments for the research participants ahead of their qualitative interviews.

- Turning off non-human notifications, as these type of notifications can leverage the desire for social interactions

[1] https://www.youtube.com/watch?v=NUMa0QkPzns

- Grayscaling the screen, as the regular bright colors of smartphone apps can be distracting

In extension to these aforementioned suggestions, we generated two supplementary design revisions in accordance with Harris' statements on the addictive design elements of the smartphone. For instance, Harris compares slot machines to the "pull to refresh" feature to demonstrate how certain design features provide an addictive illusion of control. Harris further explains that it is important to restrict the home screen to everyday tools, by filtering out apps that use infinite scrolling as they reduce a user's sense of control and make it harder to stop consuming content.These design features are very prominent in social media, which is the category of application most used by individuals in the same age group as the research participants [45]. Hence, the following design revisions were added.

- Setting daily time limits for their most-used apps, as these apps can potentially leverage an addictive illusion of control
- Changing the position of their most used applications on their smartphone, as this will make these potentially distracting apps with no built-in endpoint less accessible

These experiments were presented as an optional one-week challenge to the research participants, as it would serve as a retrospective exercise for the follow-up qualitative interview. Additionally, this would allow a study of the advantages and disadvantages of current solution strategies targeting additive smartphone design.

8 participants accepted to perform this one-week challenge, whilst the remaining 5 participants dismissed it due to lack of time. Therein, the first half were given the freedom to choose their one-week challenge, whereas the other half were asked to perform a specific challenge to ensure the diversity of the empirical data. The day before the challenge started, each participant was asked to document their current weekly screen time. iOS users were able to use the "Screen Time" [50] feature available in their Settings and Android users had to download the same application through their built-in app store [2].

Due to the coronavirus outbreak, the majority of the interviews were scheduled online through video calls on Facebook Messenger [3]. Each interview lasted around one hour and participants were asked a group of questions according to a structured interview guide. At the beginning of the session, the overall project idea was presented and participants were informed that they have the possibility to skip a question in case they felt uncomfortable. All of the interviews were recorded with the knowledge and agreement of the students and later used for further analysis.

[2] https://play.google.com/store/apps/details?id=com.ezlapp.screen.time&hl=en
[3] https://www.messenger.com/

5.1.1.2 During the interview

First, the participants were provided with a timeline template and asked to describe what an average day in their life looks like. Then, they were asked to mark in a different color when the phone is a central part of their day. As the interviews were moved online, the interviewer performed this timeline activity in accordance with the participant's explanations (Figure 5.1).

Following this exercise, the researchers followed an interview guide to structure the rest of the qualitative interview. The questions started off by asking the participants to describe and reflect on their phone usage throughout the day as well as communicate their subjective experience of their devices. Finally, their opinions on their screen time as well as their preferred smartphone apps were asked.

5.1.1.3 After the interview

The first iteration resulted in **8 hours and 8 seconds** of audio recordings. The audio recording of participants 4, 7 and 9's interviews unfortunately failed to save and therefore the researchers relied on the notes taken during the interview to account for their insights.

The audio recordings were, first, fully transcribed. Then, these transcriptions were subject to close reading by both researchers. Key themes and categories were identified and developed, in which the approach was both inductive and deductive. We identified selected quotes that best represented each theme. This process facilitated the documentation and formulation of the first iteration.

5.1.2 Findings

The information gathered from the initial interviews shed light on students' everyday routine and their feelings about their smartphone usage.

5.1.2.1 Routines

The smartphone accommodates several needs for the participants, communication-, productivity- and entertainment-focused interactions. These various use cases for the smartphone are often incorporated into specific daily routines. This insight is important to identify opportunities for impact through design.

Morning routine

Almost all participants used their smartphone's alarm function to wake up, and in prolongation with turning off their alarm, they described a longer wakeup process, in which they check their notifications, mainly from social media. An interesting detail that was observed during the interviews was that most of the participants immediately referred to social media, when describing their smartphone activities.

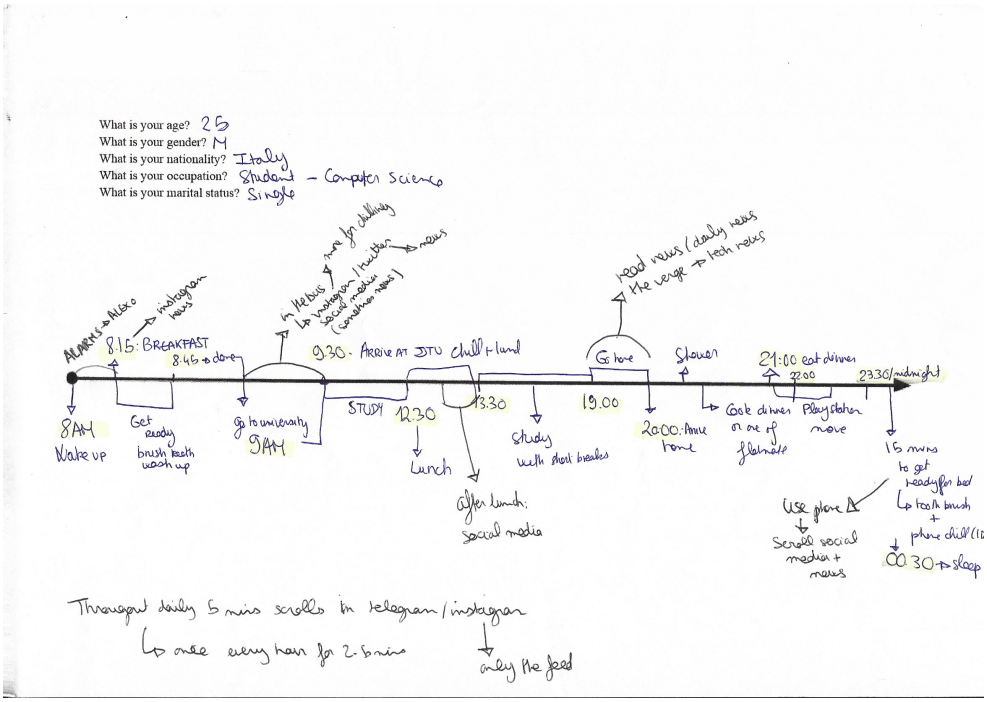


Figure 5.1: Daily timeline example

Thereby, participants implicitly connotes the smartphone to frequently performed smartphone activities.

> *"It actually plays a role in my wake up process (...) so first, I open my eyes, I'm really tired and then while checking Instagram, the news, Facebook, Reddit and all this stuff then in that half an hour, I slowly wake up so that's basically supplement for my waking up"*
>
> - ***Participant 1***

Only one participant opted the smartphone's alarm functionality out of their morning routine. Instead this participant incorporated their reliance on their smartphone in their morning routine in an alternative manner:

> *"I need a phone call from my parents so they wake me up. I won't be able to start the day otherwise"*
>
> - ***Participant 3***

Evening and bedtime routine

An important insight that was noted is that the smartphone plays a more important role in the evening for all of the participants, as this is the time for them to entertain themselves until they fall asleep. Another interesting observation is how the following research participant speaks in such excited terms of a routine he describes himself as 'horrible', 'useless' and 'scattered'. This routine is clearly a meaningful part of the participant's day, and therefore it is significant to question how 'horrible' it actually is.

> *"And then I have a really long going to bed process because I check crazy amounts of useless information on my phone like, okay, I take on my PJs, then I do something on my phone then I go and brush my teeth then I do something on my phone then. I don't know - I go to the shower and then do something on my phone like it's really scattered. Yeah, my bedtime routine is is horrible"*
>
> - ***Participant 1***

Additionally, all international students mentioned that the evening represents an important time for relationship maintenance (c.f.. Section - 5.1.2.4) with friends and family abroad:

> *"Between 19:00-20:00 I am calling my family, friends or my roommates."*
>
> - ***Participant 5***

Break time routines

When describing their daytime routines at school or work, the participants referred to 'phone breaks', in which they would dedicate a set amount of time throughout the day to check their notifications and scroll through their social media feeds, as a way to take a break from work or studying.

> *"I think Instagram is something that I can't live without. I like to see photos of what other people post and take a break. I can't work without a break, I am not productive without a break - if there is an alternative - like sometimes I make tea and I am not looking into Instagram. (or talking with somebody else). I have this kind of routine to use it for 10 mins. I usually don't exceed these 10 minutes."*
>
> ***- Participant 5***

Again, the personal experience described by the above participant is another example of how something described in 'addictive terms' plays a useful role.

5.1.2.2 Habits

As the participants start associating their smartphone activities with their daily routines, increased repetition of these routines allows their behavior to become instinctive and thereby, habits are formed over time, as more needs get satisfied through the smartphone. Hereby, a habit is formally defined as "a routine of behavior that is repeated regularly and tends to occur unconsciously" [15].This is also visible throughout the interviews, as participants use the expression 'habit' very often to explain their smartphone usage and behaviour:

> *"I do check my phone. I think out of habit sometimes. Like if I receive the message, then I check it but mostly I think it's out of habit just to check (...) if I've gotten a message even though I don't have any notification or if you know something new pops up on Instagram or Facebook. (...) I would just take it just to do something different."*
>
> ***- Participant 13***

Comfort zone

As the routine turns into a habit, a bubble of comfort also flourishes around the participants' smartphone usage, as they continue to personalize their interface and interactions according to their preferences for their own convenience. Therefore, the participants showed signs of reluctance and meticulousness with regards to changing their smartphone behavior as part of their smartphone-related challenges (c.f. Section - 5.1.1).

> *"Because I love my phone to be organized. If I have like everything is on one side or the other. Yeah, [changing the apps positioning] will be (...) annoying"*
>
> - ***Participant 2***

Additionally, in terms of the grayscale challenge, participants expressed a clear desire of wanting to be attracted to their devices, which seems to be partially satisfied by the colors. Therefore, one respondent points out the need for a sustainable solution strategy on a long-term basis, as changing or removing the colors were perceived as an unsuitable decision. This highlights an important aim to consider for later design work.

> *"[The grayscale challenge] (...) it's uncomfortable. It would decrease the screen time but it's not sustainable"*
>
> - ***Participant 9***

> *"My challenge was to have my colors on my phone like black and white for a week, so Thursday when I put the colors off, and I was like 'Oh, my God, this is so strange. I don't know if I can do it for one week'. (...) 'if my colors are not on, I will not be attracted to my phone anymore'. I was like that the first day I was like 'my phone is not attractive to me anymore. I hate it. It's so boring. I don't know what to do on it when it has no colors.'"*
>
> - ***Participant 12***

Nevertheless, their strong attachments to their devices allowed certain participants to develop new habits around their smartphone usage:

> *"I put them like two or three screens after. And at the beginning it was just like, Oh, it's not been where [the position of the app] it used to be, it's in the new one and then after one day I just got used to it"*
>
> - ***Participant 6***

> *"But then I got used to it, and then on Sunday, I think after I send you the screenshot of the screen time, I turn the colors on, and I was like these colors are too much, maybe I was used to it so much to be black and white. And the colors were awful for me. But then I realized that it makes sense for the screen time to be higher, since it's easier for my eyes. The first*

day they got used to the colors. And then the other days, it was easier for me to look at the screen because it doesn't have that many colors to give me a headache, you know?"

- ***Participant 12***

Alone

This comfort zone enhances the participants' attachment to their smartphone. Correspondingly, participants' commentary centred more often on situational or contextual antecedents of loneliness than the subjective experience of loneliness itself. Terms such as 'distract', 'escape', 'relax', and 'support' are used to describe the purpose of their smartphone usage in those cases:

In the case of being alone due to their situational state, it is mostly related to situations in which they have to eat alone or when they are alone during their commute to school or work.

"A few months ago - taking the train to go home [alone]. I thought I lost the phone. Everything was on my phone - the phone is essential during travel. I was outside my comfort zone. I lost my connection to the world at the moment I needed it. I needed to solve things differently to have the day how I wanted it to be."

- ***Participant 3***

Therein, an interesting observation to note in one participant's statement is the conflation of 'need' and 'desire' in the context of smartphone usage. The following participant describes a desire to listen to music, when she is commuting alone. Yet, when expressing herself, she uses the term 'need' to describe her smartphone behaviour.

"(...) When I'm in the metro, my face and my eyes are on the phone. Sometimes I even see people who are like in the metro, and I know them, but I'm so focused on my phone and I don't even see them and then I have to be sorry: 'sorry, guys.' (...) because there I'm alone. For example, if I'm at school and I'm around people, I sometimes forget about my phone (...) when I'm home, I also forget about my phone because I'm putting the TV on and someone is talking to me, you know "

- ***Participant 12***

Likewise, participants also described how a variety of subjective experiences, including loneliness, anxiety and discomfort, frequently motivated their smartphone usage. Here, the interrelated nature of situational and psychological antecedents of smartphone usage are seen.

> *"(...) when I am bored, I go to Instagram, just for the sake of going there. Sometimes I have seen everything on Instagram and I would scroll through because I am bored (...) [social media] is good as a distraction when you are bored. I am also used to it, but I want to change it."*
>
> - ***Participant 11***

> *"I think.. so maybe when I feel alone you know. Not conversating with someone or not having someone to talk then I would go on my phone. I think some people choose to read a book, but I just choose to be on my phone (...) Other than that, I think when I'm home and I just need something to do. (...) I wouldn't know what to do by myself, I think to be honest, yeah."*
>
> - ***Participant 13***

> *"I think when I am in public, and (...) I don't feel like talking with people, I don't feel comfortable with them. Then I'll be on my phone. (...) I would just browse social media (...) Just to have something to do, I guess.. to feel busy. (...) I don't remember the first time but I remember (...) a specific time where it made me think that I could rely on my phone (...) I was in the bus. And for some reason, I started to feel very anxious. And I felt like people were maybe staring or judging or I didn't know what to do or who to call so I just tried to focus on my phone and use it as much as I could at that time. (...) I can focus on that rather than people around me. (...) "*
>
> - ***Participant 13***

For one participant, their smartphone usage at home plays into a larger ecosystem, with the TV and the laptop, as a way to feel less alone:

> *"Usually when I get home, the first thing is to put the TV on (...) And maybe sometimes I'm watching Netflix, sometimes I'm just listening to the news and start cooking"*
>
> - ***Participant 12***

Temporal illusion

Thereby, especially when being or feeling alone, the smartphone acts as a tangible escape room, in which participants can penetrate this alternative virtual dimension

to escape reality. Herein, a distinct characteristic is the temporal illusion that the participants experience when on social media, which results in them losing track of their screen time.

> *"(...) that's just my feeling and the screen time shows something different"*
>
> ***- Participant 1***

> *"Sometimes, I can not keep track of everything I do, but mostly I am trying to set up some limits (...) sometimes I lose complete track of how much time I spend on my phone, but around 45 min."*
>
> ***- Participant 8***

> *"I think I lose track of the time in a sense where like, I can always see how much time I've spent on it, but I don't get a sense of reality. Like if an hour passes by I don't go 'oh, I've been on my phone for a whole hour', it's not like that. I know how much time I spent on it. But I don't really put in perspective and say 'Oh, that's too much'."*
>
> ***- Participant 13***

Procrastination tool

Yet, despite some benefits of this online escapism in distressful situations, in the case of lack of motivation, the smartphone becomes a procrastination tool for the participants. This is the point where smartphone usage begins to be perceived as problematic. This is highlighted by a majority of the participants' statements:

> *"Because sometimes it distracts me. Like while I'm studying and I don't want to study if I receive a notification immediately I will go on my phone. So it's just like an excuse to not study."*
>
> ***- Participant 2***

> *"(...) when I am studying, not as productive [because of the smartphone] (...) less interesting to study and can get very theoretical (...) I'd rather focus on easier things"*
>
> ***- Participant 3***

> *"I feel like I need to study a lot of things and I'm just procrastinating those things and I'm just doing something that (...) is funnier, and it's less boring (...) because I need to prepare for the interviews and stuff and that's something that it's not motivating me and it should."*
>
> - ***Participant 6***

A participant explained further that, despite the smartphone allowing one to escape reality momentarily, it can't replace actual human connection (c.f. Digital Intimacy 6.1.3.2), which allows one to process, accept and thereby actually escape this reality on a long-term basis:

> *"(...) for me, the phone would be a way to escape but a conversation with a human being, or just interacting with a human being would be a way for me to accept the reality and talk about it. I can't talk to my phone and receive advice. Of course, I can Google it, but it's not the same thing as maybe needing someone to hear your thoughts or what you're going through. At the time it helps in a different way. I feel like"*
>
> - ***Participant 13***

Furthermore, these tendencies to use the smartphone as a procrastination tool has a physical impact on the participants' everyday life, such as sleeping later or having eyesight problems. Interestingly, the participants seem well aware of these consequences, especially in terms of their sleeping schedules.

> *"So the thing is that whenever it turns out that I [am] actually kind of addicted to my phone and use it more, I always feel bad so that would be guilt again. But I'm yeah, I'm really bad at getting rid of bad habits, actually. I'm really bad. And, I don't know I always feel guilty."*
>
> - ***Participant 1***

> *"Because after being on the phone for a long time, I just cannot sleep like my sleep goes away and then I cannot sleep (...) I don't know if it's the blue light or something and it's just like changing the patterns of sleeping."*
>
> - ***Participant 6***

> *"I stay up on the phone because I am not that tired. Or maybe this is what I think"*
>
> - ***Participant 11***

Yet, they don't exhibit a conscious attitude in response to these problem areas, as they choose to ignore it. This is reflected in the quote that follows, as the research participant explains how she often goes through periods of deleting Facebook, when she feels it becomes problematic in her everyday life, then re-downloading it again because of boredom.

> *"I normally delete the [Facebook] app and then coming back sometimes (...)"*
>
> - ***Participant 6***

Nonetheless, the smartphone as a procrastination tool very often also turns into a vicious cycle of bad habits, as the participants describe the experience of chronic feelings of guilt, stress and performance anxiety, as their own willpower balances necessity and distraction.

> *"So in general, I really feel like I'm procrastinating almost everything and I think using the smartphone plays a lot, a huge role in that. And, since I really feel bad because of procrastination, I feel bad for using my smartphone as well. (...)Because I feel like I have much more potential. And I feel like I could do much more with my life (...) "*
>
> - ***Participant 1***

Herein, the participant specifically expresses dissatisfaction with themselves, as they understand their weakened sense of control as a personal shortcoming. Yet, this reduced sense of control is actually a conscious design choice, as smartphone features such as infinite scrolling aims at creating frictionless experiences to keep users on their smartphone [28].

5.1.2.3 Connectivity

The concept of connectivity and disconnectivity is often directly or indirectly referred to, during the qualitative interviews. The on-the go element of the smartphone device is interpreted by the participants as a constant state of needing to be available:

> *" I usually shut it down. Since I am not in a position to be available at night, this is why I turn it off. If I had to help somebody during the night or my job needed me - I would have kept it on."*
>
> - ***Participant 5***

Urgency

Thereby, this perpetual availability attributes a feeling of urgency to the smartphone, which is further illustrated by the fact that the participants always keep their smartphone at close proximity (i.e. always smartphone at hand and/or smartphone close to their beds when sleeping).

> *"My phone is next to me, not under my pillow. The phone is always on, however, it is disconnected from the network. The sound is on vibration, so if somebody needs me for something important, it wakes me up."*
>
> - ***Participant 4***

> *"Maybe sometimes I feel anxious just to check my phone if I receive something (...) If I don't have my phone, it's like 'Oh, I need to go and get my phone and see if I receive anything' (...) It's that feeling of missing something that you need to check (...) I guess I just got so used to it to have the phone next to me and just check. It is something that I'm doing [subconsciously] without thinking (...) like contact with friends and family."*
>
> - ***Participant 6***

One respondent further exemplifies this, by explaining that smartphone-based content, and especially communication, provokes impulsivity traits in them, allowing frequent cognitive interference to happen [12].

> *"(...) it would be weird - because I am used to being able to check the messages relatively often (...) especially in student organizations, urgency is important (...) For urgent stuff, we talk through messenger. For less urgent, it is on slack but the fact that it is on my phone makes it feel urgent"*
>
> - ***Participant 9***

Real-life disconnectivity

Connectivity is originally expressed in terms of the virtual dimension brought on by the smartphone's online connection but has also transcended to a revised meaning in certain situations from the participants' everyday life. For instance, participants often describe a lack of attention during real-life conversations, due to the smartphone. These cases can be interpreted as online connectivity in exchange of real-life disconnectivity. Thereby, there are blurred lines between reality and online, as terms previously describing online behavior can be used when characterizing current real-life behavior.

> *"I'm trying not to because I want to talk to my friends. Yeah, since we're all together and having lunch, but sometimes I just cannot resist because I really like sending memes to my friends and like, seeing interesting things showing up on my Facebook newsfeed and yeah (...) [it's] friends from back home! Because they are Bulgarians, but they're also international students. Some of them are studying in England. Some of them are studying in the Netherlands."*
>
> ***- Participant 12***

> *"[With friends] I would maybe look at my screen a couple of times, but because we're talking I try to not look at it too much. But again out of habit. I find myself reaching for my phone"*
>
> ***- Participant 13***

F.O.M.O Nonetheless, the participants express a need for connectivity, primarily in relation with F.O.M.O., as participants feel the urge to be available and updated on-the-go.

> *"(...)there's definitely a part of the fear of missing out in the morning because, mostly with the news, I'm quite interested in what was happening in the world and if if something happens during the night like something big like, I don't know, the President of the United States dies or something like that then I would feel really really stupid 'Oh, I I went all the way until three o'clock and I didn't know about this thing'. And that that makes me feel a little bit strange"*
>
> ***- Participant 1***

> *"I would like to say no but there might be cases where I feel this way - mostly in connection with life from back home or family gatherings and I*

am not part of it. Happy to see they are having a good time but I am not there. But no stress or anxiety."

- ***Participant 3***

"When friends from back home are meeting; I am more prone to check the phone (...) Especially with friends back home, when I was in Asia because I couldn't be involved in my circle in Spain - more sad than anxious. Homesick"

- ***Participant 9***

All things considered, as seen in one participant's statement in regards to F.O.M.O, there seems to be a dichotomy here between how smartphone usage gives rise to a need to feel connected and at the same time can diminish connections.

"(...) sometimes I feel like that because I haven't done like the things (...) then I cannot go there because I thought I have waste my time on my phone or in Netflix or those things, and then I felt need to finish these things and then I cannot go to this event because I need to finish this and I didn't do that I felt like missed out of consequence. (...) Because I see that it was fun afterwards"

- ***Participant 6***

5.1.2.4 Relationship maintenance

As mentioned in the previous sections, participants lean more towards apps and in-app features supporting their relationships with friends and family. Especially, all international students mentioned that their smartphone usage is centered around relationship maintenance, as they primarily use it to stay in touch with friends and family from their home countries or their international community.

"The fact that I moved to another country challenges me to be more on the phone: keep relationships with parents cause I have to but not using it as much with friends and can clearly see the effect/prefer to see them in real life. (...) nice with a smartphone to mimic the everyday interactions (...) [social media] is nice to check up on international friends"

- ***Participant 3***

"Since I am not from here, it is very necessary for me to keep in contact with my family. I feel homesick and I feel less sad when using the phone to contact them (...) [If I couldn't use my smartphone] I would be devastated because I would miss them. I would mainly feel anxious because of the loss of contact with the family. Especially cause now it's the only way to see your family and this is why I would feel like that."

- ***Participant 8***

"It takes time [to maintain relationships through the smartphone] but I do it because, in the long term, I see myself living in Spain so I want to maintain the meaningful relationships there.. keep up with them so everything would be the same.. fill the gap (...) allow contact for friends that are not physically there"

- ***Participant 9***

As these interactions are more communication-based, the primary smartphone functions utilised are the classical phone calls as well as Messenger and Whatsapp, allowing online and easy-to-access alternatives for texting, audio and video calls. Several participants describe the smartphone as the only way to keep in touch and one participant even compares these interactions as an alternative to everyday interactions.

"(...)because I cannot meet them [with my friends abroad] all the time (...) you can meet only with a really limited group of people right? So yeah, let's let's take me as an example. I think I made like 10 or maybe 15 people regularly but then I'm still in touch with more than 50 at least on Instagram and Messenger"

- ***Participant 1***

"[I can't give up Whatsapp] Because it helps me to keep in touch with many people from around the world. Yeah, sometimes I only have them on Whatsapp. And I have pictures like we share pictures and stuff like that. So for example, I changed my phone and I lost some pictures, some conversation on WhatsApp and I was really pissed. And I still have my old phone because I'm trying to find a way to put them in the new."

- ***Participant 2***

> *"I talk to my family, so I have to use it for video calls and contact my friends as well. I usually don't text people, but I can't see them on a regular basis"*
>
> - ***Participant 11***

Social norms

An interesting insight noted is the fact that participants' choices are strongly shaped by social norms, as they are following their close friends' and/or family's preferences in terms of platforms, both for communication and general entertainment.

> *"I use Messenger because everybody uses it here in DK, I actually didn't use it 2 years ago before moving and WhatsApp because back home everybody uses it"*
>
> - ***Participant 5***

> *"I have few friends that don't have Facebook and we just use Instagram to chat (...)[I can't give up on]Viber (...) because this is the only way for me to communicate with my family."*
>
> - ***Participant 8***

> *"[I use Instagram the most because] (...) because it's one of those platforms that other people use the most."*
>
> - ***Participant 13***

This is also seen on a larger level, as their smartphone behavior is also impacted by their current geographical location and life situations. Two participants describe an increase in smartphone usage during their exchange semester abroad, as they are dependent on new applications to fit in, in addition to the existing ones to keep in touch with their friends and family back home.

> *"(...) because sometimes when we receive like, message from CBS or from like, exchange group on Facebook, if (...) there's like an event or something (...) we have like a group chat on Nimbus (...) so sometimes 'oh party on the fourth floor', stuff like that (...) it's true that here I use it more because yeah, I just want to have news from my family."*
>
> - ***Participant 2***

> *"(...) in China, they used the phone much more (...) everything is done through the phone, since coming back I have been using it less"*
>
> - ***Participant 9***

5.1.2.5 Content

The participants were quick to distinguish between the smartphone as a whole and the content. Every app and every in-app feature represents a different type of content. Thereby, the participants enter each environment with different goals and expectations.

> *"I use Chrome and Twitter to check the news. I use them because on Twitter there are journalists that I follow and I like to read discussions, which sometimes I find interesting. Chrome, just use a browser but it's basically where I search all my news (...) [it is] the one I need the most tho, to find something, to learn about something, to read news about coronavirus"*
>
> - ***Participant 5***

> *"YouTube I use the explore page. Twitter is through the feed. Messenger is 80% messages and 20% video calls. Instagram is mainly stories and explore/search."*
>
> - ***Participant 10***

Entertainment or People

Common denominators between their different smartphone usages were the seek for fun content, read news and/or get life updates - with people-centered content being more important. Thereby, their smartphone usage was further aligned in accordance with their values and daily routines, as the participants leaned towards apps and in-app features supporting their relationships with friends and family more than others.

Notifications

Despite the fact that notifications can act as a distraction, by calling for their attention, when the participants' concentration is low, they still agree that the notifications are not the real issue, as the habit of checking their phone is so embedded into their smartphone behavior that they automatically reach for the specific app's content stream, regardless of the notifications:

YouTube	"Youtube is an application that I can and would give up." **- Participant 10**	"I could definitely give up YouTube and Instagram. If I had to. Because that's, that's just content" **- Participant 1**	-	"Just to update on what my peers are doing, or to see some funny content (...) I do search first for things to entertain myself a lot. And I do tend to binge watch on stuff and series. " **- Participant 13**
Instagram	"There are only pictures - it is simple (...) [lately] I started using explore (...) I saw something interesting and then I started using it more" **- Participant 5**		"I only have notifications for messages, email and calls. I don't have notifications for Instagram, Twitter and Facebook, so I don't receive notifications from them. I have never had them because I don't care if somebody liked my picture or whatever - it is not important for me. " **- Participant 5**	
Facebook	" Facebook makes me feel guilty because I'm not being productive and just wasting my time there." **- Participant 6**	-		
Twitter	-	"I would say Twitter, Instagram and messenger because they are useful and cool. Because I use them for actually communicating with people." **- Participant 10**		
Messenger	"I have different sounds [for the notifications] (...)Messenger is like the main one" **- Participant 12**		"I only have notifications for messages, email and calls. " **- Participant 5**	-
WhatsApp	"I think WhatsApp it's fine. Doesn't make me feel bad because mainly WhatsApp, I use it for my family." **- Participant 6**	-	"I have different sounds for different apps, but if it is a text noise - I will check" **- Participant 11**	

Figure 5.2: Entertainment or People

"(...) it's not because it [removing notifications] would decrease the access to these applications"

- ***Participant 2***

"Instagram is when I see a notification or when I feel horny"

- ***Participant 10***

"I would still go but less because there were no notifications so I would go when I had time."

- ***Participant 11***

Infinite content loop

When asked about whether they lose track of time on their smartphone, the majority of the participants answered that they sometimes feel trapped in this infinite content loop, especially on applications such as YouTube and Instagram, and end up spending more time than initially expected.

"(...) most of the time it's opening Reddit, or YouTube and you just click on one link after another because everything is interconnected. (...) [it]prevents me from from being (...) useful for hours sometimes because I just lost myself in YouTube videos and Reddit and stuff like that."

- ***Participant 1***

" I watch this one YouTube video and then I continue watching and I end up like watching 5-10 videos. I lose like 30-40 minutes of my life doing this."

- ***Participant 10***

Above statements heavily employ terms related to a loss, when describing their experience with the infinite content loop. These feelings are mainly born out of a purely retrospective judgment but they are motivated by a sense of guilt over what they perceive as a weakened sense of control. Again, participants understand their inability to stop consuming content as a personal shortcoming instead of a conscious design choice by the app developers.

This infinite content loop is not only limited to entertainment-related content, as some participants describe this same phenomenon when performing communication-based interactions. This further highlights how the design of all our app interactions are aimed to keep the participants glued and hooked to the content on their screens:

> *"So I opened up in every I don't know in every hour maybe, or something like that and then I saw that Okay, I got messages from four or five people and then I started replying them back and out of the five usually one started replying me back instantly. So I caught up with the discussion. And then in the meantime one of the other from the five also started replying to me back so it started being a never ending circle."*
>
> - ***Participant 1***

Passive consumerism

The power of the infinite content loop is further emphasized by the applications' interaction design, inciting low effort engagement and passive consumerism. This is further seen in the participants' smartphone usage, as several of them describe a silent behavior on entertainment apps. Thereby, the participants describe experiences of 'brain-dead entertainment', in which they aimlessly consume content, without consciously absorbing any, on a blind search for meaningful content.

> *"(...)like it's not interactive what I do on the phone usually. It's just like looking at news or videos."*
>
> - ***Participant 1***

> *"It is probably more after lunch because I need to relax for a little bit. Also, when I come back, I just scroll through some news. It is relaxing because I don't have to think that much, I am just reading."*
>
> - ***Participant 5***

> *"I use Youtube late at night when I am the most tired because it's garbage/-trash tv. But it is accessible (...) Twitter has been meaningful even though it is 90% garbage, 10% meaningful. But I don't think that there is an application I can not give up from."*
>
> - ***Participant 10***

As seen in this section, their overall app interactions accentuates the blurry lines within the broad diversity of entertainment apps. This ambiguity is expressed by participants' apparent lack of smartphone vocabulary, when describing their smartphone usage, more specifically for social media. Despite the majority of participants commonly understanding social media as content-sharing platforms, when describing their social media behavior, communication-based platforms (i.e. Messenger, Whatsapp) as well as more streaming-based platforms (i.e. YouTube, Netflix) are also

mentioned within this spectrum. Thereby, all behaviour and meaning is social and interconnected.

Scoping their smartphone usage further down also allowed the identification of interactions that participants find the most problematic. It is very clear in the participants' statements that streaming-based platforms, especially YouTube, are most often promoting what the research participants perceive as problematic usage patterns. Therein, a plurality of research participants further argues that this problem is a result of a design that heavily revolves around concepts of low-effort engagement and brain-dead entertainment.

> *"I am not spending too much time but more than I want to. An app is disproportionately increasing my screen time. I would like to reduce it but I sound addicted. I can't remove it because I enjoy the app on my phone, so this is why I am trying to reduce my time there. Humans are visual, all the pleasure they get from literature would be more long-lasting or exciting if the mechanism is in action. With YouTube, you don't have to rest, you are getting something from the visual input."*
>
> - ***Participant 10***

Thus, these findings on low-effort engagement and passive consumerism seem to approach a definition of 'smartphone addiction' or at least 'potentially problematic engagement' in the words of the users.

Content saturation

A worthy mention amidst the current worldwide pandemic situation is the saturation of coronavirus-related content. According to Oxford (2020), saturation is meant as ""the state or process that happens when no more of something can be accepted or added because there is already too much of it or too many of them" "[4]. In the context of online content, this is expressed by different content streams being overflowed with similar content.

The last two user studies of this first iteration, which coincided with the early stages of Denmark's lockdown measures, shows the impact of this content saturation on the participants' mental health. The participants describe their entertainment apps, especially their social media, as being overcrowded with content pieces on COVID-19. This saturation evoked feelings of anxiety and panic, as platforms initially intended for relaxation were now induced with mass fear. Yet, paradoxically, they also felt the need to be up-to-date with the evolving situation, stay connected with others and, in general, they had much more free time to spend on their smartphone and online entertainment as a result of staying at home and boredom.

[4] https://www.oxfordlearnersdictionaries.com/definition/english/saturation

> *"Sometimes yes, especially now with all this Coronavirus and literally like I don't want to put my phone on because it's everywhere. Like you open Facebook, you open Instagram, you open everything - everywhere it's just like Corona and this is a lot stressful because we all know that this is going.. This is viral now. We all are stressed, we all are concerned about our health. But when it's like all the time in your head, like Coronavirus is here, it's too much it's overwhelming."*
>
> - ***Participant 12***

Content anxiety:

> *"Not because of the smartphone, but because of the news right now. The corona.(...) Every five news pages that were on my Facebook every time I opened it was related to the corona."*
>
> - ***Participant 13***

5.1.3 In Summary

5.1.3.1 Smartphone challenges

As mentioned earlier, 8 out of the 13 participants participated in a one-week challenge prior to their individual qualitative interviews. They were asked to document their screen time and their most used application before and after the challenge. During their interviews, they were asked to reflect on their screen time before and after the challenge. As documented in the screenshots, only the participants who performed the grayscale mode challenge saw a decrease in their overall screen time (Figure 5.3). The participants who performed the time-limit challenge admitted that whenever they received a notification that their scheduled time was over, they would just ignore the warning and continue using their smartphones.

> *"during the challenge(...) I tried to limit myself in certain areas, but then also because I had the opportunity to extend it sometimes. Then I realized that I use this platform a lot (...) and it's not really necessary. I think there were a lot of times where I extended it.(...)at first it started off like 15 minutes and then an hour and then I think I had two days where I just canceled it for the day."*
>
> - ***Participant 13***

(a) Before the challenge (b) After the challenge

Figure 5.3: Screen time

The participants who removed the notifications or changed the positioning on their most used apps did not see a difference in their behaviour, as their smartphone activities had become a routine and therefore, the challenges did not impact them. However, despite the greyscale being the most effective strategy, it was also voted as the most unsustainable strategy. All of the participants chose the app limiter as the hardest strategy but also the one with the most potential, as it removed completely the access to their preferred apps.

> *"For YouTube, I would have definitely needed to put a screen time limit. Yeah. Because I think for YouTube, that's the only way to stop it, just to have a limit and boom. After that there's no more."*
>
> - ***Participant 1***

> *"(...)the hardest cause the others you still have access"*
>
> - ***Participant 5***

Nonetheless, a few participants still made sure to accentuate that keeping themselves busy in real life and/or finding offline hobbies would be of greater value than a smartphone strategy, as less willpower would be necessitated to stay away from their smartphones:

> *"One thing that it will make me lower it down is having more work to do and another thing to do is find another hobby that fits my free time."*
>
> - ***Participant 4***

Lack of reflection

All participants got the opportunity to reflect on their smartphone usage for the first time, throughout this interview process and despite some being aware of tools to monitor screen time, the majority had never noticed these digital wellbeing features in their devices or apps. Yet, those that knew about these strategies showed no major interest in checking their screen time, underlying their lack of proactiveness when it comes to establishing a healthier relationship with their smartphone.

> *"I didn't think about it (...) I don't care (...) Don't want it to be lower or higher (...) because I know that some days it will be like, two hours. Sunday eight hours. It depends so [it balances out]. "*
>
> - ***Participant 2***

> *"I'm usually not checking my screen time, even if I have this function"*
>
> - ***Participant 12***

The majority of the participants said that they would consider more than 2 hours a day as too much. Still, most of the students exceeded these 2 hours. Despite some participants feeling shocked, embarrassed and guilty, the majority felt rather neutral about their screen time.

"I am surprised, it makes sense but never thinks about it timewise; don't feel guilty or sad about it"

- ***Participant 3***

"In general, I expected that I spent less time on my phone (around 10h weekly). I didn't expect that - I don't know how I feel."

- ***Participant 4***

"Very shocked by the actual result"

- ***Participant 9***

Yet, when they were confronted with their screen time on their most used apps, the participants that previously felt neutral seemed taken aback. Despite being aware of which applications they were 'wasting' their time on, they were not conscious of how much time they actually spent there. Some participants were even slightly surprised or simply shocked to see some applications rank higher than expected.

"[Surprise about Instagram's high placement] Yeah. Because when I go on Instagram, it's like 10 seconds and then you know, so it's crazy (...) Like what the fuck?"

- ***Participant 2***

"Facebook is surprising - 33 mins for Facebook, I would never have said it, because I don't even like Facebook."

- ***Participant 5***

"Kind of reflect on what I chose to spend my time on.(...) it's not something I'm proud of. (...)I think I don't have other ways to entertain myself (...) or that's the easiest way to entertain myself sometimes, yeah. So I choose to go on YouTube instead. Because it's easier and it's in my reach."

- ***Participant 13***

Within this context, an interesting statement on defining 'use' was made by one research participant, as she questioned the appropriate term to describe her activities on YouTube. As such, this viewpoint could be linked to the low-effort engagement and elements of passive consumerism associated with apps such as YouTube.

> *"I completely forgot about YouTube. I didn't consider it as an application that I use that much. I use it mainly for listening to music."*
>
> - ***Participant 8***

Interestingly, this newfound reflection also made two of the participants raise questions on a potential smartphone addiction, as they described feelings such as guilt and embarrassment but still, they expressed a lack of courage in giving up these same apps that made them feel these negative feelings.

> *"[Why don't you give them up?] Good question, I don't know. I have to let these things sit through my head so I can feel that the decision was mine instead of feeling like it's addictive through this interview."*
>
> - ***Participant 10***

> *"I think it made me realize that I might have a phone addiction. That I didn't need to be on the phone that much and how much of that time throughout the day because that's a lot of hours throughout the day. And it just got me thinking like, what could I have done within these six hours instead of constantly being on the phone."*
>
> - ***Participant 13***

Initial insights

One of the key takeaways from these user studies is the need to avoid black-and-white discourse around students' use of technology. These initial insights helped develop a richer understanding of students' smartphone usage as well as the daily situations and personal incentives which promote addictive smartphone behaviour, as summarized below:

- Daily routines, mainly their morning and bedtime process
- Feeling or being alone
- Procrastination due to performance anxiety
- F.O.M.O
- Infinite content loop
- Relationship maintenance, mainly international community (both friends and family)

These findings were used as the foundation for the structure of the smartphone usage survey conducted in the second iteration.

5.2 Second Iteration: Smartphone Usage Survey

The first iteration of this design research process pointed to reasons underlying students' engagement with their mobile devices. As part of a mixed-methods approach, we next chose to extend and validate our understanding of these themes by conducting a survey with a larger and more diverse student sample. The results presented in this second iteration are therefore more quantitative in nature.

The findings from the first iteration on low-effort engagement and passive consumerism also seemed to approach a definition of 'smartphone addiction' or at least 'potentially problematic engagement' in the words of research participants. In accordance with the initial user studies, the survey aims to gain a richer understanding of the daily situations and personal incentives, which promotes university students' smartphone usage, with emphasis on the areas that the university students find problematic.

We also conduct this second iteration to nurture the ideation process of alternative concept strategies, aimed at fostering healthy relationships to and throughout the smartphone.

5.2.1 Methods

5.2.1.1 Before and during the interview

An online survey using Google Forms [5] was created and shared with a large group of students from Denmark and abroad. Charlton's questionnaire was employed as the basis for the creation of the online survey [62], as the 45 statements on the immersive experience of playing video games also proved relevant to technology more broadly. Additionally, the 37 statements from the Offline-Friend Addiction Questionnaire also inspired the formulation of the online survey [60].

Selected statements from both sources were modified and adapted to relate to this research focus on smartphone usage, which resulted in a total amount of 48 statements. The observation also included general demographic questions alongside questions related to users' screen time and their associated emotions.

Questions related to the current coronavirus outbreak were also included to enable reflection upon the difference between normal everyday smartphone usage and the increased usage pattern during these social distancing measures. In the end, respondents were informed as to our means of complying with GDPR (General Data Protection Regulation)[6] requirements and asked to leave their email address if they were interested in participating in a group or individual interview. The survey was open for responses for one week.

[5] https://www.google.com/forms/about/
[6] https://gdpr-info.eu/

5.2.1.2 After the interview

Data from 114 respondents was collected in the context of this online survey. The results of the online survey were collected through a Google Sheets document, after closing it down for responses. In order to comply with GDPR requirements, the email addresses collected were separated from the remaining data set.

The graphical summary provided by Google Forms was on the basis of the majority of the findings and analysis. No further analysis method was utilized to dissect the collected data. Thereafter, the qualitative comments left by respondents at the end of the survey were assembled into one document. These comments were then subject to close reading by both researchers. Similar to the first iteration, key themes and categories were identified with consideration to the quantitative findings from the graphical summary as well as the key themes and categories developed in the first iteration. Herein, the approach was mainly deductive. We identified selected quotes that best represented each theme, which helped frame the documentation and writing of the second iteration.

5.2.2 Findings

5.2.2.1 Demographics

As mentioned previously, the survey gathered 114 responses. The average age was 24 years old and 59 (51.6%) identified themselves as male and 53 (46.5%) as female (Figure 5.4). According to their education, 37.3% are current Bachelor students, 58.8% are Master students, 2.0% are recently graduated and 2.0% fall into the group of "Not studying" (Figure 5.5). Furthermore, 35 nationalities were represented across the dataset. There is a slightly larger male representation and due to convenience sampling, a majority of the respondents have similar educational degrees to the researchers.

5.2.2.2 Students' Phone Usage

All respondents who answered the questions have a smartphone. When asked about when was the last time they used their smartphone, 74 referred to messaging and social media/internet browsing. Moreover, the majority (57%) describe their smartphone usage to be a few times an hour, 15.8% use their phone once an hour and 18.4% - every few minutes (Figure 5.6). Additionally, this smartphone usage is further confirmed with the frequent need for charging - 78.4% reported a need to charge their smartphone at least once a day and 17.5% - twice a day (Figure 5.7).

5.2.2.3 Applications

Moreover, when asked about which applications respondents use the most, social media applications such as Facebook and Instagram, and contact applications such

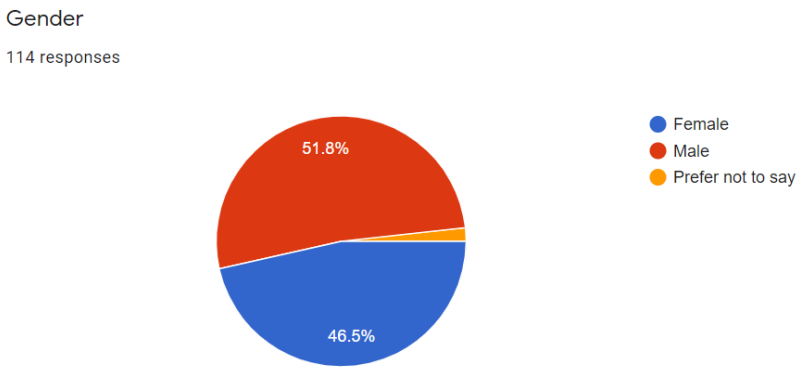


Figure 5.4: Gender identity

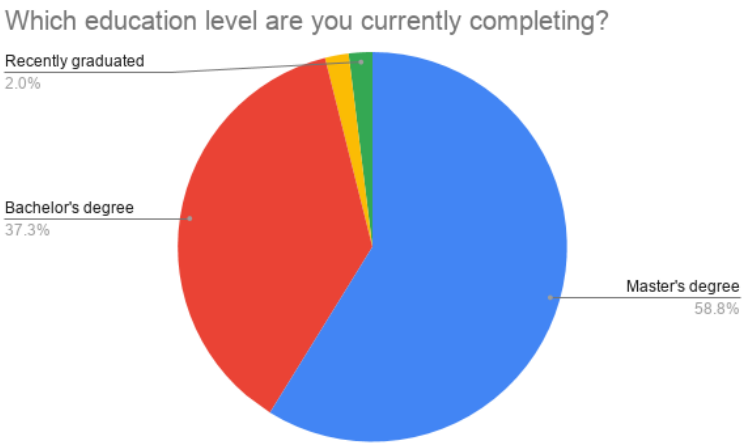


Figure 5.5: Education level

as Messenger and WhatsApp were heavily mentioned (Figure 5.8). This matches the results from the first iteration.

5.2.2.4 Duration

Daily average screen-time, as reported by respondents, varied between between 2 and 5 hours, with some respondents appearing to be outliers with screen times at 30 minutes and 17 hours (Figure 5.9). When asked about how they feel about their

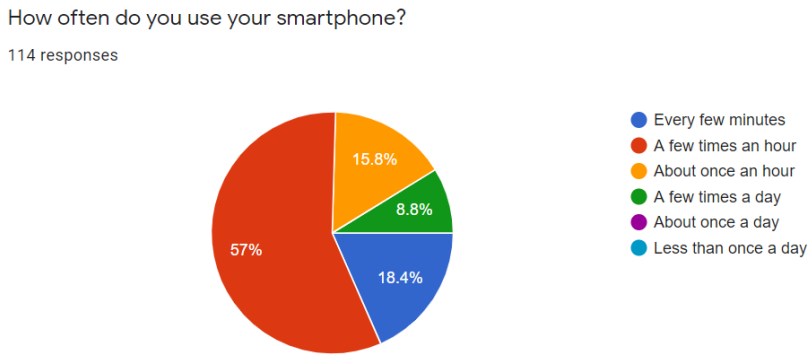


Figure 5.6: Smartphone usage

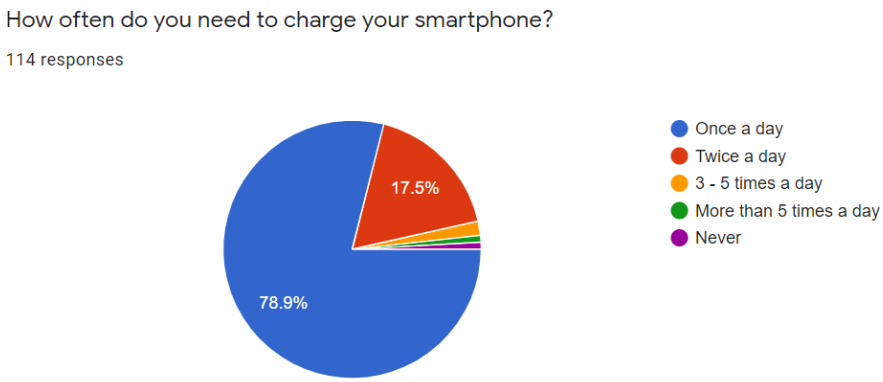


Figure 5.7: Smartphone charging need

screen time, most respondents' reactions were neutral, but some of the respondents expressed surprise, shock, and embarrassment. As seen in the first iteration as well, the majority (54.4%) do not use strategies to decrease their screen time, but when they do, they mainly remove notifications (32.5%) or put an app limit (14%). The respondents explain this by expressing a pressure to be constantly available, due to the on-the-go nature of the smartphone. Therefore, their position in regards to their screen time is conflicted, as they are balancing meaningful and wasteful interactions with their smartphone.

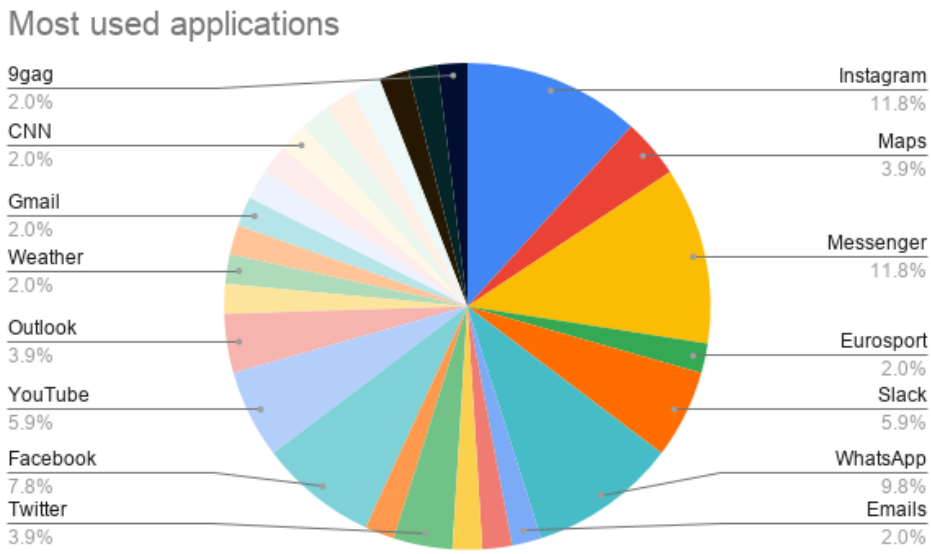


Figure 5.8: Most used applications

> *"I have heard from many people, who would like to use their smartphone less. However, on the other side, no one wants to feel like missing out on something. So in order to always know what is going on, you need to check your message (whatsapp, messenger) and constantly keep in contact with other people. For me personally, I feel anxiety about this issue."*
>
> - ***Survey respondent***

5.2.2.5 Students' Subjective Experience of their Behaviors

After the general smartphone usage questions, a series of statements were presented to the respondent, with respect to which they were asked to rate their response on a five point scale from strongly disagree to strongly agree.

Connectivity and F.O.M.O

As mentioned in the previous iteration, university students express a need for connectivity, majorly in relation with F.O.M.O., as respondents either feel the urge or are required to be available and updated on-the-go. For 57% of university students, it is important to be up to date with their smartphone activities, especially on contact applications such as Messenger, WhatsApp, Slack, Gmail but also on news

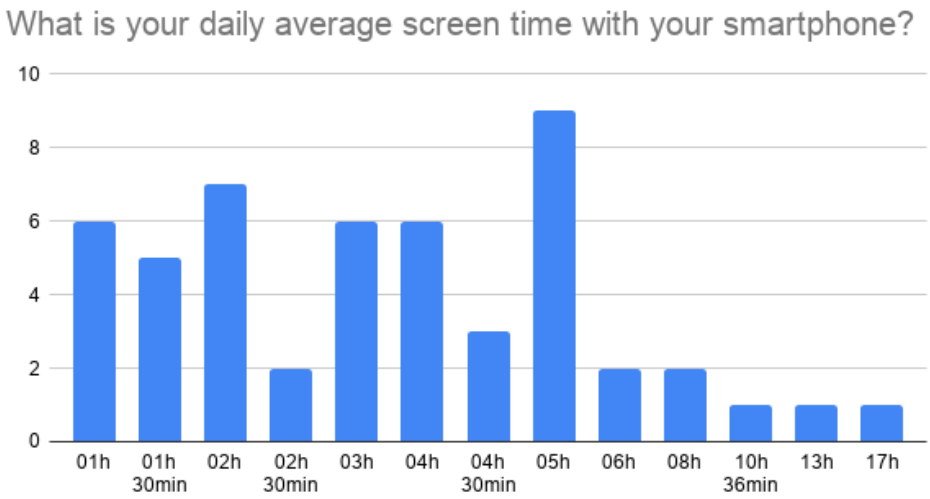


Figure 5.9: Summary of the most frequent responses concerning daily average screen time

applications. Some of them also mentioned social media applications in general such as Facebook and Instagram.

> *"My previous boss bought a smartphone for me, just so I can have access to my emails all the time. I find it very stressful the fact that people want immediate response from me. I wish I did not have a smartphone, but in Denmark it is not something that I can do."*
>
> - ***Survey respondent***

Relationship maintenance

As noted in the first iteration, university students lean more towards apps and in-app features supporting their relationships with friends and family abroad. This is also visible in the results from the online survey, as 96.5% of the respondents use their smartphones to stay in touch with friends and family (Figure 5.10).

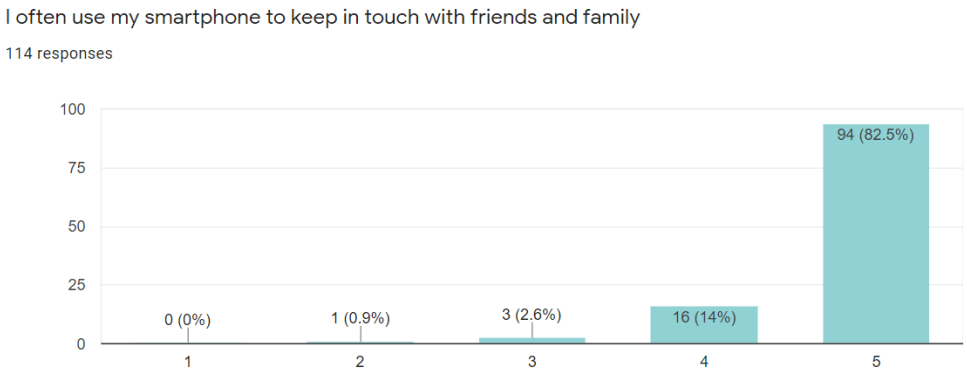


Figure 5.10: Use smartphone to stay in touch with friends and family
1: Strongly disagree 5: Strongly agree

Alone

Another dimension previously described in the first iteration is the respondents' attachment to their smartphone when being or feeling alone. The majority of the students (78.1%) agreed that smartphones are important in their university student's life (Figure 5.11). At the same time, 58.8% reported that they used their smartphones to relax and 65.8% believed that their smartphone is good for overcoming boredom (Figure 5.12). When asked about their feelings and emotions, 57% agree that they do not feel anxious about using their smartphones. Thereby, as seen in the first iteration as well, their smartphone represents a comfort zone and tangible escape for alone time.

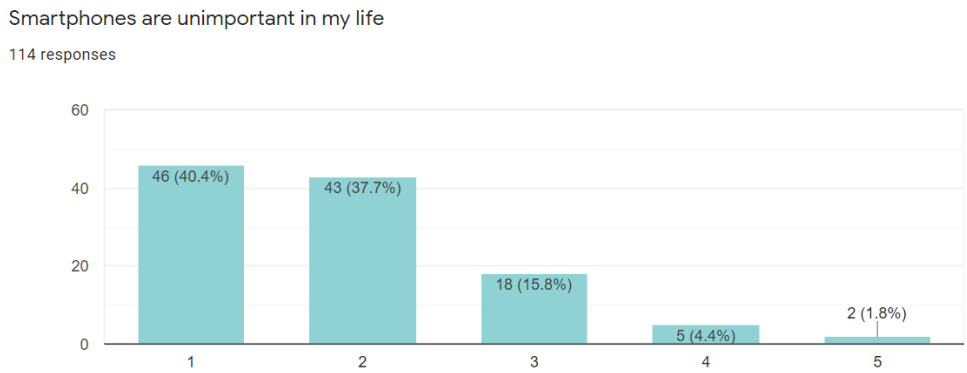


Figure 5.11: Smartphones are unimportant in my life
1: Strongly disagree 5: Strongly agree

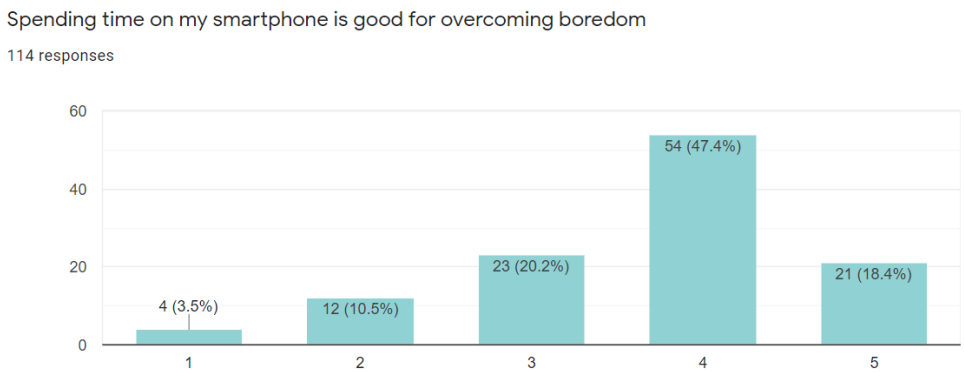


Figure 5.12: Using smartphone for overcoming boredom
1: Strongly disagree 5: Strongly agree

In contradiction to the initial user studies, respondents have marked that they don't often use their smartphones during mealtime. It could be assumed that, if the researchers had added "alone" to the phrase, the responses would be different (Figure 5.13).

Figure 5.13: Smartphone used during meal time
1: Strongly disagree 5: Strongly agree

Smartphone vs. content

Interestingly, despite 57% noting that smartphones do not make them anxious, 46.5% express worry about their self-image on social media applications (i.e. Facebook, Instagram, Snapchat, Twitter), dating applications (i.e. Tinder) and during larger-scale virtual calls/message groups on WhatsApp and Skype (Figure 5.14). Some respondents have further marked that they feel uncomfortable using social media applications (mainly Facebook) but also up-and-coming TikTok and dating applications as Tinder.

Certain respondents also expressed a hard time tolerating social media applications, therein Facebook, Instagram, and TikTok are the most mentioned application that they find hard to tolerate. This accentuates the distinguishment between the smartphone as a whole and social media for the respondents.

> *"On social media, I feel I have less to tell, yet there's a slight pressure of posting and on some days, when you see how productive/ creative/ cheerful others are makes me even more anxious."*
>
> - ***Survey respondent***

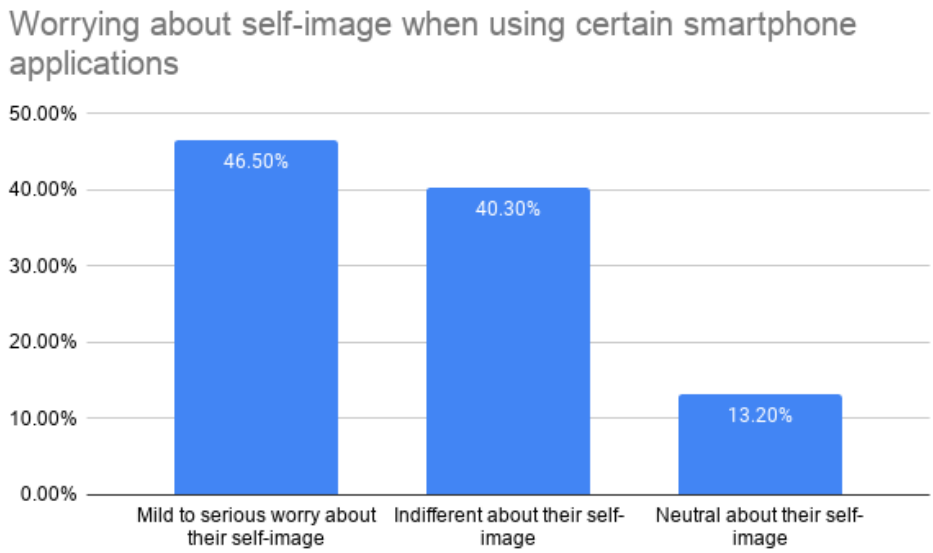


Figure 5.14: Worrying about self-image when using certain smartphone applications

> *"I feel more impacted by the way people around me use their phone, as opposed to my own use."*
>
> ***- Survey respondent***

This is further highlighted by the fact that 57% of university students find smartphone activities addictive (Figure 5.15), but a plurality (39.5%) don't believe that they are addicted to their smartphones (Figure 5.16). Therein, it can be suggested that the addictive smartphone behavior is promoted by respective apps' conscious design decisions to promote a frictionless experience for increased engagement and user retention, rather than the smartphone in itself, which acts as an intermediate between the respondent and these apps.

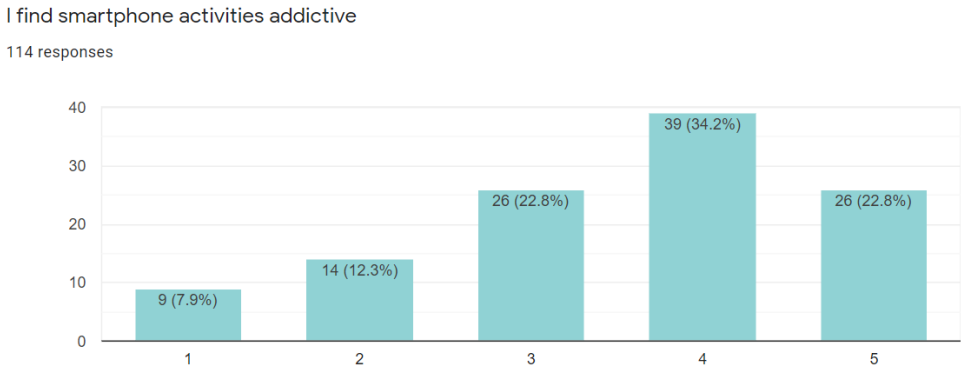


Figure 5.15: Find smartphone activities addictive
1: Strongly disagree 5: Strongly agree

Coronavirus outbreak

- **New routines**

It is important to put the coronavirus outbreak in perspective, when describing the insights collected on the university students' smartphone usage. The lockdown situation introduces a 'new normal' in the respondents' everyday lives and, as a result, a lack of structure and a change of routine. Thereby, their regular smartphone routines and their expectations to these are shattered, leading to a heightened screen time overall.

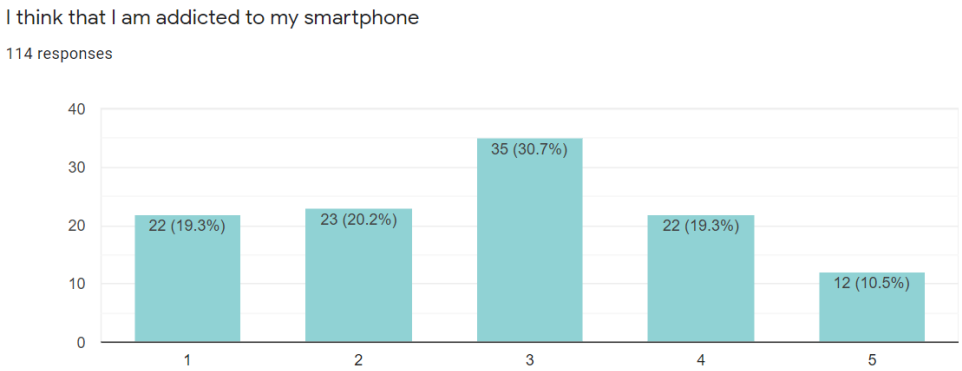


Figure 5.16: I think I am addicted to my smartphone
1: Strongly disagree 5: Strongly agree

> *"I was not sure whether to answer the questions according to my normal smartphone use or recent smartphone use (which is drastically different given the situation)"*
>
> - ***Survey respondent***

> *"screen time increased with like 20%"*
>
> - ***Survey respondent***

> *"I am using my phone around 5 more hours for sure"*
>
> - ***Survey respondent***

- **Boredom**

Yet, a majority of the respondents don't believe that the nature of their smartphone activities have changed. Instead, the respondents describe a disproportionate time distribution on their usual smartphone activities, as there is a drastic increase in their entertainment- and communication-focused interactions.

> *"before corona I tried to limit my usage.. It has now skyrocketed compared to before (...) I use it way more for brain dead entertainment. Facebook videos are my weakness"*
>
> - ***Survey respondent***

> *"I use it much more, and can now spend hours on tiktok (...)"*
>
> - ***Survey respondent***

This rise is explained by the increase in situational or contextual antecedents of loneliness. As the majority of the respondents are primarily alone during the lockdown period, they explained a need to cope with feelings related to being alone, therein boredom primarily, through their smartphone.

> *"Due to isolation, my on screen time has significantly increased, because I am pointlessly scrolling through applications to kill time."*
>
> - ***Survey respondent***

> *"More free time leads to more time wasting, sometimes on the phone"*
>
> - ***Survey respondent***

The respondents perceive this elevated smartphone usage negatively, as exhibited by respondents' feelings of anxiety around this. This viewpoint is further accentuated by the respondents expressing being "more tired of using my smartphone".

> *"I spend more time with my smartphone than before (...) I feel more anxious based on the increasing usage of my smartphone"*
>
> - ***Survey respondent***

Some respondents also mention that the lockdown measures has introduced slight changes in terms of their app usage, as a result of online schooling and work from home situations:

> *"I used to use mainly skype, now I also use discord, facebook video call, skype business, whereby"*
>
> - ***Survey respondent***

> *"I was procrastinating with Netflix last days, but strangely podcasts (Youtube) allowed me to concentrate for work. Sometimes in the middle of the day, I am calling to my friends or family to get to know how they are doing."*
>
> - ***Survey respondent***

- **New sense of availability**

Additionally, the respondents feel more the need to be up to date with the evolving coronavirus news. As the respondents are unable to stick to their regular time schedules and routines amidst the stay-at-home situation, their sense of availability is disoriented. Therefore, they feel a larger obligation to be connected and available.

> *"I use my phone more than ever. I'm always on except the work hours or study hours (...)"*
>
> - ***Survey respondent***

> *"FOMO. I feel there's more going on in Whatsapp groups discussions, for example."*
>
> - ***Survey respondent***

- **Human connection**

As the respondents are now isolated and no longer able to sustain their real life relationships, another layer of relationships need to be maintained through their smartphone. This adds another category of individuals for relationship maintenance, increasing further their dependency on their smartphone to mimic everyday life interactions.

> *"I think these circumstances have not changed the way I use my smartphone (I use the same apps as always), however they changed the time I spend communicating with people that I used to meet in person."*
>
> - ***Survey respondent***

> *"The quarantine is boosting the current need of people to stay in touch more than ever through digital communication platforms such as WhatsApp, FaceTime, Facebook Messenger and so on. Which displays how important these platforms are for our social life when we are unable to physically see each other."*
>
> - ***Survey respondent***

Likewise, the lockdown situation further accentuates a greater need for human connection with closed ones. Therein, FaceTime, Messenger and Whatsapp are heavily shaping the respondents' daily smartphone usage, as they are prioritizing apps promoting digital intimacy over others. This also explains the increased popularity of the new video calling app HouseParty during the coronavirus outbreak, amongst the respondents.

> *"currently being confined in my apartment alone I use my phone a lot more than I do usually, which makes answering these questions difficult (...) it is almost my only source of communication with friends and family"*
>
> - ***Survey respondent***

> *"I downloaded Houseparty and use it with my friends."*
>
> - ***Survey respondent***

- **Saturation of content**

A significant percentage also mention that their social media content makes them feel more anxious and stressed in general due to the prominence of coronavirus related posts, with some respondents describing a conscious act to "avoid reading about coronavirus".

> *"(...) Because people are posting all kind of crap about the virus, which is not useful information"*
>
> - ***Survey respondent***

> *"(...) I feel that most of the content I follow is connected to coronavirus, why I aim to spend less time on it"*
>
> - ***Survey respondent***

This further points out the distinguishment between the smartphone as a whole and social media, therein its content, for the respondents.

Addicted

In the additional comment section, one respondent compared smartphones to drugs, illustrating the impact of addictive smartphone behavior on the respondents.

> *"Maybe smartphone usage could be compared to drugs usage "*
>
> - ***Survey respondent***

Whereas, others explained that they have felt addicted to their phones in the past and are actively using strategies to decrease their smartphone usage but they have a hard time converting the newfound time to productivity, accentuating the limitations of current smartphone strategies.

> *"I used to be very addicted to my phone, and I stopped that by deleting the social media apps from it - and though the anxiety linked to using the apps has reduced - I am not able to convert the time saved into a productive activity as I just spend the same time gaming/watching YT videos instead"*
>
> - ***Survey respondent***

As seen in above statements, several respondents straightforwardly use the term 'addicted' to refer to the areas that they find problematic in their smartphone. This could be due to the heightened smartphone usage provoked by the coronavirus situation. Alternatively, this could indicate a difference in alertness and consciousness amongst respondents in terms of their individual perceptions of their smartphone usage.

Regardless, these supplementary comments in addition to the findings from this second iteration continue to point to low-effort engagement and passive consumerism as an approach to defining 'smartphone addiction' from a user-centric perspective. Therein, YouTube's and TikTok infinite scrolling features are continuously referred to as potentially problematic engagement by the research participants.

5.2.3 In Summary

The quantitative findings expressed in this Chapter contribute to a mixed-methods understanding of students' relationships to their devices, and in particular highlighted three primary paths to focus on for initial concept development - where change in line with students' values was most likely to be realised through design.

- Using the smartphone when alone (loneliness)
- Using the smartphone to connect with family and friends, mainly abroad (F.O.M.O)
- Using the smartphone to relax (phone break)

Amidst the unprecedented coronavirus situation, respondents' daily smartphone habits intensified in duration of usage, allowing pre-existing smartphone behaviors to be perceived as problematic. Yet, it is important to note that, when reflecting upon their smartphone behavior, respondents often seemed to lack conscious awareness of its effect on themselves, despite being aware of their usage patterns.

The frequent occurrence of conflicting statements and results suggested the need for even richer understanding of university students' smartphone behavior. In the next iteration, we aim to get a deeper insight into this as well as explore a series of concept strategies in collaboration with university students, developed and designed on the basis of the three aforementioned focus areas.

5.3 Third Iteration: Group Interviews 1 - Lo-Fi Prototypes

The rich understanding gathered through the conduct of the first two iterations of this work allowed us to next pursue the creation of several novel design solutions to the challenges raised by participants.

Six different solutions ideas are conceptualised in the intent of follow-up evaluation with research participants. We chose to conduct focus group interviews to gather actionable insight relevant to these initial concepts. This would later facilitate the prioritization, further conceptualisation and operationalisation of the selected solution ideas.

5.3.1 Methods

5.3.1.1 Before the interview

The online survey allowed us to gain access to research participants for the third iteration. We chose to conduct focus group interviews, as they allow the generation of many different ideas and perspectives, which can serve as actionable insight for the further development of potential solutions and ideas. Due to GDPR requirements, there was no access to the individual respondents' data and the focus group interviews were coordinated according to their schedules and time slot preferences. Due to the current coronavirus outbreak, the group interviews were conducted virtually through Zoom [7], and the sessions were limited up to 4 participants, excluding the moderator and minute taker.

A moderator was assigned to set the atmosphere, facilitate the conversation between the research participants and maximize the results from the focus group interviews [52]. At the beginning of the interview, the moderator emphasized the definition of a group interview and explained the focus and objectives of this session. Some guidelines were also set to ensure an inclusive, respectful and diverse environment, so that every respondent felt comfortable to share their feedback regardless of the other participants' perspectives.

5.3.1.2 During the interview

The first half of the group interview was focused on familiarising the participants further with the overall subject, but also with the general observed trends and each others' opinions. Thereby, the group interview was initiated with a short introduction round. Then, the research participants were asked to share their overall opinion on the survey. Subsequently, the participants were presented with the main insights from the study and asked to reflect upon them, collectively.

[7] https://zoom.us/

In the second half of the group interview, the focus was on feedback and idea generation. The three concept frameworks were introduced alongside six different concept ideas for the promotion of a healthier relationship with the smartphone. The participants were prompted to consider how each of these concept ideas would work in practice in their everyday life, what they would remove/add and if this was something they would use for themselves or someone they know. Finally, participants were asked to reflect on which parts of their own smartphone usage and relationship they found unhealthy as well as which of the concept ideas they would use to address this or if they had any personal strategy ideas.

5.3.1.3 After the interview

The third iteration resulted in **8 hours, 25 minutes and 36 seconds** of audio recordings. The audio recordings from these group interviews were, first, fully transcribed. Thereafter, these transcriptions were subject to close reading by both researchers. We identified selected quotes that best demonstrated the breadth of different options or perspectives for each of the concepts discussed. Thereby, the documentation and writing of the third iteration was framed around the selected quotes.

5.3.2 Findings

5.3.2.1 Students' Reflections on Smartphone Usage Survey Results

7 group interviews were conducted over the span of two days, with 17 participants in total.

The session started off with a retrospective overview of the main findings from the online survey. The majority agreed with the fact that the smartphone brought them comfort, "killed time" and provided "brain dead" entertainment. Social media in particular was perceived as a tool for relaxation.

> "When I am on my phone I do this scrolling. This is how I try to relax. My phone is a way for me to relax."
>
> - ***Participant 15***

Nonetheless, the majority of the participants also agreed that social media does produce negative feelings such as stress due to unproductivity or anxiety due to self-image. Some participants hinted at the design of the user experience as at the center of this duality, whereas others plainly described it as an 'addiction'. Yet, several discussions were also held about the proper term with which to describe this behavior. Some argued that it was a 'necessity' considering today's technologically connected society (i.e. Google Maps, Apple Pay, Camera, Microsoft Outlook, etc.).

> "Necessity. If you don't have it, you feel how hard life is without it. Even that being said, addiction - is it something almost as useful as wearing shoes."
>
> - ***Participant 16***

Still, a vast majority explained that it depends on the actual smartphone usage behavior and more specifically the use case scenarios. The smartphone appears to solve various functional needs for participants in terms of communication and productivity. Therefore, heavy reliance on the smartphone for entertainment purposes was drawn as the limit, as these types of interactions were not perceived as functional nor necessary but simply desirable and optional.

Research participants also emphasized that activities performed on the smartphone are possible on other electronic devices (e.g. the personal computer). Therefore, it is important to always consider the individual's overall technology behavior, as this allows a richer understanding of what prompts a specific behavior: the smartphone or the specific activity. For instance, despite mainly accessing social media through their smartphones, participants are very likely to also access it on their other electronic devices. Thus, a participant argues that it is sometimes incorrect to use the term 'addicted' in the context of the smartphone, as the behavior might actually be provoked by a specific application, ordinarly sustained as a smartphone activity.

> "No one's strictly addicted to holding a smartphone; they're addicted to certain apps within this smartphone. (..) For example, you can go on Instagram on your laptop. therefore you wouldn't be addicted to your smartphone you'd be more addicted to Instagram."
>
> - ***Participant 19***

In general, participants' perceptions of problematic forms of interaction aligned with previous iterations. Above findings on the addictive elements of the design of interface interactions, in alignment with prior findings on a frictionless experience with low-effort engagement and passive consumerism seem to strengthen this research's definition of 'potentially problematic engagement', which are pertinent for breaking the cycle of 'smartphone addiction' by design.

5.3.2.2 Students' Feedback on Concept Strategies

In the second part of the session, the different narratives and concept strategies were presented. As observed in the prior iterations, the three main narratives of smartphone usage identified through prior design research phases are the **phone break**(i.e. taking a mental break from studying to scroll through social media), **Fear Of Missing Out** related to physical distance (i.e. keep in touch with friends or family abroad)

and **loneliness** (i.e. taking the train alone, eating lunch alone or feeling alone/awkward in a unfamiliar social situation). Subsequently, each researcher generated 3 - 5 concept ideas for the respective narratives, which resulted in 21 concept ideas in total. Finally, 6 concept solutions were chosen for further user evaluation based on the RICE (Reach Impact Confidence Effort) prioritization matrix.

Concept Strategy: Ring Limiter

The first concept idea, Ring Limiter, arose from reflection and discussion of the 'phone break' narrative described by research participants. This simple tangible device would allow real-time reports on how much time you spend on your device, as this ring changes color in response to the wearer's screen time (Figure 5.17). This tech gadget can be used in the context of a phone break, an app or the overall screen time to ensure the smartphone user doesn't lose track of time.

Figure 5.17: Ring Limiter

The Ring Limiter received several positive responses from participants in terms of its subconscious real-time reporting ability. The ongoing feedback provided by the ring in a non-invasive manner nudges discreetly the research participants to reflect upon their screen time. Two of the participants further compared the Ring Limiter to Apple's Screen Time feature, which allows users to check and monitor their device usage.

Problem area	**Losing track of time during phone breaks**
Design hypothesis	University students easily lose track of time, as they are not aware of their screen time. A tangible reminder of our screen time can help us make more mindful decisions in terms of our smartphone usage. We chose to propose a tangible device as it could make real-time reporting more easily accessible and efficient. Currently, we need to use an app or the built-in features such as Screen Time or Digital Wellbeing to check or monitor our smartphone usage. However, this ring would eliminate these unnecessary additional interactions with the smartphone that could potentially be distracting.
Usage scenario	**Use Case 1:** A university student is studying with classmates for a written exam. They want to take a 15 minutes break on their smartphone to relax. They don't want to lose track of the time, so they assign a screen time limiter to their ring (see Further Possibilities for additional details). The ring changes colors according to the time spent on their smartphone. When the 15 minutes break is over, the ring signifies to the university student to put down the smartphone. **Use Case 2:** A university student wants to limit their screen time on social media, as the overload of content around the coronavirus makes them anxious but they still feel the need to be up to date with their friends abroad. They connect a timer of 2 hours to their ring on the specific social media apps. When the 2 hours limit has been reached, the ring signifies to the university student to put down their smartphone. **Use Case 3:** A university wants to limit their overall screen time, as it affects their eyesight and their sleep time at the end of the day. They put a screen time limit of 4 hours on all of their smartphone interactions, therein social media, phone calls, emails, etc. When the 4 hours limit has been reached, the ring signifies to the university student to put down their smartphone.
Further Possibilities	The ring could signify the end of the screen time slot through sounds, touch or blinking colours. The ring could be customised according to user's style preferences. The screen time limiter could be assigned through the ring directly or through an associated smartphone application.

Table 5.1: Ring Limiter Overview

"(...) it's not invasive, so you don't feel like you're being actively monitored and stuff, but it might work. It's similar to the screen time thing in the iPhone, I guess, where you set a screen time and after that, it just turns the screen blank and you have to select 'Do you want to use it more?'(...)Because if you make it harsher, you just throw it away altogether."

- Participant 21

> *"I don't know if I would use it personally that much, but I could see it being a helpful thing for other people.. to (...)be able to monitor what you are doing."*
>
> - ***Participant 23***

> *"Having (...) something objective telling you exactly in the same way screentime does when it comes up and gives you hours or whatever, but on an ongoing basis, rather than once at the end of every week, [where] you just ignore it. If it's there (...) while you're actually in the midst of using it, I think that'd be a lot more helpful."*
>
> - ***Participant 24***

The respondents in favour of the Ring Limiter imagined using it as a tool to allocate and monitor their phone breaks throughout the day, when they decide to have one. One respondent emphasized that it was important that the Ring Limiter was used to limit and frame the phone breaks, and not as a reason to encourage them further.

> *"I would probably use it as a sort of cumulative thing throughout the day. So it wouldn't be like I'd want times of the day where I can use the phone, but like having an allocated amount of time (...) [for] wasting time. And that would be more for (...) social media apps (...) so that you can use (...) your payment methods and all that whenever you wanted to. But you could still limit the amount of time you're spending using apps like Facebook"*
>
> - ***Participant 24***

> *"I think it should not let you know when you can have a phone break because you should decide if you need one or not (...) otherwise I like the idea. I really like everything which is tangible and wearable. I like these tech gadgets."*
>
> - ***Participant 1***

Nevertheless, despite some participants comparing it to Apple's Screen Time, they were quick to distinguish it from the act of setting an app limiter or timer on one's phone for examples. These participants perceived challenges and opportunities related to the fact that the solution was a tangible and wearable device, due to its tactile and visual intimacy, along with its persistent presence in the participants' sphere of attention.

> *"If it is something like a ring, this means that it is kind of like a piece of you. I see the potential, but I also see the challenge. "*
>
> - ***Participant 16***

> *"This one sounds really intense to add another electronic gadget to your life to decrease the usage of your smartphone. I don't know if I'm that convinced."*
>
> - ***Participant 18***

Meanwhile, other participants thought that the solution idea was too soft, as it did not demonstrate any remarkable or serious consequences, in case the participants decide to ignore the ring's nudging. The participants believed it was too easy to ignore it, and some suggested shutting down the smartphone screen or even executing electroshock through the ring for higher efficiency.

> *" I feel like it's too easy to ignore so you can just always blink red but whatever."*
>
> - ***Participant 19***

> *"I feel like you don't necessarily need a ring to limit it. Like Can you if it's programmable into the app like, shutting it down?"*
>
> - ***Participant 22***

> *"I don't know if it helped that much unless it has electroshock or something like that. Because you can always browse through the next story of Reddit and even if it's blinking (...) you can just hide it or ignore the color"*
>
> - ***Participant 25***

One respondent further commented that it would be too much of a financial investment to buy a tech gadget to promote a healthier smartphone relationship, especially if the target group is university students, as their general budget is limited.

> *"(...) as a student. I think I probably would not pay for it because I don't have that money. Or depending on how much it cost I probably wouldn't pay for it."*
>
> - ***Participant 22***

Nevertheless, research participants seemed to come to the agreement that the efficiency of the ring depended on the mindset of the person, and if they went to the extent of purchasing a wearable device to monitor their screen time, then it should be assumed that they would put effort into respecting their Ring Limiter.

> *"If you are using the ring, it means that you actually want to change so(...) I assume that if you do have the ring, then you're not [going to] ignore [it]"*
>
> - ***Participant 4***

This again also depends on how conscious the participants are of their smartphone usage. Setting unrealistic goals can also demotivate them from following through with their phone breaks and the limits set by the ring as suggested by the framework for SMART goals [8]. One respondent described experiencing this phenomenon, when using Apple's Screen Time's app limiter, in the first iteration, as part of the smartphone-based challenges.

> *"When I was putting the timer [for the app limiter], like the restriction, it wasn't very realistic"*
>
> - ***Participant 13***

This highlights another important aim to consider for later design work, as it could be relevant to incorporate the SMART goals within this concept idea, and potentially the other concept ideas as well. This would help frame goal-setting to become Specific, Measurable, Attainable, Relevant and Time-based, facilitating its achievement for participants.

Concept Strategy: Content Digest

Again, in line with reflection and discussion of the 'phone break' narrative described by research participants, the next concept idea, a **Content Digest**, was developed. As the infinite content loop is a prominent variable in research participants' 'phone break' , this incited the idea of a tailored digest of users' current content

[8] https://www.indeed.com/career-advice/career-development/smart-goals

streams to avoid the deteriorating effects of the design's frictionless experience on the user's sense of control.

This concept idea could be implemented as a plugin or a separate application. Additionally, it would target the gesture interactions of infinite content loop structure (i.e. scrolling, swiping), by allowing the user to curate their news feeds based on pre-selected filters. Thereby, the user can spend less time aimlessly looking for content (Figure 5.18) by efficiently getting the desired information from a specific application or across several applications.

Figure 5.18: Addiction spectrum

The participants seemed very intrigued but also sceptical in terms of the Content Digest's ability to curate the content efficiently. A general fear expressed by the participants was the possibility of a potential information bubble shaping their content streams, especially social media, as a result of the Content Digest along with general ethical issues associated with the notion of tailoring news.

Problem area	**Infinite content loops during phone breaks**
Design hypothesis	According to some university students, they spend too much time scrolling through social media, looking for meaningful content. A filter that allows the university student to personalise their content streams according to their preferences in terms of categories. Inspired by Instagram's pop-up feature, displaying a "You're All Caught Up" message, this filter would also allow the university student to set a limit to their scrolling [34]. These features can help the university student make more mindful decisions in terms of their smartphone usage.
Usage scenario	**Use Case 1:** A university student always makes sure to scroll his Twitter feed before going to sleep. In a blind search for satisfying content on his favourite football team, the university student keeps scrolling, losing track of time and accidentally ending up spending over 2 hours on Twitter. Therefore, he ends up sleeping later. The Content Digest would help him personalise his Twitter feed, so he can more easily access content on his favourite football team, and by setting a limit to 20 posts, he can limit the amount of scrolling he can do on Twitter before bedtime. **Use Case 2:** A university student is interested in fashion and uses both Instagram and Pinterest for inspiration in the frame of her design studies. Multiple times a day, for 30 minutes, she scrolls through these applications to stay up to date with the content and latest trends. This increases her screen time tremendously. The Content Digest app would help her access the content in one place, and filter through it, according to her content preferences. Additionally, she puts a time limit of 30 minutes within the app, so she doesn't lose track of time. **Use Case 3:** A university student studies journalism, and is always keeping track of the newest trends on Twitter and several different news applications. The university student often grows frustrated, as they find a lot of meaningless content on these streams of content, either as spam or clickbait posts leading them into an infinite content loop. The Content Digest app would help him filter the respective platforms to reach the meaningful content according to their own interests and limit the amount of clicking and scrolling from one content article to another.
Further Possibilities	The Content Digest could be a separate application overlooking all content applications or an optional add-on to respective content applications. The Content Digest could limit the amount of scrolling, by limiting the amount of posts, the duration of the entire interaction, or by limiting the amount of app-based actions (scrolling, clicking, liking, commenting)

Table 5.2: Content Digest Overview

> *"Developing something like this (...) is full of ethical issues (...) I've been to conferences where a lot of ideas like this have been kind of floated. It's just that notion of tailoring news. Or the 'you're the censor' of what someone else receives is, it's problematic. I mean, that's not worse than the problem of getting a continual loop of content"*
>
> - ***Participant 24***

> *"Even if you give people access to decide the parameters of what gets selected or doesn't get selected, you still recreate (...) that kind of bubble effect where they're just seeing the same thing over and over again"*
>
> - ***Participant 24***

> *"I think it's quite dangerous (...) it's called an information bubble or something like that. Which is already present without these (...) Facebook, Twitter and all these pages or applications, they are prioritizing the content which fits you. And with that (...) you are not exposed to any other political views or any other type of content (...) you can really easily find yourself basically trapped in a really small pot of content."*
>
> - ***Participant 1***

Another issue raised by the respondents is the limitation of the diversity within their content streams, which one described as being the whole appeal of social media. This curation symbolized a bias, which went against the popular values of freedom of expression, commonly associated with social media.

> "The whole appeal of social media is that there is this vast amount of information, you can choose what you want from it because if you're digesting something, [it] means someone or something is curating it for you (...) here's a sort of bias that comes in when you do that"
>
> - ***Participant 21***

An important variable affecting the potential of the solution is also the balance between content from people they follow and interesting content creators, as the key aim with social media is still mainly revolving around keeping in touch with friends and family from around the world. Below comment thereby refers to the strength of ties. Research shows that networks for strong and otherwise remote interpersonal ties are valued, as they support social interactions and communication needs [30]. Whereas, weak-tie networks are dependent on protocols established by others, making them more susceptible for a lack of engagement from users.

> *"I guess it would depend on how the filter is set to make sure that you get content from people, you know, it's not just the most popular, like the most liked posts, for example"*
>
> - ***Participant 22***

Still, one participant believed that university students were the perfect target group for this solution, as they thought that this was a rising issue amongst her age group, who increasingly sought meaningful and personalised content.

> *"I like the idea. I think it wouldn't work for, for example, teens, because I think they want to know everything, whether they're interested in it or not. But I think like, for our age and up, I think it's very useful. (...) you kind of find yourself like scrolling to find just like this one thing that is interesting and that you can relate to. So I think it would be a nice thing to have it filtered so you just see the things you're interested in that day, and you can kind of move on."*
>
> - ***Participant 13***

Another respondent further believed university students would rapidly get accustomed to using the solution idea, as part of their smartphone use in their everyday life.

> *"I think that it can work because most of the time at the beginning, we are not ready for the changing but after like one month we are getting used"*
>
> - ***Participant 26***

Additionally, despite the initial skepticism on the Content Digest's efficiency from other participants, one commented that social media platforms, such as Twitter and Instagram, were already doing early-stage initiatives in curating and personalizing the content streams of users, so this would just be a next step, targeting all social media.

> *"This could be further inspired by a new thing that they introduced to Twitter (...) you can just follow trends (...) it would just show me like the most tweeted or like the hottest topics in the past, I don't know, let's say 12 hours or whatsoever. So (...) you can actually combine them from all the apps and filter just the most commented or the most viewed . So this could work."*
>
> - ***Participant 4***

Concept Strategy: Bond Touch

In the context of the second narrative 'F.O.M.O related to physical distance', the selected concept idea is a **bracelet**, intended to be shared with close friends or family, which allows you to keep in touch through touch (Figure 5.19). When pressing on the bracelet's interface, a vibration or nudge is sent to the bracelet of the intended recipient. This idea is inspired by the existing tech gadget BondTouch with similar functionalities [9].

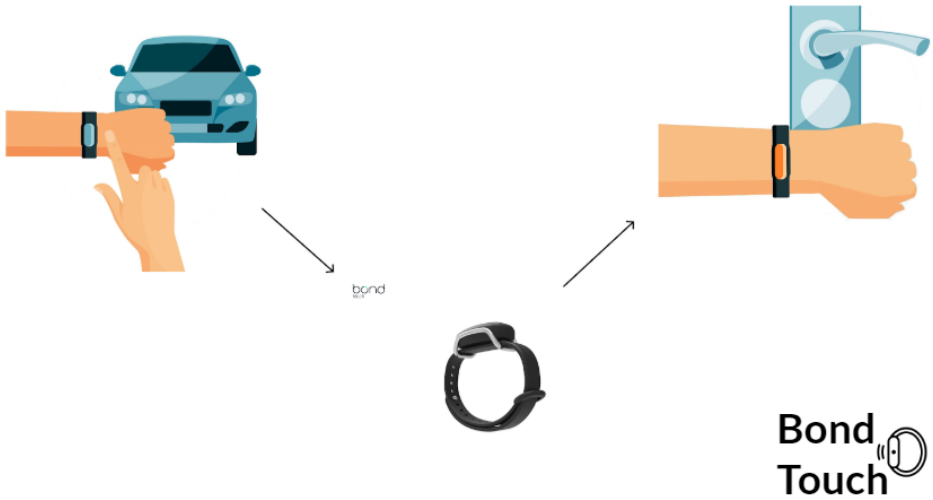


Figure 5.19: Bond Touch

In general, the BondTouch sparked more laughter than interest, as the research participants seemed to agree on its lack of efficiency in terms of promoting a healthier relationship with their smartphone devices. Several participants commented on the

[9] https://www.bond-touch.com/

Problem area	F.O.M.O. with international relationship maintenance
Design hypothesis	University students spend a majority of their screen time for relationship maintenance and human connection with friends and family abroad. The bracelet allows the university student to maintain human connection and digital intimacy, without using their smartphones. As seen during the first and second phases of this research project, one interaction with the smartphone often leads very quickly to more, due to the infinite content loop. Therefore, this bracelet would replace some of these smartphone-based interactions to help make them mindful decisions in terms of their smartphone usage.
Usage scenario	**Use Case 1:** A university student goes on exchange to South Korea and feels homesick, as she is far away from her parents and close friends. Before she left, she shared these BondTouch bracelets with them. These bracelets would help send and receive small signs of human contact from each other throughout the day. This will minimise the microinteractions and its corresponding screen time throughout the day or the week. **Use Case 2:** A university student goes to Spain to study their Master's degree full time at a local university. Their romantic partner is still living in Denmark, so they decide to get the BondTouch bracelets together. These bracelets would allow them to send each other small acts of digital intimacy, which would decrease their need to constantly stay on their phone to receive news from each other throughout the day or week.
Further Possibilities	The bracelet could send acts of digital intimacy through a vibration, a nudge or a blinking color. The bracelet could be customised according to the user's style preferences.

Table 5.3: BondTouch Overview

solution's air of novelty, which intrigued them to want to try the solution. Nevertheless, all seemed to agree that they would either not buy it or stop using it, after some time.

> *"it has that kind of novelty sort of vibe to it where it would be something people might use for a month, and then it'll go in the drawer and never be seen again."*
>
> - ***Participant 24***

> *"I think it's nice and just cute. It's you know, it's nice to have a little reminder that someone is thinking of you and to send it to someone, but I don't. I don't think I would buy it though."*
>
> - ***Participant 13***

Furthermore, research participants did not believe that the bracelet could properly replace an act of digital intimacy or reciprocate the human connection provided by a simple phone call. Therefore, they did not believe that it had the potential to have any lasting effect on their smartphone usage. Thereby, it would only act as a supportive gadget to the participants' current smartphone usage:

> *"It can also hurt your feelings if someone forgets about you one day and you get used to this buzzing thing"*
>
> - ***Participant 9***

> *"I think it would confuse me because when I get a vibration (...) I would immediately check my phone if this person has written me a message or something (...)."*
>
> - ***Participant 17***

> *"As much as the nudge is nice, I feel connected with someone when I know what's going on in their life. (...) it would have to be like, paired with a (...) verbal communication"*
>
> - ***Participant 22***

Within this discussion, an interesting insight noted from below is the primacy of human connection beyond technology. The following participant appears to value the active act of human contact, rather than the passive thought of it. Therein, McLuhan's theory on "The medium is the message" comes to mind, as the comments below refers to the importance of the nature of the medium rather than the content of the message [49].

> *"It can also hurt your feelings if someone forgets about you one day and you get used to this buzzing thing"*
>
> - ***Participant 9***

Another interesting insight pointed by one participant's comment is the interrelated nature of each of these technologies, as one smartphone activity is believed to potentially increase the likelihood of other activities being performed.

> *"How is it gonna keep you away from your phone? (...)I think that this is gonna work the opposite way like this is actually gonna encourage people to use their phones more."*
>
> - ***Participant 4***

One respondent also commented that the bracelet would be more appropriate for elderly people in the context of healthcare management, as the wearable device did not solve any immediate needs for herself or her surroundings.

> *"I think it could be a good idea for elderly people maybe to be in contact with people (...) if there's an emergency (...) I don't think we need another (...) physical object tool to be connected through"*
>
> - ***Participant 23***

Concept Strategy: Challenge Application

Also in line with the theme of loneliness as a motivation for more frequent than desirable phone use, the fourth idea is an application that will limit the user's screen time by challenging them to entertain their time differently and thereby become less dependent on certain applications for entertainment (Figure 5.20). This could be either through the smartphone (i.e. 'listen to Radiolab's latest podcast episode instead') or their surroundings (i.e. 'go out on a run or a walk and create a heart-shaped route on GPS apps such as MapMyWalk [10], Strava [11], and Runtastic [12].').

The challenge application was met with different opinions. The majority of research participants thought that the right mindset was needed to make the most out of this solution idea. They explained that this solution would need a prior acknowledgement of feeling alone as well as a realisation of being dependent on certain applications. Therefore, the general consensus was that this would function better in combination with a self-monitoring app.

> *"You really have to believe and you really have to trust your phone here. That it knows what you should do"*
>
> - ***Participant 1***

[10] http://www.mapmywalk.com/
[11] https://www.strava.com/
[12] http://runtastic.com/

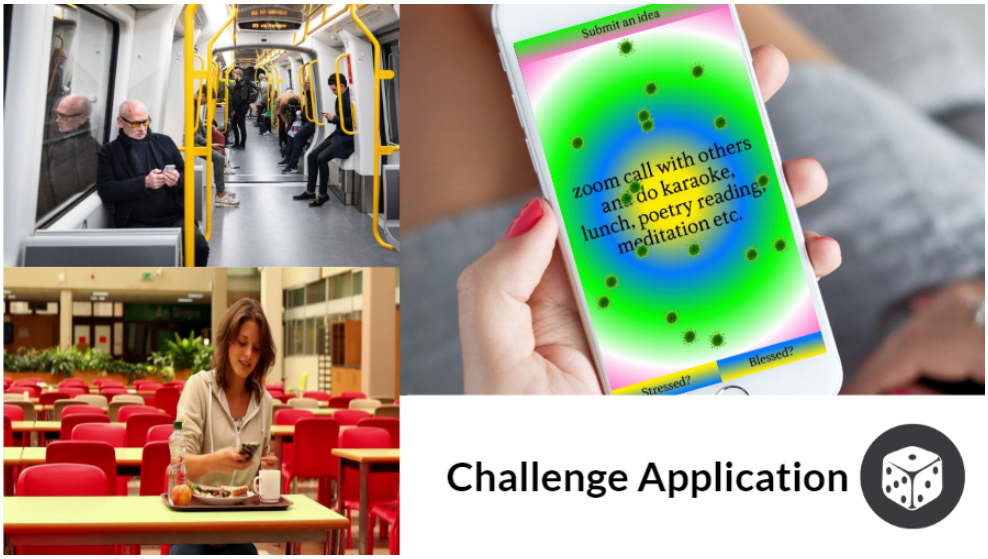


Figure 5.20: Challenge Application

> *"The first step is to acknowledge that you're lonely and then to (...) combat it using these ideas. Because (...) [there] was some sort of anxiety app [that I was using] and it was like, okay, go clean the room or something like that. And I'll just close the app and be like, Don't tell me what to do."*
>
> - ***Participant 21***

> *"I don't know how long term it would be (...) in the end, it's your own decision (...) so it's more of a self monitoring that would have a bigger impact in my opinion on people's addictive phone usage or other phone usage."*
>
> - ***Participant 23***

All of the participants enjoyed that the challenge application would act as a reminder or means of brainstorming other entertainment options. By positioning the solution within this mentality, research participants can perceive the solution as a *distraction rather than a strict cut-off* or *limit*, which helped the participants feel more motivated to respect their app limits instead of ignoring or removing it.

Problem area	**Loneliness and lack of suggestions for entertainment alternatives in current app limiters**
Design hypothesis	App limiters are not working for university students, because they don't know how to entertain themselves otherwise, especially when they are or feel alone, so they just end up snoozing the pop-up message. This challenge application will proactively divert the university students by suggesting them different offline and online activities to replace the apps that they are currently dependent on. Diversifying their smartphone usage and their entertainment options can help them be more mindful of their smartphone usage.
Usage scenario	**Use Case 1:** A university student is alone in the train, commuting to school. They have used the challenge application to set a limit of 2 hours on all social media platforms. The limit is reached on their way to school. When the pop-up message is displayed, notifying the university student that the limit has been reached, the application challenges the university student to count the number of brown shoes in the train or to listen to a recommended podcast episode. This will decrease the chance of the university student ignoring the app limit. **Use Case 2:** A university student is home alone and bored during the coronavirus outbreak. He is scrolling through Instagram, watching funny memes to entertain himself. He is trying to be more mindful of his smartphone usage, especially on Instagram, so he has an app limit of 2 hours on. Later on, he receives a pop-up message notifying him of the end of his app time. The app challenges him to go for a run or for a walk and to create a heart-shaped route on a GPS app of his choice. This will introduce the university student to alternative entertainment options.
Further Possibilities	The challenge application could suggest either online or offline entertainment, or both. The challenge application could be integrated into the smartphone's operating system or act as a separate application.

Table 5.4: Challenge Application Overview

"I think it's a nice reminder of the options because sometimes (...) it may be obvious, but you can't think of it."

- Participant 13

"I mean, I feel like I could use this in some situations as a brainstorm but it's kind of like I downloaded this app that reminds you to drink water you just kind of don't care about it at some point"

- Participant 17

"It's good having that kind of distraction rather than just having a cut off zone(...)But (...) it doesn't have the same kind of separation as the idea

of the ring(...) [which] you're more likely to actually pay attention to (...) than something that is still on the phone"

- ***Participant 24***

Amidst the current coronavirus outbreak situation, two participants believed that this solution could help bring some normalcy into everyday life through its incorporation into participants' daily tasks. This could help control the increasingly bad habits of procrastination, which the stay-at-home situation has promoted. Additionally, it could help improve the mental health of participants that have been affected by the lack of structure in their everyday lives.

"I actually just downloaded a to do list app because it's very, very hard to self motivate when you're in confinement and you don't actually have any (...) things to do at any time. And as time goes on, it's harder and harder to motivate yourself to do really normal things."

- ***Participant 23***

"Maybe this app itself would not help from limiting your time from the phone but would rather help you to (...) not be as depressed (...) not (...) be stuck Facebook looking loop or on Instagram looking loop (...) that could improve their mentality."

- ***Participant 25***

Despite some participants enjoying the idea of incorporating to-do lists into the challenge application, one respondent believed it would cross some lines within his smartphone relationship.

"If my phone started telling me to do things that I was supposed to be doing, I would find that really annoying."

- ***Participant 24***

Concept Strategy: Alone Mode

In line with the theme of loneliness as a motivation for more frequent than desirable phone use, the fifth idea is the **Alone Mode** - it is inspired by the current 'sleep mode' on smartphones, which immediately push down notifications and app interactions (Figure 5.21). This Alone Mode builds on the narrative of "It's okay" to be completely alone with your phone, without having to be connected to the rest of the world.

Thereby, this concept is thought as a symbolic feature to promote an autonomous choice of practicing 'alone time', away from the smartphone, in further situations than simply 'when going to sleep' and 'when being in the airplane'.

The Alone Mode is also intended to be fully customisable to allow the user to control all interactions with their device in this mode. This is why the Alone Mode can be used as a self-love, self-awareness or as a productivity tool, depending on the user's needs. Other than customising the allowed he precise details of this concept idea were not developed, as we wanted to hear the individual participants' perspectives on their ideal Alone Mode to ensure a broad set of features for personalisation.

Figure 5.21: Alone Mode

The research participants generally provided positive feedback on the Alone Mode concept. They enjoyed the alone's mode tie to the practice of mindfulness and productivity, as well as the symbolic reminder of taking alone time, as an act of autonomous choice.

> *"I think it's a good tool for making people realize how beneficial it could be to take some alone time to meditate."*
>
> - ***Participant 9***

Problem area	**Loneliness and procrastination**
Design hypothesis	University students frequently comment that they do not know how to disconnect from their smartphones when they are alone with it, because of its on-the-go nature, promoting a feeling of urgency. The Alone Mode, a new mode of interaction with the smartphone, encourages us to disconnect from online content without turning off our smartphones completely. Therein, it allows us to customise our alone time according to our personal needs. The focus of the Alone Mode could, for instance, be on mindfulness and productivity related interactions. This Alone Mode would work as a built-in feature, similarly to the sleep and airplane modes, which already exist in all our smartphones.
Usage scenario	**Use Case 1:** A university student is alone in the library studying. She often gets distracted during her study session, as she keeps receiving Messenger notifications from her friends but she can't put the phone on Do Not Disturb mode, as she waits for important information from her thesis supervisor. She turns on the Alone Mode and enables only notifications from the app Spotify to listen to music and Outlook in case of school emergencies. This helps her stay more productive during her alone time. **Use Case 2:** A university student is alone at home on a Saturday morning. He has had a stressful week and wants to take some time to disconnect before lunch. He doesn't want to get distracted by unimportant notifications, so he turns on the Alone Mode. He decides to only keep interactions promoting mindfulness on and by consequent, all the other apps are grayed out until the mode is turned out. Thereby, he can still use his smartphone whilst fully focusing on himself this morning.
Further Possibilities	The Alone Mode could restrict or promote certain applications rather than others when in this mode.

Table 5.5: Alone Mode Overview

"I like the idea. I don't really use the sleep mode just because I turn off like the sound from my phone when I go to sleep. But I think it's a nice thing to have. So you are kind of forced to have like this moment for yourself, really take the time for yourself and like a nice reminder as well."

- ***Participant 13***

"(...) I think it's a good reminder to have a like Alone Mode."

- ***Participant 22***

Nevertheless, several participants questioned the originality of the application, as they compared it to other meditation apps and the current sleep mode, which is found on all devices. They didn't believe that the solution had a strong unique value proposition to compete with these alternatives.

"That sounds very similar to just having a meditation app. But then if you can change what you might be doing during those times to suit yourself (...) [If] I start timetabling things that are just for myself, like exercise meditation, they just go out the window because I don't have time to fit them in when I've allotted them."

- ***Participant 24***

"I feel like it kind of just sounds like the sleep mode or, you know, maybe leave your phone at home if you're going to do an activity."

- ***Participant 23***

"I think there are existent applications who are aiming for the same thing. But (...) of course, this one would be one level down and part of the whole system (...) right now, only those people are aware of these modes (...) But if the whole thing would be built into iOS or into the operation system, then of course, all of a sudden a whole wider population would be aware that it's an important thing. So I think it's a good way to spread the word."

- ***Participant 1***

Nonetheless, two respondents suggested ideas for improving the potential of the Alone Mode concept by making it fully customisable in terms of notifications and app interactions. One respondent suggested sending automatic reply messages to individuals trying to contact them in the Alone Mode, as well as establishing trigger keywords, which others could use to automatically turn on notifications again. The other respondent also suggested including additional modes of interactions for the future.

> *"(...) I think there should be more different modes and should be more customizable."*
>
> - ***Participant 17***

> *"I have an idea about that. And this is actually something that I would use (...) I would like to have a mode like this that would switch my phone off like switch my notifications and stuff. But (...) allows me to filter (...) my work email because of.. (...)an important email or something. But at the same time(...) [when somebody messages me] (...)I would just send an automatic reply saying that I'm focusing (...) But (...) I would like that person to have the option to actually activate my phone (...) and actually trigger my notification if it's something important"*
>
> - ***Participant 4***

Concept Strategy: Speech-Based Social Network

Finally, under the context of 'loneliness', the sixth idea is a **Speech-Based Social Network**, inspired by the question-and-answer platform Quora [13] (Figure 5.22). This concept idea intends to provide an alternative, more human and therefore meaningful alternative to mindless phone usage.

It would function as a separate application, for which the user is prompted to mark down a timeslot (i.e. lunch break), a topic of interest as well as preferred language. Thereby, this would allow a phone call or video call with interested friends or strangers available in this same time slot instead of scrolling or browsing through their smartphone due to loneliness. A supplementary dimension to this concept idea could also be talking with a chatbot, in case no one is available and the user needs to rant, brag or let some feelings out loud.

One of the participants enjoyed this solution as it reminded her of the traditional pen pal system, which she finds relevant amidst the current coronavirus outbreak, which has forced research participants to stay at home.

[13] https://da.quora.com/

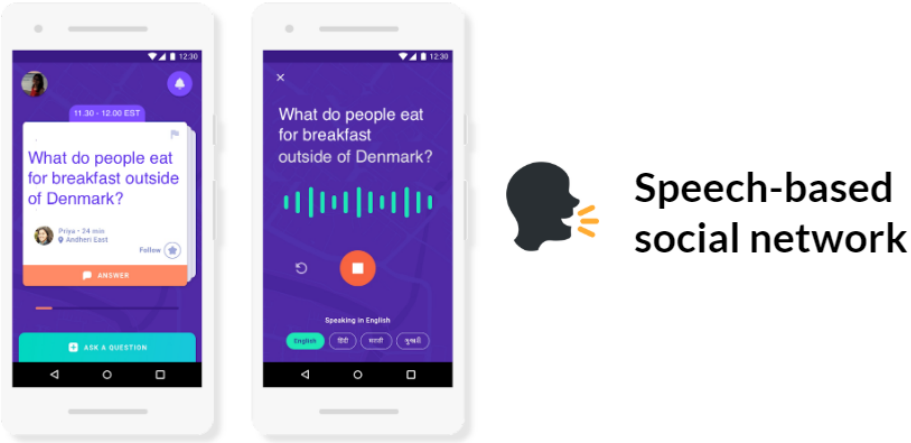


Figure 5.22: Speech-Based Social Network

> *"I think it's actually nice because I was thinking of the pen pal system.(...) especially in the situation that we're now [in] kind of got me thinking like, how do you normally meet new people, you know, in social settings like (...) I know people use Tinder, but what if you don't want to, you know, hook up with someone or for romantic purposes"*
>
> - ***Participant 13***

Some confusion was raised around which elements of their smartphone relationship this concept idea was aiming to improve and make healthier. One respondent mistakenly believed that this concept solution was promoting a healthier relationship with the smartphone by minimizing direct exposure to their screens.

> *"I think that the idea is good because at least it reduces the eye contact that you have with the former."*
>
> - ***Participant 26***

Yet, within this research study, a healthier smartphone relationship will not and can not be defined according to the screen exposure. Instead, the focus of this concept idea is on establishing a meaningful alternative to mindless phone usage.

Problem area	**Loneliness**
Design hypothesis	University students often report that they do not know how to entertain themselves, when they are alone, other than by engaging in interaction with their devices of a form which they come to view as a loss of time and self in retrospect. A Speech-Based Social Network would allow them to focus their alone time on mindful interactions with people around the world, instead of aimlessly scrolling through social media. This Speech-Based Social Network application would allow the university student to specify a timeslot, in which they know that they are alone as well as a topic they would like to discuss, then they would be connected with someone from around the world to discuss this. Another dimension of this application would be to add a speech-based chatbot feature to still allow the same option as above but with an AI based service in case no one is available at the same time as the university student. Herein, the focus would be more on talking about their day, rather than a specific topic.
Usage scenario	**Use Case 1:** A university student is eating lunch alone at their workplace because their colleagues had an early meeting. The university student doesn't want to aimlessly scroll through his social media, so he goes on to the Speech-Based Social Network application and writes that he has a lunch break from 11.30 to 12.00. He specifies the topic he is interested in discussing to be "What do people outside of Denmark eat for breakfast?", as he had recently found out that his Japanese colleague ate rice and soup for breakfast, which surprised him a lot. One user in India has an available time slot at the same time as the university student, so they start planning the logistics of their call. They decide on a video call. The university student enjoyed this interesting conversation with this complete stranger instead of engaging in social media browsing on his device which he often comes to view as a *waste of time* in retrospect due to his weakened sense of control. **Use Case 2:** A university student is having dinner alone at home. She has had a long day in front of the computer and doesn't want to look at her smartphone screen but she doesn't want to feel alone at home. She decides to go on the Speech-Based Social Network to use the speech-based chatbot. She talks about her day and her worries at school, until she is done with dinner. After she is done, she feels relieved, as she got to let off some steam without disturbing her friends or family and without wasting her time on meaningless social media content.
Further Possibilities	The Speech-Based Social Network application could be used by university students amongst their close friends or strangers from around the world. The Speech-Based Social Network could be more call or video call focused, or both.

Table 5.6: Speech-Based Social Network Overview

Still, a critique echoed by several participants in relation to this concept was that it seemed like a classical social media application. Thereby, they did not believe that it would help promote a healthier relationship but instead reinforce the existing problem areas, especially in terms of habit-making interactions:

"Seems like another app to get hooked on (...)"

- ***Participant 16***

"So it's like another social network application?"

- ***Participant 25***

Several participants also raised suspicions in regards to the speech-based element of the application, as it made them uncomfortable to spend lunch break talking with strangers. They showed an inclination towards text-based communication. Furthermore, they explained that the smartphone symbolized a relaxing escape during breaks and alone time. Therefore, they preferred if the solution was targeted towards their friends to eliminate any potential level of unfamiliarity. Yet, in retrospect, if we chose the focus to stay on text-based interactions with close friends and family, it would embrace additional social media characteristics, which is not our aim.

"I think connecting to friends would be a better idea at least for me (...) Because I think just talking to a random stranger would not make me feel less lonely (...) let's take the canteen at DTU. You are surrounded by thousands of strangers. (...)you could also ask them something but you would still feel lonely. Having the(...) deeper level of the connection or relationship is definitely an important factor to feel not lonely (...)it's a little bit like talking to a customer service or something like that."

- ***Participant 1***

"I'm an introvert. So the very idea of like, calling someone on the phone sounds like so draining. And yeah, I do not see myself using this. Even when I'm alone, let alone in public. If it's like text based, like a chat bot, then maybe but speech based? I don't see."

- ***Participant 21***

Certain participants further believed that the application would be more appropriate to help promote cultural diversity and understanding. Nonetheless, the research participants imagined this as a tool that would introduce new interest areas and thereby, again, encourage a heightened smartphone usage.

> *"I think it's a good idea because it sort of would break up your lunch for example and yeah just promote sort of cultural diversity."*
>
> - ***Participant 19***

> *"I think it really depends on how it's used, like for small things like culture. I think it can be very interesting. But then I think there's also the possibility of like, making sure who's answering because if it's more of a technical question, making sure there's no misinformation if we think about the pandemic."*
>
> - ***Participant 22***

Another problem area that one respondent raised is the air of novelty that this solution presents, which would make it interesting to use a couple of times but would not make it a sustainable solution on the long term basis.

> *"It's like something you might enjoy using a few times. Then, just going back to having lunch as you did before (...) and you have the issue where you don't want to talk to someone you've never spoken to (...) that's private information that someone might not want you to know. If you were looking for someone you already know, for instance, to fill that social gap, and then you can replace that person with Siri anyway by just saying, hey, Siri, what people in Denmark eat for breakfast? And she'll tell you."*
>
> - ***Participant 24***

In conclusion, this solution idea was considered not to address the initial problem area aptly, as it promoted a new smartphone usage scenario instead of promoting a healthier relationship in the context of participants' current smartphone usage scenarios.

5.3.3 In Summary

5.3.3.1 Students' Subjective Experience of a Healthy Smartphone Relationship

Following feedback on the different concept strategies, the research participants were asked to describe what they viewed as unhealthy in their current smartphone relationship.

The trends generally described by the participants were:

- Infinite Content Loop and Losing Track of Time

"You are not even connected to your friends, you are seeing random people and (...) you don't realize how much time you spend on it because you just (...) scroll infinitely"

- Participant 1

"just keep scrolling, switching through three apps (...) It's a waste of time watching videos of people making stuff that no way in hell I'm gonna make."

- Participant 21

"I think I have a hard time disconnecting with things. So I think it's once I get sucked into my phone, then I like then I go down like the rabbit hole."

- Participant 22

- Fear of Missing Out

"[hard time disconnecting] sociological issue of needing interaction and how phones create this possibility for interaction with social media"

- Participant 23

"I feel like our generation has [made us] used to having the phone muted. so I never hear when I have a notification I always have this pressure to check my phone if something has happened [or] someone has texted"

- Participant 18

"If I have like 5 minutes free, I immediately grab my smartphone and check something so yeah I think it's way too intense in that regard."

- Participant 17

- Procrastination

> *"For me unhealthy means that I use it to (...) for example when I have to study for exams I use it and I procrastinate instead of studying so I just end up doing useless stuff like scrolling on social media."*
>
> - ***Participant 15***

> *"Normally for a distraction. If I'm trying to learn something really complicated. It's an awful habit, just going on there every four or five minutes but generally, anytime I get quite bad, I kind of notice it, you know, just make an effort to stop it"*
>
> - ***Participant 24***

Respondents 4, 25, 26 & 27 did not believe they had an unhealthy relationship with their smartphone, as they believed that their screen time was below average and that they used social media in a very limited manner. Therefore, they refrained from answering this question.

5.3.3.2 Preferred solution idea

In general, different ideas were preferred and different perspectives added during each session. However, the bracelet and Speech-Based Social Network in particular provoked mixed reactions. The bracelet sparked laughter from the majority of participants and they explained that it would be easier to just grab their smartphone to contact close friends or family. The Speech-Based Social Network also triggered several debates, as some felt uncomfortable having a conversation with a stranger and others believed it would not solve the initial problem but only contribute to it.

In table 5.7, a summary of the preferred solutions of each respondent is outlined:

Thereby, the overall trend showed preference for the ring, the challenge application, the Alone Mode and the Content Digest concepts in particular. This is not surprising, as these are the solutions that primarily addressed problem areas that the research participants personally felt were unhealthy in their own smartphone usage: 'losing track of time' and the 'infinite content loop'.

The Ring Limiter and the Content Digest were chosen for further development during the fourth iteration of this project according to research participants' feedback. Whereas, the challenge application and the Alone Mode concepts were merged into a third idea 'Digital Friend', as their respective unique value propositions were perceived as too weak by a majority of the participants. The title 'Digital Friend' was chosen, as this application would promote meaningful interactions with the smartphone in

Participant number	Preferred solution
1	Alone Mode + Ring Limiter
4	Alone Mode
9	Challenge Application
13	Challenge Application
15	Ring Limiter
16	Challenge Application
17	Content Digest
18	Content Digest
19	Challenge Application
20	Speech-Based Social Network + Content Digest
21	Alone Mode
22	Content Digest
23	Challenge Application
24	Ring Limiter
25	Challenge Application
26	Challenge Application
27	Speech-Based Social Network

Table 5.7: Summary of the preferred solution of each respondent

a divertive and friendly manner. Thereby, the concept ideas chosen for the further development of lo-fi prototype are the following:

- The Ring Limiter
- Content Digest
- Digital Friend: a combination of Alone Mode and Challenge App

An important insight to note for the next iteration is that participants expressed a need for the respective solutions of the combined third idea to be incorporated within the smartphones' operating systems in order to be useful. Therefore, the third idea will specifically revise the smartphone built-in iOS 'Screen Time' and Android 'Digital Wellbeing' features to produce the lo-fi prototypes for the next iteration.

5.4 Fourth Iteration: Group Interviews 2 - Final Prototype Solution

The prior three phases of this process of design research allowed us to conceptualise three distinctive proposals for a technological solution to the challenge of realising healthier relationships to our mobile devices: The Ring Limiter, Content Digest and Digital Friend, a combination of Alone Mode and Challenge App.

Further development of these concepts result in the creation of lo-fi prototypes, which we would discuss and evaluate with research participants. We perform four focus group interviews to obtain insights into which of the three concepts the participants would be most likely to use in their everyday lives and what kinds of potential users would be most interested in the different solutions.

5.4.1 Methods

Focus group interviews were conducted with eight participants in total. Due to the coronavirus outbreak, the group interviews were conducted virtually through a Zoom video call where the participants were divided into four groups of two. All of them were currently higher education students and it is important to note that half of the participants did not participate in any of the previous iterations, i.e., the different concepts were presented to them for the first time during the current concept strategy group interviews. The main purpose of this decision was to compare the feedback between participants who had already seen the concepts and whose suggestions from previous interviews were included when improving the designs, with the feedback from participants who would see the concepts behind these lo-fi prototypes for the first time during this iteration.

5.4.1.1 Before the interview

Before the interviews, a short video presentation was created for each of the different concepts, where the ideas were introduced with different scenarios. These scenarios were presentations of the most common situations participants in previous interviews found problematic and leading to smartphone overuse, i.e., endless content scrolling leading to staying up too late, losing track of time when on their smartphones and the current coronavirus outbreak leading to too much time spent on social media.

The group interviews were divided into three parts where each one of the different concepts was presented individually. At the beginning of each interview, the participants were given a short introduction where they were familiarized with the overall subject of the current research and were asked to share their unbiased opinion. Some guidelines were also set, where participants were asked to respect each other's point of view to ensure a respectful environment where each participant feels comfortable sharing their perspective.

5.4.1.2 After the interview

The fourth iteration resulted in **5 hours, 33 minutes and 15 seconds** of audio recordings. Similar to the prior iterations, audio recordings from these group interviews were, first, fully transcribed. Thereafter, these transcriptions were subject to close reading by both researchers. We identified selected quotes that best demonstrated the breadth of different options or perspectives for each of the lo-fi prototypes presented. Thereby, the documentation and writing of the fourth iteration was framed around the selected quotes.

5.4.2 Findings

5.4.2.1 Concept Strategy: Ring Limiter

During the first part of the interview, the first concept strategy video was presented, where the participants were able to see Tom, a student who is preparing for his exams (Appendix A.1). While studying, he takes phone breaks once in a while and when he does so, loses track of time on his smartphone, which leads to him feeling stressed and unproductive. Further in the video, the first concept of the Ring Limiter is introduced - a device that changes color according to the user's screen time (Figure 5.23). For example, when Tom takes a 15 minute break and wants to watch videos on YouTube, he will go into the application which comes along with the ring and set a timer for the desired time break. The ring will start changing its color from yellow to red and when it turns red, Tom will know that his phone break is over and it's time for him to go back to studying.

Figure 5.23: Screenshot from Ring Limiter video

After seeing the short video presenting the overall idea of the Ring Limiter, the participants were asked to describe a person who would not use it and a person who would definitely use the ring.

Unlikely Users

First, the participants described personas who were unlikely to have problems with losing track of time on their smartphone and as a result would not be interested in getting this Ring Limiter.

All participants agreed that people with dedicated hobbies and interests, requiring them to be constantly active such as sport or dance, would not have problems with their smartphone usage and therefore, they would be unlikely users of the Ring Limiter.

> *"I imagine that this person is into sports so these kinds of people don't usually wear any kind of accessories, just because it is not comfortable to be fully active while wearing them. "*
>
> - ***Participant 22***

> *"I think that the person who will use it would have some kind of interactive degree, some type of art, dance. Something that is different from the typical textbook study."*
>
> - ***Participant 9***

Similarly, the participants described *'workaholics'*, as being unlikely users, as they dedicate their time to their studies and/or work, and therefore, would not have problems with their smartphone usage.

> *"she's interested in financing(...) basically a person that doesn't doesn't really go on his phone or doesn't really connect with anybody. So a person like this is mainly focused on either studying or working"*
>
> - ***Participant 4***

On the other hand, the participants also described personas who were on the other side of the extreme, meaning they were too dependent on their smartphone in their everyday lives. Therein, one persona was described to be dependent on the smartphone for her personal entertainment and due to some degree of F.O.M.O , whereas another persona was dependent on the smartphone as a result of his travel-related studies, which necessitates him to keep up with current trends.

> *"Abdullah Mohammed. He's 22 years old. He studies at KEA and he studies Hotel Management. (...) he uses it to (...) keep up with the latest developments in [the] travel industry. So he's like checking out the Instagram like on a non stop basis to kind of keep up with the trends and keep up with his homies"*
>
> - ***Participant 16***

> *" my first person is called Britney. She's 18 to 20 years old. She studies (...) some sort of design or social media. And her interest is being cool with their friends (...) she wants to keep up with the latest Tik Tok stories (...) She's dancing with her partner (...) to be cool."*
>
> - ***Participant 16***

Other personas that were mentioned to be unlikely users were also the less tech savvy university students, who would maybe find the Ring Limiter too complicated to use:

> *"person who is (...) not studying something tech (...) [who would find] a little bit too complicated maybe to use with the app"*
>
> - ***Participant 31***

Finally, one of the participants placed themselves as an unlikely user, as he believed that, despite the Ring Limiter being a good idea, it required a specific type of personality, in which you enjoy timing and scheduling your everyday life, which he didn't have. Furthermore, the participant explained that the Ring Limiter could easily be substituted with an alarm, which would make him even less inclined to purchase the Ring Limiter.

> *" myself as an example (...) It has no sense [to have] a device that is going to tell me when I have to go back to do something, for example, I could do that with my phone now, with like an alarm. I never do (...) I don't like to set times for everything I do."*
>
> - ***Participant 30***

Potential Users

Participants described people who may be experiencing difficulties concentrating or are used to procrastinating as potential users, since this will be a device that visually shows them when they are spending too much time on their phones.

> *"Nikolai (...) He studies management at CBS (...) He would use it so he can limit his time on the phone and focus more on his work (...) [reminder] to go back to work, like stop distracting yourself and focus on what's more important."*
>
> - ***Participant 4***

Moreover, participants mentioned that people who are interested in being more productive and focused will benefit from this kind of solution.

> *"He's a 20 year old he studied some DTU biochemistry, he's interested in being successful (...) he's using the ring to streamline his time use and to be extremely efficient (...) [with] a really practical excel sheet function where you can like time your (...) usage."*
>
> - ***Participant 16***

> *" for people that they like to just schedule their time to know what they're going to do and to follow like some steps, this device will help them."*
>
> - ***Participant 31***

In addition, participants mentioned that probably more women will use it since they are more likely to wear additional accessories.

> *"I still think that it will be generally girls who will use it. (...)"*
>
> - ***Participant 9***

> *"maybe a girl or woman and she could be into like, the blogging world (...) And she could be like studying at CBS or anything like management wise and she's into social media (...)"*
>
> - ***Participant 31***

Strengths

Afterwards, participants were asked to highlight the strengths of the ring, which would make it more interesting for the personas they described as potential non-users and to point out weaknesses which might make the device less interesting for a potential user.

As a strength, they mentioned that the ring is a small wearable technology that is easily accessible.

"it's not like a big device that it can be uncomfortable for you"

- Participant 30

"it doesn't (...) take a lot of (...) space, it's not a huge thing. It's just a little ring that can help you and it's easy to look down and you're using your hand so you can just look at your finger whenever and I think it's cool that it changes color."

- Participant 31

Another attractive strength mentioned by the participants is an extended battery life, so that the Ring Limiter would only need to be charged once a week.

Furthermore, they concluded that it is a nice way to help you stay focused more and not get easily distracted. One participant suggested that it should be customisable to different users' needs, in terms of the ring's aesthetic style, so that it doesn't limit its reach, but also in terms of the preferred degree of intensity for the notifier on the Ring Limiter (pop-up text, color, lights, sounds).

"Some design features (...) make it customisable for each needs"

- Participant 16

"it could [also] be like a little rock and that rock could change color(...) to make it more like, versatile"

- Participant 31

This same participant further suggested that the Ring Limiter could be made a Linux based program, so that their community of users could access and contribute to unique user-created personalizations of the Ring Limiter.

participants also emphasized that it should be introduced in the frame of a social media trend for the personas that are currently too dependent on their smartphone.

"some functionality that can make it viral. Such as play a song after 15 minutes and then it could be like Rick Astley."

- Participant 16

Another interesting addition to the device suggested by one participant is "the possibility of sharing achievements" **(Participant 4)**, which would allow community-building and potentially, a domino effect amongst the user's closest contacts.

Weaknesses

On the other hand, participants mentioned the size of the ring as problematic, since it is small and you can easily lose it. Moreover, since the target group is students, it might be expensive for them to afford it.

> *"You can lose it easily. Another point could be that it might be expensive. And in order to use it, you need to use your phone. So this might lead to using your phone more than expected. "*
>
> - ***Participant 9***

Another weakness mentioned by participants is related to its tactile and visual intimacy, along with its persistent presence in the user's sphere of attention, as the ring is worn on your hand, making it visible at all times. Additionally, some participants believe that the fact that it changes colors might add some extra pressure when using it, since people might feel ashamed when the ring turns red in public (Table 5.8).

> *"The device might put us in much more pressure when using it. You're like a Christmas tree if you're using it in a public place."*
>
> - ***Participant 29***

> *"come on, you're kind of an adult and you walk outside go to work or to school with like a glowing, childish looking ring."*
>
> - ***Participant 4***

Similarly, according to the participants, the fact that this is a ring limits its reach, as it will only be university students that already like to wear rings that would be interested in getting the Ring Limiter:

> *"it's only useful for people that they like to wear rings."*
>
> - ***Participant 30***

"it's meant for people who like to wear rings. So not all can use them."

- Participant 31

Finally, participants believe that this Ring Limiter would only function if the user had the necessary mindset when using it, as it doesn't actively limit your smartphone usage but ensures that you don't lose track of time:

"it relies too much on the personal willpower of the user"

- Participant 16

5.4.2.2 Concept Strategy: Digital Friend

In the second part of the interview, the second concept strategy video was introduced, during which the participants were shown Bob, who is socially distancing due to the current coronavirus outbreak (Appendix A.2). He wants to be more productive amidst his stay-at-home situation but he always ends up spending more time than desire on social media. After the problem is presented, the second concept Digital Friend is introduced - an application which Bob can use to regulate his screen time. The Challenge feature lets Bob choose which applications he wants to put an app limit. When the limit has been reached, the feature gives him challenges and suggestions for how to diversify his time on and off screen. Another feature that the application offers is the opportunity to enter into Alone Mode which is intended as an autonomous choice of practicing 'alone time' with your phone, without having to be connected to the rest of the world. During this mode, only selected contacts will be able to reach you and at the same time, you will be available to set up emergency keywords which once used, you will be able to receive the message/email including these specific keywords (Figure 5.24).

After seeing the short video presenting the concept, the participants were again asked to describe two people - one a potential non-user and another who would use the solution.

Unlikely Users

As potential non-users, participants described somebody interested in knowing what is happening around the world, e.g., designers and influencers. In their opinion, these personas will not want to limit their time on social media, since this will be their main and most efficient way of receiving new information about their topic of interest.

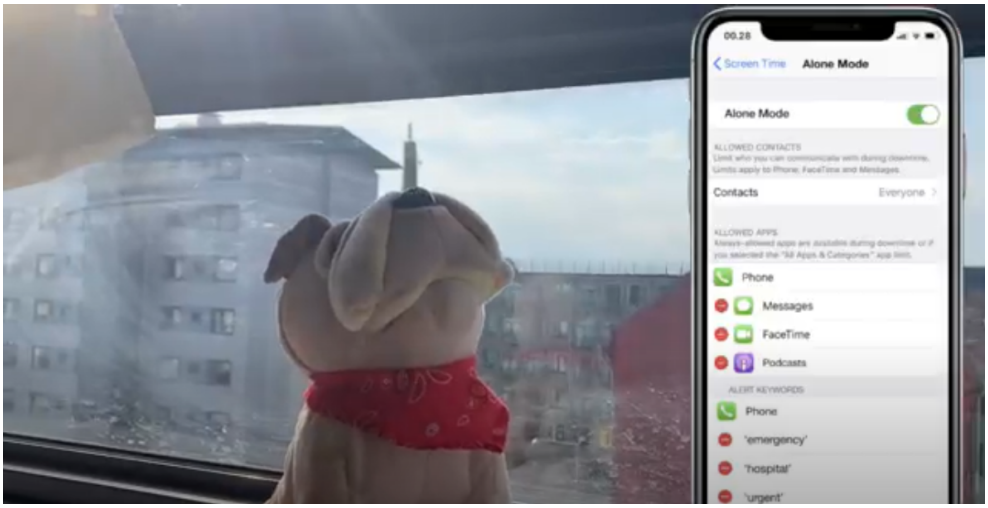


Figure 5.24: Screenshot from Digital Friend video

Strength	Weakness
It can help you stay focused and avoid distractions: *" It will allow you to focus more on things that you love so it will help you not get distracted. "* - ***Participant 22***	It is small, so it is more prone to lose the tangible device: *"You can lose it easily. Another point could be that it might be expensive. "* - ***Participant 9***
It is small and simple: *"(..) I want to highlight that it is small and doable."* - ***Participant 9***	It might be expensive for students: *"I think that it will be hard to find students who want to use it and afford it. Because a lot of students don't have high paid jobs. "* - ***Participant 22***
It could have a long battery life: *"That it is free and it has to be charged once a week."* - ***Participant 29***	It might lead to smartphone overuse because you need to use an app to set the timer: *"And in order to use it, you need to use your phone. So this might lead to using your phone more than expected. "* - ***Participant 9***
It could be customisable in terms of design features. *"Some design features (...) make it customisable for each needs"* - ***Participant 16***	It might be too colorful and thereby, create additional pressure on users, whilst wearing it: *"Maybe a little bit nerdy and down, because you're like a Christmas tree if you're using it in a public place."* - ***Participant 29*** *"The device might put us in much more pressure when using it. Inside the brain, inside the mind that some changes need to happen first."* - ***Participant 28***
	It is meant for people who likes to wearing rings - additional devices *"People who don't usually wear any kind of accessories, just because it is not comfortable to be fully active while wearing them."* - ***Participant 22***

Table 5.8: Ring Limiter strengths and weaknesses

> *"I imagine somebody who is using social media a lot. Their interests are online, they are comfortable there so they don't question if they should use their time in something else."*
>
> - ***Participant 22***

> *"always on social media and always has the urge to share everything"*
>
> - ***Participant 4***

Similarly, one participant described a persona that has just started a romantic relationship recently to be an unlikely user of the Alone Mode, as new relationships generally enhance the need for constant human connection and digital intimacy.

> *"Zack (...) just got together with that new girlfriend of his. So he wants to be in touch 24/7(...) stay connected and not miss a single call or single message."*
>
> - ***Participant 4***

Another category of unlikely users are individuals that do not think their smartphone usage is problematic or simply do not care about their screen time.

> *"They don't feel they need something to control them"*
>
> - ***Participant 29***

Finally, another unlikely user described by participants was simply an individual that does not use their smartphone a lot. Herein, an example was given of the participant's brother, who prefers spending his leisure time on his computer instead.

> *"I think about actually my brother. I don't think he would use it because he's not using his phone so much. And like he's in high school (...) his interest is a lot on like gaming [on the computer]"*
>
> - ***Participant 31***

Potential Users

Furthermore, as a person who will definitely use the solution they described people who are interested in personal growth and mindfulness alongside people who have struggled with their concentration and want to change their behavior to be more efficient, productive and meaningful.

"The person who I imagine is somebody who is trying to change their personal habits and is interested in personal growth and mindfulness."

- ***Participant 9***

"Fatima. She's a 24 year old DTU student in data science (...) she does actively pursue these kind of opportunities [that] makes her use the technology she loves and adores, but in a responsible sustainable manner."

- ***Participant 16***

"I would definitely, definitely use it myself (...) I study journalism (...)I'm trying to like use my time a little bit more wisely. And I just deactivated my Instagram account, for example, because I felt that I was spending countless hours just scrolling into nothing."

- ***Participant 31***

In addition, all agreed that this solution is a nice way of encouraging people to try different/new things through the Challenge App rather than spending their time on their smartphones.

Afterwards, participants were asked to highlight the strengths and weaknesses of the presented concept strategy.

Strengths

When asked to describe potential strengths of this solution, participants described, in particular, the capacity of the Alone Mode to facilitate time spent in activities related to their personal growth and mindfulness.

"I would highlight the mindfulness piece of it"

- ***Participant 31***

"I would highlight is that every person has to take some time for themselves (...) force yourself offline (...) and focus on something that you always wanted to do."

- ***Participant 4***

Moreover, the alert keywords feature, which allows users to specify keywords that would re-enable notifications, was described by participants as an attractive detail. They believed that this element would promote more meaningful interactions and was well-suited for users who constantly feel the need to check their smartphones for notifications in the case of emergencies.

> *"the idea of living without the phone, not being dependent on the phone. So having an app that it's able to just allow you to use the phone with a good purpose"*
>
> - ***Participant 30***

One participant suggested that the addition of " some sort of risk and reward system will be nice" **(Participant 16)**, in order to add more power and weight to the Alone Mode and to ensure users respect their alone time. An example of a useful penalty, according to the participant, for disrespecting the set alone time is that the "phone could turn off itself" or "some sort of like really annoying sound" **(Participant 16)**.

Furthermore, a participant emphasized the importance of *the visibility of this tool*, as digital wellbeing features are currently not very prominent in the interface design of their smartphone, which limits their reach.

> *"have (...)this app or this feature kind of more prevalent, and more kind of just featured. For instance, in the phone settings itself (...) When you sign up to what time zone, for instance or language, you could immediately start setting up some parameters [on] how to use [the Alone Mode]."*
>
> - ***Participant 16***

Weaknesses

On the other hand, as potential weaknesses, participants talked about how the application might not recognize certain activities in social media as working activities. For example, if you use Facebook for work, the application will still count your time there as social media screen time.

> *"The weakness could be that if I use Facebook for work, the app would not recognize it as a work activity."*
>
> - ***Participant 29***

Furthermore, they mentioned that they might feel embarrassed performing specific challenges when around people. For this, they suggested that users define the tasks they want to accomplish through the day and that the application notify them of the percentage they have completed (Table 5.9).

Nevertheless, a plurality of the participants did not believe that the solution had any weaknesses, as they believed it served a clear purpose for a specific target group.

> *"I personally can't really find any weakness in using this as I think that it's something everybody would make use of."*
>
> - ***Participant 4***

Still, they accentuated that the necessary willpower and mindset is needed for this to be useful. Another participant also commented slightly on the irony of a smartphone-based solution for the promotion of a healthier smartphone relationship:

> "If I am to find weakness to this, it's the fact that you're still using your phone. And you're just kind of like playing games with yourself."
>
> - ***Participant 16***

5.4.2.3 Concept Strategy: Content Digest

During the third part of the interview, a quick video overview of the last concept strategy was presented, where participants were able to see Diego, who is a master student, struggling with staying up late on his phone before bedtime (Appendix A.3). Further in the video, participants see how Diego shares with his girlfriend his struggle of mindless scrolling on social media which leads to him staying up far too late every night. He is also concerned that this activity affects his daily productivity. After the problem is presented, participants are familiarised with the final concept strategy - the Content Digest. Content Digest is a plugin, which lets users define their topic of interest. The plugin is then applied to different social media platforms and helps users filter out the content they are interested in. Moreover, the plugin summarizes the newsfeed according to the selected interests and only shows the highlights for the day. Using it, users can minimize the time spent on social media looking at random content (Figure 5.25).

After presenting the concept, participants were asked to think of a person who would not use the solution and to describe another person, who would be interested in applying the plugin.

Figure 5.25: Screenshot from Content Digest video

Strength	Weakness
It could be personalized, by allowing users to add personal challenges/tasks. "This app is trying all the things that you can do. I will use it. Especially now, it will encourage me to go for a walk or something like that. " - ***Participant 22***	The level of accuracy might be a problem, especially if it is not able to recognize certain activities as work-related activities. *"The weakness could be that if I use Facebook for work, the app would not recognize it as a work activity."* - ***Participant 29*** *"So I thought of somebody who is studying communications and journalisms and they want to be up to date with what is going on and being constantly updated. And they don't trust this filter and want to know all the news related to the interested topic."* - ***Participant 22***
It promotes mindfulness. *"The person who I imagine is somebody who is trying to change their personal habits and is interested in personal growth and mindfulness."* - ***Participant 9***	It is easy to ignore the app limits, as participants suggested additional features to add more power and weight to the Alone Mode, in particular. *"some sort of risk and reward system will be nice"* - ***Participant 16***
The alert keywords feature allows the user to be notified in case of emergencies. *"the idea of living without the phone, not being dependent on the phone. So having an app that it's able to just allow you to use the phone with a good purpose"* - ***Participant 30*** It is easy to apply across the whole system, as it is built-in to the smartphone settings. *" It is easy to apply. You just go to the app settings and allow it. It could be applied to any app. "* - ***Participant 9*** This app is more like a human approach to the problem.	The user might feel less connected to friends on social media. *"I imagine somebody who is using social media a lot. Their interests are online, they are comfortable there so they don't question if they should use their time in something else."* - ***Participant 22***

Table 5.9: Digital Friend strengths and weaknesses

Unlikely Users

Since the plugin is aimed towards social media use, participants described personas who are not avid social media users as unlikely users of this Content Digest solution.

> *"Somebody who is not that invested in social media. So you would not need that feature since you are not using social media that often. "*
>
> - ***Participant 9***

Moreover, they concluded that somebody who has a communications-related job, would not be interested in filtering news since they might miss important news as well as individuals, in general, that would like to stay up-to-date with what's trending and happening on social media. One participant further commented that this filtering might cause a F.O.M.O, as their content reach is limited.

> *"I would feel like I was missing something, if I limited myself into categories, maybe I would get some kind of FOMO, of missing out"*
>
> - ***Participant 31***

> *"just setting something and adjusting something into one specific feature (...)maybe you will miss a lot of information in the meanwhile."*
>
> - ***Participant 30***

Similar to the previous iteration, one participant also described a person who would demonstrate skepticism and distrust towards the criteria and efficiency level of the Content Digest as an unlikely user, as the filtering could yield a bias.

> *"He does not use the app because he doesn't trust it. Who and why someone curates whatever he wants to look at (...) even if it's a super advanced AI"*
>
> - ***Participant 16***

Potential Users

When asked to identify a person who would be likely to engage with this prototype solution, most of the participants mentioned themselves, as they frequently commented on their experiences with losing track of time when browsing through their social media accounts.

> *"I think that it would be somebody who is interested in what is going on on social media but at the same time doesn't want to spend that much time there. They have trouble finding what is relevant information and important news."*
>
> - ***Participant 22***

> *"He just likes to keep well informed about like world (...) and what's happening around him (...)it just makes it more efficient and (...) he doesn't need to go deep into the feed to kind of just find his main information"*
>
> - ***Participant 16***

Additionally, the participants mentioned individuals with clear content goals as potential users, as it would limit their search for meaningful content, if they already know specifically what they are somewhat searching for.

> *"He is basically going to use it because he doesn't like when, even though when (...) he goes on Twitter even though he follows specific media (...) they often just share some random stuff, some random pictures or whatsoever that (...)he doesn't really care about. So he would love to be able to filter that out."*
>
> - ***Participant 4***

> *" people that they are looking for something very specific. So, they are looking for specific content that they only want to get information about that, and they don't want to get anything else."*
>
> - ***Participant 30***

Strengths

As before, participants were asked to highlight the strengths of the solution which would make it more interesting for those they described as potential non-users and point out the weaknesses they felt would make the Content Digest less interesting for the people they pointed to as potential users.

As a strength, participants mentioned that the plugin would help university students in the field of journalism in avoiding false news from unreliable content sources.

> *"maybe the app would allow him to filter the fake news. So he would actually turn it into his advantage by filtering out only the trusted media that wants to follow."*
>
> - ***Participant 4***

Moreover, participants believed that users of the Content Digest solution, therein their described personas, would spend less time scrolling through social media, since the infinite scrolling would be bordered by the pre-selected filters. One participant further described this new filtered content to be of better quality, as the output is meaningful for the user and not randomised with 'garbage news'.

> *"I guess the main point of this thing is efficiency, right? So you can effectively see the same amount of value for 15 minutes as you can see in 30 minutes"*
>
> - ***Participant 16***

> *"(...)highlight the quality of the content that you're ingesting"*
>
> - ***Participant 30***

One participant further explained that this plugin could help make research more efficient in the future, as it would filter out less informative content streams as well.

> *"if I were to write an article and I wanted to find some information on social media, I could plug this in."*
>
> - ***Participant 31***

Weaknesses

On the other hand, people expressed their concerns that filtering content might lead them to miss something important.

> *"The weakness of this product is that the recommendations it gives are in terms of what you have to watch and what you don't have to watch. "*
>
> - ***Participant 29***

> *" How good is restricting yourself and you putting yourself into little boxes if you're missing something."*
>
> - ***Participant 31***

Another potential weakness raised by participants concerned issues of privacy and transparency. Participants expressed a lack of understanding of the filtering process and desired knowledge concerning, for example, whether it would be conducted by a human or AI system.

> *"Where's my privacy in this? There's going to be a filter that will decide what I want to see and how to present it to me. And it's actually going to know what I'm looking at all time"*
>
> - ***Participant 4***

Several participants also showed skepticism towards the accuracy of the general curating power of the Content Digest.

> *"how good is the engine behind that to filter all this content, like as a machine learning or whatever they using to do it. How efficient [is it]? I think they can look for leaks there"*
>
> - ***Participant 30***

> *"it's never going to be 100% optimal"*
>
> - ***Participant 16***

They also pointed out as a weakness the fact that the plugin might not understand their needs and display content they are not interested in (Table 5.10).

> *"For somebody who is doing journalism for example could be a bad thing because they might miss important news since the phone might filter something that it thinks is not relevant for you but at the same time it is."*
>
> - ***Participant 22***

Finally, one participant expressed skepticism towards the ability of a filtered content stream to encourage users to spend less time on their smartphone. This participant believed this had the potential to motivate the user to spend more time on their smartphone.

"if you're giving (...) the [drug addict] like better drugs, will he use less drugs than he used before? So if you have an app that makes it even more like Twitter premium, why would I use less? Like that's what I don't get."

- Participant 16

Strength	**Weakness**
This feature could allow the avoidance of false news. *"maybe the app would allow him to filter the fake news. So he would actually turn it into his advantage by filtering out only the trusted media that wants to follow."* ***- Participant 4***	The level of efficiency might become a weakness, in case it does not not understand the user's needs and filter out content that the user finds important. *"For somebody who is doing journalism for example could be a bad thing because they might miss important news since the phone might filter something that it thinks is not relevant for you but at the same time it is."* ***- Participant 22***
It can limit the weakened sense of control users experience because of infinite scrolling: *" It could be a good idea for somebody who gets distracted easily. And by filtering the information it will kind of decrease the distraction in social media. I think anybody who has difficulties focusing will benefit from that. "* ***- Participant 9***	It might become complex, as it would present users with a diversity of settings and filters for optimal personalisation. *"person who is (...) not studying something tech (...) [who would find] a little bit too complicated maybe to use with the app"* ***- Participant 31***
It might minimize time spent on specific apps. *"I think that it would be somebody who is interested in what is going on on social media but at the same time doesn't want to spend that much time there. They have trouble finding what is relevant information and important news."* ***- Participant 22***	Users' sense of privacy might be affected. *"Where's my privacy in this? There's going to be a filter that will decide what I want to see and how to present it to me. And it's actually going to know what I'm looking at all time"* ***- Participant 4***

Table 5.10: Content Digest strengths and weaknesses

5.4.2.4 Final thoughts

At the end of the interview, participants were asked to imagine that they are the CEO of a health tech company and to share which one of the lo-fi prototypes they would go forward with and which they don't see potential in. None of the participants chose to continue with the Ring Limiter. They believed that the gadget was too invasive due to its persistent presence in the user's sphere of attention, which could potentially lead to additional social pressures.

At the same time, they also felt that there were already too many technologies in their everyday lives for them to want to add another tech accessory to it. As an additional comment, they suggested that if the function of the ring was built into a smartwatch, they might consider investing in the solution, since a lot of people are using smartwatches nowadays.

> *"I would not use the ring because it is just another gadget. After 3 years there probably will be another version of it and the current want that I have will probably end up in my drawer and me not using it. So I don't think that it will be something that I want to spend my money on."*
>
> - ***Participant 22***

> *" the challenge with the first one even if you make it kind of successful, I think the amount of overall quantity of people using it, it's not going to be as high again because of, you know, having ring on your hand blinking"*
>
> - ***Participant 16***

The other two solutions - Digital Friend and the Content Digest were the preferred solutions but led to mixed opinions. Participants expressed concerns related to efficient content filtering. Moreover, they added that each person is different and has different interests, so implementing something that satisfies the majority of users will be hard and it will take a lot of time.

Still, 3 participants expressed the most interest in the Content Digest, as they believed it was a good way of limiting the effects of infinite scrolling found in most social media applications, by allowing "an information search." **(Participant 31)**. Thereby, participants would "not spend too much time on it" **(Participant 4)**, which is the most common problem mentioned by the research participants throughout the different iterations.

On the other hand, 3 different participants preferred the second solution, which is the Digital Friend. Despite all of the participants agreeing that minimizing time spent online and on social media should start with changing a person's perspective and thinking, they concluded that having a chance to disconnect will "add little more

motivation for personal growth and trying new things" **(Participant 22)** in the frame of mindfulness. Additionally, the usual impulsivity traits caused by F.O.M.O and an illusion of urgency are dissolved because participants know "that if anything important happens, I would be notified." **(Participant 4)**. Another participants further comments that this solution is the most likely to succeed, as it has the potential to easily reach everybody:

> *" (...)because it doesn't require too much hardware and too much work to make it accessible and easy for everyone to like, hop on board with everyone else. You just need the phone."*
>
> - ***Participant 16***

> *"as long as I have the possibility of selecting a certain notification that would still go through the filter, then there's no way you would make me not use it."*
>
> - ***Participant 4***

5.4.3 In Summary

The Content Digest and Digital Friend were both equally preferred prototypes amongst the participants (Table 5.11). Still, as noted by participants, the Digital Friend prototype demonstrated greater potential for scalability, ease of access, a low threshold for change, flexibility in use, and meaningful interactions. Also, in retrospective, we believed that the Content Digest proved to be more focused on the infinite scrolling content-sharing apps, rather than the entire smartphone experience.

Within the Digital Friend prototype, we chose to pursue further development of the Alone Mode feature for 3 reasons in particular. First of all, the participants seemed confused by the multiple challenges addressed in the newly merged solution. Secondly, as noted by participants, the divertive feature of the original Challenge Application is more focused on distracting the participants from their smartphone. Thereby, its scope would not directly allow users to be more mindful of their interactions for a healthier smartphone relationship. Finally, as mentioned in the prior iteration, the Alone Mode has the most potential for shaping and changing participants' overall mode of interaction with their smartphone, as it is part of the whole system.

> *"I think there are existent applications who are aiming for the same thing. But (...) of course, this one would be one level down and part of the whole system (...) right now, only those people are aware of these modes (...) But if the whole thing would be built into iOS or into the operation*

system, then of course, all of a sudden a whole wider population would be aware that it's an important thing. So I think it's a good way to spread the word."

- ***Participant 1***

In alignment with participants' perceptions of problematic forms of interaction, a solution that can effectively address the low-effort engagement and passive consumerism across the smartphone's system will be chosen, as this would prove pertinent for breaking the cycle of 'smartphone addiction' by design. It was therefore decided that the Alone Mode would be further conceptualised and operationalised upon, for the next iteration.

Participant number	**Preferred solution**
4	Digital Friend and Content Digest
9	Digital Friend
16	Digital Friend
22	Content Digest
28	"Content Digest: the coolest but the hardest one to implement Digital Friend: easier to develop but probably people will get used to it and it will stop helping. So I will go for the 1st one: Ring Limiter"
29	"will not invest in any of them - the problem is in our minds - but will use the Content Digest"
30	Digital Friend

Table 5.11: Summary of the preferred solution of each participant

5.5 Fifth Iteration: Think-Aloud Usability Tests

These four distinct phases of design research led us step-by-step to our final proposal for a technological solution to the challenge of realising healthier relationships to our mobile devices. This prototype solution, Alone Mode, comprises four primary features. First, it prompts users to customise their notification settings by choosing which apps and contacts they want to allow during the mode. Secondly, it supports the creation of motivational messages to help encourage the user during the Alone Mode. In alignment with this feature, the disabled apps are greyed out, as the bright colors can be distracting. Thirdly, the user can customise no-reply texts, which will be sent to individuals trying to reach the user during Alone Mode. Finally, the fourth primary feature is the selection of alert keywords, which allows notifications to be unlocked in case one of the predefined keywords are detected in the incoming notifications. Thereby, disabled contacts would be able to reach the user in case of emergencies.

In developing this solution we have come to develop a rich understanding of the challenges smartphone use poses for students today - an understanding embodied in this concept solution. This is reflected in particular in the decision to design the alert keyword feature, which reduces users' impulsive tendencies by distinguishing between urgent and non-urgent notifications. Additionally, this is also reflected in the choice to gray out disabled apps during the Alone Mode to prevent users from being distracted by them and, consequently trying to access them.

As the fourth iteration of this design research process enabled us to settle upon a final solution, further development of the Alone Mode is performed through a final round of interviews involving five participants in this last iteration. We conduct usability interviews with these research participants to test and evaluate the aforementioned prototype solution. The main objective is to discover potential issues in the interaction flow, gather unbiased user feedback as well obtain insights into areas of improvement in the overall user experience.

5.5.1 Methods

Prior to the usability interviews, we hand sketched the wireframes of the interface design to initiate the construction of the interaction flow, according to feedback on the Alone Mode from prior iterations (Figure 5.26). The general findings on what the research participants perceived as problematic usage patterns were also considered in the design work. The hand sketches were subsequently polished with Figma [14] to simulate the envisioned user experience of the Alone Mode (Appendix A.4)(Prototype A.4).

We conducted the five usability interviews over Zoom, a video communication service. All of the respondents were higher education students at Master's level. During the evaluation, a link to the prototype was provided to the participants and

[14] https://www.figma.com/

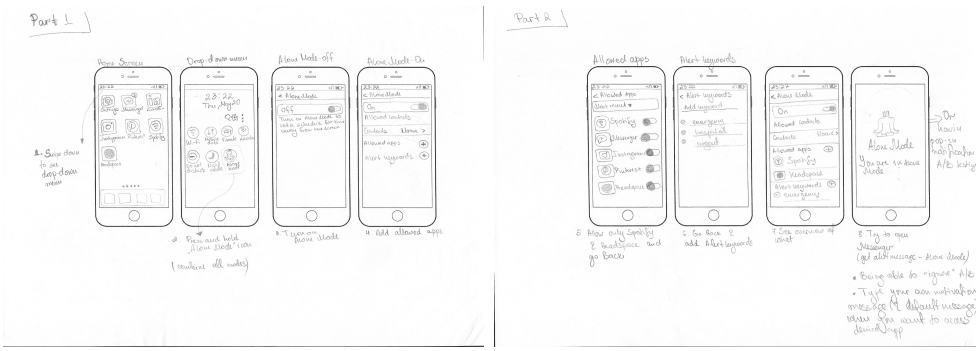


Figure 5.26: Alone Mode sketches

they were asked to share their screen whilst performing the assigned tasks. We chose to conduct the evaluation with research participants that had not participated in any of the prior iterations to accurately determine the ease of use and to eliminate potential confusion in the interface design.

At the beginning of each session, a short introduction round was included, in which participants were familiarised with the research subject. Thinking-aloud testing was chosen for the usability interviews, as it is flexible and easy to learn, given the circumstance of the usability interview. Therefore, the nature of the method was clarified to participants. Permission for recording was also requested by researchers and the participants were informed that they could skip a question in case it made them feel uncomfortable.

The interviews were separated in two different parts. First, the Alone Mode was described in broad terms to participants, without showing them the implemented wireframes. The prototype solution was tied to the practice of mindfulness and the importance of activating this mode as an act of autonomous choice was emphasized. Comparisons to the sleep and airplane mode were drawn to explain that this mode of interaction suppresses notifications from selected apps and contacts. The detailed features were not mentioned in this first section.

Afterwards, they were asked to describe what their ideal Alone Mode would look like. Guiding questions were formulated in case the discussion with participants needed facilitation (e.g., which applications and contacts would they allow, are there any features they think are important to include, should it be easily accessible, etc.)

In the second part of the interview, participants were given additional details on the features of the Alone Mode, developed in alignment with feedback from prior iterations. It was specified that disabled apps were toned down in colors to reduce distractions. We further described the opportunity to customise a motivational message, which is intended to encourage users to stay away from disabled apps by creating a design friction. The alert keywords feature was also characterized as an opportunity

to select keywords that will re-enable notifications in case of emergencies. Finally, the option to select an automatic no-reply text was also presented.

Then, participants were asked to share their screen to perform representative tasks and explain their actions out loud. At the end of the session, participants were asked to express whether they would see themselves as benefiting from the solution if it existed and if yes, whether there were any missing features.

5.5.1.1 After the interview

The fifth iteration resulted in **2 hours, 50 minutes and 13 seconds** of audio recordings, which were fully transcribed. These transcriptions as well as the notes taken during the think-aloud usability tests were subject to close reading by both researchers. We identified selected quotes that best demonstrated participants' feedback and suggestions for further improvements. These quotes guided the future direction of the final prototype solution and facilitated the formulation of the fifth iteration.

5.5.2 Findings

5.5.2.1 Students' Reflections on Alone Mode

In the first part of the usability interview, participants were asked to specify a context in which they would use the prototype solution. The responses provided were mostly related to productivity-related tasks. Participants primarily noted that they wanted to minimize distracting elements such as notifications, whilst working or reaching a predefined personal goal, as this disturbed their ensuing concentral level.

> *"I will mostly use it for productivity since normally, you are prompt to check your phone once it makes noise."*
>
> - ***Participant 32***

> *"I think I would go with the productivity part. Mm-hmm. Because of course like when you hear all your notifications and everything like while you're doing something you're more prone to kind of stop and go check it."*
>
> - ***Participant 35***

Furthermore, an important value, as noted by participants' choice of enabled applications during the Alone Mode, is connectedness. Participants mainly chose applications used in the frame of social interactions with family, friends and colleagues to stay active. Therein, the most prominently mentioned apps were WhatsApp, Messenger, Email apps (for work and/or school) and the Calendar app (for checking their

schedule). Participants further reported they would choose to allow their close family members and friends as well as their work colleagues to reach them during the Alone Mode.

> *"I will leave on my messaging apps since you don't get distracted when you answer a message. Facebook, Twitter, and Instagram are the apps where you go for 30 sec and lose track of time."*
>
> ***- Participant 36***

> *"Um, I think if it was during the time where I was working, I would only leave like people that are directly related to my work so that they are able to contact me. Also my family."*
>
> ***- Participant 35***

When asked about when they would turn on the Alone Mode, participants seemed to agree that they would primarily prefer to stay disconnected during their working hours. Still, they emphasized the importance of flexibility in the Alone Mode, as their needs would differ according to their weekly time schedule. Nonetheless, participants explicitly noted that they would not use the Alone Mode in the evenings and weekends. As noted in participants' statements from prior iterations, this could be due to the fact that these time frames are associated with relationship maintenance as well as relaxation, which are activities commonly performed on the smartphone.

> *" I want the mode to be off after my working hours. Normally, this is the time when I connect with people and check social media."*
>
> ***- Participant 35***

> *"I would like it to be off during the evenings, lunch breaks also weekends. I want to be connected to my social media and I want to get notifications from there. "*
>
> ***- Participant 32***

Besides that, when asked about their design preferences, respondents agreed that the design should be consistent with the phone design and easily accessible, i.e., from the drop-down menu where Do not disturb and Sleep mode are located.

5.5.2.2 Think-Aloud Tests

In the second part of the interview, a link to the Alone Mode prototype was sent to the participants and they were asked to share their screen whilst performing the predefined activity tasks. This thinking-aloud test was performed to collect participants' feedback on the interface design and its flow to detect and eliminate potential misunderstandings. Their statements would also constitute the further improvement of the final prototype solution.

First, participants were prompted to localize the Alone Mode, which they could find in the dropdown menu. This task was completed easily and rapidly by all participants. They agreed that the dropdown menu would be the first place they would check, when asked to turn on any type of built-in system mode. Next, participants were asked to personalize their Alone Mode by selecting their allowed contacts and applications, as well as designate alert keywords. A majority of participants agreed that the current interface gives them a good overview of their available options (Figure 5.27). However, some participants noted that they were unsure if these settings were permanent or if they would have to re-set them again, when turning on the Alone Mode next time.

After personalizing their settings and turning on the Alone Mode, the respondents were asked to go back to the smartphone's home screen. They were asked to try accessing an application that was not part of their allowed apps (i.e. YouTube). Before performing the task, all participants pointed out that this might not be possible, since YouTube was greyed out (Figure 5.28).

Subsequently, participants seemed to be pleasantly surprised when a motivational message popped up reminding them that they are in Alone Mode and encouraging them to continue avoiding distractions (Figure 5.29). They added that they would like to have the option to customize this pop-up notification according to their personal preferences. Moreover, they noted that they did not want the option to directly turn off the mode from the pop-up notification. Instead, they preferred delaying this option by adding an extra step to the interaction flow. Thereby, participants are referring to design frictions, which are believed to promote more mindful interactions [16].

> *"I like that I have a motivational message. I think I don't want to be given the option to turn it off directly. Instinctively you will just go to turn it off, because it is just one more tap. Maybe add an extra step or go to "Settings"."*
>
> ***- Participant 33***

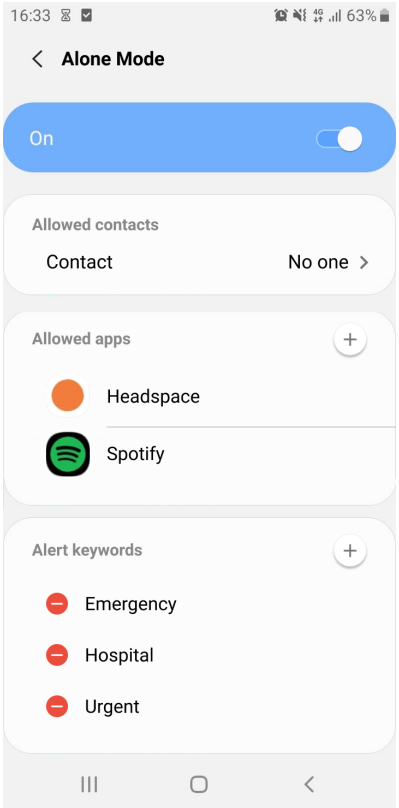


Figure 5.27: Alone Mode Overview

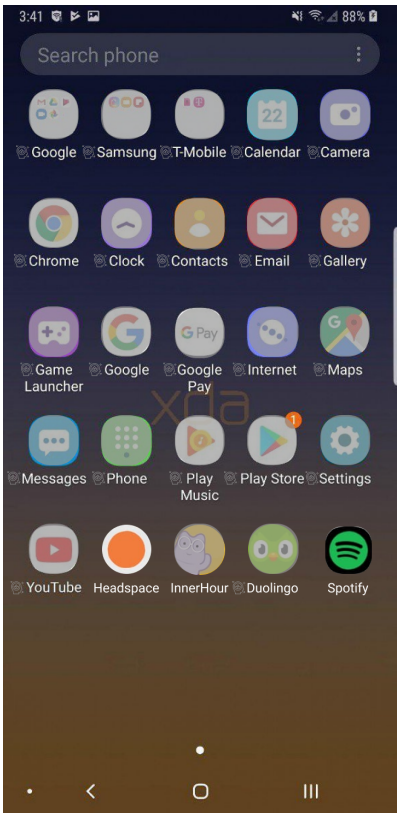


Figure 5.28: Home page while Alone Mode is on

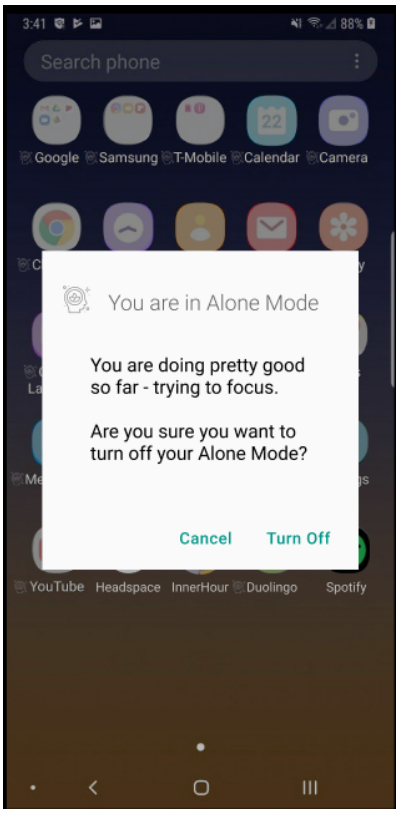


Figure 5.29: A motivational message is displayed when a disabled application is opened

> *"I would like to have an extra step or maybe include in the message that I need to go to Settings in order to turn the mode off."*
>
> - ***Participant 35***

Lastly, participants were asked to access an application that they had allowed in their Alone Mode settings. Then, they were asked to express their opinion on the pop-up notification that would appear next. This notification mentions that contact has tried to reach them through email, by using one of their emergency keywords (Figure 5.30). All participants agreed that they would, first, like to see a snippet of the received email or at least, a fragment of the sentence in which the emergency keyword was included. Some participants explain further this decision by referring to newsletters that often include expressions that they would be likely to use as alert keywords. Finally, participants noted that they would not like the Alone Mode to automatically turn off in the case of a notification being enabled due to the detection of an alert keyword. Instead, they would like the option to choose if they want to turn off in the Alone, when this type of notification appears.

> *"I want to approve when my Alone Mode is turned off and if I reply I don't want the Alone Mode to be turned off automatically. "*
>
> - ***Participant 32***

> *" I would prefer to answer the message and still have the Alone Mode on. "*
>
> - ***Participant 35***

> *"If I get an emergency I guess I won't be focusing anymore or anything like to attend emergency writes. "*
>
> - ***Participant 36***

5.5.2.3 Final thoughts

At the end of the session, participants were asked to share their general opinion about the presented solution. Several participants expressed noting similarities with Android's Focus mode. Still, they noted that the alert keyword feature was an attractive unique value proposition, differentiating the solution from other applications, as this would allow them to set up emergency keywords for close family members and friends. Still, some participants expressed concerns with regards to their privacy, as they noted that this solution would have to scrape the content of their incoming notifications to detect alert keywords.

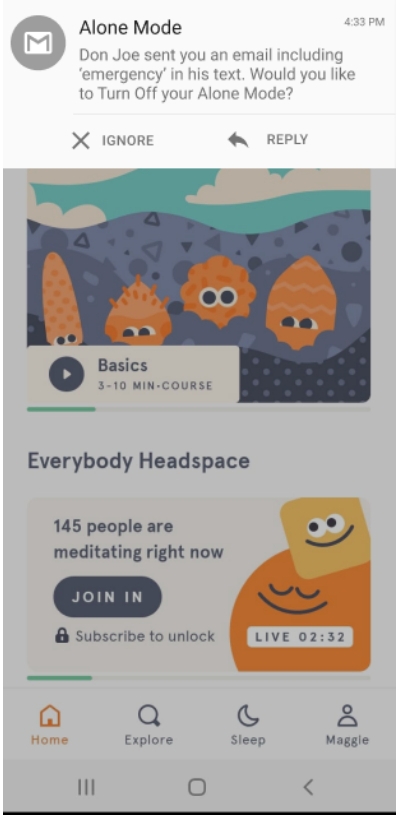


Figure 5.30: Emergency keyword was used while in Alone Mode

> *"I will use it during my studies. I think it is a nice idea. I am a bit afraid of my privacy because this means that the app will read all my messages in order to see if an alert keyword has been used."*
>
> - ***Participant 32***

Moreover, another concern raised was the lack of continuity across different electronic devices. Participants noted that, despite being on Alone Mode on their smartphones, they could still access distracting platforms from their personal computers.

> *"I think it might be. The problem is that in case I can't access my YouTube from my phone I might just go to my laptop."*
>
> - ***Participant 32***

In terms of the design, all respondents described the flow as being easy-to-follow. They positively commented on the minimalistic design, by noting that it gave them a good overview of everything simultaneously. Furthermore, they liked that the disabled applications were greyed out during this mode of interaction, as it served as a cognitive nudge. Moreover, participants expressed that the Alone Mode could be a good tool for minimizing distractions during productivity-related tasks. Yet they seemed unsure on whether the solution would be able to promote a healthier relationship with the smartphone on a long-term basis. Still, they agreed that this solution is a good first step towards establishing more mindful interactions with the smartphone.

> *"I think the problem is that we're all aware that our habits are not healthy. But I think very few of us are actually willing to do something about it. So maybe this is like a small step towards that (..)"*
>
> - ***Participant 34***

> *"I just use my phone without any purpose. And I feel like this will help me to be more conscious about it, which is, which I think is accomplished by this message that is displayed when you try to click on an app that is grated, shaded."*
>
> - ***Participant 36***

5.5.3 In Summary

In conclusion, five usability interviews were conducted over two days. All interview participants expressed interest in the presented solution. They noted that this solution was an effective manner to stay conscious of their screen time, as it would allow them to limit distracting elements.

> *"I think so because it will allow me to not give in to distractions as much and if I see that I am in Alone Mode and it doesn't give me access to distracting apps this will help me to put down my phone and continue focusing."*
>
> - ***Participant 33***

Despite one respondent noting that she could not picture herself incorporating it into her daily life, she expresses that she could potentially envision herself using this solution to limit the distracting elements of her smartphone in certain situations.

> "I don't think I would incorporate it in my daily routine, let's say but certainly if, if I would decide somehow to, you know, take a break from my phone, I think it would be really helpful."
>
> - ***Participant 34***

She further explains that she is a social person and the smartphone is an important component for her to connect with people in her life, as it easily solves her needs.

> *"I can't picture myself using it. I am associating it with existing apps, so it's like I put a label on myself. I realize that I am always seeking to text people, meet people. And if I am not physically with them then it is through my phone."*
>
> - ***Participant 34***

> *"If I stop doing it, maybe it is the new normal. I think that FOMO is what makes people use social media so if there is something about that I would use it."*
>
> - ***Participant 34***

The usability interview also provided insight into how the Alone Mode would be used in practice by the research participants, and which features participants found most important. Participants expressed that the interface design was easy to navigate, as they performed the assigned tasks rapidly. Moreover, they seem to envision the usage of this mode of interaction within the context of productivity, as they note that they would be most likely to use it during working hours and in accordance with classmates or colleagues.

As this is not our aim with this prototype solution, this highlights the need to revise the interface design to prepare and further contextualize users in the variety of potential use cases of the Alone Mode. As further design revisions were performed in alignment with participants' feedback and suggestions for supplementary features, this series of improvements, leading to the creation of the final solution, will be further discussed in the next section.

5.6 Final Prototype Solution

5.6.1 Features

The feedback provided by participants throughout the usability interviews pinpointed potential problem areas in the user experience. Therefore, improvements are made to the existing Figma wireframes (Appendix A.5) (Prototype A.5).

As mentioned earlier, we deem it necessary to further position users in the Alone Mode 's envisioned use cases, as participants mainly associated its capabilities to productivity-related tasks. A preparatory walkthrough of the Alone Mode is, therefore, introduced to the start of the interface design to allow a successful onboarding of first time users. These screens aim to help users better understand the different features that the solution is providing (Figure 5.31):

- Create a name for your personalized Alone Mode
- Set start and end date
- Choose allowed contacts
- Choose allowed apps to use during your personal mode
- Choose time slot and select days in the weekly schedule

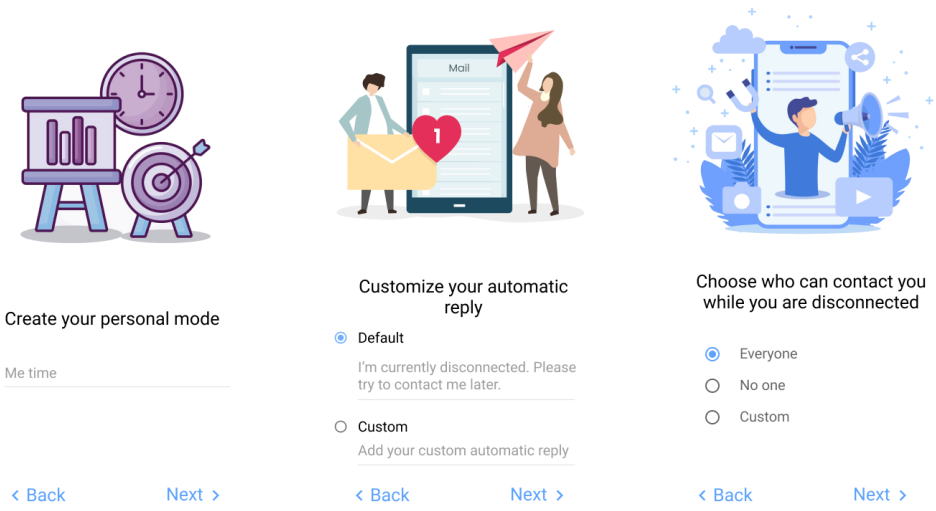


Figure 5.31: Part of the onboarding screens

- Customize your motivational messages and the automatic no-reply text received by individuals trying to reach during your Alone Mode
- Select alert keywords

Research participants' expressed concerns about saving their Alone Mode settings. They also requested flexible modes due to the varied nature of their weekly schedule. Thus, users can now create and save many Alone Modes according to different routines. We also add the option of turning the mode(s) on or off, on-demand, to accommodate unforeseen needs of the Alone Mode.

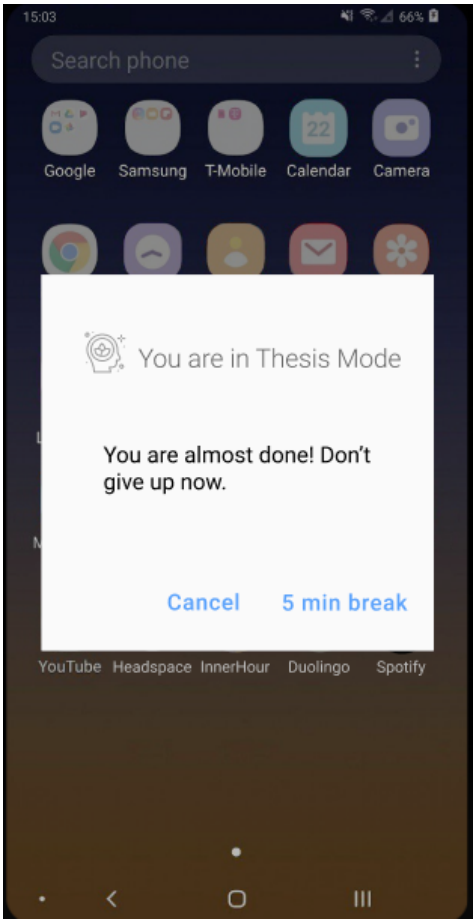
Users also have the option to "take a 5 -minute break" (Figure 5.32a) to access their disabled applications. This decision is in light of one participant's reflection. Here, he explains that being completely cut-off would tempt him to turn off the Alone Mode altogether out of frustration.

Notifications, enabled by alert keywords, now include a preview of the sentence, in which the specific keyword appears. Thereby, the user can decide, if they want to ignore the notification or continue to see the whole message (Figure 5.32b).

This is an overview of the changes performed on the interface design and its interaction flow. Participants' comments and suggestions are at the center of these revisions. The animated explainer video, created for this research study, shows the final prototype solution.

5.6.2 Explainer Video

The explainer video of our final prototype solution, Alone Mode, can be accessed through the following URL: `https://youtu.be/KqQlOtfgKDw`



(a) Motivational message giving the option of a 5-min break

(b) User receives an email with an emergency keyword included

Figure 5.32

CHAPTER 6

Discussion

Five distinct phases of design research led us step-by-step to a richer understanding of what university students believe are problematic relationships to their devices. In assembling these findings for the development of a final prototype solution, we have come across several themes that we would like to review further in this Discussion section.

This section will first discuss select findings from this design research. We have singled out notable learnings which we would like to address further in detail here. Secondly, we will reflect upon the elements that have shaped our design choices embodied in the final prototype solution.

6.1 Learnings: Factors Shaping the Individual User's Experience

6.1.1 The Mobile Device as A Multi-Tool

Throughout this process of design research, participants made several comparisons to the laptop, when describing their smartphone usage, in terms of its multifunctionality characteristic. Still, participants accentuated the *on-the-go* nature of the smartphone, as its unique value proposition, as it allowed them to preserve their connectivity (Section - Connectivity 5.1.2.3). Acting initially as a tool for human contact, in personal and professional contexts, the mobile phone now also represents an extension of the affordances presented by the laptop, as noted by participants.

> *"When I am making calls or anything that doesn't require notifications, not for emails - I go to my laptop to read them. But anything with notifications - like Twitter, Messenger, LinkedIn, Tinder. Music on the road. Anything that I am outside, it is a useful tool - navigate, pay for something."*
>
> ***- Participant 10***

Yet, amidst communication- and productivity-driven interactions, the smartphone also represented a popular source for entertainment-focused interactions for participants. This promotes an overexposure to the smartphone in terms of screen time, as multiple needs are concentrated into one device, as reported by participants. Thereby, participants are left to monitor and navigate these different threads of interaction accordingly.

> *"I feel like if I'm bored, I use my phone. If I want to say something to my friends or use my phone, if I want to learn something, I use my phone."*
>
> - ***Participant 6***

The multifunctionality of the smartphone also allows other daily ad-hoc tasks to be satisfied, as it accommodates the functionalities of several items (i.e. alarm clock, watch, music player, map). This element of convenience brought on by the smartphone reinforces participants' dependency on the smartphone in their everyday lives. This is clearly reflected in participants' articulations of the use of their phones to wake up, commute, check the time, listen to music, sleep, etc.

> *"Weekday, (...) I need it cause there is a lot of things I check on my phone - train situation, health recommendations, alarm, making sure friends and family are alive, time, really need music."*
>
> - ***Participant 3***

> *"I use it to wake up, to check the time, to check the busses, I have the travel card on it - it is necessary for my everyday life."*
>
> - ***Participant 11***

> *"Even if I have my watch on my hand. I'm not looking at it. I'm just looking at my phone. I don't know why but it's usually like that."*
>
> - ***Participant 12***

Additionally, with the diversity of content available online, their smartphone is also becoming a source of inspiration. Thereby, the online content has a direct impact on their actual everyday life decisions, especially in terms of fashion, style, food, and sports.

> *"I also see a lot of recipes and exercises and I just implement these things into my daily life"*
>
> - ***Participant 8***

The findings of this research therefore emphasize the need for designers to consider the multifunctionality of the smartphone.

6.1.2 The Mobile Device as a Willpower Battle

Along with participants' increased dependency on their devices for a variety of usage scenarios, the nature of their smartphone usage mindlessly shifts from communication- and productivity-oriented interactions to more entertainment-focused interactions within the same session. This frictionless user experience thereby blurs out participants' initial purpose of usage. Therefore, participants rely heavily on their willpower to make meaningful interactions in terms of their smartphone usage, especially when being or feeling alone. Several participants described personal experiences of lack of willpower as a weakness, displaying a constant mental battle to stay away from their smartphones.

> *"(...)the question of weakness is about willpower and willpower is almost impossible to kind of manipulate unless you do it yourself. You set yourself the parameters and whatever. Sticks and stones I talked about, like risks and rewards, you set them up. You can give the tools for someone to set it up. But you cannot go past that."*
>
> - ***Participant 16***

As revealed by the quotes below, participants showed stronger willpower to stay away from their smartphone devices, when finding themselves in settings with other individuals, such as the workplace, the classroom, and group work situations:

> *"When I study I cannot keep focus that well but where I work I can keep focus much more so during work I think there are hours when I when I don't even touch my phone."*
>
> - ***Participant 1***

> *"In class, I don't usually use the phone cuz I need to listen so."*
>
> - ***Participant 2***

> *"During group work, I am usually more focused on doing the job than on my phone. Sometimes for some messages, but for around 5 min."*
>
> - ***Participant 8***

The findings of this research therefore underline the need for designers to consider the smartphone a battleground of will in the path to more mindful interactions. Design frictions were therefore at the center of our framing of Alone Mode, in light of how participants spoke about their weakened sense of control on frictionless smartphone experiences.

6.1.3 Ecology of Personal Values

Another common thread in this process of design research is the underlying normativity associated with students' ecology of personal values. Participants often referred to hidden rules, shaping their habits, cues, and expectations for their personal smartphone usage.

6.1.3.1 Personal Desires as Social Norms

Social norms represent personal and collective origins of motivation [22] , in which personal desires can be paralleled to participants' ecology of personal values, dictating their behavior and decisions on- and offline. Almost all participants uniformly point out the desire to *remain connected*, as their most important value (Participant 8, 9, 11, 12 and 13 interviews). This comes as no surprise, as participants' exhibited a concentrated focus on relationship maintenance with family and friends abroad throughout this process of design research. Therefore, participants' desires are primarily enforced by individuals close to the participants, especially their parents or other close family members. Therein, participants often refer to a norm in smartphone usage and screen time inspired by their parents' online behavior in their youth. Interestingly, participants do not seem to perceive this as a disproportionate comparison, considering that their parents' screen time evidently took up a lower percentage of their everyday lives, due to their early and limited nature of technology in the past.

> *"I'm really just disappointed or mad at someone who is all the time at their phone, even if they're taking pictures for Snapchat, like please live the moment now and here with us and make some memories. And when I'm looking at pictures from my family when they were in their 20s my parents with their friends, they were like having all the time fun. If I look back in 20 years and see myself on pictures with my friends looking at our phones, I'll be really sad about that."*
>
> - ***Participant 12***

As participants appropriated what can be perceived as unrealistic norms for their own online behavior, they expressed constant feelings of tension and pressure to actively monitor their screen times within the appropriate scales. Therein, they touched upon concepts of 'living in the moment' versus 'online presence', presenting them as opposed concepts. Thereby, it seemed as if participants aspired for a life without the smartphone, whilst wanting to belong to a society almost necessitating the usage of a smartphone.

> *"So ideally, I would like to spend 0 times on my phone, but at the same time, I would like to do some work and since my work is digital, I would say I want the minimum time possible on my phone."*
>
> - ***Participant 10***

This is further expressed in the fact that participants showed less interest in reducing their time on specific apps and instead, they were focused on reducing their overall screen time:

> *"I actually didn't saw that before cause I was focused on the fact that all my screen time was above average."*
>
> - ***Participant 12***

Other values that participants aspired to incorporate further into their everyday life, online and offline, were related to *personal development and growth.* Participants noted that they aspired to mature in a variety of areas, ranging from mindfulness, physical health and mental wellbeing to their professional and academic journey. These areas were perceived as important by participants, as they shaped their vibrant student lives and consequently, impacted their mindset, behaviour and decisions. Within this ecology of personal values, participants' comments throughout this process of design research showed a particular focus on productivity.

Participants often seemed to measure their screen time according to their productivity level, as it was believed to measure their achievements and growth. Actually, when participants were first presented with their smartphone-related challenges in the first iteration, their first reaction was to provide excuses for their screen time or to express an interest in limiting their screen time in order to become 'more productive':

> *"I feel like lately I have been too much in my phone (...) If I should be productive, it should be one hour maximum"*
>
> - ***Participant 6***

"(...) I feel a bit more productive when I am spending less time. I am focusing more on human interaction."

- ***Participant 8***

In alignment with this perspective, participants' anecdotes throughout this process of design research indicated that a higher than desired screen time is perceived as negative and counterproductive, as participants expressed satisfaction with a decrease in screen time. In this respect, participants used terms such as "useless" and "waste" to describe smartphone usage perceived as excessive, especially when it comes to social media. Likewise, they employed terms such as 'guilt', 'shock' and 'embarrassed' to describe their feelings on their personal screen time.

"(...)that's why I don't have Instagram on my phone. I don't have the app because I was wasting too much time (...) lately I have not been productive so I have been watching Netflix (...) I mainly waste my time from eight till 11 (...) I know I'm wasting my time because I'm not doing anything."

- ***Participant 6***

" I feel good, that I spend less time on Facebook (...) This means that I have not spent my time on useless stuff. This makes me feel really good."

- ***Participant 7***

"I think when I first saw the screen time, I was surprised and thought it was very high and kind of shocked because I didn't think it was that much and then when I send it in and saw the others that I started to feel embarrassed."

- ***Participant 13***

Still, the scope of participants' understanding of productivity could be argued, as several participants also related this concept to a desire for more meaningful interactions. This is further noted in their interactions with the Alone Mode in the fifth iteration, in which they directly positioned the features for the promotion of meaningfulness within the frame of enhanced productivity.

6.1.3.2 Digital Intimacy for Human Connection

As aforementioned, another important value shaping participants' behaviors and decisions on- and offline is connectedness as defined by a sense of belonging and intimacy [57]. Therefore, a common thread described by participants is the search for human connection and digital intimacy through their smartphone relationships and activities. This phenomenon is especially prominent in situations in which the participants are or feel alone, as several participants described their detachment to their smartphone in contexts where they are surrounded by friends or family.

> *"I would say because of the connectivity with other people but (...) again it really depends on the context (...) the only context I couldn't live without my phone is if I was alone, but if I'm surrounded by people, doing a nice trip together with someone or something like that, then I would definitely be able to do it"*
>
> - ***Participant 1***

> *"I know that when I was like, back in France, sometimes I didn't use it for that one day and my friend was calling my brothers. "Oh my God, is she okay?" because yeah I just forget about it.."*
>
> - ***Participant 2***

Participants pinpointed a phone call as the most basic human contact and the highest form of digital intimacy that the smartphone could provide. They employed the term "connection" multiple times to refer to a phone call activity and described these experiences as intimate. Therefore, several participants additionally noted that the most important feature on their smartphone is the phone call.

> *"Yeah, I feel like phone calls are definitely intimate."*
>
> - ***Participant 1***

> *"[Without my phone, it would be harder] for many things, mainly to call my parents and have this connection with them. This is my only connection with them, like the phone calls, so."*
>
> - ***Participant 12***

> *"I think calling [is the most important] because even if I don't have the social media, I can still call up a friend and start to conversate but if I were not able to see or follow what was happening around me and not able to contact anyone, I think it would just be.. Plus not being able to contact anyone, I think it will be even harder."*
>
> - ***Participant 13***

Still, this need for digital intimacy is also dependent on the type of relationships that participants are maintaining, as participants in romantic relationships as well as younger participants with seemingly closer relationships to their parents craved this human connection more, as noted in their statements.

> *"When I used to have a girlfriend, then I did [longer phone calls] but I actually think that since we broke up, I haven't even made one single phone call. Yeah, only some really short WhatsApp calls or messenger calls just like 'Oh, where are you?', 'I'm here' and stuff like that."*
>
> - ***Participant 1***

Some participants also referred to this need for human connection and digital intimacy as a need for affirmation and care. Notifications signified signs of attention and interest for them, and, even though notifications could be distracting, participants refer to them as a positive ego boost.

> *"Yeah, that always feels really good to me when I get messages on messenger because that means that 'Yeah, somebody cares about me'."*
>
> - ***Participant 1***

> *"(...)even if sometimes I don't check my notifications, I love to have notifications (...) [Is it because you feel the need to hear that people are looking after you or is it because you want to know what's going on?] Both."*
>
> - ***Participant 2***

Nonetheless, participants were very determined to state the difference between digital and real intimacy, as they all expressed a preference for real intimacy, despite their appreciation for digital intimacy in their increasingly globalised and international communities.

> *"I think many things are way better when you have a human connection than with your phone."*
>
> ***- Participant 8***

> *"I am a bad texter in general. I prefer to talk with people face to face. I don't get the same feeling when I am talking with people face to face."*
>
> ***- Participant 10***

The findings of this research therefore underline the need for designers to consider the ecology of personal values in the path to more mindful interactions. In that respect, the Alone Mode's alert keyword feature was inspired through a richer understanding of participants' desire for connectedness. This unique value proposition distinguishes the Alone Mode from the modes offered by Digital Wellbeing (Android) and Screen Time (iOS) (See section 4.4), as users define and control their urgent communications by specifying keywords that can re-enable notifications in case of emergencies.

6.2 Reflections: What shaped our design choices?

6.2.1 Methodology: Reflexivity

The empirical work we describe and refer to in our design research is primarily qualitative in nature, and as such subjectivity and reflexivity are in fact valued. Therefore, it is important to be transparent about the fact that our design choices are heavily shaped by our experiences as individuals and as members of this demographic group [23]. This helped us establish a baseline of honest engagement throughout the decision-making process in this process of design research and acknowledge the disrupted knowledge–power relationship [56]. This reflexive attitude also ensures the quality of the findings collected and developed, as we, as researchers, could more easily understand and address research participants' challenges.

6.2.2 Qualitative Interviews: Language

A primary component of our reflexive engagement in this research process concerns attention to the language employed by us, as researchers and by our participants; and in particular with respect to the term addiction. Despite a few tongue-in-cheek comments from participants, the overall language participants used was quite informative when it comes to the debate around the use of the term 'addiction'. For instance, one participant referred to their smartphone by adopting the expression *'way too intense'*. This form of expression is clearly grounded in human experience, and therefore perhaps more informative from a design perspective.

> *"If I have like 5 minutes free, I immediately grab my smartphone and check something so yeah I think it's way too intense in that regard."*
>
> - ***Participant 17***

The emotional tone of the interviews also allowed a richer understanding of the human experience described by research participants. For instance, in the initial user studies, one participant spoke in very excited terms about a bedtime routine, which he also described as 'horrible', 'useless' and 'scattered'. As the tone of this statement contradicted the vocabulary employed, it highlighted the double-edged nature of this research participant's smartphone usage. This apparent paradox highlights the need to question how 'horrible' this routine actually was, when it clearly also played a meaningful part in the participant's day.

> *"And then I have a really long going to bed process because I check crazy amounts of useless information on my phone like, okay, I take on my PJs, then I do something on my phone then I go and brush my teeth then I do something on my phone then. I don't know - I go to the shower and then do something on my phone like it's really scattered. Yeah, my bedtime routine is is horrible"*
>
> - ***Participant 1***

Our framing of Alone Mode was therefore inspired by awareness of how participants spoke about their own experiences – rather than addiction, as users were more concerned with finding the right fit for technology within their lived experiences and in relation to their connections to others.

6.2.3 Gray Zone: External Factors

Another key takeaway from this design research is the need to avoid black-and-white discourse around students' use of technology. This is comprehensively highlighted in a specific finding from our online survey, which showed that 57% of university students find smartphone activities addictive (Figure 5.15), but a plurality (39.5%) don't believe that they are addicted to their smartphones (Figure 5.16). A recurring element that shaped our design choices was therefore an extensive consideration of external factors, promoting the 'gray zone' discourse within participants' experience and understanding of their personal smartphone usage.

6.2.3.1 Consciousness vs. Awareness

Correspondingly, participants seemed to roam fine lines between states of awareness and consciousness, when discussing their smartphone usage. All participants showed

signs of awareness at minimum, as they would effortlessly describe their preferred smartphone activities, their routines and their habits. Yet, they often didn't demonstrate a high degree of consciousness, by connecting these thoughts to reason and judgment in their daily lives. Several participants noted that their participation in this design research represented the first time that they had actively reflected upon their screen time and smartphone activities.

> *"[Surprise about Instagram's high placement] Yeah. Because when I go on Instagram, it's like 10 seconds and then you know, so it's crazy (...) Like what the fuck?"*
>
> - ***Participant 2***

> *"I am surprised, it makes sense but never thinks about it timewise; don't feel guilty or sad about it"*
>
> - ***Participant 3***

> *"I'm usually not checking my screen time, even if I have this function"*
>
> - ***Participant 12***

These reflections remind us of the value of supporting critical reflection through design. Designers might draw on framings of experience such as that provided by Kahneman's focusing illusion [1] to enable such practices – highlighting the ever-biased nature of reflection on our own behavior.

6.2.3.2 Intrinsic vs. Extrinsic Motivations

Many participants spoke of intrinsic and extrinsic motivations during reflection on their smartphone behaviors and related decision-making. Intrinsic and extrinsic motivations can be classified as types of incentives motivating individuals, in which intrinsic indicates a perceived enjoyment and extrinsic invokes a perceived usefulness [66]. Despite certain participants referring to extrinsic motivational elements, such as rewards and or punishments, a vast majority discussed the importance of intrinsic motivations throughout this process of design research. One participant in the initial user studies pointed out that his lack of interest in personal retrospection resulted in a shortage of intrinsic motivations to change their smartphone relationship for the better.

[1] Kahneman, Daniel, et al. "Would you be happier if you were richer? A focusing illusion." science 312.5782 (2006): 1908-1910.

> *"[Why don't you give them up?] Good question, I don't know. I have to let these things sit through my head so I can feel that the decision was mine instead of feeling like it's addictive through this interview."*
>
> - ***Participant 10***

Intrinsic rather than extrinsic motivations are therefore more likely to lead to long-term maintenance of behavior [21]. This perspective is also highlighted in the final prototype solution, as the core element of the Alone Mode is to activate it as an act of autonomous choice.

6.2.4 Ethical Considerations

Our design choices at each stage in this process were also driven by our own ethical reflections. Participants' comments generally suggested a certain level of awareness of potential ethical concerns. For instance, ethical issues of tailoring content in the Content Digest solution were raised in the third and fourth phases of this process of design research. Participants additionally expressed concerns on issues of privacy and transparency.

> *"Developing something like this (...) is full of ethical issues (...) I've been to conferences where a lot of ideas like this have been kind of floated. It's just that notion of tailoring news. Or the 'you're the censor' of what someone else receives is, it's problematic. I mean, that's not worse than the problem of getting a continual loop of content"*
>
> - ***Participant 24***

> *"Where's my privacy in this? There's going to be a filter that will decide what I want to see and how to present it to me. And it's actually going to know what I'm looking at all time"*
>
> - ***Participant 4***

Again, privacy was generally a key factor for participants, as they raised similar concerns with the final prototype solution, Alone Mode. Here, participants raised privacy concerns as they noted that the solution's alert keywords feature would necessitate a scraping of the content of their incoming notifications to detect the users' selected keywords.

> *"I will use it during my studies. I think it is a nice idea. I am a bit afraid of my privacy because this means that the app will read all my messages in order to see if an alert keyword has been used."*

- Participant 32

These reflections therefore emphasize the need for designers to support different ideals of ethical standards through design. Our framing of Alone Mode was therefore inspired by awareness of participants' distinct privacy preferences – encouraging individuals' capacity to shape their own behaviour.

6.3 In Summary

Participants often spoke of how 'being alone' frequently motivated phone usage. Therefore, the final solution was aimed to be a more positive, framing of aloneness. Thereby, this Discussion section intends to specify the implication for design inspired by this process of research design and to clarify select underlying decisions leading to the Alone Mode.

As mentioned in the first part, due to the *multifunctionality* of the smartphone, several needs are concentrated into one device. Therefore, participants describe a heavy reliance on their *willpower* to make meaningful interactions. Yet, their sense of willpower noticeably decreased, when feeling or being alone. Thereby, this personal experience was recognized as one of the major reasons underlying students' engagement with their mobile devices. This personal experience was especially considered *problematic* by participants in light of the complex, and at times paradoxical, relationship between their personal values and normative perceptions of the need to remain connected. Participants noted a need for *digital intimacy* and human connection in this process of design research. Still, their comments express aspirations for a life without the smartphone. As a result of these paradoxical desires and unrealistics standards, participants often felt pressured by their smartphone usage, especially in the frame of aloneness.

This is why our chosen final solution more fully respects the complex human and subjective experience of device usage by refraining from judgement and increasing individuals' capacity to shape their own behaviour. Our design research was primarily qualitative in nature. Each of our design choices along the way were therefore shaped by reflexivity, the overall language participants employed, external factors framing participants' experience and understanding of their personal smartphone as well as ethical considerations.

CHAPTER 7

Future Work

Our forward-looking research addresses the challenge of realising healthier relationships to our mobile devices. Within this design-oriented process, select decisions and actions have been left for future consideration due to time constraints.

7.1 Technical development

Our final proposal for a technological solution to the challenge of realising healthier relationships to our mobile devices is created on Figma to simulate the envisioned user experience of the Alone Mode. As a further perspective, it is important to consider the technical development of this prototype solution. This would also allow the opportunity for longitudinal studies, in which research participants' interaction with the Alone Mode could be studied in further depth to study the solution's impact on a long-term basis as well as develop an ecologically-valid understanding.

7.2 Personal Informatics System

In the last phase of this process of design research, some participants expressed interest in receiving weekly notifications related to their performance. In alignment with this, they also suggested the addition of a personal statistical dashboard, in which they can track their personal development for further encouragement. These supplementary features relate to the concept of a Personal Informatics System (P.I.S.), which is a type of system allowing users to collect and reflect on their personal information for enhanced self-understanding [42]. Positioning the Alone Mode within the stage-based model could be an area for future work. Nevertheless, this would arise different challenges related to the quantified self and self-tracking, which would necessitate additional qualitative and/or quantitative research. Moreover, a P.I.S would require a different design aesthetic, than the one achieved through the five distinct phases of design research.

7.3 Additional modes

A majority of participants also mentioned the need for additional modes of interactions within their smartphones. Such an approach could serve to further the value of Alone Mode by situating it within an ecology of multiple means of interacting with our mobile devices. The idea of adding a chill mode, for instance, was suggested by few participants. They believed it would help them use their smartphones in a more meaningful manner during 'phone breaks', by activating this mode as an act of autonomous choice.

7.4 Visibility and accessibility

Finally, it is important to continue taking responsibility for habit-making designs. Despite technology developers like Google, Apple, Facebook, and TikTok adding features for digital wellbeing, we need to prioritize this further. These initiatives and features, including the Alone Mode, need to become more visible and easily accessible to establish meaningful smartphone habits and routines.

7.5 Limitations

A key limitation in this process of design research was related to the impact of the COVID-19 lockdown measures on the conducted interviews. A large majority of the sessions were conducted online, which resulted in constraints on the number of participants in the respective group interview sessions. Furthermore, the stay-at-home restrictions also affected the nature of the interviews, as the material and activities had to be re-adapted for online execution. Thereby, it was also more complicated to retrieve design material, such as sketches and scribbles, from the research participants.

The online interviews also created an additional layer of distance between participants, as it became more difficult to build rapport within the sessions. Additionally, in the frame of a design research project, it would have been more valuable for us to observe participants' reactions and emotions face-to-face.

CHAPTER 8

Conclusion

Within this research study, we have gained a richer understanding of the challenges smartphone use poses for students today.

The first phase of the design research was initiated with 13 user studies. These were conducted to define the themes and reasons underlying students' engagement with their mobile devices. Subsequently, as part of a mixed-methods approach, an online survey, as a second phase, was shared to develop a richer understanding on how students feel about their smartphone behavior. This allowed us to gain a rich understanding into the daily narratives and personal incentives that could potentially promote an addictive smartphone behavior amongst university students. Additionally, this led us to identify three user scenarios that promote university students' smartphone usage - the phone break, fear of missing out and loneliness.

The creation of several novel design solutions to the challenges raised by participants were then conceptualized and developed for the third phase of this process of design research.We conducted group interviews to gain actionable insight into these 6 initial concept ideas. Participants expressed an overall preference for the solution ideas that addressed problems such as losing track of time and the infinite content loop, as those were perceived as problematic areas in their current smartphone usage.

This led us to further develop these 3 solution ideas, which resulted in the creation of lo-fi prototypes, discussed and evaluated by participants in the fourth phase of this process of design research. Finally, we chose to pursue further development of the Alone Mode concept, as it particularly demonstrated greater potential for scalability, ease of access and meaningful interactions. Initial wireframes were developed and presented to 5 research participants during the last phase of this process of design research. Here, the usability interviews highlighted participants' interest in additional personalisation features in the Alone Mode. Therein, they suggested the opportunity to create multiple modes, which they could connect to their personal goals and time schedule. Participants' comments also highlighted the need for an onboarding process to frame the Alone Mode within the practice of mindfulness, as they primarily linked the solution to productivity-related tasks. The areas shaping our design choices were also discussed and reflected upon in terms of participants' ecology of personal values, the reflexive nature of the research and ethical considerations.

In conclusion, this research project resulted in five distinct phases of design research contributing with a rich understanding of the challenges smartphone use poses for students today and producing our final proposal for a technological solution, the Alone Mode, which we hope will serve as one step on the path towards realizing more mindful relationships to and through our mobile devices.

APPENDIX A
Additional Design Material

A.1 Ring Limiter Video

To see the Ring Limiter concept strategy video click on the next URL: `https://youtu.be/dzDpUhQDqf4`

A.2 Digital Friend Video

To see the Digital Friend concept strategy video click on the next URL: `https://youtu.be/-FtXMbDB8Ck`

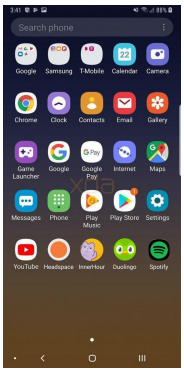
A.3 Content Digest Video

To see the Content Digest concept strategy video click on the next URL: `https://youtu.be/9cT_NPZtxOQ`

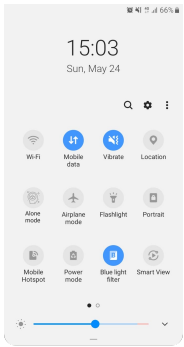
A.4 Alone Mode: Initial Wireframes

Think-Aloud Usability Tests: Alone Mode - Wireframes

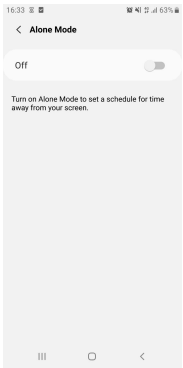
- Interactive version of the prototype - https://www.figma.com/proto/tDc50gavxXXueIkggsD0mW/Alone-Mode?node-id=1%3A2&scaling=scale-down&fbclid=IwAR0p2wFNrIL1lz6WNGRBlMaSMkPucqlld_ir6o2a19XF095e4HsR0whAifQ



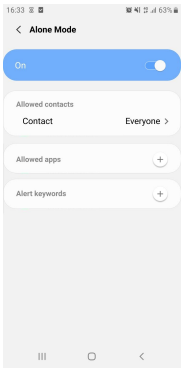
Home Screen



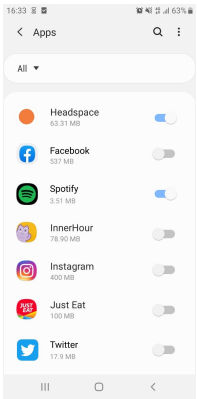
Alone Mode In Drop-Down Menu



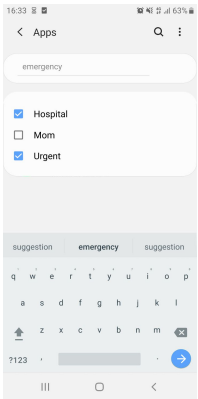
Alone Mode - Off



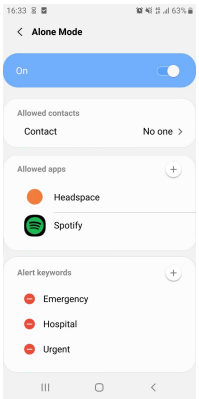
Alone Mode - On



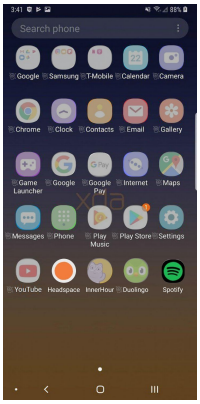
Allow Spotify and Headspace



Add Emergency Keywords



Overview Of Personalized Alone Mode

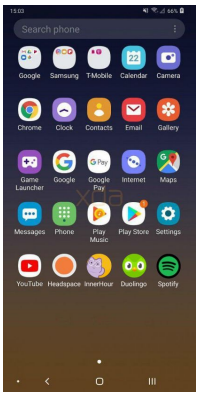


Home Page when Alone Mode Is On

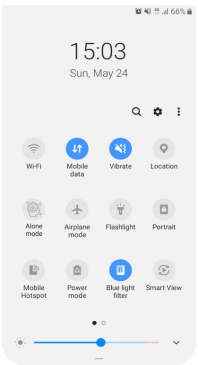
A.5 Alone Mode: Final Prototype Wireframes

Final Prototype Solution: Alone Mode - Final Version Wireframes

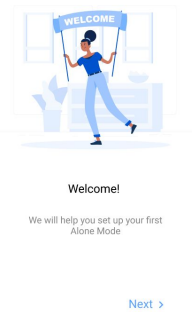
- Interactive version of the prototype - https://www.figma.com/proto/tDc50gavxXXueIkggsD0mW/Alone-Mode?node-id=91%3A1535&scaling=scale-down&fbclid=IwAR37REn47xm6sxrP_Yw9vXzSGQGz4NeV5C69IDLv2VeTHaMkAHcN5vXtCXY



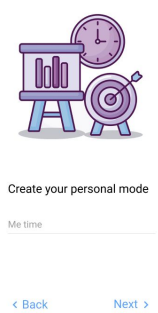
Home Screen



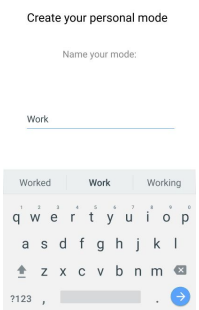
Alone Mode in Drop-Down Menu



Onboarding Screen - Welcome

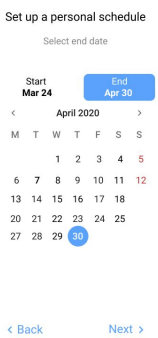


Onboarding Screen - Secret Personal Mode

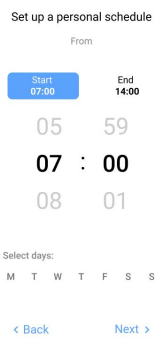


Onboarding Screen - Enter Mode's Name

Onboarding Screen - Select Start Date



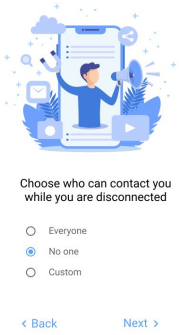
Onboarding Screen - Select End Date



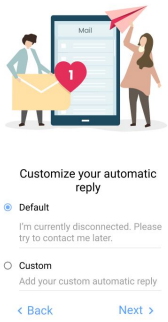
Onboarding Screen - Select Start Time

Onboarding Screen - Select End Time

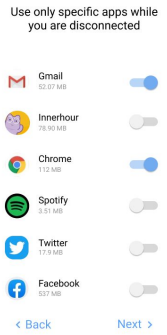
Onboarding Screen - Select Days Of The Week



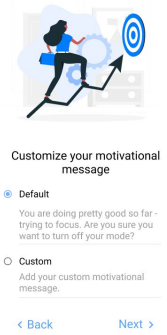
Onboarding Screen - Choose Allowed Contacts



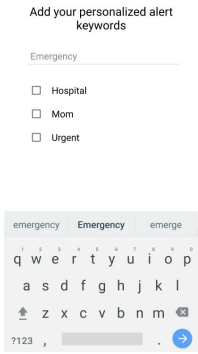
Onboarding Screen - Customize Automatic Reply



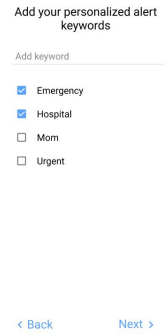
Onboarding Screen - Select Allowed Applications



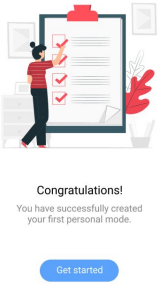
Onboarding Screen - Customize Motivational Message



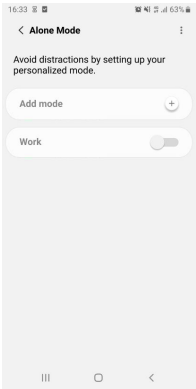
Onboarding Screen - Add Emergency Keyword



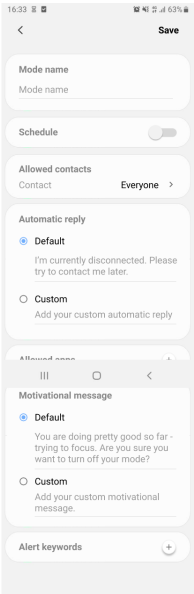
Onboarding Screen - Select Emergency Keywords

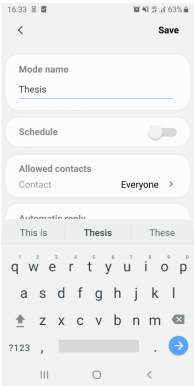


Onboarding Screen - Complete Onboarding



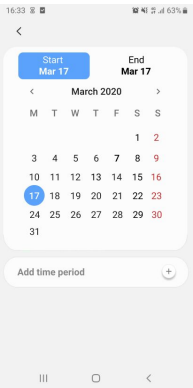
Alone Mode - Overview Of Existing Modes



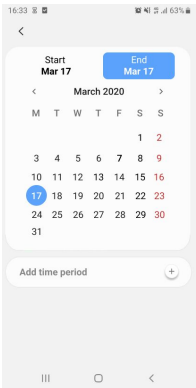


Personalize Mode's Name

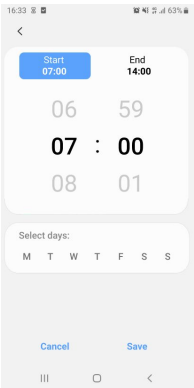
Create New Mode



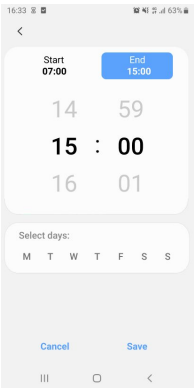
Add Start Date



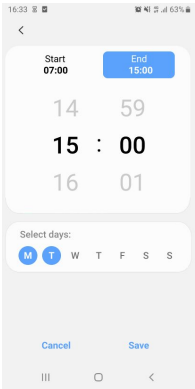
Add End Date



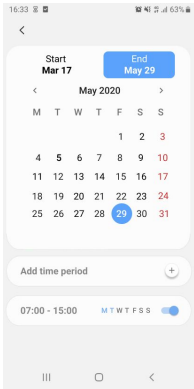
Add Start Time



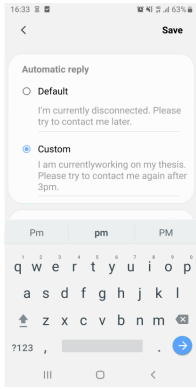
Add End Time



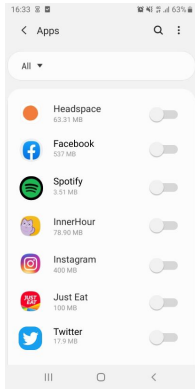
Select Days Of The Week



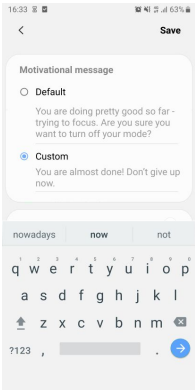
Overview Of Personalized Schedule



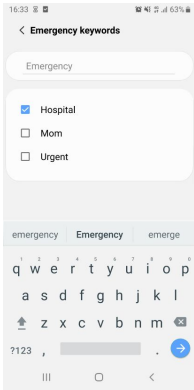
Customize Automatic Reply



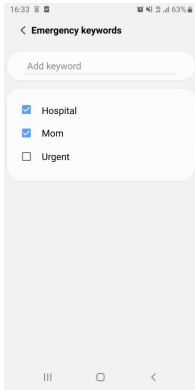
Select Active Application While In Alone Mode



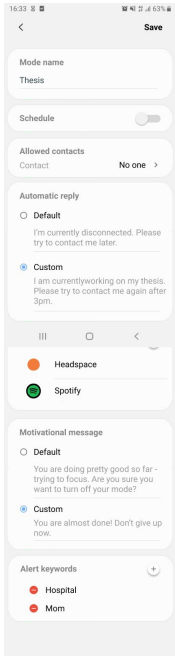
Personalize Motivational Message



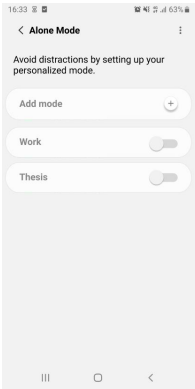
Add Emergency Keyword



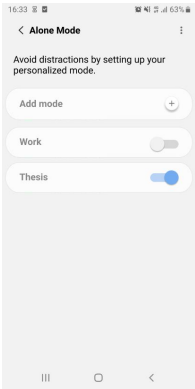
Select Emergency Keywords



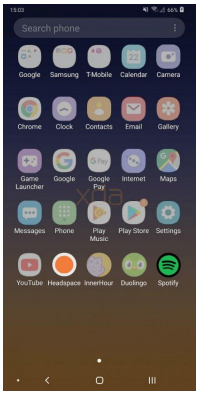
Overview Of Mode's Settings



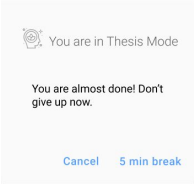
Overview Of Current Modes



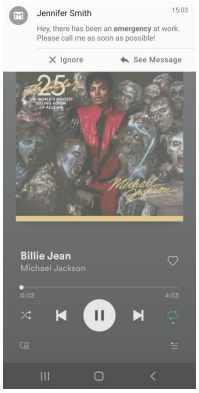
Turn On Specific Mode



Home Page While Mode Is On



Display Motivation Message While In Alone Mode



Receive Notification When Emergency Keyword Is Detected

APPENDIX B
Interview Transcripts

B.1 First Iteration: Initial User Studies

B.1.1 Participant 1

Researcher: Hi. So first of all, do we have permission to record this interview?

Participant 1 Yes.

Researcher: What is your age?

Participant 1 24

Researcher: What is your nationality?

Participant 1: Hungarian

Researcher: What is your occupation?

Participant 1: Student.. or slash research assistant, I don't know. Both of them are part time.

Researcher: What do you study?

Participant 1: Human centered artificial intelligence

Researcher: Are you currently in a relationship?

Participant 1 No.

Researcher: Okay, so now that I have made you aware of the feelings, you can use them as tools? Yeah, I want you to look at this and I'm gonna give you a pen and I'm gonna ask you to describe a day in your life and I want you to put milestones whilst describing a day in your life. So when.. we start from like, when do you wake up?

But it's so different each day.

So let's take yesterday for an example just as a...

Okay, okay, then it will be at 10:00 am so somewhere here

no, like the first...

Should I put the timestamp?

Yeah, just right 10am "I wake up". when you wake up, what do you do afterwards? Go to the bathroom? Describe me through the whole day, the whole process?

Participant 1: Yeah. Yeah, unfortunately first I grab my phone, going through these the news, and by the time..

Researcher: Can you write that?

Participant 1: Oh yeah. And the news news definitely that that. So yeah, so so news news every single morning and if I have more time, which I did last last day, for example, then I go on YouTube and just try spending my time on Instagram and stuff like that but yeah, news, news every time

Researcher: Okay, then next?

Participant 1: then next I go to the kitchen and try to try to grab some breakfast I always take my vitamin. that's that's sort of a habit with one glass of water that's that's right right after this phone session. should it should I put these down as well?

Researcher: Yes. Estimate times maybe.

Participant 1: Oh, okay..

Researcher: Should I do this for you whilst you talk through it?

Participant 1: yeah that's perfect. Then they.. put it in half an hour after.. the vitamin stuff and and and some some breakfast some small breakfast like some fruits or or musli

Researcher: Okay cool. What is the next step then?

Participant 1: The next step is that usually I yeah, I go to work or university but not yesterday. but usually I yeah yeah I don't know there I guess I just I just work or study yeah yeah I don't know because because so so this typrr semester of mine is really different than than the than the previous ones like I only have one single course you know

Researcher: But say that is.. so you get to school work around 11?

Participant 1: yeah yeah let's say.. okay okay.. today for example I I got to University at 11 so that makes sense

Researcher: and then you go for?

Participant 1: then I go yeah then then I I do my stuff for short while, then I go for lunch

Researcher: so you study?

Participant 1: Yes.

Researcher: And then at 12?

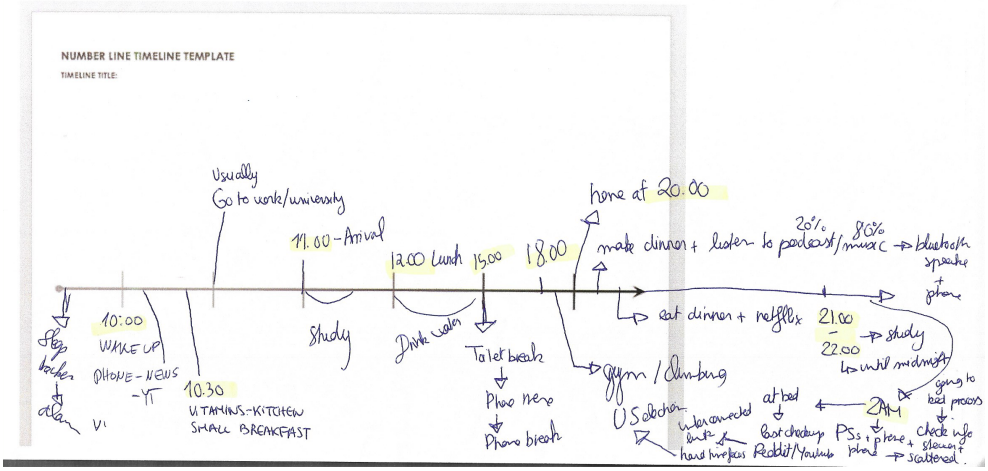


Figure B.1: Participant 1 timeline

Yes, yes, yes. Yes. That's that's what I do every day.

Exactly. And then do you have often, cause please also incorporate toilet breaks and all those into..?

Participant 1: I don't really go to go to the toilet often to be honest. Usually I go to toilet in the afternoon more often because in the afternoon, I always realized that oh, I haven't drank enough. So I started drinking a lot in the afternoon and then I started going to pee in every every hour but yeah, it's actually quite funny. I never realized it but it's true. I never go to the toilet in the morning.

Researcher: And then do you take your phone with you when you go to the toilet?

Participant 1: Yes

Researcher: Okay. And so what time do you finish..

Participant 1: actually I do sometimes that. that is only if I just want to take a break and I just go to the toilet with my phone

Researcher: so kind of a phone break?

Participant 1: Yes, exactly.

Researcher: And what time do you approximately finish?

Participant 1: 6pm

Researcher: And when you get home what do you do?

Participant 1: usually I make dinner or yeah, actually actually many times every second day I go to the gym after after six

Researcher: so you go to the gym?

Participant 1: so that's that's.. yeah that's quite usual, yeah climbing for two hours.

Researcher: Okay um so you come back around eight.

Participant 1:] Yes, exactly.

And then I make dinner and listen to music or podcast during making the dinner then usually I watch some Netflix.

Researcher: And do you listen to the podcasts on your phone?

Participant 1: I mean, yeah, like, I have a Bluetooth speaker which I bring to the kitchen. And then my phone is connected to the Bluetooth speaker. And yeah, either podcast or music. It's It's It's more like 80% music and 20% podcast so mostly music. Okay, but I I always listen to something

Researcher: and then when and then afterwards you get dinner and then you watch some Netflix

Participant 1: Yes. And I started studying or during some productive time again from nine or Yeah, or 10 or something and then I go to bed really late. Usually. That's also a thing which I do, like between one and two.

Researcher: Okay, and how can you sleep this late? Huh? How come you sleep late?

Participant 1: How come I'm going to sleep late? I don't know, because I wake up quite, quite late. So my..

Researcher: So how long do you study, would you say?

Participant 1: Oh, yeah, okay. Okay. Yes that's also true because I only study until midnight I think. Yeah, usually yeah the latest is half past midnight. And then I have a really long going to bed process because I yeah, I check crazy amounts of useless information on my phone like, okay, I I take on my PJs, then I do something on my phone then I go and brush my teeth then I do something on my phone then. I don't know I go to the shower and they do something on my phone like it's it's really scattered. Yeah, my my bedtime routine is is horrible

Researcher: and also so when you finally do a sit in the bed, are you still on

your phone?

Participant 1: usually I do a last checkup. Yeah. Yeah, but it's Yeah, it's like, you know, it's it's just most of the time it's opening Reddit, or, or, or YouTube and you just click on one link after another because because everything is interconnected. So it's, it's, it's a little bit yeah. Okay. And also I'm, I really have a hard time keeping focus so many times if I if I, if something pops into my mind like I don't know, for example, right now I'm quite interested in the Democratic primaries for the US elections and then boom, something pops into my mind and I google it instantly. And then I like click on a few, few links, and then something else pops into my mind and then boom, I commonly leave the previous one and then go to the other one. Yeah.

Researcher: Okay, cool. So that's approximately your day.

Participant 1: Yes

Researcher: at least, let's say on average, maybe

Participant 1: Yeah. In the last two months. That's, that's completely accurate, actually.

Researcher: Cool. Okay, thank you very much. So now..

Participant 1: it's crazy to reflect, but it's true.

Researcher: So, now I'm gonna ask you some more questions that's specific to the smartphone and how it plays into your life. And so how does the phone play into your everyday life? Like when and where is the phone as central part of your everyday

Participant 1: essential meaning useful or essential meaning that?

Researcher: central!

Participant 1: Central?! I think

Researcher: Cause so if we look right now a little bit at this when do you think that the phone is something where you actually go towards?

Participant 1: Yeah that like like the the morning 100% is a is a is a time for that also, before the bed is also

Researcher: and what are the frame and the context for it so you wake up and you just need to check the news.

Participant 1: Yeah,it's like it's like it's like an instinct or some something like that.

Researcher: And is it because your kids are? Is it because there's an urge to keep updated? Or is there a fear of missing something out or what is the goal? or is it a habit?

Participant 1: It's completely a habit. It's completely a habit for for spending time. It's a it's so it actually plays a role in my wake up process that Okay, so first, I open my eyes, I'm really tired and then while checking Instagram the news Facebook Reddit and all this stuff then in that half an hour I slowly wake up so that's that's that's basically supplement for my for my waking up

Researcher: and is it ..

Participant 1: so that's yeah maybe maybe that morning is the most central time actually with with with the phone and maybe the less central time is when I when I work

Researcher: it's less central?

Participant 1: that yeah there's a least central where I work but not when I study. when I study I cannot keep focus that well by where I work I can I can keep focus much more so during during work i think i think there are hours when i when i don't even touch my phone.

Researcher: Could you imagine yourself not having your phone in the wakeup process?

Participant 1: Yeah, I definitely can imagine Yeah, yeah, I can

Researcher: But how would it make you feel?

Participant 1: Much better

Researcher: Much better so actually you will feel much better if you didn't have your phone in the morning. How come?

Participant 1: Because I think it's a it's a bad thing

Researcher: why is it a bad thing?

Participant 1: Um because it makes this this wakeup process longer and if I don't have.. if I don't have something to do right after waking up then I tend to stay in bed and only browsing stuff on my phone and that prevents me from from being useful.. or not useful, how to say these things? Yeah, anyway useful for hours sometimes because I just I just lost myself in YouTube videos and Reddit and stuff like that. So if I could eliminate that interaction with my phone, then I think I could start my day much earlier. And that would make me much more productive

Researcher: and how come you can't do that now?

Participant 1: Because I'm... because I'm weak! I don't know.. because I'm weak!

Researcher: because you know.. you're so actually saying a bad thing but then you're not removing it from your daily life?

Participant 1: yes yes

Researcher: and is it because you want and because what what role, other than the wakeup process, what actually keeps you locked to checking you for? because now it's a habit but yeah, can you imagine an alternative that will make you wake up?

Participant 1: I I don't think I need any any alternative actually. Maybe Yeah, I don't know. So in my mind I have this perfect morning, when I wake up, drink a glass of water and then do some yoga. Maybe doing some some yoga would be nice or just stretching or something like that. But yeah, now that you said that actually, there's definitely a part of the fear of missing out in the morning because, mostly with the news I'm quite interested in what was happening in the world and if if something happens during the night like something big like I don't know I don't know the President of the United States dies or something like that then I would feel really really stupid Oh, I I went all the way until three o'clock and I didn't know about this thing. And that that makes me feel a little bit strange

Researcher: So if you were to describe this feeling with these? Which one would you say?

Participant 1: I mean the the negative ones are only these two right?

Researcher: Yeah.

Participant 1: Then that would be one. That would be number one. And I feel about this whole thing that I use my phone with number two, with guilt.

Researcher: Is it a guilty pleasure?

Participant 1: Yes, yes, yes, yes, yes. Yes.

Researcher: And are there any relationship a situation in your everyday life that promotes your smartphone usage? Like, parents family friends? ...that makes you use it the phone more than what you would maybe want to.

Participant 1: Friends.. friends on Instagram! Definitely. That's why I check Instagram and, and pretty significant share of my screen time is on Instagram. I mean, family, they only promote it for FaceTime. I don't really consider facetiming like necessarily a smartphone usage because you can do it also on computer and stuff like that

Researcher: Do you FaceTime a lot?

Participant 1: Yeah, with my family but I think that's pretty necessary that's that's a bit because that's the only way I keep touch with my family and that's usually one hour per two days. So one hour per two days

Researcher: one hour per two days? and why do you think it's important to keep in touch with your friends?

Participant 1: because I cannot meet them all the time. Like because you can you can meet only with a really like limited group of people right? So yeah, let's let's take me as an example. I think I made like 10 or maybe 15 people regularly but

then I still in touch with with more than more than 50 at least on Instagram and messenger

Researcher: and you feel you actually keep in touch with them?

Participant 1: yes, yes ,yeah, yeah, I think I do. Like okay let's let's take my friends from home as as an example; like again the only platform to keep in touch with them is on messenger. I don't FaceTime with them, I only use Messenger

Researcher: and you want to keep in touch?

Participant 1: Yes, yes. I want right. I want. Yeah.

Researcher: Okay. Do you consider your relationship to your smartphone similar to a relationship with a friend or a human?

Participant 1: No.

Researcher: So you don't see a social aspect to the phone? And only the phone

Participant 1: Only the phone, no.

Researcher: So it's not for you - you feel like you've socialized after a phone break or..

Participant 1: Oh, no. No, I definitely don't feel like socializing after using the phone. No.

Researcher: No, I mean, do you feel like you have socialised.. that you feel like it has.. after hanging out with your phone, it is similar to hanging out with..?

Participant 1: No. No. Because I.. yeah. It's pretty interesting. But uh, but I don't really .. like it's not interactive what I do in the phone usually. It's just like looking at news or videos. Yeah.

Researcher: Do you use your phone to check the time?

Participant 1: Yeah

Researcher: How often?

Participant 1: Hmm.. I don't know not that often because usually I'm on my on my laptop also. And it's just way easier to look at the corner of the screen to check it while studying and working. So yeah.

Researcher: How often do you use your smartphone to make phone calls?

Participant 1: Oh, really not often, really not often. When I used to have a girlfriend, then I did but I actually think that since we broke up, I haven't even made one single phone call. Yeah, only some really short WhatsApp calls or messenger calls just like Oh, where are you? I'm here and stuff like that. And then..

Researcher: So to find each other when you are meeting up?

Participant 1: Yes, yes, yes, yes, yes.

Researcher: But when you were having a girlfriend, you did it more?

Participant 1: Yeah, yes yes. Yes.

Researcher: How come? Why did you call each other?

Participant 1: Just to talk? I don't know. I don't know, maybe because because she was definitely the person the closest to me. Okay if I had a really close friend, but I don't. I think like I never had those type of friends who I would call like just to hang out.

Is there an intimate aspect to calls?

Yes, yes, yes, that's.. Yeah, I feel like phone calls are definitely intimate.

Researcher: Do you use your phone when you're eating?

Participant 1: Yes.

Researcher: Often?

Participant 1: Yes. While eat alone, all the time.

Researcher: While you eat alone?

Participant 1: Yes, then always!

Researcher: Do you do it with people?

Participant 1: Sometimes. Sometimes as well. If we run out of topics or something or if I am excluded from a discussion with my colleagues or something like that because they are talking about some professional stuff then I check my phone instantly.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 1: Umm, no.

Researcher: So you get a notification, you don't check it immediately?

Participant 1: No

Researcher: How come?

Participant 1: because.. i don't know.. I like that small, like that time of surprise.. oh well wait what could have happened, i don't know.. I never check it instantly, it's just a good good feeling to have these notifications that 'Oh okay. Something is happening. I'm an important person because someone is messaging me or something like that, but I don't care.' And then I check it half an hour later or something.

Researcher: Do you sleep with your smartphone turned on? under your pillow, or next to your bed?

Participant 1: Next to my bed. Someone sleeps with the phone under the pillow?

Researcher: Yeah, I do.

Participant 1: Why?

Researcher: Because of the alarm.

Participant 1: Really?

Researcher: That's also what I was gonna ask you here. Do you have an alarm?

Participant 1: I actually use a sleep tracker. So sleep cycle. And that requires me to put the phone right next to my head.

Researcher: And do you have an alarm to wake you up?

Participant 1: Yes

Researcher: From your phone too?

Participant 1: Yes

Researcher: Okay, and I'm just gonna go quickly over these. Do you seem to lose track of time when you're on your smartphone?

Participant 1: Yeah.

Researcher: After how much time do you like 'oh, I've spent a lot of time' ?

Participant 1: Half an hour

Researcher: half an hour? Do you sleep later at night when you are on your smartphone?

Participant 1: Yeah.

Researcher: Do you feel FOMO?

Participant 1: Yeah.

Researcher: Has your smartphone caused you feelings of anxiety and or stress?

Participant 1: Yeah. Yeah, I think it did. Yeah, definitely. I mean, I think that's pretty much connected to FOMO as well. When I was was feeling quite down and so everyone doing all the crazy stuff and having a lot of friends and smiling all the time and stuff like that and that happens quite often.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 1: Yes. But mostly in the morning and in the evening. but yeah, never in between but in the morning and in the evening all the time I would say.

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 1: Do I feel that using the smartphone decreases my productivity? Yes

Researcher: Would you be able to live without your smartphone for a day?

Participant 1: If I really need to, yeah.

Researcher: So you would not like to?

Participant 1: No.

Researcher: Why?

Participant 1: Yeah, it's crazy. I don't even know why I said that. But it's true.. but it's so embarrassing

Researcher: Okay, so you feel embarrassed about it?

Participant 1: yes yes yes. I would say because of the connectivity with other people but it's.. so again it really depends on the context because for example right now when I went to the cabin trip I was even living without my phone for three days because I didn't have any internet connection; I didn't touch my phone for three days. But I was surrounded by people 24/7 so the only context I couldn't live without my phone if I was alone, but if I'm surrounded by people, doing a nice trip together with someone or something like that, then I would definitely be able to do it.

Researcher: What daily screen time would you consider too much?

Participant 1: Yeah, I would consider above three is too much and above one for social media

Researcher: All of social media?

Participant 1: Yes.

Researcher: What are your expectations in regards to your screen time?

Participant 1: I really want to make it less

Researcher: And after seeing your screentime actually? Is your usage lower or higher than expected?

Participant 1: Higher.

Researcher: So you thought you used the phone less?

Participant 1: Yes.

Researcher: What is your opinion on your personal screen time? Describe your emotions about it? Like are you happy with the time which you spend on your phone, like if you were to use these emotions again.

Participant 1: I don't know, so with YouTube and Instagram so with the first two, that's that's definitely 'guilt'. So number two. And messenger is actually.. that actually feels quite nice. So messenger would be I think number five 'belonging' because actually so my challenge was to disable notifications so I completely disabled all the notifications for messenger. So I checked only few times during the day. So when I spent some time on it that means that I was actually messaging people constantly and receiving some stuff and that feels good to them. Yeah, that always feels

really good to me when I get messages on messenger because that means that 'Yeah, somebody cares about me'.

Researcher: And you have this app called index, what is that?

Participant 1: That's a news application, a hungarian news application.

Researcher: Do you think the challenge impacted your screentime subconsciously?

Participant 1: The messenger.. okay, three hours, four to six and the date.What?! It's more? I don't know. I wouldn't have expected that..

Researcher: Maybe to explain the general trend: people have used... a lot of challenges have made people use their phone more subconsciously because they were aware of the fact that they were restricted

Participant 1: ah, no i didn't really feel like I was restricted to be honest.

Researcher: So how come the average went higher-?

Participant 1: I don't know but okay so just for the record only for messenger Instagram and Facebook the notifications were disabled. But also these other notifications..

Researcher: Facebook...?

Participant 1: ...messenger and Instagram so the three biggest ones from last week.

Researcher: How come you didn't put index, when it's a big part of your day?

Participant 1: Because it's not sending notifications at all.

Researcher: Yeah. cool. We're just gonna go through the last questions.

Participant 1: Yes.

Researcher: Which apps did you expect to be the most used on your phone? before checking this? What did you think was the ones that you use the most?

Participant 1: But now I know.

Researcher: Yeah, but what do you think it would have been? before checking? What did you generally..

Participant 1: I didn't expect YouTube to be that that big actually. Yeah, I definitely wouldn't have put YouTube that high. I would have put Instagram on the top and not YouTube. And I would have also expected less from messenger. This surprised me a lot that I use messenger that much.

Researcher: So the ones that you use the most are YouTube, messenger and Instagram.

Participant 1: Yeah.

Researcher: And how did it make you feel? So it made you feel surprised that..

the difference?

Participant 1: From these?

Researcher: Because the results are different from what you expected, how did it make you feel?

So the thing is that whenever it turns out that I actually kind of addicted to phone and use it more I always feel bad so that would be guilt again. But I'm yeah, I'm really bad at getting rid of bad habits actually. I'm really bad. And, and I don't know I always feel guilt.

Is it something that translate into other parts of your life. Other examples?

Participant 1: smoking? I don't know. just watching nextflix instead of studying...

Researcher: Is it procastination?

Participant 1: Yeah, yeah. So in general, I really feel like I'm procrastinating almost everything and I think using the smartphone plays a lot, a huge role in that. And, and since I really feel bad because of procrastination, I feel bad for using my smartphone as well.

Researcher: And you feel badly because you're procrastinating?

Participant 1: Yes

Researcher: and why do you feel bad about procastinating?

Participant 1: Because I feel like I have much more potential. And I feel like I could do much more with my life, but just in general.

Researcher: So do you have like performance anxiety? Do you feel like you should perform better?

Participant 1: Yes.

Researcher: And is this related to.. Is this something you feel since childhood or is it something that has been evolved later in life?

Participant 1: Later, later.

Researcher: And when would you time it?

Participant 1: When I entered in the professional scene, so from university, I would say. When I started caring a little bit about my future and career and stuff like that

Researcher: and is there any milestone specifically that made you, like a teacher or a class where you're like, I need to get my stuff together?

Participant 1: No, no, I can't really remember. Definitely not teachers and classes. If there was a milestone, then it was coming from somewhere outside of the university

Researcher: it was what?

Participant 1: If there was a milestone, then it was coming outside of university. it definitely didn't come from the university. But the funny thing is that at the same time, I'm doing better than 95% of my friends like just, just by the fact that I'm here in Denmark and having a job and stuff like that and I was the first one who got a professional job from my group of friends and stuff like that, but I still feel like this

Researcher: And is it related to your parents, your friends what is it that's causing you the anxiety?

Not my friends, maybe more like my family because my family is quite successful and everybody is really determined but not my parents so that's the thing basically that so I have a really successful and yeah from a business perspective successful family but not my parents they were always the one with the normal kind of life but all my cousins, all my uncles, the husband of my sister and stuff like; they are really pushing stuff and I also wanted and still want to be liked by them.

So Youtube, Facebook, messenger and Instagram are the most used app and which context and situation to use them in the most?

Participant 1: Again just killing time actually.

Researcher: Specifically in the morning and evenings?

Participant 1: Mostly and then when I have to, like focus on my studies or something and I'm weak and I'm not able to focus then I instantly grabbed my phone and I don't know open up Instagram or something like that. And that's completely unconscious actually, I just I just realized Okay, I I was working on my special course for five minutes and then I'm on my phone again. I was working for two minutes and then I'm on my phone again.

Researcher: And which sections or features of these apps are your favorites. So YouTube is it you just look at the Explore page or do you actually look intosearching for the Youtube video?

Participant 1: Yeah, I usually look for like.. Yeah, I definitely search for something and then from then I go through the links

Researcher: And with Instagram, is it the notifications that prompts it?

Participant 1: Instagram. Mostly the stories, actually, yeah, I opened.. Yeah. And it's so stupid. But I opened it up like many times a day and just go through the stories but but even those stories of people who I don't even care about and of course, discover, and I really like the feature of Instagram which says that you are all caught up today. because before that there was also a thing that i would just keep rolling. But since this feature is there, this one actually made me stop scrolling the main page, I definitely remember that But then I turn into other features so it doesn't matter but I'm not spending any more time on the homepage anymore.

Researcher: And messenger would you say it's notifications?

Participant 1: Yeah, but okay, so this week I didn't get notifications for messenger

Researcher: You didn't? Oh, yeah.

Participant 1: So I opened up in every I don't know in every hour maybe, or something like that and then I saw that Okay, I got messages from four or five people and then I started replying them back and out of the five usually one started replying me back instantly. So I caught up with the discussion. And then in the meantime one of the other from the five also started replying me back so it started being a never ending circle.

Researcher: And so did the challenge decrease your interaction with your favorite apps? It did slightly.

Participant 1: I think it did, I honestly. Yeah. But that's that's just my feeling and and the screen time shows something different

Researcher: So would you say you felt more productive last week do you feel better about yourself last week or did it not change that much? was it not a marking difference?

Participant 1: In terms of messenger I felt better I honestly felt better that I'm not spending that much time on messenger but yeah, so this notification stuff it was a little bit strange because only messenger was affected by that so YouTube and Instagram and Facebook, they were not really affected by you know notification stuff.

Researcher: Yeah. okay, the last two questions..

Participant 1: For YouTube, I would have definitely needed to put a screen time limit. Yeah. Because I think for YouTube, that's the only way to stop it, just to have a limit and boom. After that there's no more.

Researcher: Okay, so last 2 questions.

Participant 1: Yes.

Researcher: Is there an application that you can not give up? Like you'll never be able to let go?

Participant 1: I mean, yeah, some sort of news application. I don't know which one, it's just in in general.

Researcher: So index, for example?

Participant 1: Yeah, maybe.

Researcher: It's the one that's been used the most on your phone.

Yeah. Because, like, it could be something for work or something. But like, it's the news application

Participant 1: Yes, yes. Yes.

Researcher: And is there an application that you can..

Participant 1: I mean, I mean, I guess I could buy newspapers, but nobody does it nowadays, right.

Researcher: And you don't check them on the computer. You check them mainly on the phone?

Participant 1: No, I check it on the computer as well.

Researcher: But you mainly check it on your phone.

Participant 1: Yes.

Researcher: And last question. Is there an application that you can but don't want to give up?

Participant 1: I can but I don't want to?

Researcher: Yeah.

Participant 1: No, I don't think there is

Researcher: An example is Messenger - a lot of people could if they wanted to but they don't actually want to.

Participant 1: Ah okay, in that sense, okay. Yeah, yeah. Then that's a good one.

Researcher: Messenger?

Participant 1: Yes, yes.

Researcher: What about YouTube?

Participant 1: No, no, no, no, I could I could definitely give up YouTube and Instagram. If I had to. Because that's, that's just content. That's just content but when messenger is actually people and I think that makes a lot of difference. So messenger feels much more intimate than all the others. the others are just content and consuming content. Messenger is with dealing people and having friendships and maintaining friendships

Researcher: How did you overall think about your challenge then? You need to use the emotions

Participant 1: yeah but like this one "value", yeah; and also trendsetting, I don't think I will put the notification back. it actually felt quite great. And actually some time I did not get distracted like for example when I'm watching Netflix with my friends then many times before I had my phone next to me and and every time I get a notification from messenger I checked it and I actually realized that we watched the movie the other day and my phone was on on the kitchen counter not even with me on the sofa which is crazy and I could without any disturbing stuff watch the movie for the whole length and that was because I didn't get notifications from messenger.

So yeah, that was good.

Researcher: And yeah, so you don't think the notifications is the problem?

Participant 1: I don't think notifications.. What do you mean?

Researcher: So you don't think that notification is... cause you won't put notifications back but you don't necessarily think it's the problem as to why you spend this amount of time.

Participant 1: No. No, no because as you could see the top two: Instagram and YouTube, they don't have notifications.

Researcher: Okay, cool. Thank you.

Participant 1: So I should get some other methods to get rid of those. Yeah

Researcher: Thank you.

Participant 1: Yeah thanks

B.1.2 Participant 2

Researcher: Okay, do we have approval to record this interview?

Participant 2: Yes.

Researcher: Okay, so we're gonna ask you first some general questions. You have the emotions here on the side to help assist you and we're going to ask you these questions first. Do you want to fill it out yourself? Or do you want us to fill it out for you whilst you talk?

Participant 2: I can do it.

Researcher: Okay, so first of all, what is your full name?

Researcher: Okay. What is your age?

Participant 2: 24

Researcher: Yes. What is your gender?

Participant 2: Female

Researcher: What is your nationality?

Participant 2: Ivory Coast

Researcher: What is your occupation?

Participant 2: student

Researcher: What is your marital status?

Participant 2: I'm single

Researcher: okay. okay, so to start off..

Participant 2: Do I have to put my name here?

Researcher: yeah, yeah. That'd be nice, just

Okay, cool. I want to start off the interview by asking you to describe a day in your life. So how does your everyday life look like? And we've provideed you here with a timeline. And ideally, we want you to go through it. And, for instance, what time you wake up? What do you do next and just go step by step and kind of just draw it out for us.

Participant 2: Okay. I wake up at six, but I get out of bed at 630

Researcher: You can.. yeah.

Participant 2: Okay. So six.. And then 7am breakfast. And then, from 8am to 11/12, I have a lesson. And then go back home.

Researcher: You can write that down.

Participant 2: okay. I think at 11.30/11.45 I'm home and usually I eat something

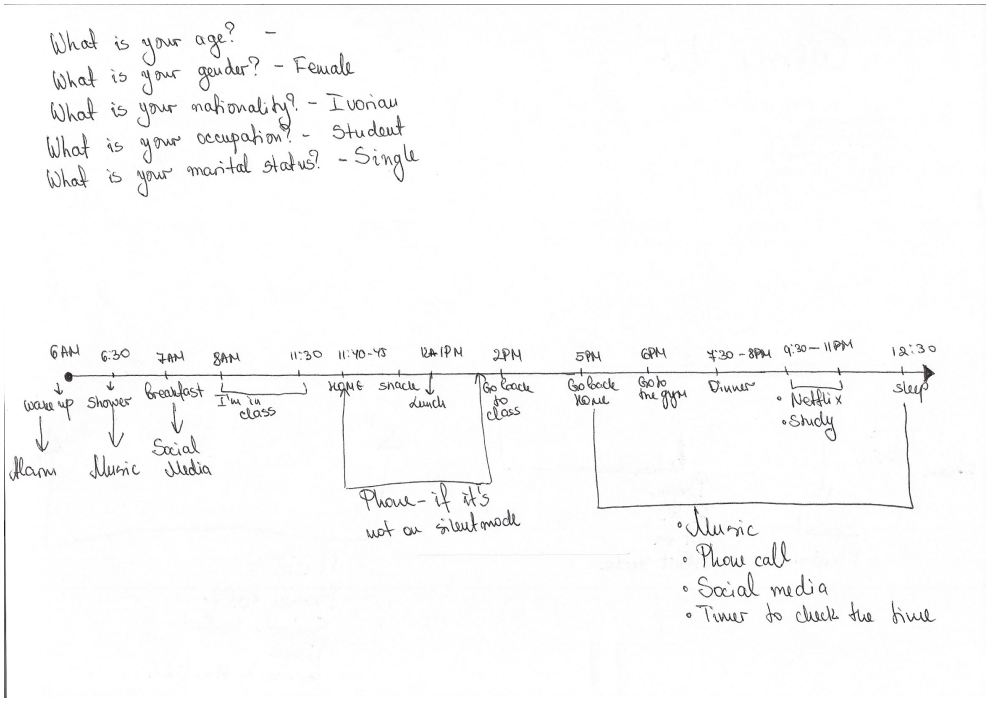


Figure B.2: Participant 2 timeline

like a snack. Snack and then at 12.00/1pm, I start cooking, like I eat lunch.

Researcher: okay

Participant 2: and after..

Researcher: Dance class?

Participant 2: No, council class

Researcher: What?

Participant 2: The council class, but it depends because sometimes I have class only in the morning and sometimes I have class in the morning and the afternoon. So I need to go back.

Researcher: Just take whatever you prefer.

Participant 2: Okay, go back to class again until like five. And then 7.30 pm till 8pm I eat, again. Like dinner. After I stay here, we watch like a movie or I go to my room, study a little bit.

Researcher: That's fine, write it.

Participant 2: Uhm, it depends.

Researcher: Okay and when do you sleep?

Participant 2: I go to bed at like 11

Researcher: 11?

Participant 2: Yeah. Or I like I wash and stuff at 11pm

Researcher: you start..

Participant 2: sometimes 12, it depends.

Researcher: Okay.

Participant 2: but I don't sleep until 2 or 3AM, it depends on the day.

Researcher: Can you write that down? That you don't sleep until...

Participant 2: ..very late, but it depends sometimes I can sleep right away or sometimes No.

Researcher: But what is, when is the average time that you fall asleep? Like you actually sleeping

Participant 2: I think midnight midnight 30

Researcher: Okay. Cool, thank you. Now I want you to take this pen and write in how does the phone play into your everyday life? Like for example, do you use an alarm? So every time you interact with the phone, can you please write them in and just..not every time but you know?

Participant 2: Shower, I listen to music

Researcher: from your phone?

Participant 2: Yeah.

Researcher: But first you do scroll through?

Participant 2: Yeah. Like social media.

Researcher: Yeah.You said for example here that there's a 30 minute before you go into the shower.

Participant 2: Yeah.

Researcher: Are you on your phone in those 30 minutes?

Participant 2: I'm in my bed and I'm like "oh what the fuck, why? I don't want to wake up" but yeah And in class, I don't usually use the phone cuz I need to listen so. Yeah. Only when I'm home like for phone mode.. social media. it depends sometimes.

If I have like a message, I will check it. Because sometimes when I'm go back home, my phone is on silent, so I don't really hear. Yeah, so it depends.. sometimes

I forgot and I don't use my phone. Sometimes I'm right away on my phone, so

Researcher: Okay.

Participant 2: Okay, I can't.. Do you understand?

Researcher: So this whole section, you have your phone maybe.

Participant 2: Uhm hum

Researcher: Okay.

Participant 2: Okay, and yeah nope. like on the break sometimes I check it. Because.. but yeah, yeah, no, I think I have my phone here.

Researcher: Yeah. And how do you get to school?

Participant 2: Biking

Researcher: and do you listen to music whilst biking?

Participant 2: No, I don't want to die. Yeah, no and it's like Two minutes so people are dangerous here so yeah.

Researcher: Okay.

Participant 2: yeah.And after I use my phone here.

Researcher: And what do you specifically use it for?

Participant 2: It depends music like my brothers are always calling me so the phone..

Researcher: phone calls?

Participant 2: Uhm hum, and for my food ideas, it depends and what more?

Researcher: Do you use your phone to check the time?

Participant 2: Yeah.

Researcher: And for example, here you say there is a process from going to bed. So from 11 you start getting ready to bed but you can sometimes sleep until midnight thirty or past. Are you on your phone in that timeframe?

Participant 2: Hmm, it depends if I'm like in bed for like 3040 minutes and I can't sleep, I go on my phone.

Researcher: Okay, so there is a delay so it's only after 30 minutes that you start going on the phone so you don't want to..

Participant 2: Or like if I received like a message on the group chat. I don't know sometimes. Like things happen. Or I came here. I come in the kitchen because there are always people in the kitchen, talking until 1am- 2amso if you're not sleeping you can come here. And yeah it depends.

Researcher: yeah okay and when is the phone a central part of your everyday?

when is that the phone plays the hugest role in your everyday?

Participant 2: after like when I finish class

Researcher: okay yeah and what specifically, what is the frame and a context for when it's very important for you to have your phone on you

Participant 2: Like to check Facebook WhatsApp, music

Researcher: and are there any relationships or situations in your everyday life that promotes this smartphone usage.

Participant 2: What do you mean?

Researcher: For example right now you're on an exchange, are there any relationship that promotes you using your phone more now that you're in exchange or is there any situations?

Participant 2: Yeah, because sometimes when we receive like, message from CBS or from like, exchange group on Facebook, if they are there's like an event or something. In we have like a group chat on Nimbus. Yeah, so sometimes 'oh party on the fourth floor', stuff like that

Researcher: So do you think that, without putting words into your mouth? But do you think that because you're on exchange, you check your phone more often?

Participant 2: No, no.

Researcher: But then do you think there is people in your life that make you check your phone more often?

Participant 2: Yeah, for example, like, my mom is always calling me. My brothers. Sometimes my sisters, no my sister, I only have one. and she's like in a different time zones so..

Researcher: do you have your phone on just to check that you get it. And so why do you think that the phone is so important in this scenario?

Participant 2: Because we are not leaving in the same country so it helps out to keep in touch.

Researcher: Yeah. And why is it important to keep in touch?

Participant 2: Because? I don't know. Because I want to have news from my family, from my family. Yeah.

Researcher: And if you didn't have this news, how would you feel?

Participant 2: It would be strange because they always call me so if they are not calling me, something is wrong.

Researcher: But if you didn't have easy access to this information, how would you feel?

Participant 2: I don't know.

Researcher: If you want to use the emotions

Participant 2: this one? I don't know.

Researcher: Number eight? Okay.

Participant 2: yeah, I don't know.

Researcher: But so you use your phone to maintain this intimate contact with your family.

Participant 2: Yeah.

Researcher: And it's mainly because you're in different time zones and different countries. Okay. Do you consider your relationship to a smartphone similar to a relationship with a friend or human?

Let me explain. Let me explain. So, when you use your phone Do you feel like After spending a, for example, if you feeling sad and you feel the need to socialize after spending a select amount of time with your phone, do you feel like oh, I have socialized now.

Participant 2: No, no.

Researcher: Okay. Okay. Now I'm just gonna go through a couple of scenarios and I just want you to tell me if this is valid for you. So you use your phone to check the time, right? Okay. How often do you use your smartphone to make phone calls?

Participant 2: Can I check my history?

Researcher: Of course.

Participant 2: For example, yesterday 7 times

Researcher: 7 times?

Participant 2: Yeah.

Researcher: Okay.

Participant 2: And it was like, my mom, my mom. My brothers.

Researcher: Yeah. Okay, and do you use your phone when you eat?

Participant 2: Yeah.

Researcher: So whilst you're eating or whilst you're cooking,

Participant 2: Both.

Researcher: okay. And what do you use it for?

Participant 2: If I have like a message or sometimes when I'm bored, I'm on Facebook, but it depends of the conversation.

Researcher: Okay

Participant 2: If the other people is boring... If not, I'm usually noy

Marc So when we're eating together, you are never on your phone?

Participant 2: Yeah.

Researcher: Do you check? Do you check your phone as soon as it makes a noise?

Participant 2: Hmm. it depends.

Researcher: So if you see a notification, do you check it immediately or do you wait sometimes

Participant 2: It depends.

Researcher: Depends on what?

Participant 2: I don't know if I want to. Yeah, sometimes like Oh, if I'm busy, no but if I'm or if my phone is like close or far away, it depends.

Researcher: Okay.

Participant 2: Like Yeah, I have some notificiations but I didn't check it because I'm doing the.. depend of what I'm doing.

Researcher: Yeah, of course. And do you sleep with your smartphone turned on under your pillow or next to your bed regularly?

Participant 2: No, it's like on the - how do you call it?

Researcher: the cupboard?

Participant 2: Yeah, I don't know. And yeah, sometimes I forgot to turn off the wifi. Yeah. So it's annoying.

Researcher: Yeah.I see

Participant 2: I have like many notification. Or yeah, no if I don't forgot to.. like it's on my cupboard. And then if I forgot to turn off the wifi, I have notification. If not, no. And sometimes I go back to put the Wi Fi because I can't sleep so I can use or I watch Netflix but on my computer. So

Researcher: Regards to notifications are there any notifications that you are more prone to? to react to than others? So some notifications, you immediately take your phone or not immediately but if the timing is right, you will look..

Participant 2: If it's like a phone call, yes! If it's a message from WhatsApp, yes. But it depends if I saw Mom, I will automatically take my phone.

Researcher: So there's some people that you immediately react to?

Participant 2: Yeah. Like if I'm doing something but I saw Mom, I will take it.

Researcher: Okay.

Participant 2: Yeah.

Researcher: Okay, so we're gonna talk about some problem areas with regards to smartphone usage and you say if it's valid for you. Do you seem to lose track of time when you're on your smartphone?

Participant 2: No.

Researcher: Okay, do you sleep later at night when on your smartphone?

Participant 2: No, cause I just go to sleep.. no.

Researcher: Do you feel fear of missing out?

Participant 2: No, not really.

Researcher: Okay, has your smartphone caused your feelings of anxiety and or stress?

Participant 2: Uhmm, how?

Researcher: So you never feel stressed or anxious after using your phone or was using your phone because something related to the smartphone or not using your phone Yeah, of not using your smartphone.

Participant 2: No, no.

Researcher: You don't think so?

Participant 2: It depends.

Researcher: What you mean?

Participant 2: I don't know - it depends if I'm doing like if I'm busy doing other stuff, I don't mind not checking my phone for like a long time. But if not..

Researcher: But if.. say that you are alone at home in the day and you can't you don't have access To your phone. How would you feel?

Participant 2: The beginning maybe I would be like

Researcher: fidgety? Distracted?.

Participant 2: No, "frustrée"

Researcher: Oh, frustrated!

Participant 2: Oh it's the same. And after I would be like, I would start doing other stuff.

Researcher: Okay. And how long can you stay without your phone?

Participant 2: It depends. Because, um, I know that when I was like, back in France, sometimes I didn't use it for that one day and my friend was calling my brothers. "Oh my God, is she okay?" because yeah I just forget about it.

But yeah, it's true that here I use it more because yeah, I just want to have news from my family.

Researcher: Yeah.

Participant 2: Yeah. It depends. Some days I know I would be 'oh, my phone". for example, one..I think it was two weeks ago, one weeks ago. I forgot my phone. somewhere. I didn't know where. But I was like, Oh my god, I lost my phone. And I realized that it was here. Yeah, so I didn't care at all. And I didn't like stress out or anxious because I couldn't use my phone.

Researcher: Yeah.

Researcher: But was it because you thought that you lost your phone; is it because of like, the money. Let's say this or it's more..

Researcher: You couldn't contact your mom for example?

Participant 2: No, it was because of the money. It was expensive. They are going to kill me.

Researcher: Do your eyes hurt after using this smartphone for a longer time?

Participant 2: Hmm, no,

Researcher: Okay. Do you feel your use of smartphone decreases your productivity at times?

Participant 2: Yeah. Because sometimes it distract me. Like while I'm studying and I don't want to study if I receive a notification immediately I will go on my phone. So it's just like an excuse to not study.

Researcher: Okay. And so just to to clarify you would you would be able to live without your smartphone for one day?

Participant 2: Yeah.

Researcher: Okay. So we asked you for your screen time. How much? Or how much did you expect your screen time to be per day? Before I asked you for it?

Participant 2: I didn't think about it?

Researcher: You never thought about it? And what daily screen time would you consider too much?

Participant 2: 10-12?

Researcher: 10 to 12 hours per day?

Participant 2: Yeah.

Researcher: Okay. And what are, what are you..

Participant 2: 8? I don't know.

Researcher: So just above eight.

Participant 2: Yeah, above 8.

Researcher: And what are your expectations in regards to your own screen time? So for example, right now, your screen time is at four hours and 29 minutes. And do you want it to be lower or higher?

Participant 2: No

Researcher: No, you think this is?

Participant 2: Yeah, because I know that some days it will be like, two hours. Sunday eight hours. It depends so not really.

Researcher: so what is your overall opinion on your personal screen time if you were to use the emotions here, how did you feel about your screen time? Don't look at the words. Eight?

So you're okay with your screentime and how much you spent time on your phone?

Participant 2: Mhmmhmm.

Researcher: Okay. And.. but so how come you chose number eight which is a very not emotional?

Participant 2: I don't know.

Researcher: Is it because you're unimpressed or you just you don't care at all about your screen time?

Participant 2: I don't care.

Researcher: Okay, you don't care. And okay. Which apps do you use the most on your smartphone?

Participant 2: I think WhatsApp, Facebook. yeah. I don't know.

Researcher: And in your chart, it's written Facebook, Whatsapp and Instagram.

Participant 2: What?

Researcher: Instagram is the third most used.

Participant 2: Oh yeah.

Researcher: But you didn't... Did you know that Instagram was gonna be?

Participant 2: No! Like before Apple Music?

Researcher: yeah.

Participant 2: I think have the other. Okay, can you check?

Researcher: Yes.

Participant 2: [french conversation]

Researcher: So you check a lot of emails?

Participant 2: Yeah. Snapchat also.

Researcher: But Instagram is pretty up there. Did you expect it to be there?

Participant 2: No!

Researcher: Because you seem surprised.

Participant 2: Yeah. Because when I go on Instagram, it's like 10 seconds and then you know, so it's crazy

Researcher: So how does this make you feel to see that you're spending this amount of time on Instagram that it's the most that it's mored use than your emails.

Participant 2: Like what the fuck?

Researcher: Number seven! Okay, and in which context and situation do you use these apps that we just mentioned

Participant 2: Facebook, I use it to watch videos, news because I follow like the French...

Researcher: news?

Participant 2: Yeah, news.

Researcher: okay.

Participant 2: Yeah. And my friends if they post something because I don't post things on Facebook so, or if someone tagged me on something

Researcher: Then you check it? so it's mostly but when is it like.. if you were to use this everyday. Sorry. When do you usually use these applications?

Participant 2: Facebook like here.

Researcher: yeah. What about Instagram and messenger?

Participant 2: Messenger, I think here. Messenger and Facebook here. Instagram here.

Researcher: and Whatsapp? It's throughout the day, right?

Participant 2: Yeah.

Researcher: Okay. So Facebook is more like in the evening when you have time and WhatsApp is throughout the day.

Participant 2: Yes.

Researcher: And Instagram is mostly here too.

Participant 2: Yeah

Researcher: Okay. And why they important throughout these time slots? Like why have you put Facebook more in the evening versus throughout the day?

Participant 2: I don't know.

Researcher: Okay. Which sections or features of these apps are your favorite?

What do you do when you're in these apps? For example, on Instagram, there's the stories, there's the feed, there's the messages

Participant 2: I think the stories, and, like with my brother we love to send us like funny videos or dogs videos. Sometimes for like aspiration

Researcher: Inspiration?

Participant 2: Yeah.

Researcher: What do you mean?

Participant 2: Like, I don't know how to do my hair.

Researcher: Okay

Participant 2: ...how to dress... stuff like that

Researcher: Okay. And what about.. WhatsApp, you mainly use it just to text or to phone call.

Participant 2: Both.

Researcher: Both! And what about Facebook? It's mainly the feed or do you look.. what parts of the app do you use the most?

Participant 2: Yeah, I think it's mainly the feed. Or if someone like tag me or something? We have like a messenger group with like my sister and my brother. Yeah.

Researcher: Yes. And is there an application that you cannot give up? Ever?

Participant 2: I think Whatsapp.

Researcher: Whatsapp?

Participant 2: Yeah.

Researcher: Okay. And why?

Participant 2: Because it helps me to keep in touch with many people from around the world. Yeah, sometimes I only have them on Whatsapp. And I have pictures like we share pictures and stuff like that. So for example, I changed my phone and I lost some pictures, some conversation on WhatsApp and I was like really pissed. And I still have my old phone because I'm trying to find a way to put them in the new. So, yeah.

Researcher: And is there an application that you can but don't want to give up?

Participant 2: facebook and instagram. Yeah.

Researcher: Why?

Participant 2: Because I don't really post anything on this app. So..

Researcher: okay. Just quickly, I'm going to talk about the challenges that were made the others participants go through. So number one was app positioning. So you know, the most use apps we put them in a way that is the most accessible, but what the challenge was to put them in places to kind of hide them in the phone.

Participant 2: Okay.

Researcher: Number two was change colors. And it would make so make the whole interface gray so that the colors wouldn't affect you. Number three was removed the notifications from your favorite applications. So for example, for you would have been Whatsapp Facebook and Instagram? And the fourth one was App limits. So you know, on the phone, you can put a limit to how much you use certain applications. What do you think of these challenges, and which one would you have the easiest to do and which one would be the hardest for you to do?

Participant 2: Hmm I think the easiest would be... No, the most difficult will be remove the notification and the change of color.

Researcher: Why?

Participant 2: I love when it's on the dark mode because it's more chill and less tiring for the eyes. And because when I'm like in class and stuff, I'm always on my computer. So after..

Researcher: Yeah, yeah.

Participant 2: And the no notification because I don't know. Like, even if sometimes I don't check my notifications, I love to have notifications

Researcher: Is it because you feel the need to hear that people looking after you Or is it because you want to know what's going on? or Why do you feel the need?

Participant 2: Both.

Researcher: Both? okay. So it's also to feel like you're needed. Is it?

Participant 2: Yeah maybe.

Researcher: Okay, but also..

Participant 2: No, it depends because when I.. If my mom calling I will take it but sometimes I am like what the fuck, it's the fourth time in like 40 minutes. I don't feel needed there. But it depends, like, yeah.

Researcher: And for you it would be easy to do the app positioning and the app limits?

Participant 2: Yeah, because Yeah.

Researcher: How come?

Participant 2: No, ah, no I don't know. Because I love my phone to be organized. If I have like everything is on one side or the other. Yeah, it will be

Researcher: weird?

Participant 2: Annoying.

Researcher: It would be annoying, but it's not because it would decrease the access to these applications?

Participant 2: No, no, no at all.

Researcher: Okay. And the app limit, you wouldn't mind it?

Participant 2: Yeah.

Researcher: Do you currently use any app limits?

Participant 2: What?

Researcher: Do you currently use any of these app limits?

Participant 2: No.

Researcher: Okay, but would you be for example, would you put an app limit on Facebook on social networks?

Participant 2: Yeah.

Researcher: Would that be interesting for you to do?

Participant 2: Mhmhm.

Researcher: Okay, but you don't think you need it?

Participant 2: No.

B.1.3 Participant 3

Researcher: What is your age?

Participant 3: I am 21.

Researcher: What is your gender?

Participant 3: I am female

Researcher: What is your nationality?

Participant 3: Slovak

Researcher: What is your occupation?

Participant 3: I am a student. I study international bachelor in social science.

Researcher: What is your marital status?

Participant 3: I am single.

Researcher: Describe a day in your life? How does your everyday life look like?

Participant 3: I wake up between 6:00 - 7:00 am. It takes me between 30min to 1h to get ready. Around 7:30 - 8:00 I leave home and then I take the train. When I'm in the train I scroll through social media or message friends. Around 9:00 I am at work and until 12:00 I work. Around 12:00, I go for a lunch and then at 12:30 I go back to work. Around 15:00, I have a break for 30 minutes max. Then I go back to work and I stay until 18:00. After that, I either meet with friends or go back home. Around 19:30 I go to the store to buy something for dinner. Around 20:00 I cook. After that, around 20:30 I eat dinner and watch something until 21:00. After that I call my family for around 30 minutes. And then, I waste my time - checking things for the next day, reply people on messenger, generally doing stuff which I have not done during the day Then before I go to sleep I stay around 30 min on my phone. I fall asleep around midnight.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Participant 3: I need a phone call from my parents so they wake me up; I'm not being able to start the day if they don't call me. Then, I listen to music while I prepare myself to go out. When I am on the train I am on my phone - I check social media or call people. At work - I am trying not to use my phone that much. Then during lunch - hmm, I don't use my phone there. After work, on my way home, I use my phone - I listen music, scroll through social media or I talk to my friends or family. In the evening, I catch up with family or check events/trips on my phone. I also spend time in social media

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Participant 3: The fact that I moved to another country challenges me to be

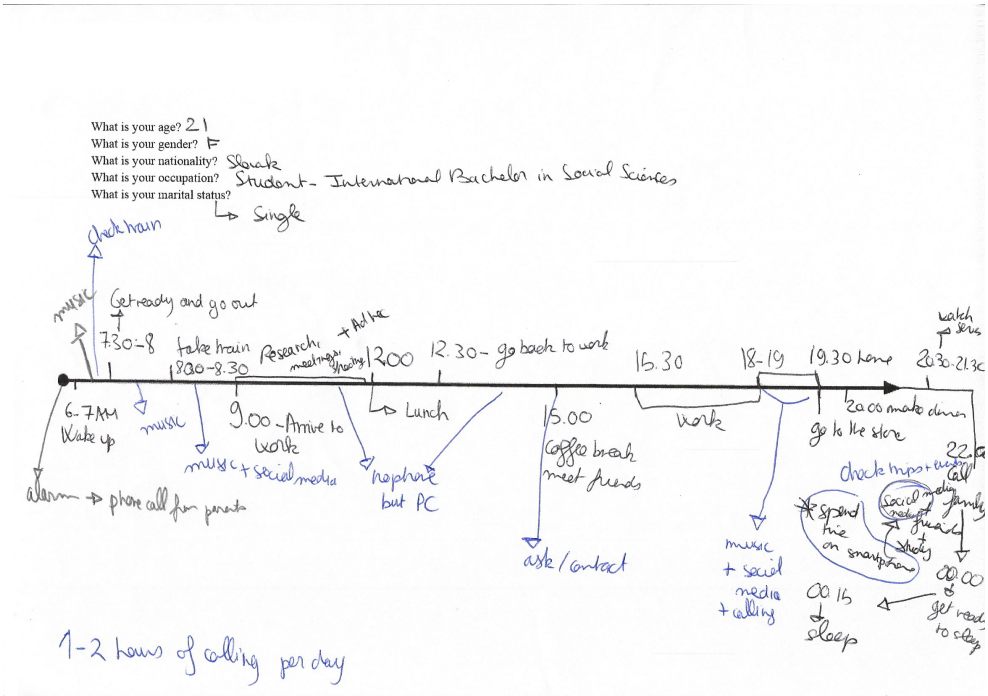


Figure B.3: Participant 3 timeline

more on the phone - this way I keep relationship with parents cause I have to but not using it as much with friends and can clearly see the effect/prefer to see them in real life. Also its nice with a smartphone to mimic the everyday interactions

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 3: No

Researcher: Describe the different use scenarios your smartphone is part: **Researcher:** Do you use your phone to check the time?

Participant 3: Yes, always.

Researcher: How often do you use your smartphone to make phone calls?

Participant 3: On average I might receive 5 calls per day but I don't think I call anyone

Researcher: Do you use your phone when you eat?

Participant 3: No

Researcher: Do you check your phone as soon as it makes a noise?

Participant 3: It depends on the time but usually no; if I am not doing anything - I do, but if I do - I don't check it

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 3: No, on my desk so I can't reach it - so I can stand up when I wake up and turn off my alarm

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 3: No, I am very aware of smartphone usage - adjust the time to how much time I have - postpone usage until I have an active time

Researcher: Do you sleep later at night, when on your smartphone?

Participant 3: No, the content is not that interesting

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 3: I would like to say no but there might be cases where I feel this way - mostly in connection with life from back home or family gatherings and I am not part of it. Happy to see they are having a good time but I am not there. But no stress or anxiety. A few months ago - taking the train to go home. I thought I lost the phone. Everything was on my phone - phone essential during travel. Outside the comfort zone. I lost my connection to the world at the moment I needed it. I need to solve things differently to have the day how I wanted it to be.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 3: I don't know, but I don't think so

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 3: Yes, when I am studying, not as productive; less interesting to study and can get very theoretical, rather focus on easier things

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 3: Weekday: I don't think so, I need it cause there is a lot of things I check on my phone - train situation, health recommendations, alarm, making sure friends and family are alive, time, really need music Weekend: can survive; no important tasks; not dependent on time; can use it to relax.

Researcher: What daily screen time would you consider too much?

Participant 3: Above 3 hours is too much

Researcher: What are your expectations in regards to your screen time?

Participant 3: Hopefully lower but would assume around 3h

Researcher: Is your usage lower or higher than expected?

Participant 3: Higher than expected

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 3: I am surprised, it makes sense but never thinks about it time-wise; don't feel guilty or sad about it

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 3: Messenger, Phone calls, maybe Instagram

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 3: Messenger, Phone calls, Facebook

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 3: Pretty much what I would expect

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 3: Communication with other people; inspiration Phone calls with family → mostly morning, trains, evening Messenger with everybody else and family → mostly trains and evening; sometimes urgent during the day Facebook → work, during work time, when I get notifications but then don't really get active notifications Instagram → mostly for inspiration, checking other people inspiration; important but can live without it, nice to check up on international friends

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 3: Phone calls - mainly call/not text and mainly receive Messenger - text or video calls Facebook - newsfeed and events + market place Instagram - newsfeed, stories and explore Pinterest for inspiration

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 3: Camera Can imagine living without a phone call but would have a completely different life

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 3: Facebook, Instagram, Pinterest, and maybe Messenger

B.1.4 Participant 4

The audio recording of participant 4's interview unfortunately failed to save and therefore the researchers relied on the notes taken during the interview to account for his/her insights.

Researcher: What is your age?

Participant 4: I am 27 years old.

Researcher: What is your gender?

Participant 4: Male

Researcher: What is your nationality?

Participant 4: Bulgarian

Researcher: What is your occupation?

Participant 4: I am a student and I am working as a part-time web developer.

Researcher: What is your marital status?

Participant 4: I am engaged.

Researcher: Describe a day in your life. How does your everyday life look like?

Participant 4: I wake up around 6:00 am then I go to the bathroom and I brush my teeth. Afterward, I make coffee and breakfast and then I eat my breakfast and drink my coffee. Around 6:50 I dress up for work and around 7 I leave for work. Until 7:30 I travel (drive) to work.

After I go to work, around 10:00 I go to the stand-up meetings we have every day. After that, around 12:00 I go to lunch and around 12:30 I come back from lunch and continue working until 16:00.

I am home around 16:30 and until 17:30 I take some rest and after that, I go to the gym where I work out until 19:00.

After I get back from the gym, I take a shower and around 20:00 I have dinner. From 20:00 until 22:30 I spend some time with my fiancee. At 22:30, I brush my teeth and get ready for bed. 23:00 I normally go to bed.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Participant 4: When I am in the bathroom, I browse social media. While I drive to work I listen to Spotify on my phone. During my lunch at work, I check my messages and emails. - I barely check my phone during work. I am trying to focus on my tasks. I only keep track to check if my fiancee had messaged me something important. I listen to Spotify on my way back from work. When I get home and when I rest during this 1h, I normally browse social media and message friends. (Messenger

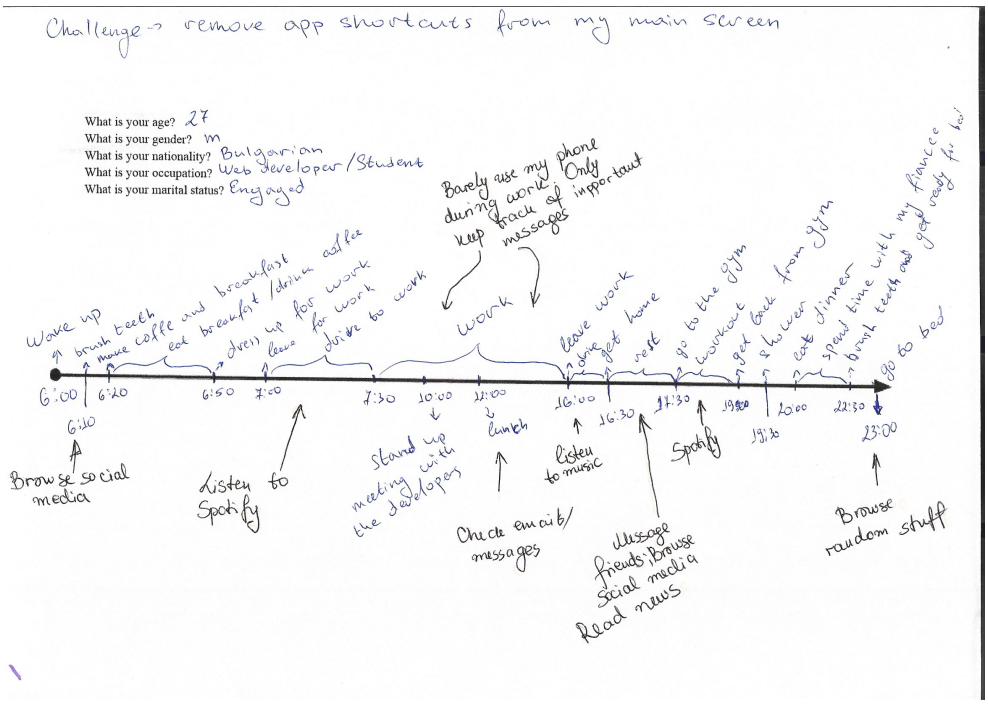


Figure B.4: Participant 4 timeline

and Twitter mainly) Then during my workout, I listen to music again from Spotify. When I go to bed, I normally don't fall asleep right away, but I browse random stuff, it depends - sometimes it is social media, sometimes YouTube, read news, etc.

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Participant 4: Receiving emails and messages.

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 4: No, I don't. In no way, I consider my phone as a friend or a human.

Researcher: Describe the different use scenarios your smartphone is part - Do you use your phone to check the time?

Participant 4: Yes, I do. I mostly use my phone to check the time. Almost always.

Researcher: How often do you use your smartphone to make phone calls?

Participant 4: Maybe once a day on average.

Researcher: Do you use your phone when you eat?

Participant 4: Sometimes yes. Mostly when I am alone.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 4: It depends if I am at work, I often completely silent my phone while working.

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 4: My phone is next to me, not under my pillow. The phone is always on, however, it is disconnected from the network. The sound is on vibration, so if somebody needs me for something important, it wakes me up.

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 4: Not really.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 4: No, I normally keep track of the time when I am on my phone and try not to spend more time than normal.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 4: Only if it comes down to the people close to me, like my fiancee or family. And only when it wakes me up in the morning, it makes me feel stressed.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 4: No, I never had that problem, because I try to keep its brightness low.

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 4: No, because I am always keeping it away when I am doing something important.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 4: If I am not being able to connect to the network, I would feel mad - because I am paying and it's not working and second, the smartphone is useless without network. I would be fine with not having access to my phone for a day. It will only bother me if I have to go to an unknown place, where my phone would help me navigate.

Researcher: What daily screen time would you consider too much?

Participant 4: More than 1,5h a day.

Researcher: What are your expectations in regards to your screen time?

Participant 4: It will probably remain the same. Because I used my phone when I had to and of course when I had free time. I think that moving the icons actually made it worse since I had to search for every single application when I needed it.

Researcher: Is your usage lower or higher than expected?

Participant 4: Before challenge - 12h 44m for 7 days, during the challenge - 12h 58m for 7 days

I think that it confirms my theory that I used the same time and even used more time for finding the applications.

Researcher: What is your opinion on your personal screen time? Are you happy with the time which you spend on your phone?

Participant 4: I would be happy if I could lower it down with let say 20%. One thing that it will make me lower it down is having more work to do and another thing to do is find another hobby that fits my free time.

Researcher: Did the challenge impact your screen time, subconsciously? How did this challenge make you feel?

Participant 4: I knew that I am being tracked, but to be honest, after the first couple of days I didn't care. The first couple of days I tried to spend less time, but it didn't really work - I spend the same time. I was happy to do the challenge and see whether something like this will change the way I use my phone.

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 4: Facebook, Twitter and Messenger

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 4: Messenger, Facebook and Twitter. I know where I waste my time the most. And since I do, it actually makes me feel good, since I can try to limit my time there.

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 4: The apps - no. In general, I expected that I spent less time on my phone (around 10h weekly). I didn't expect that - I don't know how do I feel. I have never tracked my time before, so I guess I would say that I am happier that my prediction is not that far away.

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 4: Facebook when I browse for memes mostly; Messenger - when I want to connect with friends and family. Twitter - for reading sports news.

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 4: The fact that they allow me to connect with the world around me. I never watch stories. In Twitter, the news always follows up based on the time they were posted and at some point, you end up hitting the stuff you have already seen - I really like this feature. I don't like how on Facebook you always randomly get some posts.

Researcher: Did the challenge decrease your interaction with your favorite apps? How did this make you feel?

Participant 4: His time decreased - I don't think that the challenge caused this. The only big difference is on Twitter and this might be by the fact that my favorite team played 2 times during the 1st week.

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 4: Messenger - Because this is where I find all the people I need. 90% of the people use messenger.

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 4: Facebook - I don't like the way it is developed. But most of my friends are only there, they don't have Twitter, which is my preferred social media.

Researcher: What are the most important values regarding your smartphone?

Participant 4: It helps me connect with people around me. It also helps me to stay updated with the world around me.

B.1.5 Participant 5

Researcher: What is your age?

Participant 5: I am 25

Researcher: What is your gender?

Participant 5: Male

Researcher: What is your nationality?

Participant 5: Italian

Researcher: What is your occupation?

Participant 5: I'm student and part-time student worker

Researcher: What is your marital status?

Participant 5: I am single

Researcher: Describe a day in your life - How does your everyday life look like?

Participant 5: I wake up around 8 am. I snooze my alarm and then I have breakfast around 8:15. After breakfast, I get ready and then I go to work or university. I get ready for about 30 min. So at 9, I take the bus and I go to DTU. I arrive at DTU at 9:30. Then I study until noon when I have lunch. Around 13:30 I go back and study until around 19:00. Then I take the bus again and go back home. Around 19:45 - 20:00 I am home. Usually, I take a shower and make dinner. We usually don't order something, but one of my flatmates prepares the dinner. Around 21:00, I am ready. After dinner, we watch a movie or play on the PlayStation. So around midnight, I go to bed. I stay on my phone around 10-15 min and then I fall asleep.

I use my phone to wake up. Then I use my phone during breakfast - it is mainly Instagram and reading news. Then I use the phone on the bus again - again Instagram and some other news. It is mostly to wake up myself. Then after lunch, I spend some time on social media and then when I am coming back, I read some news on the bus. I like to read what is happening around the world. Lately, is about the coronavirus. After dinner is again social media. I would say, I look at my phone every hour for about 2-3 minutes. Mainly after dinner, I look at my phone when I prepare to go to bed. I scroll through social media and read some news.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday life? What are the frame and the context?

Participant 5: It is probably more after lunch because I need to relax for a little bit. Also, when I come back, I just scroll through some news. It is relaxing because I don't have to think that much, I am just reading.

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

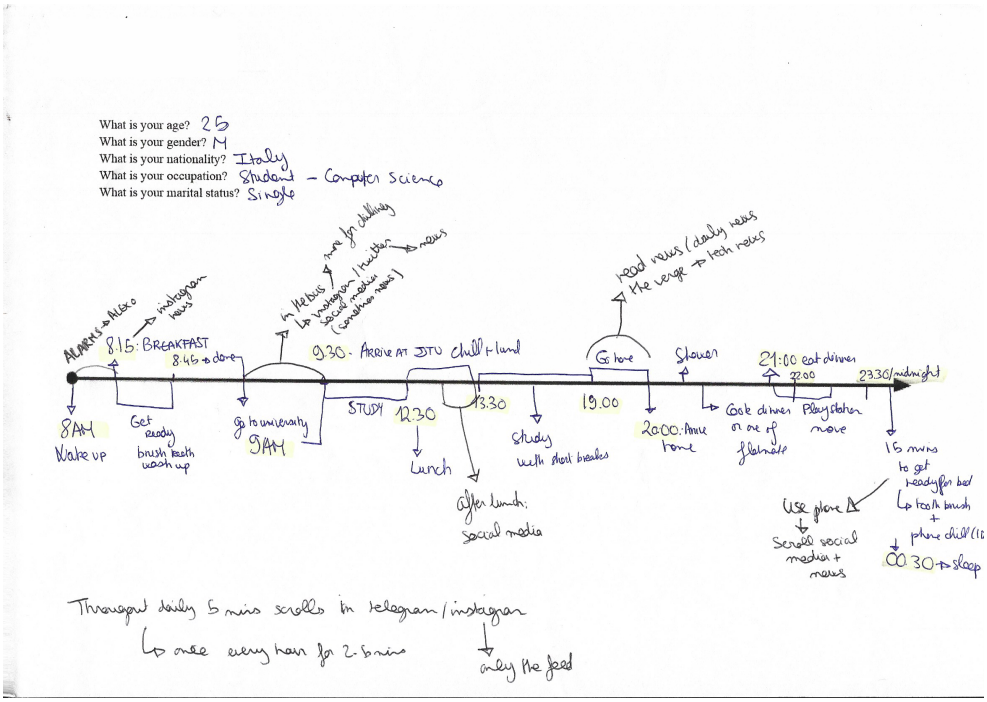


Figure B.5: Participant 5 timeline

Participant 5: The distance with my family. I would say, I talk once a day with my family - one day with my father, the next day with my sister. Sometimes, it happens that I don't talk with them for days, but mostly it is at least 5 min a day. I am using Whatsapp, where we have chat groups and we chat there. With my family, I mostly call them. It is not the phone itself, it is the easiest way to keep in touch. It is a small thing that you always have in your pocket - you can call, it is simple.

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 5: No

Researcher: Describe the different use scenarios your smartphone is part - Do you use your phone to check the time?

Participant 5: Sometimes but I have a watch

Researcher: How often do you use your smartphone to make phone calls?

Participant 5: Yes, during the day. Mainly during the night, when I am coming back home. Between 19:00-20:00 I am calling my family, friends or my roommates. I am calling my family to ask them how they are doing and my roommates to check if I

need to buy something before coming home. I am calling my friends here in Denmark more often than my family.

Researcher: Do you use your phone when you eat?

Participant 5: No. When I am eating breakfast - yes, because I am alone and I don't have anybody to talk to, but during dinner, I normally put it away from me.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 5: It depends if I am doing something and I need to focus - I don't. Otherwise - yes. Sometimes, if I start to receive a lot of notifications from a chat group that doesn't involve me, I stop looking. But, for instance, here, I only have notifications for messages, email and calls. I don't have notifications for Instagram, Twitter and Facebook, so I don't receive notifications from them. I have never had them because I don't care if somebody liked my picture or whatever - it is not important for me.

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 5: No, I usually shut it down. Since I am not in a position to be available at night, this is why I turn it off. If I had to help somebody during the night or my job needed me - I would have kept it on.

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 5: No. Maybe I am not aware, but I don't feel like I have to track my time.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 5: Yes, this might happen, but I don't really care. I have this kind of routine to use it for 10 mins. I usually don't exceed these 10 minutes.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 5: No, I don't think so. I don't think it is related to the phone.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 5: No

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 5: Yes, sometimes. Mainly when I am working on something that is a bit boring and when I have my phone, it is very easy to get distracted.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 5: Yes, for one day yes. I use my phone for work, so if there was an alternative, I could live without the phone for 1-2 weeks. I don't see a problem. I think Instagram is something that I can live without it. I like to see photos of what other people post a take a break. I can't work without a break, I am not productive without a break - if there is an alternative - like sometimes I make a tea and I am not looking into Instagram. (or talking with somebody else)

Researcher: What daily screen time would you consider too much?

Participant 5: For all applications? I would say too much is above 1h 45 min - 2h. I guess, it also depends on what you mean by active time, because if you have a call.

Researcher: What are your expectations in regards to your screen time?

Participant 5: On average I would say 1h 30 min.

Researcher: Is your usage lower or higher than expected?

Researcher: It is 2h and 31min. It is higher than expected.

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 5: It is not fear, not even guilt - I am fine with myself. Maybe, I should consider spending less time on this and do more valuable things. I am not really surprised, but it makes me reflect, for sure.

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 5: Mainly Instagram, because it is a social network I prefer. When I have 2 minutes free, I open Instagram. I like seeing pictures quickly.

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 5: Instagram, Facebook, Chrome, Messenger, Twitter, Whatsapp, Outlook

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 5: Facebook is surprising - 33mins for Facebook, I would never have said it, because I don't even like Facebook. Chrome, I am not surprised, because I read the news there. Messenger and Whatsapp I use for messages.

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 5: I use Outlook for work and university and it is only for that. I use Chrome and Twitter to check the news. I use them because on Twitter there are journalists that I follow and I like to read discussions, which sometimes I find

interesting. Chrome, Just use a browser but is basically where I search all my news. I use Messenger because everybody uses it here in DK, I actually didn't use it 2 years ago before moving and WhatsApp because back home everybody uses it. Facebook, I am not sure, because I don't really like it. I am not sure how I spend my time there.

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 5: Instagram: I like photos, there are only pictures so there's not the garbage that you find on Facebook of links and advertisement; it is simple; mostly the feed and stories - mainly interested in what my friends are doing but in the last 2 months started using explore → started randomly because I saw something interesting and then I started using more

Chrome is the one I need the most tho, to find something, to learn about something, to read news about coronavirus

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 5: I would say phone calls to make phone and Whatsapp so I can keep in touch with people. The emails because of work and school. Chrome for reading news. These are also the ones that I have notifications turned on for.

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 5: Probably Instagram. I like it, so I prefer to do that. But Facebook wouldn't make a lot of difference.

Researcher: Which one of the challenges is the most difficult to follow?

Participant 5: App positioning → I only have one page so it wouldn't make sense cause I don't have a lot of pages to scroll Remove notifications → already don't have them Put grayscale → I wouldn't keep my phone grayscale to reduce my time on social media; only if it was only on the apps instead of the whole interface App limit → the hardest cause the others you still have access

B.1.6 Participant 6

Researcher: Hi. So first of all, can I record this interview?

Participant 6: Yes.

Researcher: okay? No, it's not filmed. It's just recorded through my phone.

Participant 6: Okay cool.

Researcher: Yes. It's just so my my teammate also can hear what's happening.

Okay, so this project is about smartphone addiction and we have decided to focus on university students and how we're trying to tackle this on is trying to understand how people use their smartphone in their everyday life and see which problem areas that could potentially be added after that focus on one of them. So it's going to be very general questions, and this is a safe space. And of course we have these emotion cars to assist you in case you don't have the words to describe an emotion. So first of all, can you tell me your full name, you don't need to say the middle names.

Participant 6:...

Great. What is your age?

Participant 6: 27?

Researcher: Which gender? Do you identify yourself with?

Participant 6: Female

Researcher: What is your nationality?

Participant 6: Mexican.

Researcher: What is your occupation?

Participant 6: Currently, I'm a student and master in computer science and a student worker, as a software developer in Microsoft.

Researcher: What is your marital marital status?

Participant 6: Single

Researcher: Okay. Cool. Those are the general of questions. These are just used to see, in case we find some patterns later on. We just want to see if it's connected to any of these but it's not anything that we want to look at in these questions. Okay, so I'm going to ask you first to describe a day in your life, sir, from when you wake up, for example, to when you sleep, so what time do you wake up for instance? And just so you know, I'm drawing out your chart here. So I'm trying to like visualize it and then try to describe your day without talking about the phone and then afterwards we're going to see how the phone plays into your everyday. Okay?

Participant 6: okay. If it's mainly my week, it's divided in three different things. Like it's the days I'm going to university, the days I'm working and weekends.

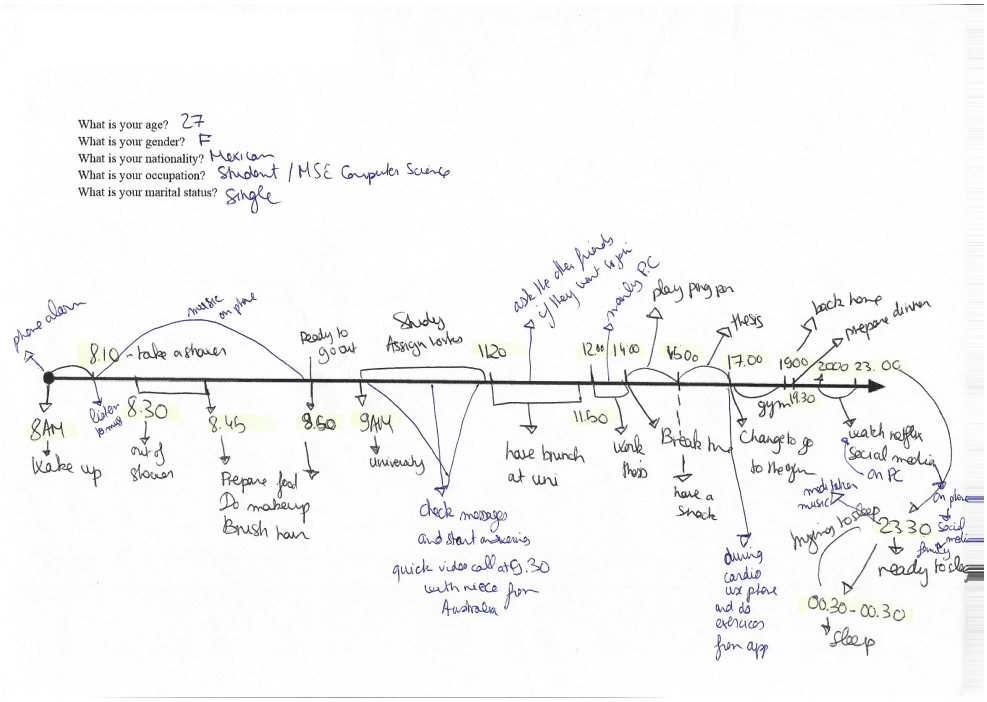


Figure B.6: Participant 6 timeline

Researcher: okay, maybe talk about either school or work day.

Participant 6: Okay. In school days, I'm waking up around eight?

Researcher: Yeah,

Participant 6: taking a shower, preparing my things and going to university.

Researcher: Okay, so just a step back you wake up at 8am.

Participant 6: Yes.

Researcher: Okay. And just like take it more step by step when you wake up afterwards, what do you do?

Participant 6: Take a shower.

Researcher: Okay and when from when you wake up so what time approximately do you start taking the shower?

Participant 6: I normally prepare my things and then take the shower.

Researcher: So 8.10 you start your shower?

Participant 6: Yes.

Researcher: Okay.Then what do you do afterwards? How long do you take a shower for?

Participant 6: 15 minutes.

Researcher: Okay. And so around 8.30 you are out of the shower?

Participant 6: Yeah.

Researcher: Okay, what do you do then?

Participant 6: I prefer I prepare something like food to take to university.

Researcher: Okay, and how long do you do that for?

Participant 6: I think like 15 minutes and while I'm preparing that I'm also like putting makeup, brushing my hair. Getting ready in general, but I was like, I'm getting ready while I'm cooking.

Researcher: Okay.

Participant 6: So at 950 I'm ready to go out of my room.

Researcher: Okay, so you don't eat breakfast.

Participant 6: No, I eat it in the university.

Researcher: Okay, so at 950 you're done with all of these tasks.

Participant 6: Yes.

Researcher: So 9.50 you go out?

Participant 6: 8.50

Researcher: 'Ready to go out'. Cool. And then how long does it take you to go to school?

Participant 6: 10 minutes so at 9am, I'm at university.

Researcher: Cool. And then?

Participant 6: and I meet with my other friend that we're doing the master thesis. We approximately start like talking and what are we going to do today and what we did before and then we set up activities what she's going to do and what I'm going to do and then we start working on that until 11.20

Researcher: Okay, okay.

Participant 6: Then from 1120 to like 30 minutes like 1150 or 12 we have brunch at uni.

Researcher: Okay. So you skip, skip breakfast and you have just brunch from 11.20?

Participant 6: Yeah!

Researcher: okay.

Participant 6: And then from 1pm to 2pm, I mean from 12 to 2pm, we continue working in the thesis.

Researcher: 12 to 2pm?

Participant 6: Yeah. And then we have a kind of break and we go like with more friends from uni, we go and play ping pong.

Researcher: Okay, that's from what time to what time?

Participant 6: From 2pm to 3pm.

Researcher: Okay.

Participant 6: Then 3pm to 5pm come back to continue with the thesis. and then 17 to.. well at 17 we go and change for going to the gym. And, like 5.30pm we're starting exercise. 7pm. Yeah, until 7pm and then at 7pm I come back here to my room.

Researcher: Okay.

Participant 6: Oh, I totally forgot I eat something in the middle, like at 3pm, approximately after 3pm I eat something like I got the food and I eat something that I got

Researcher: Okay.

Participant 6: And then when I arrived here I'm preparing something to eat, like dinner and then lately I have not been productive so I have been watching Netflix.

Researcher: Okay, so from how long do you eat for and how long do you cook for?

Participant 6: Like I finish uni at 7pm, pm I'm in my room. 7.30-7.40pm I'm preparing something and I'm eating and then at 8pm, I'm done

Researcher: okay, so from 8pm till what time do you watch Netflix?

Participant 6: I mainly waste my time from eight till 11

Researcher: did you say waste your time?

Participant 6: I know I'm wasting my time because I'm not doing anything.

Researcher: Okay, so you watch Netflix. Yeah.

Participant 6: Netflix, on social media..

Researcher: Then you're on social media too, between 8pm and 11pm.

Participant 6: Yes.

Researcher: Okay, and then what time do you like go.. when do you go get ready to sleep?

Participant 6: Around 11.30

Researcher: Okay, so 11.30 you're ready to sleep. Okay. And so you sleep at what time? 11.30?

Participant 6: I go to bed 11.30 but I end up like sleeping at 12pm -12.30pm

Researcher: Why?

Participant 6: Because after being in a phone for a long time, I just cannot sleep like my sleep goes away and then I cannot sleep.

Researcher: So you sleep around midnight 30 - midnight 40?

Participant 6: Yes

Researcher: And so for one hour you are on your phone?

Participant 6: No. Without anything.

Researcher: Oh Okay. Cool, thank you, now we're gonna go throughout this day, but we're gonna talk about where the phone plays in.

[random conversation]

Okay, cool. So do you use an alarm on your phone to wake up?

Participant 6: Yes.

Researcher: Okay.And so walk me through when do you use your phone? When you take a shower, do you listen to music? When you?

Participant 6: Yeah, I try to not reply to messages and everything until later. So I wake up, and then I just put music in my phone and then start listen to music until I leave my room, until 8.50

Researcher: Okay, um, so you just listen to music throughout that time.

And then you go to school you go with bike, I assume.

Participant 6: Yes.

Researcher: Yeah. So you don't use your phone?

Participant 6: No, no. It's such a short distance.

Researcher: So you study from 9am till 1120 do you check your phone at that time?

Participant 6: Yeah, normally when we started meeting we.. I.. like maybe my friends late or something then I start checking my messages and replying to the messages and you know, and then sometimes my brother calls me around 930 or Yeah, around 9.30 and we do like a quick video call for 5 to 10 minutes with my niece

Researcher: who is from Australia, right?

Participant 6: Yep.

Researcher: I'm asking.. Cool. And then when you have brunch at university,

do you use your phone then?

Participant 6: Just a little bit to tell the others if they want to join.. and not normally.

Researcher: Okay and so you work from 12 to 14 on your thesis,ou don't use your phone there or?

Participant 6: no, if I have to reply messages in messenger, then I use a computer

Researcher: okay

Participant 6: And then is the same until I think maybe five in the gym. If I'm like doing cardio I use my phone. I download the app that you said so I am doing some cardio exercises at the gym with my phone

Researcher: Yeah?

Participant 6: yeah. And then coming back here does when I use either the computer watch netflix, while using my phone and yeah, until 1130 and then I sometimes I put some, like meditation things to fall asleep, like not looking at the phone, but just like hearing the sound

Researcher: and so you know, from Eight to 11 you're either watching Netflix, either on your phone - what do you do on your phone do just go on social media?

Participant 6: Yes, maybe that or I answer the messages from my family because at that time they were like, more active.

Researcher: Okay, cool. Okay, so when is the phone essential part of your everyday life? So when when is it very important for you to have your phone

Participant 6: maybe in the morning like around when I'm calling with my, with my brother or replying to my family but replying to my family can be like any time in the morning

Researcher: So you also reply your family in the morning.

So, would you say that your family promotes your smartphone usage? What do you would you say that your relationship with your family because you're living in different countries promotes your usage of the phone?

Participant 6: Yes.

Researcher: And do you think there's other relationships or situations in your everyday life that promotes your smartphone usage?

Participant 6: Yeah, like friends, like friends from uni that we are meeting in the uni or we're open to something where I'm talking with, like you or friends from outside of uni. When I'm arranging like plans

Researcher: Okay, so mainly to schedule meetings, arranging plans?

Participant 6: And normal talking, like just daily life, questions with friends,

not only.. okay, but yeah, it's relationship okay?

Researcher: And why is it for...why is your phone important in these scenarios

Participant 6: just to be in contact with other people.

Researcher: And for example, you said friends from university or like people like us, but you also see us at work or school. Why do you feel like the phone plays an extra role in making the relationship? Orbe in contact.

Participant 6: For instance, like we're in the university and there are different friends and then we are like in different parts of the university. So sometimes we are like, okay, let's meet in the canteen to have lunch together. And then everybody joins. Or, for instance, like when you and I go to work, and then we arrange like meeting lunch or meeting to take coffee or going out together or some kind of things-

Researcher: Yes. Okay. And do you consider your relationship to your smartphone similar to a relationship with a friend or human? In a sense where like, after spending some time if you're feeling lonely, if Do you feel like you're socialized a bit after spending some time with your phone?

Participant 6: Yeah, I feel like if I'm bored, I use my phone. If I want to say something to my friends or use my phone, if I want to learn something, I use my phone.

Researcher: Okay.Um, we talked a little bit about your family because you know, they live far away so you use it to keep in contact with them. Right?

Participant 6: Yes, yes.

Researcher: So would you think that your smartphone usage would decrease if you were living in the same country as your family? Because...

Participant 6: I think it would increase for my parents.

Researcher: It would decrease for your parents?

Participant 6: For my parents.

Researcher: okay.Because Do you also contact a lot your friends from Mexico?

Participant 6: Not so much lately. But it's something that I keep in touch.

Researcher: So you think you smartphone usage would always be, would still be high, even if you lived in the same country as your family?

Participant 6: Yeah, because also like my, my brother doesn't live in the same country, and my sister doesn't live in the same city.

Researcher: But imagine that you all lived in the same country. All of you lived in Mexico. Imagine all of you lived in Denmark, like your brother, your sister, your parents. In that scenario, do you think your smartphone usage would decrease?

Participant 6: I think it will decrease. Yes.

Researcher: okay. Now I'm gonna walk you through some use scenarios and just say if it's valid for you or not. So do you use your phone to check the time?

Participant 6: Yes.

Researcher: Okay.How often do you use your smartphone to make phone calls.

Participant 6: I normally do one phone call for my father My sister or another for my sister, another for my mother. There are three phone calls every week for one hour each.

Researcher: Three calls every week for one hour each. Yes.

Participant 6: And with my mother and sister is like a video call.

Researcher: So mother and sister video calls

Participant 6: Sunday evenings

Researcher: What?

Participant 6: on Sundays, evenings

Researcher: and Sunday evening and your dad is just a normal...

Participant 6: Yeah.

Researcher: Okay. So you don't call them every day.

Participant 6: Not every day but my brother is the one that I'm like calling more often, but it's like five minutes. 10 minutes call and it's just like to see the faces to each other mainly.That's it. But apart from them I don't usually call other people. It's mostly messages.

Researcher: Okay. Do you use your phone when you eat?

Participant 6: No.

Researcher: Do you you do. Do you check your phone as soon as it makes a noise so as soon as you get a notification

Participant 6: I turn off the notifications like the sound. Normally, I have months without the sound. But I.. after some time. I'm just like, checking my phone if I get any messages. I get the text there in the phone stay in it, but it doesn't make any sounds.

Researcher: Would you check it as soon as you see it? As soon as you see there's a notification, do you check your phone or you just ignore it. Or does it depend?

Participant 6: It depends. Like if I'm making plans I immediately check it and try to answer in the moment. If I'm just like doing some other things I just leave it there and reply after.

Researcher: Okay. And so when you go to sleep to sleep with your smartphone turned on and do you sleep...

Participant 6: Yes.

Researcher: do you sleep with it under your pillow or next to your bed

Participant 6: next to my bed. Sometimes I turn off the Wi Fi.

Researcher: Why?

Participant 6: Because some people when they call they make, like noise because sometimes I just want to sleep more. Don't get distracted to anything.

Because sometimes like family is calling me but then like sleeping.

Researcher: Yeah.

Participant 6: And that just wakes me up.

Researcher: Okay. But Then why'd you keep it turned on?

Participant 6: Because takes much time. Because I use the alarm to wake me up. I use the audio thing meditation to sleep. And also it takes too much time to turn it on and turn it off every day. And I always think like, if there's an emergency in some case, they will call me directly to my number.

Researcher: Yeah. Okay, now I'm going to talk about some different problem errors with regards to smartphone usage. And then you say if it's valid for you or not. Do you seem to lose track of time when you're on your smartphone.

Participant 6: Yes.

Researcher: How much would you say for example, if you spend one hour how, like, how.. Plese describe the feeling and how it appears to you? Because is it just a little bit of losing track? Or is it like, Oh, you ended up spending one hour on your phone? And then actually, you were only supposed to spend five minutes? Isn't that kind of losing track?

Participant 6: Yeah, I feel like lately. It's like okay, I'm just going to watch a video or because I'm lazy. I'm like scrolling and Facebook videos, and there's like joke comedy stand ups and stuff. And I'm just like, oh, five minutes and then I end up Like one hour.

Researcher: And how come do you do.. would.. Why do you think this is like this?

Participant 6: I feel like I need to study a lot of things and I'm just procrastinating those things and I'm just doing something that it's not that and it's funnier, and it's less boring.

Researcher: So is it because you have a lot of responsibilities right now that you feel like you would rather do something fun?

Participant 6: Yes.

Researcher: And why are.. Why are you? Why do you feel you have too many

responsibilities? Is it because you have too much to do or is it because you're wanting to do better or what is why do you feel troubled by your responsibilities? Is it because you want to do better at them? Like, is there a pressure to do better? Or is it just a pressure to finish them? Or is it? Is it something else, variables, that makes you feel Oh, I want to procrastinate.

Participant 6: It's just like finding a job and getting ready for interviews and stuff is not like a nice thing to do. And then I'm just making something that it's less distressing.

Researcher: Yeah. I understand. Um, do you sleep later at night when you are on your smartphone.

Participant 6: Yes

Researcher: how much later?

Participant 6: How much time?

Researcher: Yeah, like, how much time difference does it make if you sleep later If you're on your smartphone I mean.

Participant 6: I think like two more hours.

Researcher: Two more hours?

Participant 6: lately it has been horrible.

Because if I'm in my phone before going to sleep then I cannot sleep after. So it's like being in my phone and then not being able to sleep.

Researcher: Okay. Why can't you sleep if you've been on your phone?

Participant 6: it's just, I don't know if it's the blue light or something and it's just like changing the patterns of sleeping.

[random conversations]

Researcher: Sorry, I'm just gonna pause. So you said maybe the blue light makes you feel less sleepy after spending time with it so you think it's like the radiation maybe?

Participant 6: Yeah.

Researcher: Okay, that's bad or I feel bad. Do you feel fear of missing out?

Participant 6: What do you mean?

Researcher: So for example, I'm going to give you different scenarios because it's different for every person. But so for example, some people if you have moved abroad, so do you feel fear of missing out because their friends are catching up back home and you're in a different country, or it could be like when your friends from university go to an event and you couldn't go because you have to do a homework, and you see the pictures afterwards and you feel like, Oh, I should have been there.

Or it could be anything from like fear of missing out from social aspect. And usually it's not just oh, I'm sad, but it's like something a little bit more anxious or stressful, like it's a little bit stronger feeling

Participant 6: Yeah, yeah, sometimes I feel like that because I haven't done like the things and it's like okay then I cannot go there because I thought I have waste my time and my phone or in netflix or those things and then I felt need to finish these things and then I cannot go to this event because I need to finish this and I didn't do that I felt like missed out of consequence. Yeah.

Researcher: And when when do you feel you missed out because you watch pictures afterwards? on your smartphone or what? What? How? Why do you feel you missed out? Is it because you knew you were gonna go? Or was it because you saw afterwards it was fun and you're like, Oh, I should have been there?

Participant 6: No, it's because I'm like, using my phone, then wasting my time in not doing the things I need to do. And then I need to do the thing. And because I need to do the things I cannot go to those events.

Researcher: Okay, but then when do you think it's a shame? Is it because afterwards you'd see pictures of the venue? You're like, Oh, it looks so much fun, but I wasted my time so I couldn't go or is it because you think, oh, I've wasted my time so I can't go so it's a shame. Is it because you can't go or is it because you see that was fun afterwards?

Participant 6: Because I see that it's fun afterwards

Researcher: Do you feel feelings of anxiety and/or stressed because of you phone?

Participant 6: anxiety and stress? No.

Researcher: No because. For example, some people get stressed out by notifications, or I personally feel stressed out if I get too many notifications or if Some people feel anxious if they're you know, because FOMO is different for every person some people get so much fear of missing out then they get anxious. Like, oh, this is really bad. So do you feel any of these?

Participant 6: Maybe sometimes I feel anxious to just to check my phone if I receive something.

Researcher: Okay,and why do you feel anxious?

Participant 6: Just like I don't have I don't... if I don't have my phone is like, Oh, I need to go and get my phone and see if I receive anything. I don't know. It's that feeling of missing something that you need to check?

Researcher: But what are you afraid of missing?

Participant 6: I don't know. I guess I just got so used to it to have the phone next to me and just check It is something that I'm doing in consensus.. inconsistent..

Researcher: subconsciously?

Participant 6: without yeah without thinking

Researcher: but for example if we talk about like are you afraid of for example missing the news, missing messages or missing family like what what is it that links you to check it? So let's say that you check your phone What do you first check on your phone when you check your phone?

Participant 6: The notifications from messenger or Whatsapp? Yeah, like contact with friends and family.

Researcher: And would you say it is friends and family from here in Denmark or is it from abroad or internationally?

Participant 6: Ah, family, not in Denmark and friends mostly in Denmark right now and some friends from back in Mexico

Researcher: hmm Is it because you're out of your comfort zone here? And you feel like you need to stay in contact? You need like a human contact or is it just because it's become a habit?

Participant 6: I think because it becomes a habit.

Researcher: Okay, but so okay. Let's talk about it again like there's another question about this later. So do your eyes hurt after using the smartphone for a longer time?

Participant 6: Do I what?

Researcher: ...your eyes hurt after using the smartphone for a longer time?

Participant 6: That's why.. I haven't thought so. I think it's I feel it's normal.

Researcher: You think it's normal

Participant 6: yeah

Researcher: no, I'm just asking

Participant 6: yeah maybe I haven't think about how it probably affects my eyes because I'm only on the computer I'm with my glasses, but in my phone I'm without them. So maybe I just got used to the feeling and I'm not even noticing.

Researcher: Yeah. Do you feel your use of smartphone decreases your productivity at times? you already mentioned it but just so yeah.

Participant 6: Yes.

Researcher: Would you be able to live without your smartphone for one day?

Participant 6: Ah, I will just tell my family before that and then that's it. I will feel very, very weird, but I think I can do it

Researcher: Why would you find it very weird?

Participant 6: it's just like not using the computer it just like feels so normal

to everyday.

Researcher: The smartphone?

Participant 6: Yeah, I mean like it's the same like with the computer

Researcher: and which part of not using it would be the strangest for you. Out of all the things that you do on your smartphone what will be the hardest for you to not do if you were to live out without your smartphone for one day? Is it the human? Is it the contact with your family? Is it the arrange meetings what is the hardest for you if to live without the smartphone?

Participant 6: I think I will get bored. And it will be like social media that I'm just.. maybe it's.. as far as like, being in contact with other people..And also, it helps not to get bored by watching videos, social media and stuff. So otherwise

Researcher: So you think that the hardest to not get bored and also the human contact?

Participant 6: Yeah, and also like the messages and those kind of things.

Researcher: Yeah, I see. Okay, now we're going to discuss your screen time. So what daily screen time would you consider too much?

Participant 6: Say two hours is too much.

Researcher: Okay, what are your expectations in regards to your own screen-time?

Participant 6: Oh, I don't remember what was it?

Researcher: no no you don't don't check it just what do you what do you want it to be?

Participant 6: Oh, I want to change it to?

Researcher: Yeah or really what do you think your screen time should be?

Participant 6: If I should be productive it should be one hour maximum

Researcher: of your entire smartphone?

Participant 6: Yes.

Researcher: Including talks messages. Okay. Just making sure did me. So not social media but the phone Okay,

Participant 6: Yeah.

Researcher: Is you..Okay, now check your usage.

Participant 6: It must have been three hours - four hours. The one that I sent you or the current one?

Researcher: The current one is fine. How much is it?

Participant 6: I'm checking. It's charging. Today is one hour 44 minutes.

Researcher: What about yesterday?

Participant 6: Yesterday was two hours 58 minutes.

Researcher: 2 hours 58. Okay, so it's higher than expected.

Are you surprised by the screentime?

Participant 6: Usage time?

Researcher: Yeah. Are you surprised by it or what are your feeling about it?

Participant 6: I feel like lately I have been too much in my phone.

Researcher: So you're unhappy with it?

Participant 6: Yes.

Researcher: Are you disappointed? Do you feel guilty?

Participant 6: Yes. I feel, yeah..

Researcher: Which one? number two?

Participant 6: Yeah, guilt.

Researcher: Okay.So you did the challenge, right. Did you see any difference between you screentime in the beginning? The average screen time in the beginning the first week before you did the challenge between and week when you had the challenge. Did you see any difference?

Participant 6: No, it was the same. It was Yeah, it was the one that I need to change the..

Researcher: app positions

Participant 6: Yeah, yeah, the app positions, yeah. No.

Researcher: It was the same or did it decrease?

Participant 6: It was the same.

Researcher: Okay, so it didn't change anything.

Participant 6: Yeah.

Researcher: How did this challenge make you feel?

How did this challenge make you feel? The challenge.. How did it make you feel?

Participant 6: Like not nothing in general.

Researcher: So it wasn't hard.

Participant 6: No. Like changes in the position did not make me not using it.

Researcher: Okay. And how come? Is it just because you already knew where

they were, so it was easy for you to...

Participant 6: Yeah.

Researcher: And did you quickly...because after the challenge, did you change it back to where it was?

Participant 6: No.

Researcher: Okay, so you just got used to the new position.

Participant 6: Yeah.

Researcher: Okay. Did you hide them?

Participant 6: I put like two or three like, screens after. And at the beginning it was just like, Oh, it's not been where it used to be this, it's in the new one and then after one day I just got used to it

Researcher: Okay, now let's talk about the apps. Which apps Did you expect to be the most used on your smartphone?

Participant 6: Facebook

Researcher: And?

Participant 6: and whatsapp

Researcher: Okay, and when you say Facebook, do you mean also messenger

Yeah,

Participant 6: but the thing is I use more Facebook than Messenger.

Researcher: Okay, so Facebook number one, number two would be what?

Participant 6: Whatsapp and then messenger.

Researcher: Okay. Cool. So this is what you expect and in reality are.. like if you look at the app at the screen time, or because it did you send me the screen time after the challenge?

Participant 6: Yep.

Researcher: Okay. Did you send it to me on Facebook?

Yes, yes. And you didn't send me the app, so Oh, no, it is so WhatsApp is the most used. And then Facebook. And then what is this? Experience Home?

Participant 6: I don't know what's that? Doesn't say right, like I tried to click on it. It's...

Researcher: So it was Whatsapp, Facebook, and then more but what is more?

Participant 6: The app doesn't say

Researcher: but LinkedIn is up there? Okay, so the the results are different from what you expect them, a little bit.

Participant 6: Yeah. I'm just trying to check the ones of this week.

Researcher: How did this make you feel to see that you're using... so WhatsApp is the one that you use the most. How does that make you feel? Is it not shocking?

Participant 6: Not shocking.

Researcher: But for example, LinkedIn is very used, but you didn't mention it.

Participant 6: No I think I just use it that day and then that's why it show it but I haven't been using it much. If you check the ones today. Like I haven't used it in three days - four days But it is there because I checked it on Sunday

Researcher: and when you look at these apps if you were to choose the emotion cards which emotion card emotion do you feel about these apps being the most popular apps in your phone?

Participant 6: What emotion

Researcher: Yeah, like how does it make you feel to see that the most use apps on your phone is whasaap Facebook? And this.. the one that I don't know what is

Participant 6: it says more and I cannot check what is more for them. anyhow I think WhatsApp it's fine.

Researcher: Yeah.

Participant 6: Doesn't make me feel bad because mainly WhatsApp, I use it for my family. Facebook makes me feel guilty because I'm not being productive and just wasting my time there. And then more one I guess just wasting more time guilty

Researcher: Okay, in which context and situation do you use these apps? So in which context do you use Facebook? in which context do you whatsapp and which context do you? Yeah, let's just focus on WhatsApp and and Facebook for now.

Participant 6: Okay. What do you mean context like.. I don't know.. work, after some time I just take my phone and check my messages

Researcher: But when do you use it the most? When do you use it the most.

Participant 6: In the evening. Normally I try to not use it much when I'm with people, when I'm eating. And that's it. Otherwise I can use it.

Researcher: So when you're alone you usually use it

Participant 6: yeah.Most of the time, when i am alone

Researcher: so if you are with people, you don't really use Facebook a lot?

Participant 6: When I'm with?

Researcher: when you are with people

Participant 6: yeah, I will use it a little bit and then if it's something urgent, I reply in the moment, but most of the time I'm not.

Researcher: But then if you were watching something super interesting on Netflix, do you still use Facebook a lot?

Participant 6: No.

Researcher: Okay. What about whatsapp?

Participant 6: No. Unless it's something urgent or someone is calling me otherwise I will just wait.

Researcher: So you mostly use it if you receive calls

Participant 6: If I'm watching something interesting, very interesting in Netflix, and someone calls me then I will pause it and then I will reply that or answer it

Researcher: But how do you use whatsapp?

Participant 6: messages? Or is it something like a movie that I need to pay attention all the time? I don't use my phone and I just put it apart.

Researcher: But do you.. when do you use the whatsapp mostly?

Participant 6: In the evenings

Researcher: In the evenings, mostly?

Participant 6: No, it's like also in the morning, because it's when I get all the messages from my family. And maybe in the evenings, replying like how was your day or making conversation.

Researcher: And you mainly use messages and calls?

Participant 6: Yes

Researcher: So the sections or features in the app you use mostly in WhatsApp, it's mainly messages, mainly messages, but also calls especially for your brother

Participant 6: and video calls.

Researcher: And for Facebook, you mainly go on Facebook video, or do you go on to feed a lot?

Participant 6: No, video.

Researcher: Facebook videos so to watch funny content but then what is the difference between.. Do you know the apps such as YouTube and tik tok? They also have funny content.

Participant 6: Yeah, but I feel like I'm going to... It takes more time for me. I used to watch a lot of videos in YouTube and stuff but it just takes more than two hours so that's why I'm not using them anymore

Researcher: okay, so just checking your screen time from before the challenge and after the challenge so after the challenge it was tree hour and 20 minutes and before the challenge it was.. I don't know, I need to do the average

Participant 6: okay. I think it was like five hours or something too much. And it was mainly because it was a longer calls with my family

Researcher: Yeah,But before you spend two hours per day approximately and after that you spend more time after the challenge. So the challenge increased your time.

Participant 6: I will say like it was not because of the challenge. I'll just say that I'm spending more and more time every day with my phone in general

Researcher: and why are you spending more time with your phone?

Participant 6: Because I don't want to study

Researcher: but you you like less to study now or is it because you don't like what you're doing right now with your studies?

Participant 6: No, it's because I need to prepare for the interviews and stuff and that's something that it's not motivating me and it should. That's the only thing, not for studies and/or work, I think that's still the same

Researcher: so that you demotivated by your, the pressure to prepare for interviews.

Participant 6: Yeah

Researcher: And why are you pressured by preparing for interview?

Participant 6: Because I should get something, I should get a job.

Researcher: But are you afraid of failing? Is that why you are

demotivated by the pressure to prepare?

Participant 6: I think so there's like a lot of things. I should get into it.

Researcher: What do you mean?

Participant 6: It's like not a nice timing for interviews. And then it's like, I need to prepare for interviews and jobs. And then it's like, Okay, I need to check which jobs I like, and then I'm checking jobs and it's like, I'm not fully interested in the jobs. And then the one that i want they ask for other things that I don't have. And then I'm not even like PhDs or something that is not something that I can get. And then I'm just like procrastinating and not been ready for that.

Researcher: Okay, so you're unsatisfied with your job process in general.

Participant 6: Yeah

Researcher: So are you afraid of not finding the job that you like?

Participant 6: Yes.

Researcher: So that's why you're procrastinating

Participant 6: Yeah and then I feel like if I don't get a job, then I can hear then

I should move to another country. And then I don't know which other country and then all that process thing.

Researcher: so it's kind of like a vicious cycle, like you don't find any jobs and then you're not really motivated. And if you don't find a job, you should move but you don't know we're so it's like go into this loophole and then instead of thinking about it, you just go on Facebook videos. Okay? Understand?

Participant 6: Yes.

Researcher: Okay, is there an application that you cannot give off no matter what something that you need for work or something that's very necessary in everyday life that you would never be able to give up?

Participant 6: I think whatsapp at the moment

Researcher: why?

Participant 6: Because otherwise I will lose contact with my family.

Researcher: Okay. And is there an application that you can But don't want to give up.

Participant 6: Yeah. the other ones,

Researcher: So all the other ones, all your other applications

Participant 6: I think the ones that I am wasting most time.. Facebook

I normally delete the app and then coming back sometimes,

Researcher: sometimes you delete it?

Participant 6: that that's why I don't have Instagram on my phone. I don't have the app because I was wasting too much time.

Researcher: But then you redownloaded it?

Participant 6: Yes.

Researcher: Okay. I was just making sure.

Participant 6: But I will delete it again.

Researcher: [random conversations]

Cool, done, thank you so much. I'm gonna stop that.

B.1.7 Participant 7

The audio recording of participant 7's interview unfortunately failed to save and therefore the researchers relied on the notes taken during the interview to account for his/her insights.

Researcher: What is your age?

Participant 7: I am 26.

Researcher: What is your gender?

Participant 7: Male

Researcher: What is your nationality?

Participant 7: Bulgarian

Researcher: What is your occupation?

Participant 7: I am a student and a part-time employee.

Researcher: What is your marital status?

Participant 7: I am in a relationship.

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 7: No, I have never.

Researcher: Describe the different use scenarios your smartphone is part - Do you use your phone to check the time?

Participant 7: No. I don't usually check the time. I don't care. That's why I am always late.

Researcher: How often do you use your smartphone to make phone calls?

Participant 7: Around 4-6 times a day.

Researcher: Do you use your phone when you eat?

Participant 7: No. Even not if I am alone.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 7: No.

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 7: My phone is next to me, but the internet is not on. The reason why is next to me is so I can hear my alarm in the morning.

Researcher: Can you identify any problem areas with regards to your smart-

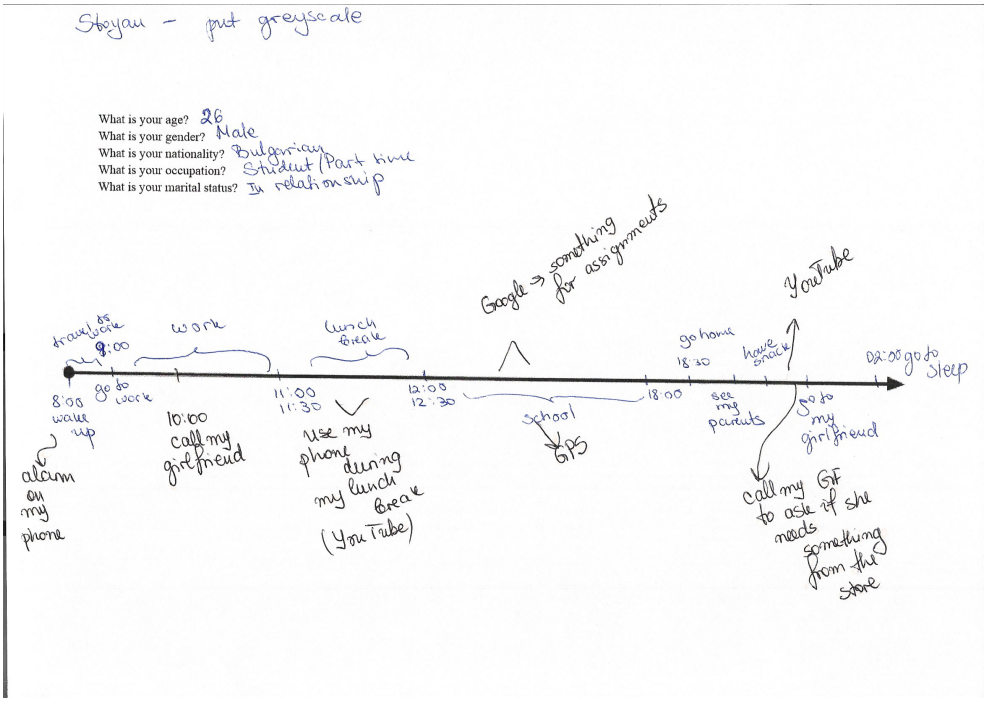


Figure B.7: Participant 7 timeline

phone usage - Do you seem to lose track of time when on your smartphone?

Participant 7: Not really.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 7: No.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 7: I am not feeling like missing something. And no, I have not. I am not feeling stressed. I don't care much about my interaction with the phone.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 7: No, I don't think so.

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 7: Yes and no. For work I use it and it makes me productive, but during the weekend I use it to watch different kinds of stuff and I can't start doing some other things, which are more important for example.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 7: Probably yes. But if I need it for work, I would not be able to find some material and find the problem.

Researcher: What daily screen time would you consider too much?

Participant 7: More than 3h per day.

Researcher: What are your expectations in regards to your screen time?

Participant 7: To make it less.

Researcher: Is your usage lower or higher than expected?

Participant 7: 19h 34m before and 16h 5m

But the app took next Monday as well. I think that the time was kind of the same. The only thing about the white-black thing was when I was trying to turn on my wifi or GPS since they didn't change their colors, I was not sure if they were on or not.

I thought that it would be the same.

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 7: Kind of. I thought that it will be less than 3h per day. It doesn't make me feel kind of bad. Maybe Nah. I don't find it as a problem.

Researcher: Did the challenge impact your screen time, subconsciously? How did this challenge make you feel?

Participant 7: Not really. I actually wanted to see if the challenge will make me use it less or no, so I tried to use it as I normally do.

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 7: Youtube Chrome Facebook

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 7: Youtube Phone calls Chrome

I am surprised because I thought that Facebook will be more. I feel good, that I spend less time on Facebook, I guess.

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 7: Yes. According to Facebook yes. But generally, I thought that I will spend less time on the phone. Nah (8)

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 7: Youtube - for entertainment Chrome - for work/school Facebook - for entertainment They make my day goes easier.

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 7: Chrome I know what I am looking for web sites with no commercials. Youtube - recommended stuff - based on what I am interested in

Researcher: Did the challenge decrease your interaction with your favorite apps? How did this make you feel?

Participant 7: My Facebook time decreased drastically - from 3h to 22min. My YouTube decreased with 1,5h. This means that I have not spent my time on useless stuff. This makes me feel really good.

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 7: Maybe YouTube, because I can find everything in one place - something for work, something for school, news, entertainment. It is easier for me to remember one thing - watching it than reading it.

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 7: Not really.

Researcher: Which one of the challenges do you think will be the hardest for you to do?

Participant 7: App limit - the hardest. Sometimes, I really depend on my phone when at work to google different things.

B.1.8 Participant 8

Researcher: What is your age?

Participant 8: I'm 25.

Researcher: What is your gender?

Participant 8: Female

Researcher: What is your nationality?

Participant 8: Croatian

Researcher: What is your occupation?

Participant 8: I am a student.

Researcher: What is your marital status?

Participant 8: I'm in a relationship.

Researcher: Describe a day in your life. How does your everyday life look like?

Participant 8: On a regular day, I wake up at 7. I am brushing my teeth and doing the toilet thing. It takes around 10 min. I drink my coffee around 7:20. Around 7:45 I'm already out of the house and I go to university.

Then I catch my bus and train. I am at school around 8:30. I usually grab some breakfast which I eat until 9.

At 9 my classes start. I don't have a break until 12:15. Then I have a lunch break. So from 12:15 until 13:00, I have a lunch break. Then from 13:00, I have group work, which continues until around 15:00. Usually, I am home around 16:30. Then I feed my pets and prepare some snacks and then I go to the gym until 19:30. After that, I go home and have some quick dinner and I try to do something for a university or I watch Netflix. I am done until 22:00 - 22:30. I go to bed and before I fall asleep, I am on my phone.

I use my phone in the morning to wake up. Usually, I have 2-3 alarms before I wake up. When I am drinking coffee, I check my phone. After that I travel, I usually use my phone, since it shortens my travel time. I search for music on YouTube or browse through social medial. I don't use my phone while having breakfast, since I am meeting some friends, so I don't use it. When I am in class, more often I don't use it, maybe for some messages, but not that often. During lunch, I spent a lot of my time searching for jobs.

During group work, I am usually more focused on doing the job than on my phone. Sometimes for some messages, but for around 5 min. Then on my home back, I use my phone.

When I get home, my boyfriend is done with work, so we chat on Viber or friends are calling me.

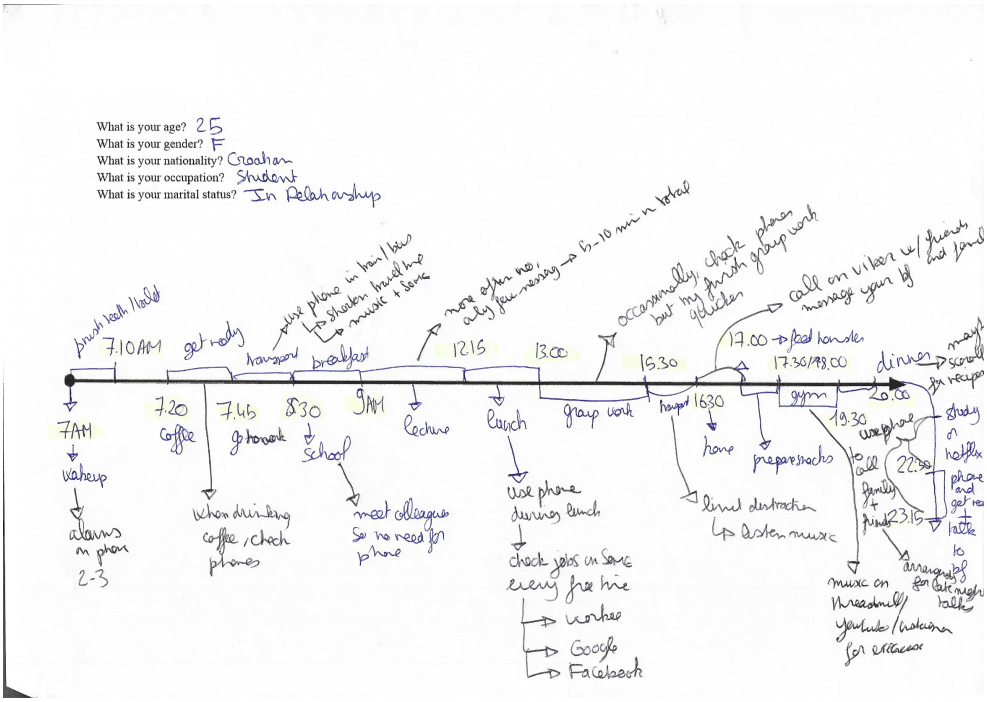


Figure B.8: Participant 8 timeline

When I am in the gym, I use it to search for some music or search for exercises. During dinner, I don't use it that much. Sometimes I search for recipes, but regularly - not really.

Before I go to sleep, I spend around 20-30 min when I talk to my family. I also text some friends. We usually text then, because we all have free time.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Participant 8: Usually after school - in the evening and during the night. In the morning, I am busy, so I don't have that much time for my phone, but during the night, when I am free, I use it to catch up with my friends and family.

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Participant 8: Since I am not from here, it is very necessary for me to keep in contact with my family. I feel homesick and I feel less sad when using the phone to contact them.

Researcher: Do you consider your relationship to your smartphone similar to a

relationship with a friend/human?

Participant 8: No, definitely not. I think many things a way better when you have a human connection than with your phone.

Researcher: Describe the different use scenarios your smartphone is part - Do you use your phone to check the time?

Participant 8: Yes

Researcher: How often do you use your smartphone to make phone calls?

Participant 8: On average 15 times a day.

Researcher: Do you use your phone when you eat?

Participant 8: Sometimes yes. Maybe 2 a day when I eat, but it is usually when I am eating alone.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 8: It depends on the situation; if I am free to do it - yes, if not I do it when I can.

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 8: Yes. It is on my night table

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 8: Yes. I usually make some limits to myself and I say "Ok, I will use this time for this specific time". Sometimes, I can not keep track of everything I do, but mostly I am trying to set up some limits.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 8: Yes, it happens - not every time, but it happens. It is more occasionally. It is not like I am doing it on purpose, but it happens.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 8: No. Definitely not. I will feel sad, but not in a way of being nervous, but then I say to myself self "Okay, I will be there next time".

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 8: Yes, sometimes I lose complete track of how much time I spend on my phone, but around 45 min.

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 8: Yes. When I know that I have to study or do something and my

focus and motivation are not that much and I find myself watching some videos on Youtube, then I feel less productive.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 8: Yes, it has happened before and I survived. I didn't really think about that too much. About my family - If it's a day or two or three, it's ok; if it's more I would be devastated because I would miss them. I would mainly feel anxious because of the loss of contact with the family. Especially cause now it's the only way to see your family and this is why I would feel like that.

Researcher: What daily screen time would you consider too much?

Participant 8: Instagram? Instagram takes me a lot of time - usually is I would say 2.5h a day to use only one application. And I think that this is too much.

Researcher: What are your expectations in regards to your screen time?

Participant 8: It is a process that I am working on, to spend less and less time per day. I am trying to set a limit on each application for about 15-20 min per day. The main applications are around 4.

Researcher: Is your usage lower or higher than expected?

Participant 8: After the challenge - 2 hours and 28 min per day

It feels weird that I had more time after the challenge, but it was because I was looking for a new job. I guess it was depending on the situation I had. But normally, I don't spend that much time.

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 8: It is exhausting. I catch myself during the day that I am spending too much time. But there are different reasons why I do that - sometimes I am bored, sometimes it is because I am looking for something in a productive way.

Researcher: Did the challenge impact your screen time, subconsciously? How did this challenge make you feel?

Participant 8: It felt different because every time I turn on my screen I was seeing the times saying how much time I saw spending on my phone and it sometimes it made me feel pressured.

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 8: I would say Instagram and afterward will be Facebook.

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 8: Facebook, Instagram and YouTube

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 8: Now I completely forgot about YouTube. I didn't consider it as an application that I use that much. I use it mainly for listening to music.

Somehow I expected it because I know that I use them a lot. Sometimes I am surprised by how much time I spend on them.

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 8: I have few friends that don't have Facebook and we just use Instagram to chat. I also see a lot of recipes and exercises and I just implement these things into my daily life.

Facebook is mainly used because of my study groups and different job applications. I am looking into groups and pages for jobs. I am not looking into the comments or photos. I found my previous jobs through Facebook and this is why I am looking for a new job there.

I tried to install a music app, but it didn't work for some reason and since I have a lot of GB I decided to use YouTube to listen to music.

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 8: The regular posts and videos that people put on Instagram. I usually type the name of the group and look into there. I don't use messages that much there. On YouTube, I search for music.

Researcher: Did the challenge decrease your interaction with your favorite apps? How did this make you feel?

Participant 8: I didn't catch it after the challenge. I think I spend less time now, just because I got used to it. The app limit was for Instagram and Facebook. I didn't track it, I just have a feeling that it is less. I feel a bit more productive than I am spending less time. I am focusing more on human interaction.

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 8: There is Viber - okay if you can behold an app because this is the only way for me to communicate with my family.

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 8: Instagram, because of I a spending a lot of time on it. And it is doable to find recipes and exercises on google. I think it is just a habit of using it.

Researcher: What are the most important things in your life for using your smartphone?

Participant 8: Definitely family, health and friends.

B.1.9 Participant 9

The audio recording of participant 9's interview unfortunately failed to save and therefore the researchers relied on the notes taken during the interview to account for his/her insights.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Notes: Occasionally: To schedule meetings throughout the day; for instance, lunch

Notes: : Check public transportation

Notes: Coffee breaks → automatic; made it a routine

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Notes: Opposite: in china, they used the phone much more; everything is done through the phone; since coming back I have been using it less

Notes: When friends from back home are meeting; I am more prone to check the phone

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Notes: More as a tool - allow contact for friends that are not physically there

Notes: Why do you need to keep in contact? Since I have a lot of uncertainties, I am unease → use friends as advisors; where to head my career; also happens to be the one I traveled with recently

Notes: It takes time but I do it because, on a long term, I see myself living in Spain so I want to maintain the meaningful relationships there; keep up with them; so everything would be the same; fill the gap

Researcher: Describe the different use scenarios your smartphone is part:

Researcher: Do you use your phone to check the time?

Notes: Not usually, always carry a watch

Researcher: How often do you use your smartphone to make phone calls?

Notes: 3 times a week; call through apps; one case is catching up and other case is we need to solve something quickly and it's easier to call than type

Researcher: Do you use your phone when you eat? Not regularly;

Notes: if I eat alone, I would

Researcher: Do you check your phone as soon as it makes a noise?

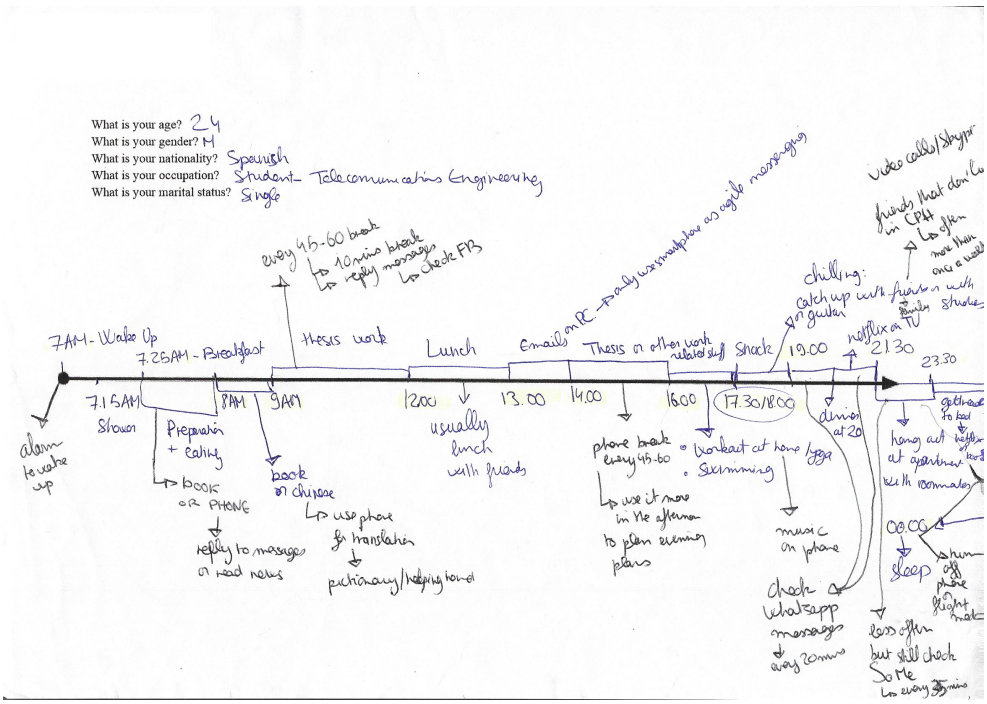


Figure B.9: Participant 9 timeline

Notes: Yes

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly? **Notes:** No, put it in the bookshelf with the charger - stand up to grab it

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Notes: Not really; sometimes I get too involved in a chat but not often

Researcher: Do you sleep later at night, when on your smartphone?

Notes: Yeah, worst case scenario another 1 hour before bed;

Notes: Extend time before going into room

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Notes: Yes sometimes; used to happen when I was using Instagram but now I deleted Instagram so I don't check the stories anymore

Notes: I can't go because I am studying

Notes: Especially with friends back home, when I was in Asia because I couldn't be involved in my circle in Spain - more sad than anxious

Notes: Homesick

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Notes: Yes, not often - the combination of phone (3-4 hours) and PC

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Notes: Yes, in scenarios when I am not too motivated to do my tasks

Researcher: Would you be able to live without your smartphone for one day? Why?

Notes: Yes, it would be weird - because I am used to be able to check the messages relatively often → especially in student organizations, urgency is important

Researcher: What daily screen time would you consider too much?

Notes: From and above 3 hours is too much

Researcher: What are your expectations in regards to your screen time?

Notes: Lately above 3 hours and usually less when I don't have to stay home

Researcher: Is your usage lower or higher than expected?

Notes: 5h in average

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Researcher: Are you happy with the time which you spend on your phone?

Notes: Makes me feel like I am wasting time - should be more productive

Notes: Do something more healthy

Notes: Very shocked by the actual result

Researcher: Which apps did you expect to be the most used on your smartphone?

Notes: Whatsapp, Facebook messenger, the news/browser

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Notes: Whatsapp, Messenger, Ecosia

Researcher: Are the results different from what you expected? How did this make you feel?

Notes: It's the same

Researcher: In which contexts and situations, do you use these apps? Why are

they important?

Notes: To keep in contact → follow where my friends and family are

Notes: News/browser → I have a box with all the shortcuts to the newspaper from the browser; easier than downloading an app

Researcher: Which sections or features of these apps are your favorite? Why? How do you interact with them?

Notes: Texting, primarily and then video calls next

Notes: Sometimes phone calls

Researcher: Is there an application that you can not give up? (something that you need for work)

Notes: Whatsapp is the one I use the most - where all my contacts are

Notes: Family, friends → maintain to keep contact

Notes: Messenger for Denmark

Notes: Instant messaging apps

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Notes: Maybe slack → usually another distraction on the phone, but still, it would allow me to check something and occupy my mind; miss things for organizing events

Notes: For urgent stuff, we talk through messenger

Notes: For less urgent, it is on slack but the fact that it is on my phone makes it feel urgent

Notes: App positioning; the apps are already diversified and i can just access apps notifications

Notes: Remove notifications → opposed of above, can maybe lower a bit interaction but still accessible

Notes: Put greyscale → it's uncomfortable ; it would decrease it but not sustainable

Notes: App limit → hardest; tried it once and i would go more often to extend it

Researcher: Important values:

Notes: Health; mental health and physical health

Notes: Beloved ones; friends and family

Notes: Personal growth

B.1.10 Participant 10

Researcher: What is your age?

Participant 10: I am 24

Researcher: What is your gender?

Participant 10: Male

Researcher: What is your nationality?

Participant 10: Greek

Researcher: What is your occupation?

Participant 10: Software developer and student

Researcher: What is your marital status?

Participant 10: Not married

Researcher: Describe a day in your life. How does your everyday life look like?

Participant 10: I wake up at 8 am. I snooze my alarm, then I check my notifications on my phone. I get out of my bed around 8:20. Then I have breakfast. I eat breakfast for about 10 min. I go to the bathroom, I prepare myself and I leave. I go to work at around 9 am. Around 12:30 I have lunch and around 12:45 I am back and keep working until 18:00. Then I come back from work and go to the gym around 18:45. I am there until 20:15, then I go to the store and buy something for dinner. Then I come back home and start cooking at 8:35. I finish cooking around 21:10. I eat until around 21:30. Afterward, I just sit on YouTube for around 30-40 min, then I get myself to do some work from 22:00 until 23:00 - coding, reading - depends on the day. Then I get a shower from 23:00 - 23:30 and then I go to sleep. Around midnight, I fall asleep, I rather read or I am on my phone watching videos on YouTube - it depends how tired I am.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Participant 10: I use my smartwatch to wake up. It has to communicate with my phone. When I wake up, I check my notifications on my phone, since it is silent during the night. When I eat breakfast, I don't use it. I use it before I leave because I put my headphones and start listening to music. During work, If somebody sends me a message if I get an email, I will check it out, but mostly I don't. If it is something that I have to do something - I check my phone. I also check my phone for the time.

During lunch, I don't use it when I am having lunch with the other, but when I am alone - I am on my phone. I check my notifications during work for about once or twice an hour.

Around 18:00 I go home, I listen to music on my way home. Sometimes, I am listening to music while cooking, but not always. From 21:30 to 22:00 I watch YouTube,

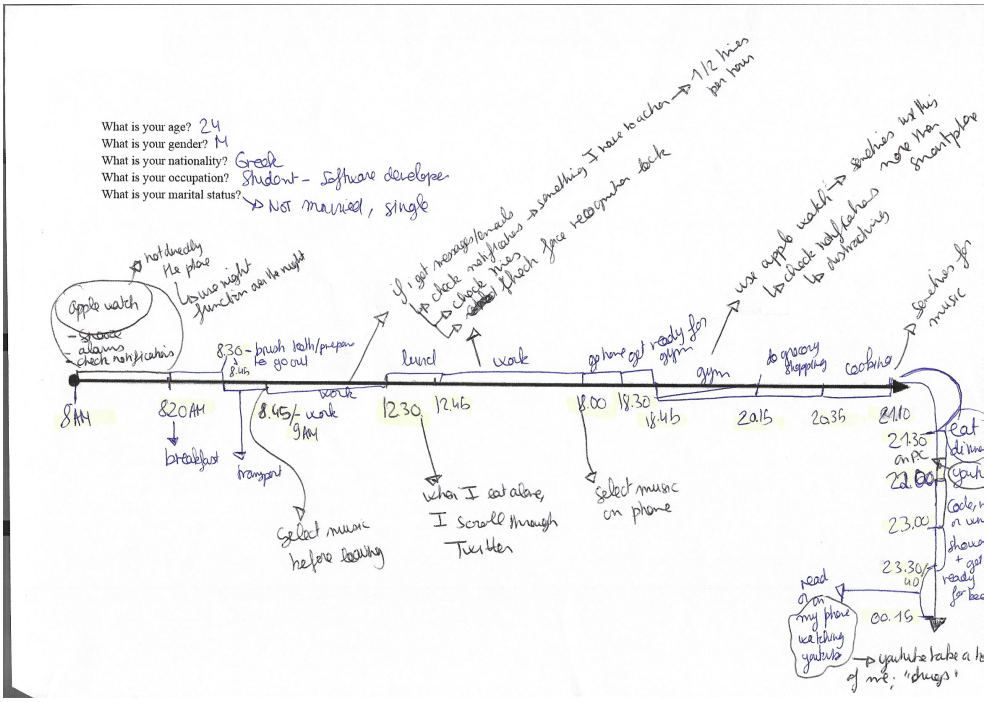


Figure B.10: Participant 10 timeline

but on my PC. Before bed, if I get a notification - I check it. YouTube is my phone drug when I am tired, I watch YouTube. Otherwise, I mainly read.

When I am making calls or anything that requires notifications, not for emails - I go to my laptop to read them. But anything with notifications - like Twitter, Messenger, LinkedIn, Tinder. Music on the road. Anything that I am outside, it is a useful tool - navigate, pay for something.

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Participant 10: Friends from Greece, when we text since the communications are mainly through texts. Also my family. Most of my communications go through Messenger.

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 10: No. I am a bad texter in general. I prefer to talk with people face to face. I don't get the same feeling when I am talking with people face to face.

Researcher: Describe the different use scenarios your smartphone is part - Do

you use your phone to check the time?

Participant 10: Yes.

Researcher: How often do you use your smartphone to make phone calls?

Participant 10: Once a day. Once a couple of days.

Researcher: Do you use your phone when you eat?

Participant 10: No. I think it is messy.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 10: It depends on the setting. If I am having dinner or breakfast - no. If I am at work, probably yes.

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 10: Yes, it is on, next to my head on sleep mode.

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 10: Yeah, I think I do. It is not really losing track of time. I know how much time I am watching this video - I know what the time is, but I just keep on not starting doing something else.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 10: Yes, I watch this one YouTube video and then I continue watching and I end up like watching 5-10 videos. I lose like 30-40 minutes of my life doing this.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 10: No. Not in general. Sometimes, I feel jealous of girls on Instagram.

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 10: No

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 10: Not really. I have other devices that are way worse. I think that a laptop is a way worse in terms of productivity.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 10: Yes. I think I could even go for more than one day - maybe like a week. The problem is about the calls, like when my parents are calling. My father

also does not have Facebook, so I call him directly.

Researcher: What daily screen time would you consider too much?

Participant 10: I don't consider any screen time too much. Regards to my smartphone, it is like more than 2h a day.

Researcher: What are your expectations in regards to your screen time?

Participant 10: That is a hard question. So ideally, I would like to spend 0 times on my phone, but at the same time, I would like to do some work and since my work is digital, I would say I want the minimum time possible on my phone.

Researcher: Is your usage lower or higher than expected?

Participant 10: Before the challenge was 1h 48 min and after 1h 53 min.

It is fine.

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 10: I am not spending too much time but more than I want to. An app is disproportionately increasing my screen time. I would like to reduce it but I sound addicted. I can't remove it because I enjoy the app on my phone, so this is why I am trying to reduce my time there. Humans are visual, all the pleasure they get from literature would be more long-lasting or exciting if the mechanism is in action. With YouTube, you don't have to rest, you are getting something from the visual input.

Researcher: Did the challenge impact your screen time, subconsciously? How did this challenge make you feel?

Participant 10: No, it increased because my phone seemed novel because of the greyscale. This is why I went and played around. Instagram was way better, also YouTube was nicer too. I like black and white. I remembered the challenge at the end, didn't impact me too much. On the 6th/7th day, I wanted to go back and I missed the normal interface.

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 10: Youtube, twitter, messenger

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 10: Camera, Youtube, Instagram. The camera is because I had to shoot some videos.

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 10: I am fine. They are slightly expected. I have a good idea of how much time I am spending - maybe I don't have exactly how much time it is, but I can slightly predict it. When I am sick, the screen time changes (daily average 3.39) and around 7 hours of YouTube.

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 10: I use Youtube late at night when I am the most tired because it's garbage/trash tv. But it is accessible. Twitter, I use it throughout the day - after I wake up, during lunch if I am alone. Maybe 5-10 minutes here and there throughout the day to catch up. Messenger I use for notifications only - very rarely I go by myself. It is mostly when somebody sends a message. Instagram is when I see a notification or when I feel horny, maybe in the mornings to see last night's Instagram stories

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 10: YouTube I use the explore page. Twitter is through the feed. Messenger is 80% messages and 20% video calls. Instagram is mainly stories and explore/search.

Researcher: Did the challenge decrease your interaction with your favorite apps? How did this make you feel?

Participant 10: Maybe, but it really depends. In terms of results, it has to be a little longer. Maybe during the week, I was not that much at home or I was watching YouTube on my laptop - maybe I didn't feel like my interaction decreased.

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 10: No, I think Twitter has been meaningful even though it is 90% garbage, 10% meaningful. But I don't think that there is an application I can not give up from.

Researcher: Is there an application that you can, but don't want to give up? (like messenger)

Participant 10: I would say Twitter, Instagram and messenger because they are useful and cool. Because I use them for actually communicating with people. Youtube is an application that I can and would give up.

Researcher: Why don't you do it?

Participant 10: Good question, I don't know. I have to let these things sit through my head so I can feel that the decision was mine instead of feeling like it's addictive through this interview.

B.1.11 Participant 11

Researcher: What is your age?

Participant 11: I am 19

Researcher: What is your gender?

Participant 11: Female

Researcher: What is your nationality?

Participant 11: Croatian

Researcher: What is your occupation?

Participant 11: Student

Researcher: What is your marital status?

Participant 11: Not married

Researcher: Describe a day in your life. How does your everyday life look like?

Participant 11: I wake up around 8 am. I have breakfast at around 8:05, then I start getting ready until 8:30. So usually around 8:30 I am ready and I leave for school. I am at school around 8:50. I have classes until 12:15, then we have a break until 13:00. We eat lunch in school or someplace close to school. Then from 13:00 - 14:30 we have group work. After that, I go back home around 15:00. If I have to do something like laundry, I do this. Then I go to work, which takes around 45 min and I work from 17:00 - 21:00. Then I finish, I take the bus home and I am home around 22:00. Then I take a shower, usually, I take something from work and eat it at home. And then I just watch something and I go to sleep around midnight. And I stay on my phone for around half an hour to an hour.

Researcher: How does the phone play into your everyday life? When is the phone a central part of your everyday? What are the frame and the context?

Participant 11: I use my alarm to wake up. I use my phone while having breakfast, I usually watch some video. I listen to music on the bus. During classes, sometimes I use it, but not a lot. I don't use my phone during lunch, I talk to people. If I am alone, I would probably use it. During group work, I check it only if I have notifications. On my way back home, I use it to listen to music. Usually, when I am home after classes, I watch Netflix. During work, before closing there is not that much time at work, so I am on my phone - I watch videos. On my way home, sometimes, I talk to my mom. Then I get home, I watch Netflix on my phone while having dinner. When I go to bed, I check social media - Instagram, Facebook. I check my messages.

Researcher: Are there any relationships or situations in your everyday life that promotes your smartphone usage? Why is the phone important in these scenarios?

Participant 11: For me, the most important is google maps, so I can check where I am going, to check when the bus is coming. Then it is important for me to

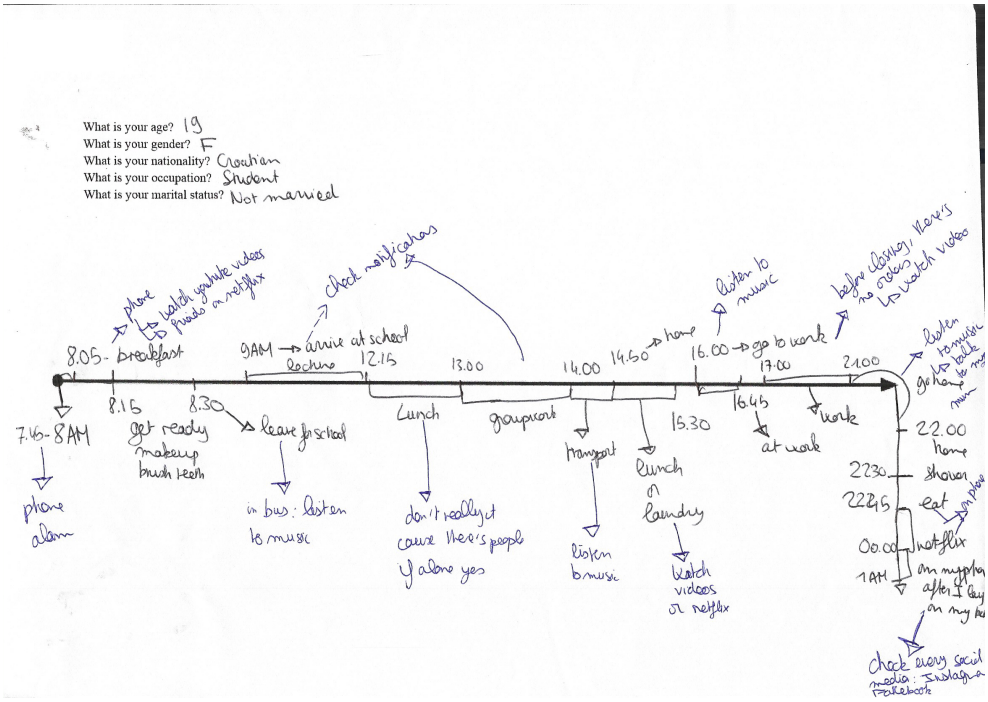


Figure B.11: Participant 11 timeline

listen to music while traveling. I talk to my family, so I have to use it for video calls and contact my friends as well. I usually don't text people, but I can't see them on a regular basis

Researcher: Do you consider your relationship to your smartphone similar to a relationship with a friend/human?

Participant 11: No

Researcher: Describe the different use scenarios your smartphone is part - Do you use your phone to check the time?

Participant 11: Yes

Researcher: How often do you use your smartphone to make phone calls?

Participant 11: Once a day

Researcher: Do you use your phone when you eat?

Participant 11: Yes, to watch Netflix. Just like a distraction while I eat.

Researcher: Do you check your phone as soon as it makes a noise?

Participant 11: Yes, I have different sounds for different apps, but if it is a text noise - I will check

Researcher: Do you sleep with your smartphone (turned on) under your pillow or next to your bed regularly?

Participant 11: Yes, it is next to my bed.

Researcher: Can you identify any problem areas with regards to your smartphone usage - Do you seem to lose track of time when on your smartphone?

Participant 11: Yes, if I watch a video I don't realize how much time I have spent.

Researcher: Do you sleep later at night, when on your smartphone?

Participant 11: I stay up on the phone because I am not that tired. Or maybe this is what I think, so I would say no.

Researcher: Do you feel FOMO? Has your smartphone caused you feelings of anxiety and/or stress?

Participant 11: No

Researcher: Do your eyes hurt after using the smartphone for a longer time?

Participant 11: It has to be a longer time - like 3 hours.

Researcher: Do you feel your use of your smartphone decreases your productivity at times?

Participant 11: Yes, if I have to read something for school I can easily get distracted.

Researcher: Would you be able to live without your smartphone for one day? Why?

Participant 11: No, I use it to wake up, to check the time, to check the busses, I have the travel card on it - it is necessary for my everyday life.

Researcher: What daily screen time would you consider too much?

Participant 11: Maybe like 5-6 hours is too much - more than 6h.

Researcher: What are your expectations in regards to your screen time?

Participant 11: Ideally around 1h-1h30

Researcher: Is your usage lower or higher than expected?

Participant 11: No, I thought that it will be even less, but I was not that surprised. It is almost the same. I tried to not be that much on the phone and I forget about the apps when I didn't get the notifications.

Researcher: What is your opinion on your personal screen time? Describe your emotions:

Participant 11: I want it less. I don't want to use it that much. I am not happy about my usage time. I am not feeling guilty. It's not even social media but I use it even when making food.

Researcher: Did the challenge impact your screen time, subconsciously? How did this challenge make you feel?

Participant 11: Yes, it could also have some impact. Maybe sometimes I told myself to not go too much on my phone

Researcher: Which apps did you expect to be the most used on your smartphone?

Participant 11: Instagram, Netflix

Researcher: Which apps did you, in reality, interact with the most on your smartphone?

Participant 11: Netflix is the most used.

Researcher: Are the results different from what you expected? How did this make you feel?

Participant 11: I am not surprised. I expected it because I am aware of what I spend my time. Even tho, when I am bored, I go to Instagram, just for the sake of going there. Sometimes I have seen everything on Instagram and I would scroll through because I am bored.

Researcher: In which contexts and situations, do you use these apps? Why are they important?

Participant 11: Instagram → when I am bored or if I want to comment or to contact people Netflix → when I cook or eat or when I get ready. I also use it as a distraction

Researcher: Which sections or features of these apps are your favorites? Why? How do you interact with them?

Participant 11: For Instagram, I use the most DMs and then explore. For Netflix I watch shows.

Researcher: Did the challenge decrease your interaction with your favorite apps? How did this make you feel?

Participant 11: I would say yes, overall screen time decreased; I would still go but less because there were no notifications so I would go when I had time.

Researcher: Is there an application that you can not give up? (something that you need for work)

Participant 11: Probably the Travel Card and Google Maps

Researcher: Is there an application that you can, but don't want to give up?

(like messenger)

Participant 11: Yes, maybe all social media but I don't want to. It's easy to talk to people. It's good as a distraction when you are bored. I am also used to it, but I want to change it.

Researcher: Why don't you do it?

Participant 11: Good question - I don't know why but I think I could.

Researcher: What are the most important values regards your smartphone?

Participant 11: Family is the first. Then health, in general, is really important for me - mental health; well being; content. Then it is my career and studies

B.1.12 Participant 12

Researcher: Okay, so first of all, we're both students at the Technical University of Denmark, and we're doing our project on addiction. And more specifically, we're looking at smartphone addiction. And we're focusing on university students. And so the whole purpose of this interview would be mainly to understand how the smartphone plays into your everyday life. It's going to be very general questions and I hope we don't touch any sensitive topics because you know, it's it is smartphone usage, but let us know if it's too much. We're going to start off with some demographics questions just to understand what kind of university student you are. But we're not using it for anything. It's just in case we have trends or patterns that we notice in the answers. We will use them but yeah, first of all, what is your full name?

Participant 12: Should I start?

Researcher: Just your full name, just like 'my name is **Participant 12** '

Participant 12: My name is **Participant 12** and I'm from Bulgaria.

Researcher: Yeah. What is your age?

Participant 12: I'm 19. Almost 20 in a few days. Yeah.

Researcher: What is your identified gender?

Participant 12: I'm female.

Researcher: Okay, what is your nationality?

Participant 12: I'm from Bulgaria, Bulgaria.

Researcher: Okay. What is your occupation?

Participant 12: I'm a student and a part time employee.

Researcher: Okay. And what is your marital status?

Participant 12: I'm sorry, what?

Researcher: Marital status?

Participant 12: I'm single.

Researcher: Okay, cool. Yeah, I know it sounds a little bit weird. It's just in case we find any patterns.

Researcher: Okay, cool. And you're writing notes right?

Researcher: Mhmm

Researcher: Okay, cool. Okay, so we're gonna start off by asking you to describe an average day in your life and try to say it without thinking in the smartphone to begin with. Just, let's start of with what time do you wake up for example?

Participant 12: Okay. Usually, if I'm not at school, like if my lectures don't start at nine, I wake up around eight, but if I have to be at school at nine, I wake up

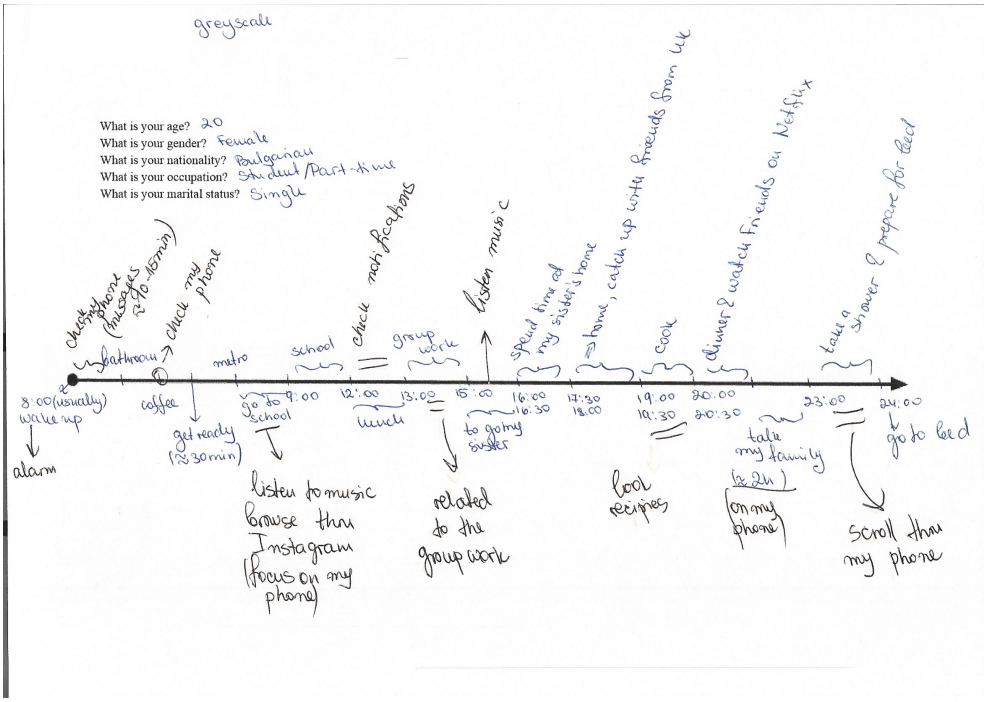


Figure B.12: Participant 12 timeline

earlier, like, 7.00 - 7.30.

Researcher: Okay, so let's say you wake up...

Participant 12: Usually around eight.

Researcher: Okay, so let's say you wake up at eight, what is the first thing you do after you wake up?

Participant 12: Of course, as every young person, I think the first thing is to check my phone.

Researcher: Yeah.

Participant 12: First to stop my alarm. And then just to check, because I usually in the morning have a lot of notifications from the apps. Doesn't matter if it's Instagram or messenger, but people have sent me like memes or my parents like are texting me. And yeah, it's just to check my notifications if there's something really important to answer.

Researcher: Yeah, yeah. And how long is that period of time? Is it 15 minutes you're checking notifications or?

Participant 12: Yeah, it's around like 10-15 minutes.

Researcher: Okay, and then after you check your phone, what do you do?

Participant 12: And then I go to the bathroom. And then the first thing when I get out of the bedroom, of the bathroom is to make myself a coffee.

Researcher: Yes. Good.

Participant 12: Yeah.

Researcher: Good start for the day.

Participant 12: Yeah. And then after that I'm putting my clothes on. If I'm going outside, I'm putting some makeup. Or if I'm not, I'm just going to the sofa and putting the TV on. So I'm going to watch some TV.

Researcher: Okay, well, let's take the context of you going out of the house, then. How long does it take you to get ready approximately to get out of the house?

Participant 12: Around 30 minutes

Researcher: 30 minutes. Okay. And then where do you usually go? Is it school? Is it work? What is an average day?

Participant 12: If it's the weekday, I'm going to school usually. If it's weekends, because I'm part time employee and I'm working only on the weekends, so if it's Saturday or Sunday, I'm going to work.

Researcher: Okay, let's take the context of you going to school then. So what time do you leave the house when you're leaving for school?

Participant 12: Depends on what time the lecture starts. But it's usually in the morning around nine. So I have to get up around 8.30. Cause I have 30 minutes with the metro to school.

Researcher: Okay, so you take the metro to school?

Participant 12: Yeah.

Researcher: And then you arrive at school around 9am.

Participant 12: Yeah.

Researcher: And how long is the lecture for?

Participant 12: Usually it's from nine to 12.

Researcher: Okay, yeah.

Participant 12: But we have like, every hour we have breaks,

Researcher: Okay, and how long is the break?

Participant 12: 10 to 15 minutes.

Researcher: 10 to 15 minutes. Okay. And then at 12 you have lunch, I suppose?

Participant 12: Yeah. At 12 we have lunch usually, I'm going with my friends to to the canteen to grab something to eat. And after lunch. We usually have a silence to work on like, by ourselves,not with the lectures.

Researcher: And how long is the lunch break?

Participant 12: One hour.

Researcher: one hour. Okay. So from 1pm till what time do you do your group work?

Participant 12: from 1pm to usually it's assigned to work until four.

Researcher: Mm hmm.

Participant 12: But we are doing everything really quick. So we are finished around 2.30-3pm something like that.

Researcher: Okay.And then what happens afterwards?

Participant 12: After I finish school, I'm usually going home because I'm living close to my sister.

Researcher: Yeah.

Participant 12: And she has her baby now, which is like five months old. So I'm usually going to my sister's home to help her with the baby.

Researcher: Okay, so you go home to your sister.

How long? How long does it take you to get there? What time are you there usually?

Participant 12: It's like, again around 30 minutes with the metro. So it depends but usually around for 4-4.30.

Researcher: Okay, and how long do you stay there?

Participant 12: one to two hours, depends on what is the situations. Yeah, but..

Researcher: But you mainly hang out with the baby when you are there, you don't

Participant 12: What?

Researcher: Do you mainly hang out with the baby? like what do you do?

Participant 12: Yeah. Because when I came here, I'm just helping her with the baby because she wants to get a shower or to cook something.

Researcher: Yeah, understand. And so around 5.30 - 6 you leave from your sister's place?

Participant 12: Yes, yeah.

Researcher: And then you go home?

Participant 12: And then I go home, and then I usually check up with some friends who live in England, talk with them. And then I usually put the TV on and listen to some news

Researcher: How long do you call with your friends from England?

Participant 12: While I'm cooking my dinner. I'm usually listening to the news here.

Researcher: How long do you call with your friends from England?

Participant 12: Depends but sometimes we talk a lot, for like two- three hours. Sometimes we just like having a short discussion about what our day was like. Around 30 minutes

Researcher: Okay, and so when.. what time do you start cooking usually?

Participant 12: Around 7-7.30

Researcher: Okay, and then how long.. when do you start eating then?

Participant 12: Well, depends on what I'm cooking. but usually I start eating around 8-8.30 cuz I'm not that hungry before that.

Researcher: Yeah. Okay. And then how long do you eat for?

Participant 12: 30 minutes?

Researcher: 30 minutes. Do you do something whilst you eat? Do you watch some shows? or?

Participant 12: Yeah, yeah, every time when I'm having my dinner, I'm watching friends on Netflix.

Researcher: Okay. And then so you finish around nine with the dinner right?

Participant 12: Yeah.

Researcher: Okay. And then what do you do afterwards?

Participant 12: Then, I'm, since I'm international student and my parent live back in Bulgaria. I'm usually talking with them, like to see how are they doing, to see how their day was and they are asking me questions like, how have I been today and I'm talking with my mom and dad separately, not because they're divorced, but because they're usually doing their own stuff, and everyone is busy with some things. So I'm usually talking with them separately and that means that I'm spending like, around two hours talking with them.

Researcher: Okay, two hours. So you finish calling with them around 11?

Participant 12: Yeah, something like that.

Researcher: And then what do you do afterwards?

Participant 12: After that I'm going to the bathroom again, having a shower,

and then putting my pyjamas on and going to bed.

Researcher: What time are you in bed like not what time you sleep but what time are you in bed?

Participant 12: Well, I'm in bed around midnight, but then, I don't know, depends how much time I need to fall asleep. If I'm too tired, I'm falling asleep immediately. If I'm not sometimes it takes me like, one hour even two, if I'm on my phone, which is usually

Researcher: So you're scrolling through your phone sometimes. One-two hours.

Participant 12: Yeah.

Researcher: Okay, cool now I'm gonna start asking you some questions. so do you use your phone to wake up for example?

Participant 12: what?

Researcher: do you use your phone when you wake up?

Participant 12: Yeah.

Researcher: Okay. And where do you use it in the morning period? so let's say from.. because you wake up at eight if I remember well, do you listen to music whilst getting ready for example?

Participant 12: No I'm just like when I wake up I just stop my alarm which is awful it's like a sound of like a beeping alarm, like this fire alarms that we have. And then I stop the alarm and I'm just checking my notifications really quick, like not putting music or anything in the background.

Researcher: And then you go for coffee. Do you check your phone when you're drinking coffee?

Participant 12: Yeah, usually when I'm walking from my room to like the coffee machine in the kitchen. I'm scrolling again.

Researcher: Yeah. And then you don't eat breakfast, do you? At home?

Participant 12: No, I don't. I don't. I really cannot eat that early.

Researcher: Yeah, no. And so afterwards, when you get ready, you take the metro. Do you listen to music in the metro?

Participant 12: Yeah

Researcher: yeah?

Participant 12: yeah, I'm listening all the time to the music or I'm scrolling in Instagram. All the time. When I'm in the metro, my face and my eyes are in the phone. Sometimes I even see people who are like in the metro, and I know them, but I'm so focused on my phone and I don't even see them and then I have to be sorry: 'sorry, guys.'

Researcher: What about when you get to class, do you check your phone during the lecture from nine to 12?

Participant 12: I'm usually not but if I know that there is something important for example, one day my nephew has had temperature and my sister was really concerned. So I had to check my phone regularly to see what is going on. So if there is a case like that something important is happening. Meanwhile, I'm checking it but usually not. I'm trying to focus on the school. Yeah.

Researcher: Yeah, I understand, and then during lunch break, do you check your phone there?

Participant 12: Yeah. Well, I'm trying not to because I want to talk my friends. Yeah, since we're all together and having lunch, but sometimes I just cannot, like resist because I really like sending memes to my friends and like, seeing interesting things showing up on my Facebook newsfeed and yeah,

Researcher: um, you said you like sending memes to your friends, which friends are these? Is it friends from friends from back home or friends from the UK?

Participant 12: friends from back home! Because they are Bulgarians, but they're also international students. Some of them are studying in England. Some of them are studying in Netherlands. Yeah,

Researcher: yeah. Okay. And then after lunch break, you have your group work, right? Well, do you check your phone during the day or is it the same as the lecture or do you check it more often or..?

Participant 12: I check it more often since we're like, we're not focused on one person talking to us, but we're more doing like group projects. And sometimes we need it because most of our projects last two weeks for examples were data collection. And we had to make surveys and like to focus on target groups, which was students so I was checking my phone not for like having my own phone but to send like the survey to my friends.

Researcher: Yeah. Make sense? And then afterwards, you take the metro to go to your sister's place. Do you listen to music there again, I suppose?

Participant 12: Yeah.

Researcher: Yeah? Okay. And then when you're at your sister's place, do you check your phone?

Participant 12: No, when I'm here like it's her place. No, no, here. It's just so close to my home that I'm saying it's here. Yeah. When I'm there. I'm leaving my phone because I really love the baby and I'm focused only at him. I don't need to check my phone because when I'm there I know that if something's really important happens with our parents, for example, they call her and yeah.

Researcher: yeah. Okay. And then afterwards you take the metro to go home?

Participant 12: No, I'm living just like two streets away. It's really close.

Researcher: Okay, so you just walk home? Do you listen to music whilst walking home too?

Participant 12: Depends sometimes I'm too lazy to put my headphones on. So, yeah, but yeah, like I'd say yes. Usually, yes.

Researcher: And then you get home and you get ready to cook?

Participant 12: Yeah.

Researcher: Yeah. And do you...

Participant 12: Usually when I get home first thing is to put the TV on.

Researcher: Yeah.

Participant 12: And maybe sometimes I'm watching Netflix, sometimes I'm just listening to the news and start cooking.

Researcher: Okay

Participant 12: ..and then I use my phone only to look at some recipes for example.

Researcher: Yeah. And then you shower. Do you listen to music whilst you shower?

Participant 12: Yeah, yeah, all the time.

Researcher: Okay, cool. And then afterwards..

Researcher: Can I just ask: it's the dinner before that, do you check your phone while having dinner? Or you just watch the Netflix as you said?

Participant 12: I'm just watching the Netflix series, while I'm eating.

Researcher: okay.

Researcher: And then you get ready to sit in bed or lay in bed. And then you said, you sometimes check your phone for one to two hours. How often does that happen?

Participant 12: Well, I'm always checking my phone, but sometimes it takes me two hours just to like talk with either my friends or my family. Depends on how much we have to say to each other about like the day or what happened and everything. But it's usually like, almost every day spending one hour before falling asleep.

Researcher: But that's in addition to.. because you have two hours to talk with your mom and your dad. And so in addition to that, you're also on your phone checking in with your friends and..

Participant 12: Yeah, but I'm doing doing it like in the meanwhile, like, while I'm talking with them.

Researcher: Yeah. Okay, cool. Do you have any questions so far, **Researcher:** ?

Researcher: Are you using your phone while talking with your parents or it's like on your computer?

Participant 12: I'm using my phone.

Researcher: Okay.

Researcher: Cool. Okay. Okay, so when do you think the phone is a central part of your everyday so when is it very important for you to have your phone?

Participant 12: in the metro?

Researcher: In the Metro?

Participant 12: Yeah, because there I'm alone. For example, if I'm at school and I'm around people, I sometimes forget about my phone. But when I'm home, I also forget about my phone because I'm putting the TV on and someone is talking to me, you know, but when I'm in the metro, and I seriously need to listen to something. So I need my phone to put some music on. And then I'm traveling for around 30 minutes. So 30 minutes, I'm just scrolling and looking at some things in my phone.

Researcher: Yeah, okay.

Participant 12: When I'm alone, I need it the most

Researcher: So when you're alone, so it's mostly when you're transporting.

Participant 12: Yeah.

Researcher: So if you were taking the metro with someone, you would not need it as much.

Participant 12: Yeah, sometimes I'm taking the metro with one girl that I know. She's living close to me. And then I just see myself that I'm not using my phone. I'm just keeping in my hand, but I'm not even unlocking it.

Researcher: Okay, yeah, yeah. Are there any relationships or situations in your everyday life that promotes your smartphone usage? So for example, you said that you're an international student. So is there any relationships or situation that really have to link you or increases your smartphone usage?

Participant 12: Of course, my parents live far away, so I really need to call them if one day, I don't call my mother. I will feel so bad about that. Like I just want and need to hear her voice every day. So I think this relationship with her is really important. It's a lot making impact on my phone usage. Because if sometimes she's coming here like because mainly because of the baby. Yeah, her grandchild and when she's here, I'm not using my phone that much like, immediately a lot of my time is focused on her and even I'm talking with my father but for around like 30 minutes 'Hi Dad, how are you? I'm fine. Okay' and that's all because my mother is here and

like, if my parents were here, probably my phone usage will be down like a lot.

Researcher: Okay. Yeah. Do you consider your relationship to your smartphone similar to a relationship with a friend or human?

Participant 12: I don't know. It's a hard question.

Researcher: Because .. so I'll give you an example or context. So some people after not socializing, especially now that we're all in quarantine. So to not be able to go out and interact with other humans. So after spending time on your phone, you feel like you have socialized.

Participant 12: Yeah, definitely. Yeah. Sometimes especially I told you, I want my phone because I'm in the metro when I'm alone. So when I have my phone and I have music to listen to, and I have things to look at, or even to text with my friends who lives in England, for example, I feel like they're here and next to me, and that makes me feel not alone anymore.

Researcher: Yes. Okay. I'm gonna go through some different use scenarios, and then you tell me if it's valid for you or not. Do you use your phone to check the time?

Participant 12: Yeah.

Researcher: How often throughout the day?

Participant 12: Even if I have my watch on my hand. I'm not looking at it. I'm just looking at my phone. I don't know why but it's usually like that. And it's I don't know, maybe every 30 minutes, let's say.

Researcher: Yeah. And how often do you use your smartphone to make phone calls?

Participant 12: Oh, every hour.

Researcher: Every hour. Okay.

Participant 12: Yeah.

Researcher: Do you use your phone when you eat?

Participant 12: No, I'm usually watching TV.

Researcher: Yeah. Do you check your phone as soon as it makes a noise? So as soon as you get a notification?

Participant 12: Yeah, yeah, definitely.

Researcher: Okay. Do you have different sounds for your different notifications? Or is it the same sound?

Participant 12: I have different sounds.

Researcher: Okay, so is there any notification that you are more prone to react to? Or is it the same for everything?

Participant 12: Messenger is like the main one and then Instagram.

Researcher: Okay. Do you sleep withh you smartphones turned on?

Participant 12: Um, no, the Wi Fi is.. my phone is turned on but my Wi Fi is not so I'm not receiving notifications while I'm sleeping.

Researcher: Okay. And then do you sleep with it next to you pillow or next to your bed?

Participant 12: It's next to my bed, but it's not under my pillow.

Researcher: OK. Now I'm going to talk about some different problem areas that are generally identified with smartphone usage. So do you seem to lose track of time when you're on your smartphone?

Participant 12: Yeah, it usually happens.

Researcher: How much? Can we talk? Is it like five minutes? Or is it one hour? or how much do you feel like you..?

Participant 12: It's sometimes around 30 minutes.

Researcher: Okay. Do you sleep later at night when you're on your smartphone?

Participant 12: Yeah, definitely.

Researcher: And so you mentioned earlier one to two hours. So do you end up with that frame of delay?

Participant 12: Yeah.

Researcher: Okay. Do you feel fear of missing out?

Participant 12: Yeah, definitely.

Researcher: Okay, and in what contexts and situations?

Participant 12: I don't know. It's like..

Researcher: Is it related to family or friends. Is it.. because for example, some people would feel it because you're an international student, so maybe you feel it if your friends or family back home are meeting up, but it could also be related to if your friends here in Denmark were meeting up for an event and you can't go because of prior arrangements.

Participant 12: Yeah, I don't know, mainly, when I think about people who are back at home, because I have a lot of friends who stay to study in Bulgaria, like, they choose to stay there. And sometimes I feel like I'm here. I know that I can contact you. I know that I can call you all the time but it's not the same when I'm not there. Yeah so usually that.

Researcher: And has you smartphone caused your feelings of anxiety and or stress?

Participant 12: I don't think that my phone helped me for that. Um, I think when I'm stressed a lot, I just need to put it away, grab some books to read or sometimes when I really really stressed I started drawing some things on paper just to like relieve my stress

Researcher: but has youru smartphone caused this? Like was it because of your smartphone that you felt stressed or anxious?

Participant 12: Sometimes yes especially now with all this Coronavirus and literally like I don't want to put my phone on because it's everywhere. Like you open Facebook, you open Instagram, you open everything - everywhere it's just like Corona and this is like a lot stressful because we all know that this is going.. this is viral now. We all are stressed, we all are concerned about our health. But when it's like all the time in your head, like Coronavirus is here, it's too much it's overwhelming.

Researcher: Yeah. I understand. Do your eyes hurt after using the smartphone for a longer time?

Participant 12: Well, yes, since I have problems with my eyes. I have contact lenses, so when I'm using my phone

Researcher: We all do

Participant 12: Yeah.

Researcher: But yeah, how? How much time usually?

Participant 12: After how much time my eyes hurt? Yeah. Oh, I don't know maybe like more than two hours if I'm like, all the time looking at my screen.

Researcher: Yeah. Do you feel your use of your smartphone decreases your productivity at times?

Participant 12: Yeah, definitely.

Researcher: In what situation?

Participant 12: Especially, when I started studying here in Denmark, I was really, really focused on my phone because I was still in like, first in the honeymoon, honeymoon stage. And then I started like, Oh, no, what am I doing here? Now I have to call my friends and talk with them all the time because I don't know if I can handle it all here. And then at the same time, I had to study a lot because I had my exams and everything and I felt distracted. Yeah, because of that.

Researcher: Would you be able to live without your smartphone for one day?

Participant 12: One day?

Researcher: Yeah.

Participant 12: Yeah, one day, definitely I can. I can manage that. But I'm not sure about anything more.

Researcher: How come you can do it for one day, but not more?

Participant 12: Because if I know that it's only one day, I'll prepare myself, like mentally and handle it. But if it's like all the time, I'm not ready for that since I really really need my phone

Researcher: Why?

Participant 12: For many things, mainly to call my parents and have this connection with them. This is my only connection with them, like the phone calls, so.

Researcher: So for you the most, the hardest part of not having your phone would be the loss of connection with your parents.

Participant 12: Yeah

Researcher: So that's the most important thing for you.

Participant 12: Yeah.

Researcher: Okay. Um, now we're going to talk about screentime So what daily screen time would you consider too much?

Participant 12: Mine? I don't really remember from the screenshots that I sent you because I'm usually not checking my screen time, even if I have this function..

Researcher: It was around four hours.

Participant 12: ..but 5 hours maybe?

Researcher: Five hours is too much, you said? Yeah. Okay. And so what are you expect? Like, ideally, what do you want your screentime to be?

Participant 12: Two to three hours.

Researcher: Two to three hours. And so I can tell you now you had four hours...2 seconds, four hours and 40 minutes after the challenge and four hours and 15 minutes before the challenge. So it's higher than what you want.

Participant 12: Yeah, I expect it to be lower and I was really surprised that it was higher.

Researcher: I'm sorry, can you just repeat the timing so I can write it?

Researcher: Yeah. Four Hour and 40 minutes after the challenge. And before the challenge it was four hour and 15 minutes.

Yeah, so the usage is higher than expected. So you were slightly shocked by it. Or..

Participant 12: I was, I was.

Researcher: How come?

Participant 12: My challenge was to have my colors on my phone like black and

white for a week, so Thursday when I put the colors off, and I was like 'Oh, my God, this is so strange. I don't know if I can do it for one week'.

Researcher: Yeah.

Participant 12: And then I was like, all the time. When I was in the metro. I was looking at my phone and then when it was like my stop and I had to get out of the metro, when I looked around, I have everything in my head was like black and white. It was like 'What is happening?' But at the next moment, everything was colorful again. And I was like 'Okay, this will be really strange'. But then like with the time probably I got used to it and even because when I turned my colors back on, when I saw how different are they like the Facebook icon is blue and the Instagram is different colors like pink and orange and everything and all of them have different colors. Duolingo I have this app on my phone. It is green. It is really really green.

Researcher: Yeah.

Participant 12: And all of these colors were making me like 'oh my god, I'm having a headache now'.

Researcher: Yeah.

Participant 12: So at first I was shocked because I expected 'if my colors are not on, I will not be attracted to my phone anymore'. I was like that the first day I was like, my phone is not attractive to me anymore. I hate it. It's so boring. I don't know what to do on it when it has no colors. But then when I got used to it, and then at the Sunday, I think after I send you the screenshot of the screen time, I turn the colors on, and I was like this colors are too much, maybe I was used to it so much to be black and white. And the colors were awful for me. But then I realized that it makes sense the screen time to be like higher, since it's easier for my eyes. The first day they got used to the colors. And then the other days, it was easier to me to look at the screen because it doesn't have that much colors to give me headache, you know? I'm not sure if I'm explaining it clearly now.

Researcher: No, no I understand. And so were you happy with the time you spend on your phone?

Participant 12: No, I was not. I really expected it to be like lower and I was so happy that finally I have like less than four hours.

Researcher: Yeah. But so do you feel any guilt? Or do you feel uneasy when you see your... when your see this time increase? Or how do you feel about it?

Participant 12: I felt guilt a lot. A lot guilt.

Researcher: How come.. did you..

Participant 12: Especially when I saw these like arrows which showing like how much percentage I have, like, increased? And I was like, 'No. Why?'

Researcher: Why did you feel guilty though?

Participant 12: Because I prefer to spend a lot more time with people and like, especially when I'm in a group of people like friends. I'm really just disappointed or mad at someone who is all the time at their phone, even if they're taking pictures for Snapchat, like please live the moment now and here with us and make some memories. And when I'm looking at pictures from my family when they were in their 20s my parents with their friends, they were like having all the time fun. If I look back in 20 years and see myself on pictures with my friends looking at our phones, I'll be really sad about that.

Researcher: Okay, so there's also some tradition to it. You want to live moments like your family was doing it?

Participant 12: Yeah, yeah, yeah.

Researcher: Okay. Did you feel like the challenge impacted your screentime subconsciously? Because you know we were tracking or we were checking your screentime? Did you feel like 'oh, I'm going to use it less because I know that someone will check it'.

Participant 12: At first I thought that, but then I don't have the time to think about it all the time. So I was just doing my daily routines and I wasn't thinking about it.

Researcher: Okay. Yeah, you already talked about how the charge made you feel. So I'm just gonna skip through to apps. So which apps did you expect to be the most used on your smartphone?

Participant 12: Messenger and Instagram for sure.

Researcher: Okay, and why? Like, is it because you use them the most or?

Participant 12: Yeah, yeah.

Researcher: okay. And which apps did you in reality interact with the most in your smartphone? If you remember, well, I can see that messenger was number one, but I don't.. I can't see what number two was.

Participant 12: Um, should I check it if it will be like..?

Researcher: maybe if you have the opportunity to check that.

Participant 12: Just let's see. It's Instagram.

Researcher: Okay? Instagram. Okay, so the results are not different from what you expected

Participant 12: It was the same. I expected it. I was sure that it will be like messenger and Instagram, so.

Researcher: How does it make you feel to know that these apps are the ones you use the most?

Participant 12: Well I was like, I expected it. I wasn't surprised. But at the

same time I was like, well, maybe now is the time to change something.

Researcher: Why do I feel like you need to change something?

Participant 12: Not to change like the apps I am using but to change the time that I'm using them.

Researcher: Okay.

Participant 12: Because I know these are the apps I'm using the most and I don't want to change that. These are the apps that I'm using mainly for communication with my friends and family, so.

Researcher: But you want it to be less because you want to live more in the moment?

Participant 12: Yeah.

Researcher: Okay. In which context and situation do you use these apps. You said messenger, you use it for your friends and family, but if you could talk us through an average situation where you use messenger.

Participant 12: Well, it's usually when I'm talking with my parents, after I eat my dinner. I'm really using my phone for long time then, before going to bed. Messenger is the main app that I'm using to talk with them. And not even not only with my parents but my friends as well. And that's it. Like all the time I'm checking messenger but I'm mainly using it before going to bed.

Researcher: And do you use calls, video calls or texting? What is it?

Participant 12: Yeah, mainly video calls.

Researcher: Video calls. And why do you use messenger in contradiction to, for example, Whatsapp or telegram and all these? What is it that attracts you?

Participant 12: I don't know, I don't know actually, maybe it's because in Bulgaria, Whatsapp is not that popular. Not many people are using it.

Researcher: Yeah.

Participant 12: And my parents are like the old generation, I barely even told them to use messenger.

Researcher: So it's the easiest.

Participant 12: I don't know if they can handle whatsapp.

Researcher: Okay. Yeah. And so Instagram, which context and situation do you use that in?

Participant 12: I'm using it for fun. Sometimes when I'm listening to the music in the metro, like usually then and sometimes when I'm.. I don't know, for example, at school and we're not doing anything and we're taking our break. I'm just scrolling to see some memes. I'm using Instagram for entertainment because I'm sending

different memes to my friends and my sister as well.

Researcher: And which sections or features of Instagram do you use the most? Instagram Stories, Instagram explorer, the feed? What do you mainly go for?

Participant 12: The feed and the stories.

Researcher: Okay, the feed and the stories. And do you actually post or you just look at it? like how do you interact with them?

Participant 12: I'm more watching other people's stories and posts, and sometimes I'm posting as well.

Researcher: Okay. Did your challenge decrease your interaction with your favorite apps? Because.. Okay, I can check actually. So before the challenge you had 14.. Actually, let me just.. you had 14 hours with messenger before the challenge and after the challenge you had 12 hours and 50 minutes so you decreased by a whole hour messenger. How does.. is that because there were some specific events that week or was it because of the grayscale? How does it make you feel? What do you think was the reason for the decrease?

Participant 12: I don't know. Maybe the reason that it decreased with one hour is my friend who is living in England was sick. So we didn't talk to each other that much that week.

Researcher: Okay.

Participant 12: But it wasn't.. it was a consequence. I think.

Researcher: So it wasn't because of the challenge?

Participant 12: Yeah, it wasn't because of the challenge.

Researcher: Okay, and how does it make you feel to see that your interaction decreased with one hour?

Participant 12: I actually didn't saw that before cause I was focused on the fact that all my screen time was above average.

Researcher: Okay.

Participant 12: Yeah.

Researcher: Um, but would you like.. because ideally right now you spend between 13 and 14 hours, how much time do you want to spend on messenger for example?

Participant 12: 10 or less.

Researcher: 10 or less. And what about Instagram?

Participant 12: I don't know, maybe five to six, something like that.

Researcher: Okay. Is there an application that you cannot give up? Like absolutely not give up something for example that you need for work or..

Participant 12: Let me think about it. For school, I'm using my laptop mainly. So if I have to give up something, it will be.. I don't know. Let me see my apps because I totally forgot them, now that we are talking. Oh, yeah. I cannot give up on my Outlook email. It's an app.

Researcher: Yeah it is. Okay. And is there an app.. and why? Because of school?

Participant 12: Yeah. Because of school and because I'm receiving, like important emails there, regarding my internship, for example, or like my studies and yeah.

Researcher: Okay. And is there an application that you can but don't want to give up?

Participant 12: Messenger.

Researcher: Yeah.

Participant 12: Yeah.

Researcher: Mainly messenger.

Participant 12: I can but definitely I don't want to.

Researcher: Why don't you want to?

Participant 12: Again, because it's my only connection with my parents and friends.

Researcher: What about Instagram then?

Participant 12: Well, again, I can but I don't want to because it's one of the ways that I entertain myself.

Researcher: Okay.But is there.. because technically there's a lot of entertainment out there? How come Instagram is the one you prioritize in terms of entertainment? Because there is.. you said you use Netflix a lot. And there's also YouTube, there's TikTok. There's so many different platforms for entertainment. Why is it that Instagram is the one you go for?

Participant 12: Okay, so I'm using Netflix mainly to watch Friends and YouTube, I'm using it for like listening to music, but not that much for watching videos. So entertaining myself mainly with memes and funny pictures is something that really makes me happy and makes me laugh. Yeah, and if I have to like to choose between watching a funny video or watching a funny meme, I would prefer a meme.

Researcher: Okay

Participant 12: I don't know why. I'm laughing more at like pictures and like texts on them. But then like, watching videos is not my thing. I feel like I'm losing a lot of time when I'm watching a video.

Researcher: Okay, but then there's also memes on Facebook. Do you also spend a lot of time on Facebook with memes?

Participant 12: Not really. At first I was doing that but then I realized that they're like the same. So I'm watching the same content twice. I don't need that. So I gave up on Facebook like scrolling the newsfeed I'm doing it only to see news or some Facebook groups that I'm part of like from Bulgaria, like to see what is happening there.

Researcher: Then dhy did you choose Instagram over Facebook then, if it's the same content?

Participant 12: It's just because it's repetitive if I'm watching like Facebook, they're posting the same things that I can already see in Instagram.

Researcher: But did you have Instagram before Facebook?

Participant 12: Ah no, but, I don't know, maybe Instagram, like the design of it is more like my thing.. I don't know.

Researcher: And do you have more friends on Instagram? Or like more of your closer friends? Is that a reason for it?

Participant 12: Yeah, yeah, I have around 800 on Facebook and 300 on Instagram. So like, I've chosen like the closest, not that I have 300 people close myself, but like, for example, I have friends of my parents on Facebook and I don't have them on Instagram, so I prefer Instagram because of that.

Researcher: Okay, just last last question. So if you were to talk about your values, and in terms of your smartphone usage, so there's different values that people value, so there is this career, health, family, friends, what are the three most important values for you? It could be something that I didn't just say but I just gave an example

Participant 12: Yeah. Well, I cannot say that like career is valid for me. But friends, my family and my education for sure.

Researcher: Okay, so you structure your life based.. or you life and your smartphone usage based on these three values you would say?

Participant 12: Yeah.

B.1.13 Participant 13

Researcher: I'm gonna start recording audio. Can I get permission from you to record the interview?

Participant 13: Yes.

Researcher: Okay, so what is your age?

Participant 13: I'm 24

Researcher: What is the gender you identify yourself with?

Participant 13: Female

Researcher: What is your nationality?

Participant 13: I'm Danish and also from Benin, I have dual nationality.

Researcher: What is your occupation?

Participant 13: I'm a student and I also work part time as a barista slash waitress.

Researcher: Okay. And what is your marital status?

Participant 13: Single.

Researcher: Okay, now we're going to go through so we are doing a project on smartphone addiction and we're doing it more specifically on university students. So we want to get an understanding of how your every day is with your smartphone to try to see what different areas of problems potentially there are. So we're gonna ask first to describe an average day in your life. You can choose whatever it's related to work to study or a weekend day, but just an average day and then tell us for example, from what time you wake up.

Participant 13: If it's a school day, I would wake up around 7am - 730. Yeah.

Researcher: And what is the first thing you do when you wake up?

Participant 13: I turn off my alarm.

Researcher: Yeah.

Participant 13: Check for messages as well.

Researcher: Yeah.

Participant 13: Social media sometimes.

Researcher: And how long do you do that for?

Participant 13: Depending, maybe like 10 to 20 minutes.

Researcher: Okay. And so, what do you do after you do that? What does the next?

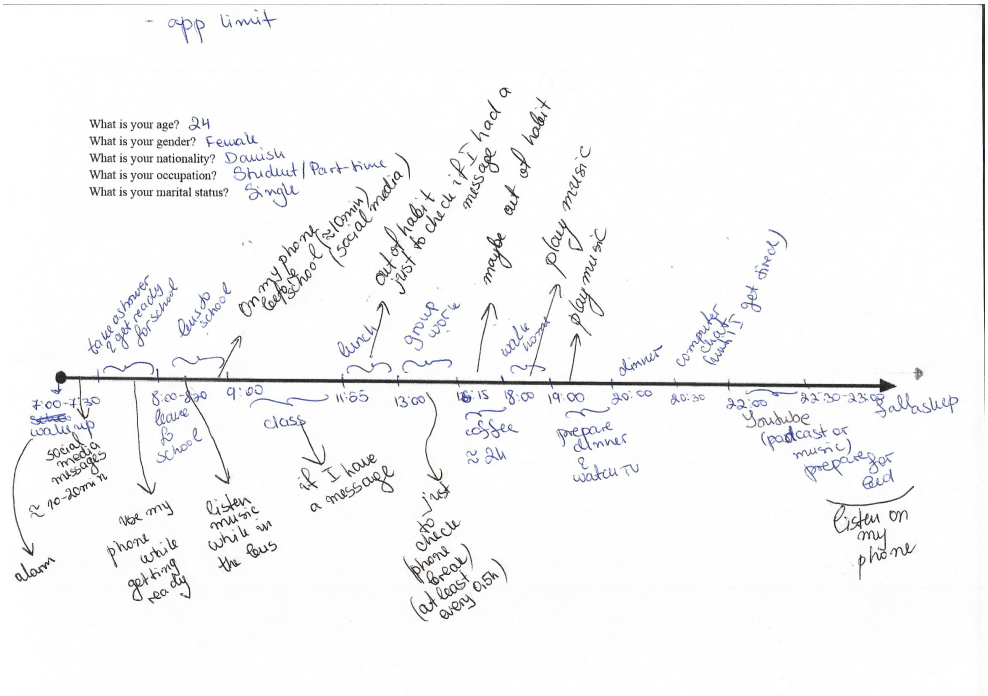


Figure B.13: Participant 13 timeline

Participant 13: I just take a shower and get ready to go to school

Researcher: and how long do you take a shower and get ready for?

Participant 13: like half an hour

Researcher: okay, so you leave the house around what time?

Participant 13: around maybe 8.15-20.

Researcher: Okay. And then you go to school?

Participant 13: Yes.

Researcher: How do you get to school? And how long does it take you?

Participant 13: I take the bus. It takes me about 25 minutes.

Researcher: Okay. And then you arrive at school around what time?

Participant 13: Hopefully 10 minutes before nine.

Researcher: Yeah. Cuz then your class starts at nine, I suppose?

Participant 13: Yeah, exactly.

Researcher: And so before you get to class, so you have these 10 minutes. What do you usually do in those 10 minutes?

Participant 13: I will be on my phone.

Researcher: Okay.

Participant 13: Or just talking with the classmates that are, that have also arrived earlier, depending on who's there. Yeah.

Researcher: And then you have class from nine until what time do you have class?

Participant 13: So until 11.55

Researcher: Yeah

Participant 13: and then we have the lunch break. And then I have class again at 1pm till 4.15pm.

Researcher: Okay. And so you have lunch from 1155 to one.

Participant 13: Yeah.

Researcher: Okay. And then you have from 13 to 4.15 you have group work?

Participant 13: Yes.

Researcher: Okay. And then after that, what do you do?

Participant 13: I maybe hang out with my classmates.

Researcher: Mm hmm.

Participant 13: It's for coffee or something and then I usually go home.

Researcher: How long do you hang out with them?

Participant 13: For a good two hours, I would say.

Researcher: Okay. So until 6pm approximate.

Participant 13: Yeah.

Researcher: Okay. And then you get home?

Participant 13: Yes.

Researcher: Okay. And then what time are you home approximately?

Participant 13: I usually walk from school.

Researcher: Yeah.

Participant 13: So I take my time. So maybe Like an hour after I'll be home.

Researcher: Okay, so around seven.

Participant 13: Yeah.

Researcher: Okay. And then what do you do when you get home?

Participant 13: I usually prepare some dinner

Researcher: Yeah.

Participant 13: or I would just be on the computer and maybe watch a series or something.

Researcher: Okay, and how much? So you would prepare dinner?

Participant 13: Yeah.

Researcher: And you will watch a series at the same time.

Participant 13: Yeah.

Researcher: And how long do you do that for?

Participant 13: Like an hour?

Researcher: An hour? And then so around eight you eat?

Participant 13: Yeah.

Researcher: Okay. And then how long do you eat for?

Participant 13: For 30 minutes

Researcher: 30 minutes. Okay. And then around 8.40 you're done with food?

Participant 13: Yes.

Researcher: Cool. And then what do you do afterwards?

Participant 13: And then I just stay on the computer, or, you know, talk with friends chat online with friends and stuff. And that's it.

Researcher: And how long do you do that?

Participant 13: Um, I think I usually stay on my phone until I get tired, which would be around like 9.50 or 10.

Researcher: And then from 10 what do you do?

Participant 13: I put some music on or podcasts or anything on YouTube and I try to sleep. I try to get myself to sleep.

Researcher: Okay, and what time do you end up sleeping?

Participant 13: I think like the earliest would be like 10.30 or 11.

Researcher: Okay, cool. And the latest?

Participant 13: It would be at midnight. Yeah.

Researcher: Okay. And but mainly from 10 till midnight. At latest. You would be listening to a podcast or?

Participant 13: Yeah or listen to some videos just playing in the background and..

Researcher: Okay. Cool. And now we're going to talk about your day but talk into how the phone plays into your everyday life. So, you said in the beginning that you had an alarm, right?

Participant 13: Yes.

Researcher: Okay, so you have an alarm waking you up from your phone.

Participant 13: Yes.

Researcher: And then you school through notifications and messages in the morning?

Participant 13: Yes.

Researcher: Do you listen to music when you're in the shower?

Participant 13: No, sometimes but rarely.

Researcher: Okay. And so, afterwards you get ready. Do you use your phone in that time?

Participant 13: Yes.

Researcher: Okay. And then you get ready and you go out of the house. So you you take the bus you said, do you use your phone in the bus?

Participant 13: Yeah, I'll listen to some music.

Researcher: Okay. And you don't eat breakfast, I suppose?

Participant 13: No.

Researcher: Okay.

Participant 13: Or I usually just get a coffee at school.

Researcher: Okay, and so you arrive at school a little bit before nine and then you are on your phone, if you don't want to talk or if you don't know anyone? Just so.

Participant 13: Yeah, if I don't really feel like talking or if I don't feel like talking with people, I don't feel like comfortable with them. Then I'll be on my phone.

Researcher: Okay, and what do you usually do on your phone?

Participant 13: I would just browse in social media

Researcher: And then during class, do you check your phone?

Participant 13: Sometimes, yes.

Researcher: Okay. What do you do? When you check your phone?

Participant 13: It's usually I received a message or sometimes even conversating

with some of my classmates through social media.

Researcher: Yeah. Okay, cool. And then, then lunch break comes on. Do you check your phone during lunch?

Participant 13: I do check my phone. I think out of habit sometimes. Like if I receive the message, then I checked but mostly I think it's out of habit just to check if something if I've gotten a message even though I don't have any notification or if you know something new pops up on Instagram or Facebook.

Researcher: Okay. And then afterwards there's group work session and that's for approximately three hours, do you check your phone in that time?

Participant 13: Yes, I do and it's the same reason. I would just take it just to do something different.

Researcher: Okay. So it's kind of like a phone break.

Participant 13: Yeah.

Researcher: Okay, cool. And how much how regularly do you do it? Is it once an hour, every half an hour?

Participant 13: I'd say at least every half an hour, to be honest.

Researcher: Okay. And then afterwards, you hang out with your friends for a little bit. What do you usually do?

Participant 13: We just go for coffee usually

Researcher: And then do you use your phone there?

Participant 13: Not as much. I would maybe look at my screen a couple of times, but because we're talking I try to not look at it too much. But again out of habit. I find myself reaching for my phone.

Researcher: Okay. And then afterwards for one hour you walk home. Do you use your phone there?

Participant 13: Yes, I do play music while I walk to distract me.

Researcher: Yeah. Okay. That's nice. And so then you get home and you cook and you watch your series. Is that on your phone or is that on a computer?

Participant 13: When I'm cooking, I do have my phone to play music or if I have a video playing in the background, and then while I eat I will use my computer.

Researcher: Okay, so whilst you eat, you use the computer, okay.

Participant 13: Yeah.

Researcher: And then, after..

Participant 13: And then after it's the computer. I mainly use the computer for leisure time or so to speak. After I eat, the break that I take, is on the computer

and when I try to sleep, it will be on my phone.

Researcher: Okay. So when you try to sleep you use the phone.

Participant 13: Yeah.

Researcher: So when is that? Is that after the podcast and the music?

Participant 13: Oh no, that is where I listen to podcast music on my phone.

Researcher: Oh, so the podcast music is on your phone. Okay.

Researcher: Okay. Okay, so when is the phone an essential part of your day? When is it very important for you to have your phone? What is the frame and the context?

Participant 13: I think when I am in public, and I don't know how to.. I think when I don't know what to do or how to.. don't want to interact with people, I think I tend to reach to my phone a lot. Just to have something to do, I guess.. to feel busy.

Researcher: So when you're out of your comfort zone?

Participant 13: Other than that I think when I'm home and I just need something to do.

Researcher: Okay, so the two use scenarios is mainly like when you out of your comfort zone, and when you're bored.

Participant 13: Yeah.

Researcher: Okay. And when you feel like you're out of your comfort zone, is it mainly related to having people around you that you don't know? Or is it related to new situations? Or when is it that it's out of your comfort zone?

Participant 13: When I feel anxious, every time we feel anxious, then I reach to my phone.

Researcher: And is there..?

Participant 13: I can focus on that rather than people around me

Researcher: And is there a usual frame and context to when you feel anxious?

Participant 13: It's really, it could be any time when I take the bus or when I'm just by myself around people. I don't know, I'd say.

Researcher: Okay. And when you're bored, it's mainly when you're at home bored.

Participant 13: Yeah.

Researcher: Okay. Cool. Are there any relationships or situations in your everyday life that promotes your smartphone usage?

Participant 13: I think.. so maybe when I feel alone you know. Not conversating

with someone or not having someone to talk then I would go on my phone. I think some people choose to read a book, but I just choose to be on my phone.

Researcher: So mainly being alone promotes it.

Participant 13: Yeah.

Researcher: So, if you are around people or if you're traveling or if you're..

Participant 13: Yeah.

Researcher: Then you use it less.

Participant 13: Yeah.

Researcher: Do you have any friends or family members, anyone that lives abroad that promotes this smartphone usage? Or is it mainly when you're alone? That you would say it's a prominent..?

Participant 13: No, I think it's mainly when I'm alone. Yeah.

Researcher: Do you consider.. Oh, before that, why is the phone important in these scenarios when you're alone?

Participant 13: I don't know. I never really thought about it, but I wouldn't know what to do by myself, I think to be honest, yeah.

Researcher: So it's kind of like a support.

Participant 13: Yeah. Yeah.

Researcher: And is it something that has grown into a habit to become a support or is it something that you initially thought of as a support tool?

Participant 13: No, it's definitely a habit.

Researcher: Okay. Would you remember when was the first time you went for the phone when you were feeling anxious? Like do you remember the context of it?

Participant 13: Um, I don't remember the first time but I remember the specific, like a specific time where it made me think that I could rely on my phone.

Researcher: When was that?

Participant 13: Just another day like going. I don't remember where I was going. But I was in the bus. And for some reason, I started to feel very anxious. And I felt like people were maybe staring or judging or I didn't know what to do or who to call so I just tried to focus on my phone and use it as much as I could at that time.

Researcher: Mm hmm. Okay. Do you consider relationships to your smartphone similar to a relationship with a friend or human?

Participant 13: No.

Researcher: So do.. because you're describing this that you feel like when you're alone you go for your phone. And when you feel anxious you go for your phone.

Participant 13: Yeah.

Researcher: Would you not describe that similar to a relationship with a friend or human?

Participant 13: I don't think so. Because for me, the phone would be a way to escape but a conversation, conversation with a human being, or just interacting with a human being would be a way for me to accept the reality and talk about it. I can't talk to my phone and receive advice. Of course, I can Google it, but it's not the same thing as maybe needing someone to hear your thoughts or what you're going through. At the time it helps in a different way. I feel like

Researcher: Okay, so I'm going to go through some different user scenarios, and you'll just let me know if this is valid for you or not. Do you use your phone to check the time.

Participant 13: Yes

Researcher: How often is that? Is it because you don't have a watch? Or is it because you prefer to do it over watch?

Participant 13: Oh, I don't have a watch.

Researcher: And how often do you check the time throughout the day? or throughout the hour?

Participant 13: Five, six times. Yeah.

Researcher: Okay. And how often do you use your smartphone to make phone calls?

Participant 13: At least once a day, at least. Once or twice a day, yeah.

Researcher: And who do you usually call or do you receive the call?

Participant 13: I usually call like, family, either my mum or friends. Yeah.

Researcher: Okay. Do you use your phone when you eat?

Participant 13: Yes.

Researcher: And is there a specific time of the day when you eat that you do it? Or is it for breakfast lunch or dinner like equally or..?

Participant 13: Evening.

Researcher: Evening, okay.

Participant 13: Yeah.

Researcher: Do you check your phone as soon as it makes a noise or as soon as you get a notification?

Participant 13: Yeah, most of the time.

Researcher: Do you have different sounds for the notifications? Or is it the same

sound?

Participant 13: No, it's the same.

Researcher: Okay. Do you sleep with your smartphone turned on?

Participant 13: Yeah.

Researcher: Do you sleep with it next to your pillow or under your pillow?

Participant 13: Yeah.

Researcher: Which one is it?

Participant 13: Oh, sorry. I sleep with it next to my pillow.

Researcher: Okay. Now I'm going to discuss some different problem areas with regards to smartphone usage and then you let me know if it's valid for you or not. Do you seem to lose track of time when you're in your smartphone?

Participant 13: Yes, I think I lose track of the time in a sense where like, I can always see how much time I've spent on it, but I don't get a sense of reality. Like if an hour passes by I don't go 'oh, I've been on my phone for a whole hour', it's not like that. I know how much time I spent on it. But I don't really put in perspective and say 'Oh, that's too much'.

Researcher: And how much time, what is the ratio to like..? Because do you go in thinking I'm going to spend five to 10 minutes and then you spent, I don't know how much hour or like..

Participant 13: Yeah.

Researcher: How much? so how many hours in general do you overspent over what you originally want to?

Participant 13: I'd say maybe two, three hours.

Researcher: Two to three hours. So do you usually go in with 5-10 minutes expectations, or what is the expectation? And then what is the reality?

Participant 13: I go in with maybe.. I give myself like half an hour to an hour.

Researcher: Mm hmm.

Participant 13: And then I find a video or something and I just keep binge watching something. And yeah,

Researcher: So it ends up being 2-3 hours.

Participant 13: Yeah.

Researcher: Okay. And do you sleep later at night, when you're on your smartphone?

Participant 13: Yeah.

Researcher: How much later?

Participant 13: Like a half an hour later

Researcher: Okay, and it's because.. what is the context for you sleeping later? Is it because you start scrolling through stuff or what's the frame?

Participant 13: I think it's because I have something to distract myself that I would rather do.

Researcher: Mm hmm.

Participant 13: So I just scroll through the phone.

Researcher: Okay. And do you feel fear of missing out?

Participant 13: Oh, I mean, yeah, I guess. I just never thought about it. Um, I think I do because I'm constantly updating and seeing if there is something new happening so I think I do yeah.

Researcher: Has your smartphone ever caused you feelings of anxiety and or stress?

Participant 13: Not because of the smartphone, but because of the news right now. The corona.

Researcher: Yeah. So the Coronavirus - what is called?

Participant 13: Lockdown?

Researcher: Yeah, no, but the fact that there is everywhere and social media and everything.

Participant 13: Yeah.

Researcher: It's stressing you out.

Participant 13: Every five news page that was on my Facebook every time I opened it was related to the corona.

Researcher: Mm hmm. And if we just go back quickly to the fear of missing out. You said that you always check so you feel like maybe you have fear of missing out. But have you ever looked at an event for example that you were supposed to go to? And then feel like 'oh' like a strong feeling because you're not part of it. Even though..

Participant 13: No, no-

Researcher: Okay, okay,

Participant 13: I think I want.. I like the option. I like to have the option but I don't necessarily feel bad or anxious about missing out on the event.

Researcher: Okay, but so if you see then a friend or friends hanging out without, so from back home or not from back home, from, for example, you went to an exchange

in South Korea and imagine that you went home earlier and your friends in South Korea are meeting up and you are not there? How would that make you feel?

Participant 13: I'll feel sad that I was not participating at the event. But I'd want to recreate it in a situation where I'll be there or have the opportunity to do it myself.

Researcher: And which one of them would make you most feel sad like to see, to hear it through a text to for them saying that they're doing it or is it seeing it or..?

Participant 13: I think it's seeing it.

Researcher: Okay. Okay. Do you eyes hurt after using the smartphone for a longer time?

Participant 13: Yeah.

Researcher: How long? Oh, how much time? Does it hurt after?

Participant 13: After I'd say two hours.

Researcher: Two hours. Okay.

Participant 13: Yeah.

Researcher: Do you feel use of your smartphone decreases your productivity at times?

Participant 13: Yes, it does because I'm not doing anything when I'm on the phone. I'm just procrastinating.

Researcher: Yeah, and which situations do you feel like you are decreasing your productivity the most?

Participant 13: When I am supposed to do schoolwork, but I choose to reach out to the phone.

Researcher: Okay. Would you be able to live without your smartphone for one day?

Participant 13: Hmm, I think so, I think.. like I've technically done it before, but I think the more I got used to having it and like being, having all the features available, I think it's difficult but I think I could.

Researcher: What would be the hardest for you to not live without in the smartphone? Like what features?

Participant 13: I think the social media, yeah.

Researcher: So it would be hardest for you to live without the social media?

Participant 13: No, actually without being able to call.

Researcher: Call?

Participant 13: Yeah.

Researcher: Okay. Why?

Participant 13: I think calling because even if I don't have the social media, I can still call up a friend and start to conversate but if I were not able to see or follow what was happening around me and not able to contact anyone, I think it would just be.. Plus not being able to contact anyone, I think it will be even harder.

Researcher: So you would say that the most basic human contact that you can gain through the phone is through a phone call.

Participant 13: Yeah.

Researcher: Okay. Um, now we're going to talk about some screen time. What daily screen time would you consider too much?

Participant 13: I think mine. I think I had six hours.

Researcher: Yeah.

Participant 13: On average, six or seven hours, which is a lot.

Researcher: Yeah, you had a six hour and 43 minutes before the challenge and six hour and 29 minutes after the challenge.

Participant 13: Yeah.

Researcher: So around 6.30

Participant 13: Yeah.

Researcher: So you think that's too much, but from what hour do you think it's too much, is it from six hours or is it..?

Participant 13: I think from four and upwards is too much

Researcher: Okay, and what are your, ideally.. What are your expectations for your screentime? What would you like it to be?

Participant 13: Um, I would like it to decrease for two hours, like getting to the four hours on average.

Researcher: Hmm.

Participant 13: I think like during the challenge, I realized, like I tried to limit myself in certain areas, but then also because I had the opportunity to extend it sometimes. Then I realized that, like, I use this platform a lot. And I see I use the other platform a lot, and it's not really necessary. I think there were a lot of times where I extended it.

Researcher: So just to clarify, you had the app limit challenge.

Participant 13: Yeah.

Researcher: And so you found yourself extending the limit. A couple of times.

Participant 13: Yes.

Researcher: Was it that you extended it for like 'Hey, give me 15 minutes more' or was it 'Oh, let me cancel it for today'

Participant 13: um, at first it started off like 15 minutes and then an hour and then I think I had two days where I just cancel it for the day.

Researcher: Yeah. Okay. Um, now, I just told you that your screentime was 6.29 after the challenge and 6.43. So it's higher than expect that or like, before you went into this challenge, what did you expect your screentime would be?

Participant 13: Around four. I thought my average would be around four,

Researcher: And it's higher than expected. So what is your opinion on your personal screentime? Like, what, how does it make you feel? What do you think of it?

Participant 13: What? Sorry it didn't.

Researcher: The connection went off. Okay, I'm gonna just gonna repeat it. So you were expecting a screen time of around four hours, right?

Participant 13: Yeah.

Researcher: And your usage is higher than expected.

Participant 13: Yeah.

Researcher: What is your opinion on your personal screen time? So how does it make you feel to see your personal screen time and see that it is first of all higher than expected but also just to see it? What do you think of it?

Participant 13: I think it made me realize that I might have a phone addiction. That I didn't need to be on the phone that much and how much of that time throughout the day because that's a lot of hours throughout the day. And it just got me thinking like, what I could have done with six hours instead of constantly being on the phone.

Researcher: And if you were to describe this as an emotion: like did you feel guilt? Did you feel sadness? What emotion did you feel?

Participant 13: I think I felt a little bit. I felt surprised and maybe a little bit disappointed. And a little bit embarrassed.

Researcher: Embarrassed. Why did you feel embarrassed?

Participant 13: Because I think my screen time was very high compared to what I would think is average. Yeah.

Researcher: And then on what basis do you compute this average for you? Like why is four hours the ideal time for you?

Participant 13: It's not the ideal time, but it's a time that I would - how do you say - I would be okay with

Researcher: Mm hmm. Yeah. And why? Why is it that this is something that you would be okay with?

Participant 13: I just think that maybe what people in my generation would, how much time they would also spend on it without it being excessive.

Researcher: Mm hmm. Because just to maybe put it into context because you've sent in your screentime in the same group shot as your co students. Did it make you feel any way to see other people's screentime as well?

Participant 13: Yeah.

Researcher: How did it make you feel to compare an average university student to yourself? Or not an average, but like other university students?

Participant 13: Yeah. I just thought that my time was excessive, that I was maybe on my phone too much.

Researcher: And was it after you send it in and saw everybody else's and also saw yourself's or was it before? Like, was it when you first saw this screentime that you felt 'Oh, this is excessive' or was it when you send it in and saw what everybody's average was?

Participant 13: I think when I first saw the screentime, I was surprised and thought it was very high and kind of shocked because I didn't think it was that much and then when I send it in and saw the others that I started to feel embarrassed.

Researcher: Okay. Did you think that the challenge impacted your screentime subconsciously? because you decreased your screentime?

Participant 13: Yeah. Yeah, I think it did because, um, I could have chosen to you.. Like at first I was making a conscious effort to decrease my screen time.

Researcher: And was that because we were.. you knew that we would watch your screen time? Or was it because you were aware of the fact that it was above what you wanted?

Participant 13: I think I think it was because I wanted it to go to four hours because I thought that is doable for me that I could be satisfied with just four hours screen. I didn't need to go up to the six hours, which is why I tried to decrease it but also made me realize that I got dependant on just being able to see a certain content or being on it all the time. But I also think that it would be possible for me to decrease more in the future.

Researcher: What do you think is not allowing you to decrease it more than what you're already done? So you said that you think that you could do four hours?

Participant 13: Yeah

Researcher: But you still were in the six hour like you decreased it by half an hour. How come you didn't manage to decrease it to four hours?

Participant 13: I think some days personally, I couldn't use my computer instead. So I had to use my phone because of internet issues. And I also was.. I remember the days where I was - when I deleted the parent control/the screentime control for the day, it was because I wanted to get certain notifications, or I wanted, I was waiting for some responses. And I was worried that I wouldn't be able to see it if I had the control on?

Researcher: What kind of notifications if I can ask? Like what app?

Participant 13: It was just messenger.

Researcher: And so you were saying that sometimes you can use your computer instead. So you would say then would.. How do you feel about your computer time then that's also some screen time. Because then..

Participant 13: I use..

Researcher: Yeah.

Participant 13: Yeah, I think because I have a specific time where I have my computer and it's not as comfortable like I don't, I cannot walk around with my computer, I cannot, you know, I have to be in a certain position, like sitting and stuff like that to use the computer comfortably. That's why I opt for the phone I think.

Researcher: Okay, but so you don't so if your screen time was like on your smartphone was around four hours, but it was 10 hours on your computer, you wouldn't mind?

Participant 13: No, it wouldn't be like that. I think if I would replace those four hours or maybe half the time on my computer.

Researcher: Okay, so yeah, so you would prefer having half of the screen time you have right now on the computer.

Participant 13: Yeah.

Researcher: Why?

Participant 13: I don't know.

Researcher: Okay. That's fine. Let's talk about apps. Which apps did you expect to be the most used on your smartphone?

Participant 13: Probably messenger or Instagram.

Researcher: Messenger, Instagram. And in reality which ones do you interact with the most on your smartphone? If you can check it because I can't see it in the screenshots that I received.

Participant 13: I think it's Instagram but I can check it now.

Researcher: Yes.

Participant 13: It was messenger.

Researcher: Messenger is number one? What is number 2 and 3?

Participant 13: Sorry, it was Instagram. for that week

Researcher: And what are the other apps?

Participant 13: Messenger and Netflix

Researcher: Okay. And the week before it?

Participant 13: Two seconds. It was YouTube and Netflix and then Instagram and messenger, the week before.

Researcher: Okay.

Researcher: So before the challenge which were the apps that you used the most?

Participant 13: Okay, before the challenge it's Instagram and messenger. YouTube and Netflix.

Researcher: Okay. And after the challenge?

Participant 13: Netflix and instagram.

Researcher: Okay, um, and you expected Instagram and messenger to be the most used in your smartphone?

Participant 13: Yeah.

Researcher: But in reality you also interact a lot with YouTube and Netflix.

Participant 13: Yes.

Researcher: Is that surprising for you?

Participant 13: No.

Researcher: No. So the results that you just saw are what you expected ?

Participant 13: Yeah.

Researcher: And how does it make you feel to have these apps as your most used applications?

Participant 13: I don't really feel bad about it.

Researcher: No?

Participant 13: It doesn't surprise me.

Researcher: So like you had predicted it?

Participant 13: Yeah.

Researcher: Okay. And in which context and situation to use these app, so maybe talk through, what situation do you use Instagram, first?

Participant 13: Just to update on what my peers are doing, or to see some

funny content.

Researcher: Okay, and why is it important to use Instagram to get that update?

Participant 13: I think it's because it's one of those platforms that other people use the most.

Researcher: So it's because your peers are on it. So it's the easiest.

Participant 13: Yeah.

Researcher: And then Messenger: what do you use it for?

Participant 13: To talk; to conversate with my friends.

Researcher: Okay, so messenger is mainly for communicating, where Instagram is more life updates.

Participant 13: Yeah.

Researcher: Okay. And then Netflix and YouTube. Netflix first.

Participant 13: Yeah, it's to watch movies as a way to entertain myself.

Researcher: What about YouTube?

Participant 13: Same

Researcher: okay, and why do you have both or is it because you get different content from both places?

Participant 13: Yeah, I think it's depending on the content.

Researcher: Okay. So there's a specific content on YouTube that you don't find on Netflix and vice versa.

Participant 13: Well, I can get specific movies on netflix, I feel like specific movies and series. Whilst on YouTube, I can listen to some music. And I can switch to listening to a podcast or I can switch to just simply watching a video following someone's life. Yeah,

Researcher: Okay. And so, if we go back to Instagram, which section of futures of the app do you use the most? Because there's Instagram explore, DMs, stories, feed. What do you think is the one you interact with the most?

Participant 13: The feed.

Researcher: Yeah, and do you? Like how do you interact with it? Is it you just watch like you like, you comment? Like, what? How do you interact with it?

Participant 13: Yeah, I just watch what's updated on my page?

Researcher: Mm hmm. Do you like and comment stuff?

Participant 13: Not really. I don't really leave comments.

Researcher: But do you like?

Participant 13: I like, yeah.

Researcher: Okay. And then, so you mainly use the feed.

Participant 13: Yes.

Researcher: And then we have messenger. How do you interact, like what features do you use? Is it mainly text, phone calls, video calls or audio calls? Like what?

Participant 13: Text

Researcher: Texting. And then we have Netflix. So how do you interact with it? Is it that you search for a show? Or do you a look at the recommended sections?

Participant 13: I look at the recommended sections.

Researcher: Cool. And then for YouTube, is it you search for a video or do you just look at what's on your start screen?

Participant 13: I search for videos

Researcher: Okay, cool. Did the challenge decrease your interaction with your favorite apps. If it's possible, like could you see the lower amount?

Participant 13: I don't really see the...

Researcher: Next to the apps, there's the time.

Participant 13: Um, I would say like the week before, for example, Instagram is like 11 hours to seven.

Researcher: Okay, so it decreased by four hours?

Participant 13: Yeah.

Researcher: What about Messenger?

Participant 13: From 6 to 2 and a half.

Researcher: Okay, and what about Netflix and YouTube?

Participant 13: From four.. Sorry. from four to seven for Netflix and...Oh no, sorry, from four to 15 for YouTube

Researcher: 15 hours?

Participant 13: Yeah

Researcher: Okay.

Participant 13: And Netflix. I don't.. From 7 to 8 I think. Yeah. From 7.65 to 8.60.

Researcher: Okay. And so, for the social media apps, your interaction decreased but for the watching apps, it increased. How does this make you feel?

Participant 13: It doesn't surprise me because I do search first for things to

entertain myself a lot. And I do tend to binge watch on stuff and series. So it doesn't surprise me that.. If I didn't use the other ones that much. I tried to find a way to replace it.

Researcher: The app limit - which apps did you app limit?

Participant 13: I did it for all the entertainment apps and Safari.

Researcher: Okay. And so there was an app limit on YouTube and Netflix.

Participant 13: Yeah.

Researcher: How big? Well, how much was the app limit?

Participant 13: Three, three hours.

Researcher: Per day?

Participant 13: Yeah.

Researcher: Okay. Um, but how does it make you feel to use, to see that amount? for example, your usage went from four to 15 hours.

Participant 13: It's a lot.

Researcher: And how does it make you feel?

Participant 13: Kind of reflect on what I chose to spend my time on.

Researcher: So you don't like it? That you spent that amount of time?

Participant 13: I can't hear you. Can you repeat?

Researcher: So you don't like the fact that you spend that amount of time on YouTube, for example.

Participant 13: No, it's not something I'm proud of.

Researcher: Okay, but then how come you still spend that because you said you were aware of the time you spent, but is it because you get into that infinite loop of YouTube or is it because you have nothing else to do to entertain yourself? Like, what is the reason for using..?

Participant 13: Yeah, I think I don't have other ways to entertain myself. So... or that's the easiest way to entertain myself sometimes, yeah. So I choose to go on YouTube instead. Because it's eaiser and it's in my reach. So..

Researcher: Okay. Is there an application that you cannot absolutely not give up? For example, something you need for work or something else.

Participant 13: I mean, yeah, I have my school schedule on my phone. So I'll be very troubled if I didn't have that one.

Researcher: Is it an app?

Participant 13: Yeah.

Researcher: Okay, so it's a school app?

Participant 13: Yeah.

Researcher: Is there other apps that you can absolutely not give up?

Participant 13: I think Instagram.

Researcher: You cannot give it up?

Participant 13: Yeah.

Researcher: Is there an application that you can but don't want to give up?

Participant 13: Yeah. To be honest, probably Netflix

Researcher: Netflix?

Participant 13: and Facebook

Researcher: and Facebook?

Participant 13: Yeah, the app Messenger and stuff.

Researcher: What about YouTube? Which category would you put YouTube in? You cannot give up or you can but don't want to give up?

Participant 13: I can but don't want to.

Researcher: Okay. But how come we didn't think of YouTube when we first..

Participant 13: I don't know, I feel.. I think it's because of the I don't want to part.

Researcher: Yeah. But so YouTube is the one you would least want to remove?

Participant 13: Yeah, yeah.

Researcher: Okay. And why? is it because it's the main entertainment tool you have now?

Participant 13: Yeah. And I think I have so many options with it. I think that's why I don't really want to give it up.

Researcher: Okay. I'm going to skip to the last question now. So, in terms of your everyday life, and your smartphone usage and how you structure your day, and how you use the phone, what are the most important values for you? So I'm going to give you some examples in order for you to understand it. So there's family, there's friends, there's career, there's health, there's sports, like there's a lot of different categories. Which three would be the most important for you to structure your smartphone usage or your everyday life? Like what is important for you?

Participant 13: I think..I don't know. I think it would be maybe friends I guess. Yeah.

B.2 Second Iteration: Smartphone Usage Survey

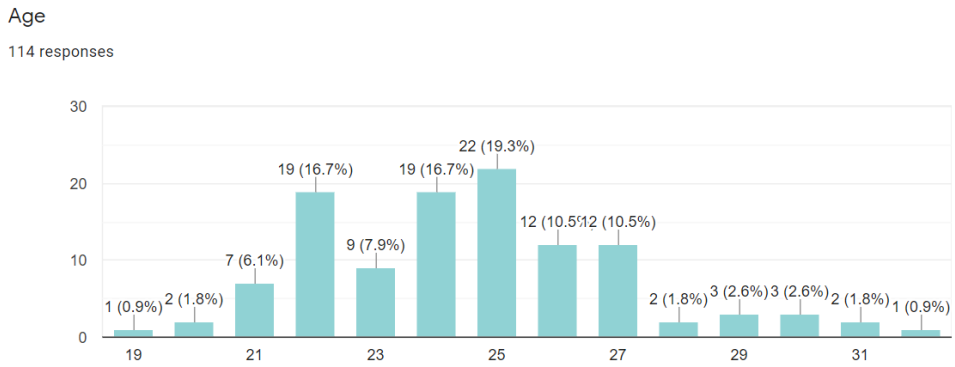


Figure B.14: Age

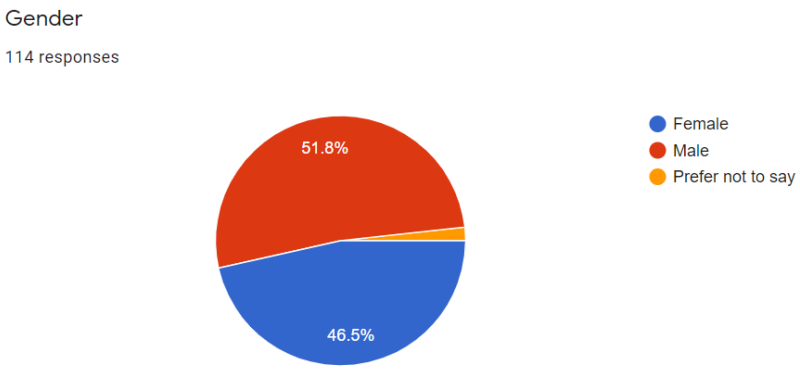


Figure B.15: Gender

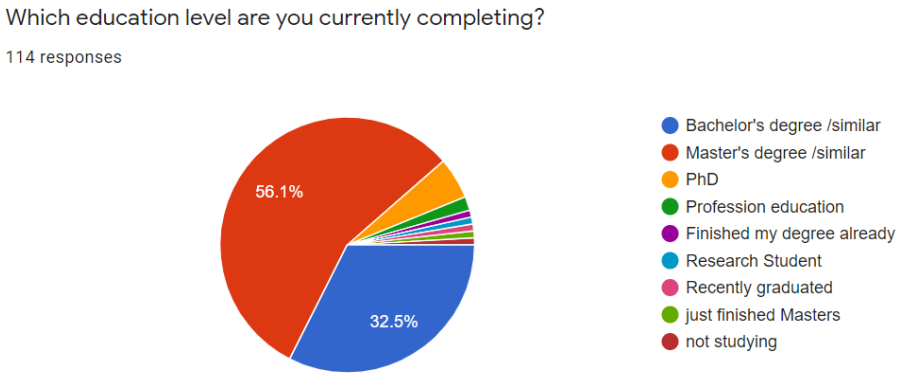


Figure B.16: Education level

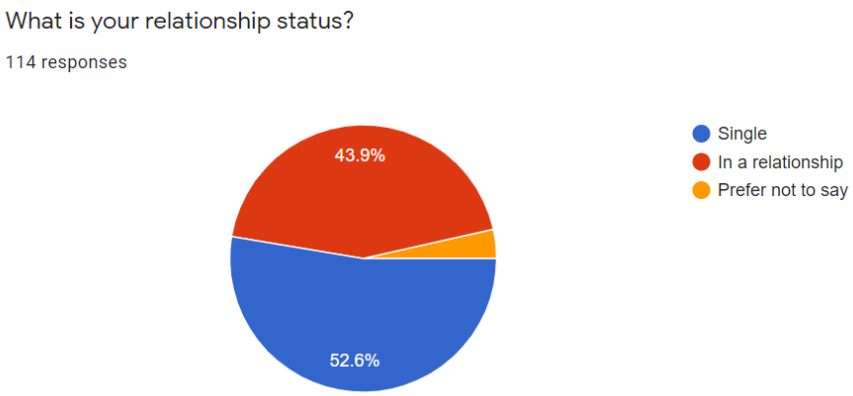


Figure B.17: Relationship status

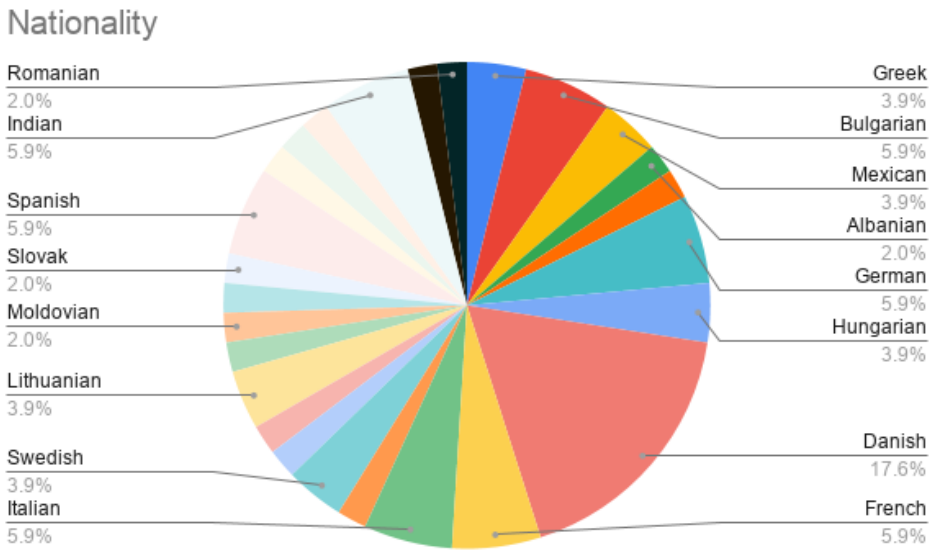


Figure B.18: Nationality

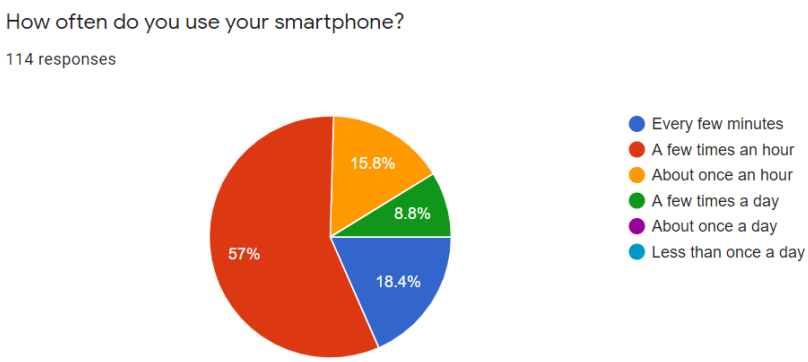


Figure B.19: Smartphone usage frequency

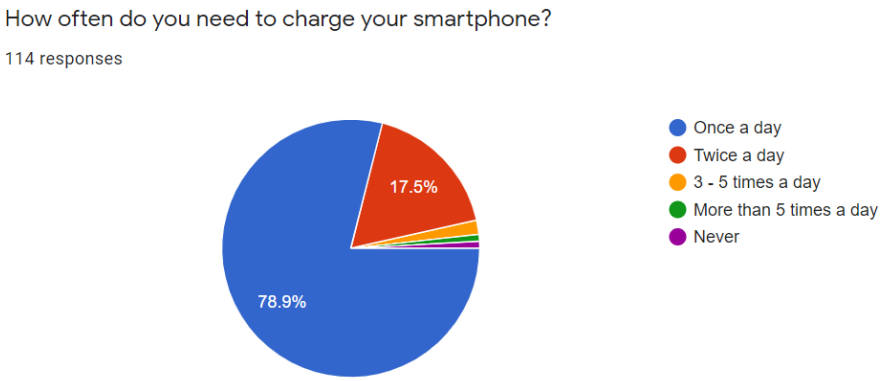


Figure B.20: Smartphone charging frequency

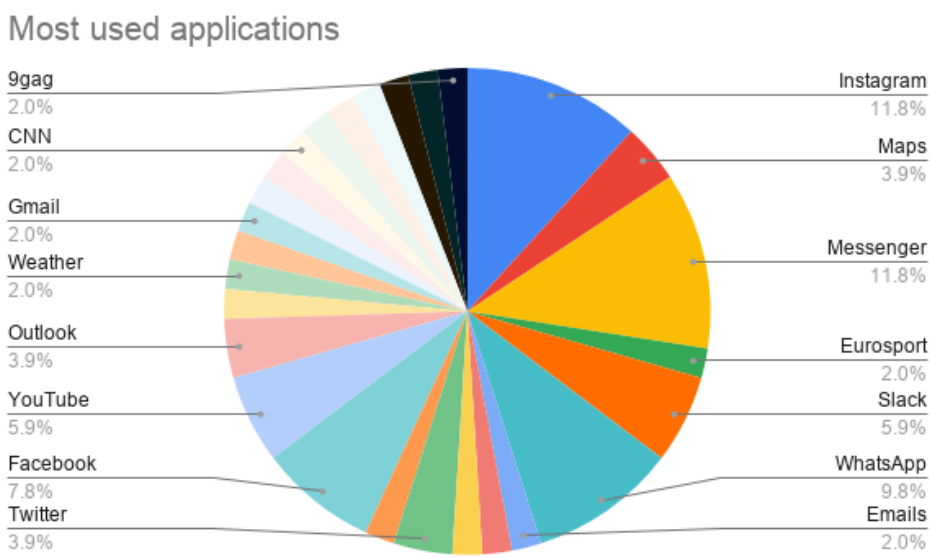


Figure B.21: Most used smartphone applications

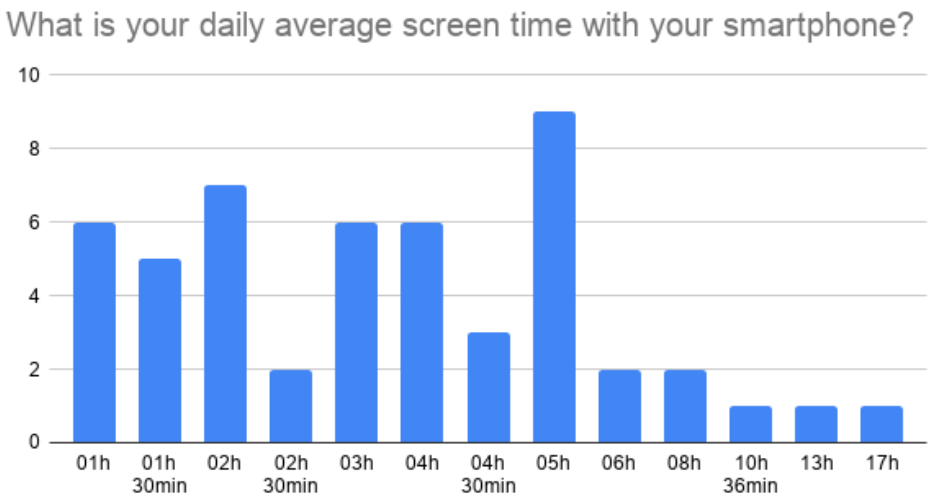


Figure B.22: Average screen time

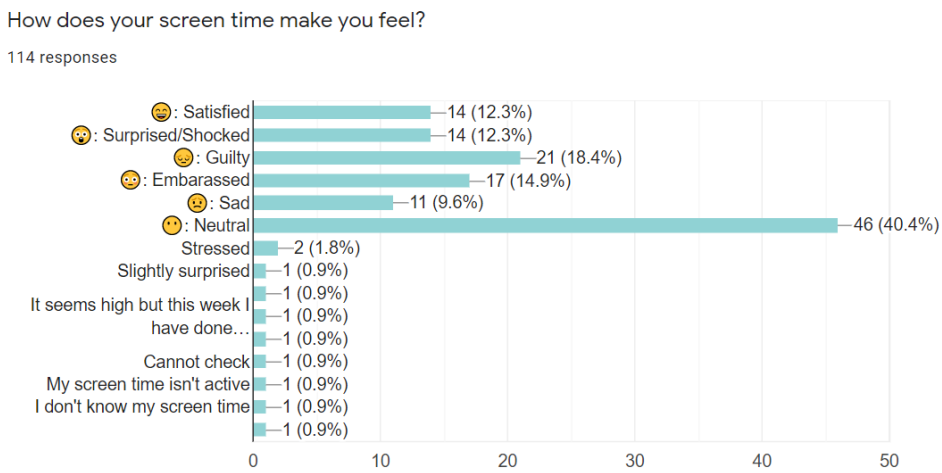


Figure B.23: Reflection on screen time

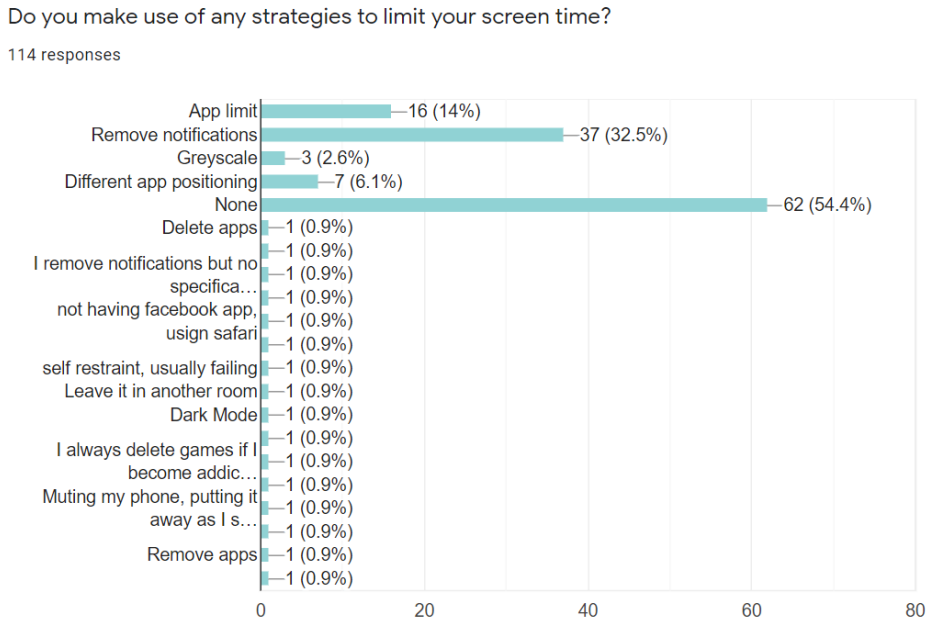


Figure B.24: Used strategies for decreasing current screen time

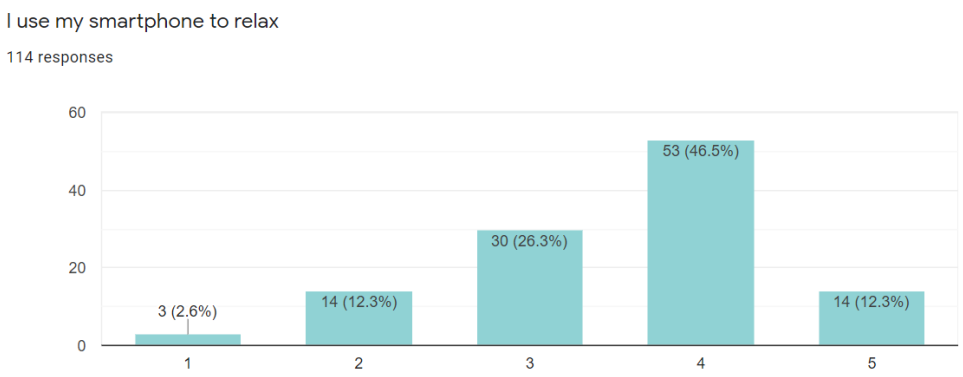


Figure B.25: Using smartphones for relaxing
1: Strongly disagree 5: Strongly agree

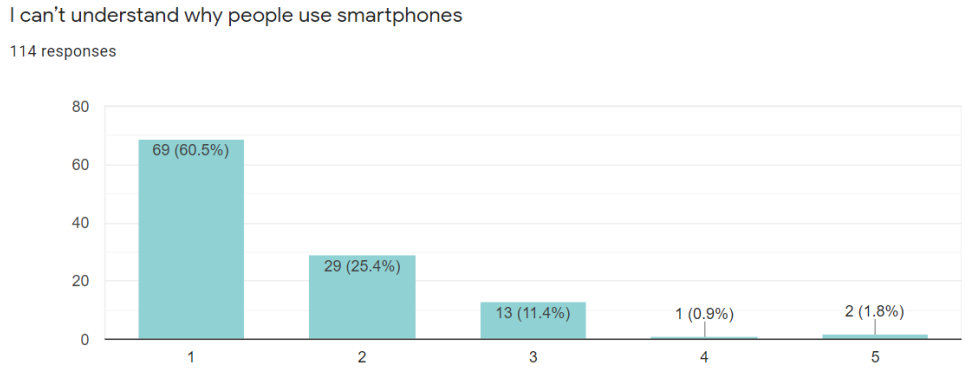


Figure B.26: I can't understand why people use smartphones
1: Strongly disagree 5: Strongly agree

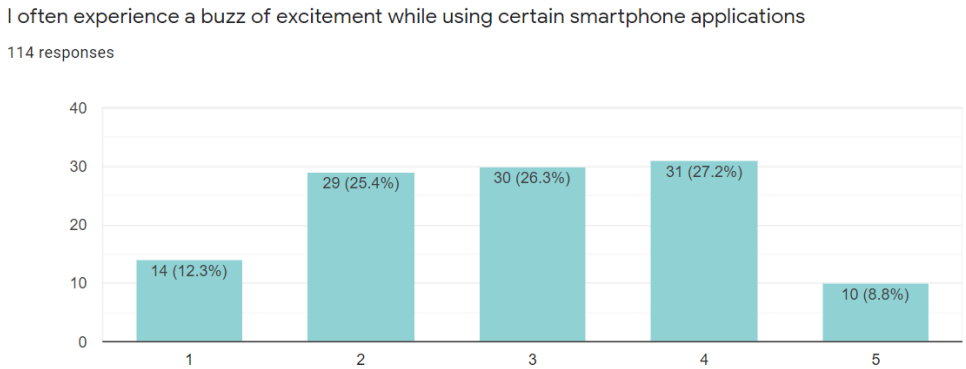


Figure B.27: Experience a buzz of excitement while using certain smartphone applications
1: Strongly disagree 5: Strongly agree

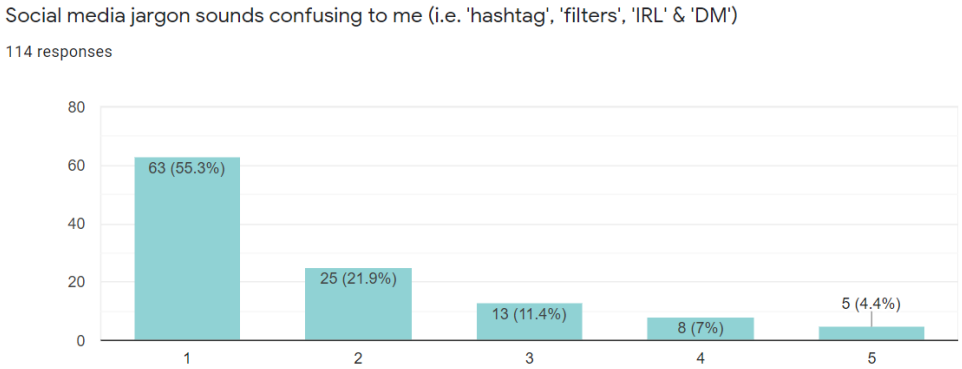


Figure B.28: Social media jargon is confusing
1: Strongly disagree 5: Strongly agree

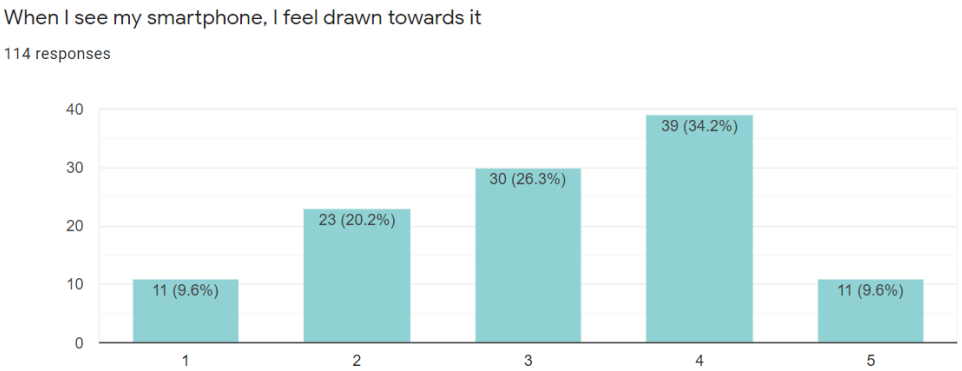


Figure B.29: Feel drawn towards smartphone
1: Strongly disagree 5: Strongly agree

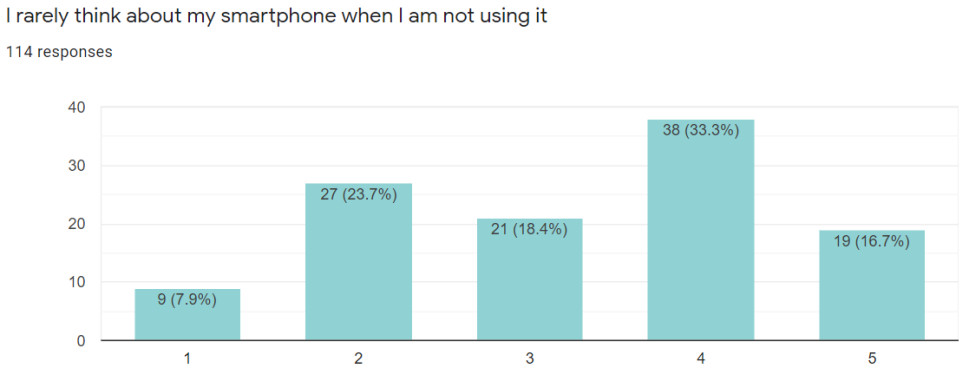


Figure B.30: Rarely thinking about the smartphone when its not used
1: Strongly disagree 5: Strongly agree

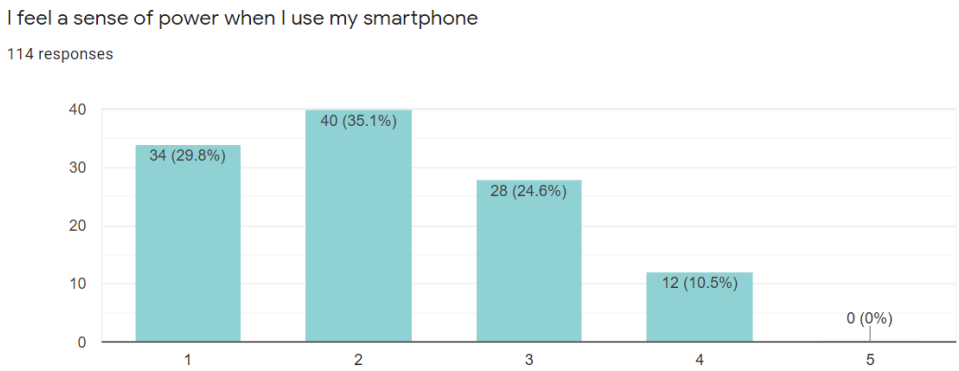


Figure B.31: Feeling a sense of power when using smartphone
1: Strongly disagree 5: Strongly agree

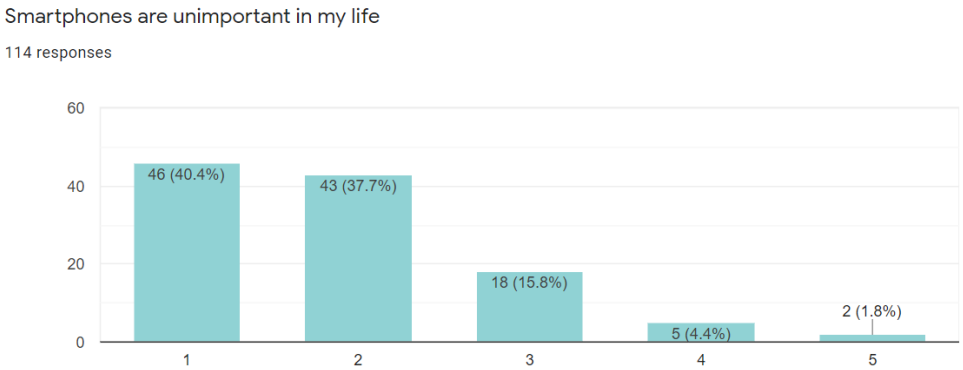


Figure B.32: Smartphones are unimportant
1: Strongly disagree 5: Strongly agree

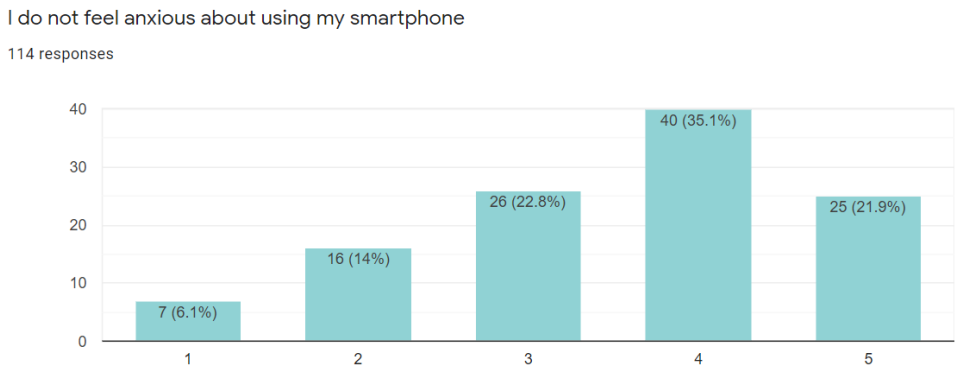


Figure B.33: I do not feel anxious about using my smartphone
1: Strongly disagree 5: Strongly agree

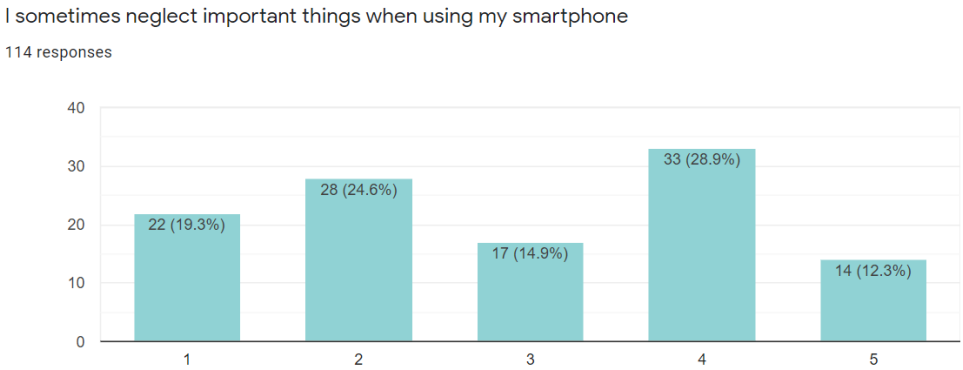


Figure B.34: Neglect important things when using smartphone
1: Strongly disagree 5: Strongly agree

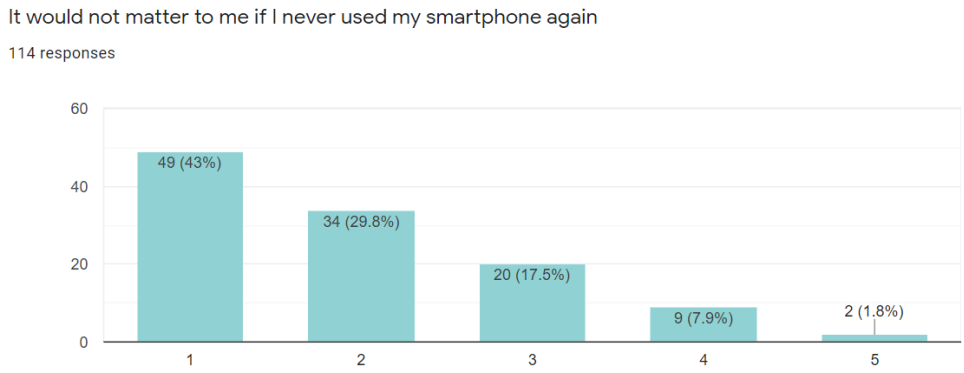


Figure B.35: It would not matter to me if I never used my smartphone again
1: Strongly disagree 5: Strongly agree

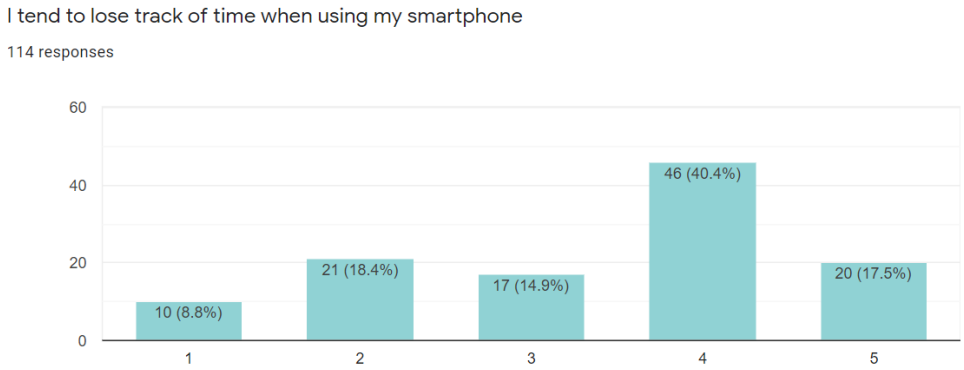


Figure B.36: Losing track of time when using smartphone
1: Strongly disagree 5: Strongly agree

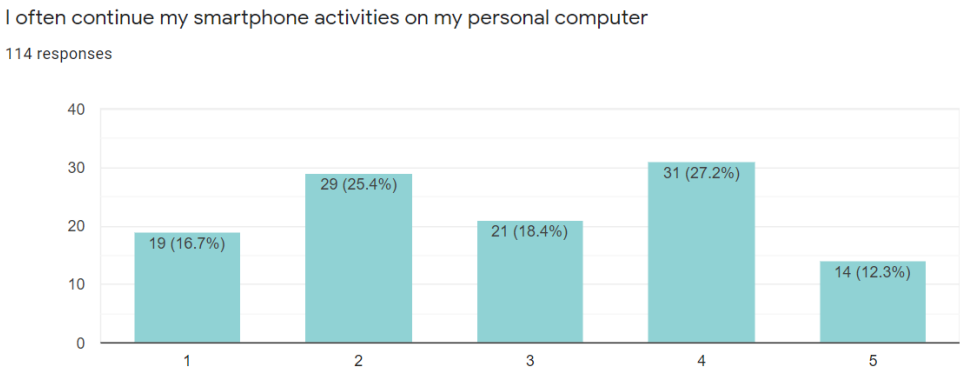


Figure B.37: Continue smartphone activities on personal computer
1: Strongly disagree 5: Strongly agree

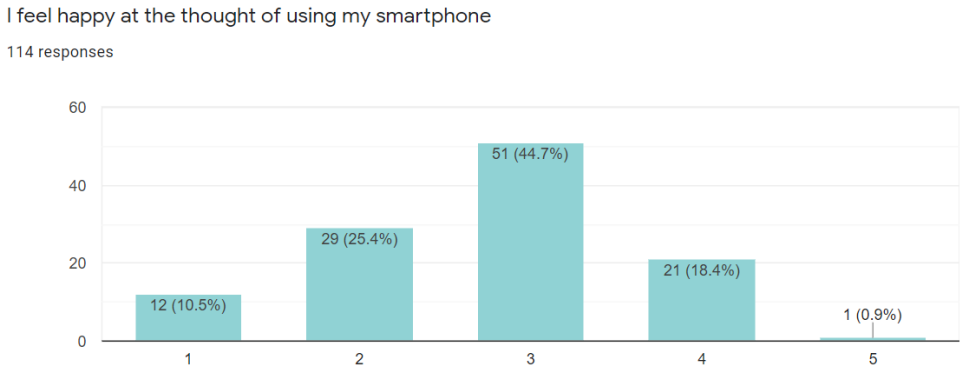


Figure B.38: I feel happy at the thought of using my smartphone
1: Strongly disagree 5: Strongly agree

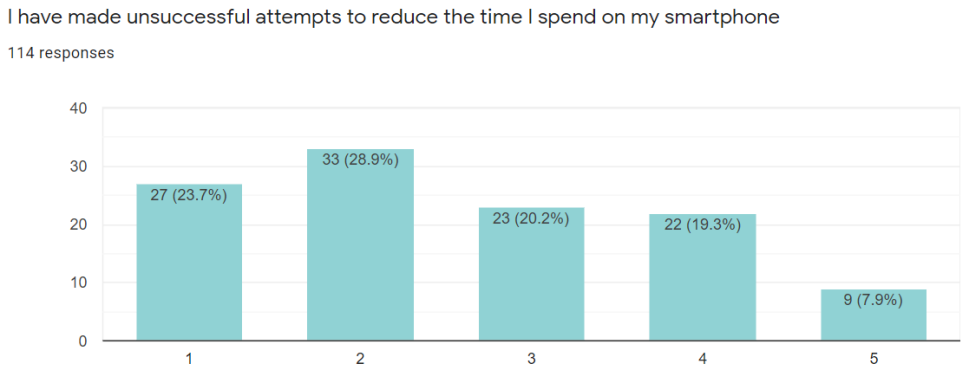


Figure B.39: I have made unsuccessful attempts to reduce the time I spend on my smartphone
1: Strongly disagree 5: Strongly agree

Figure B.40: I often use my smartphone during meals
1: Strongly disagree 5: Strongly agree

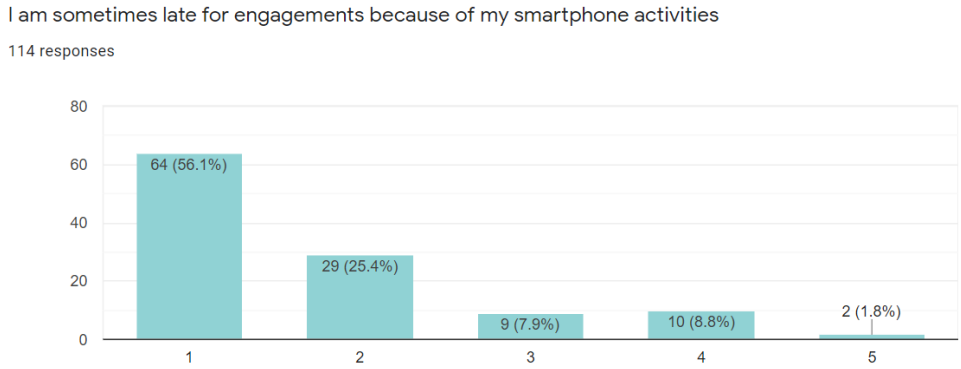


Figure B.41: I am sometimes late for engagements because of my smartphone activities
1: Strongly disagree 5: Strongly agree

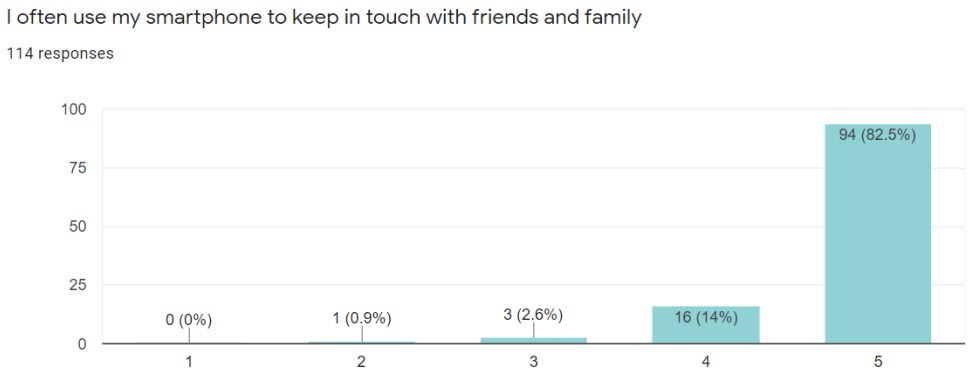


Figure B.42: I often use my smartphone to keep in touch with friends and family
1: Strongly disagree 5: Strongly agree

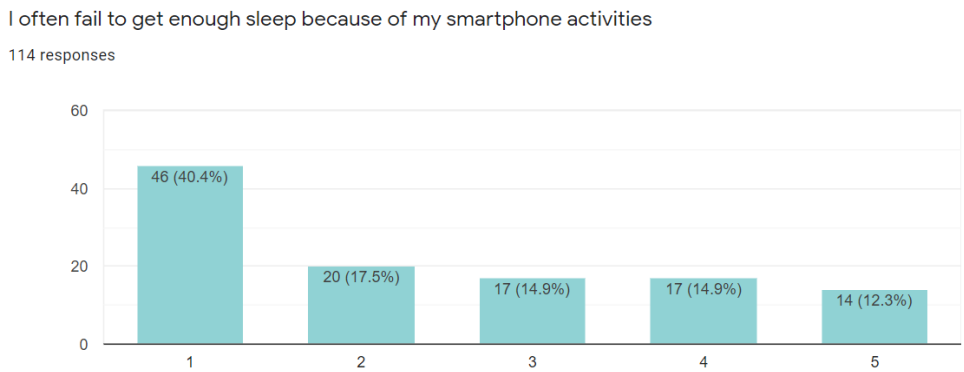


Figure B.43: I often fail to get enough sleep because of my smartphone activities
1: Strongly disagree 5: Strongly agree

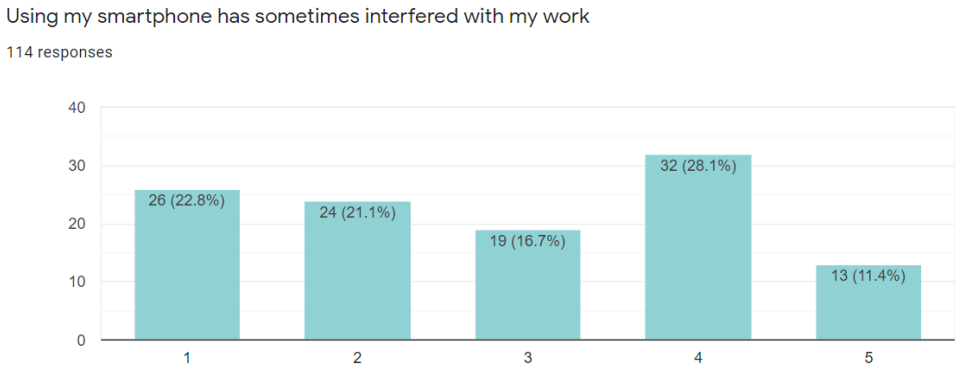


Figure B.44: Using my smartphone has sometimes interfered with my work
1: Strongly disagree 5: Strongly agree

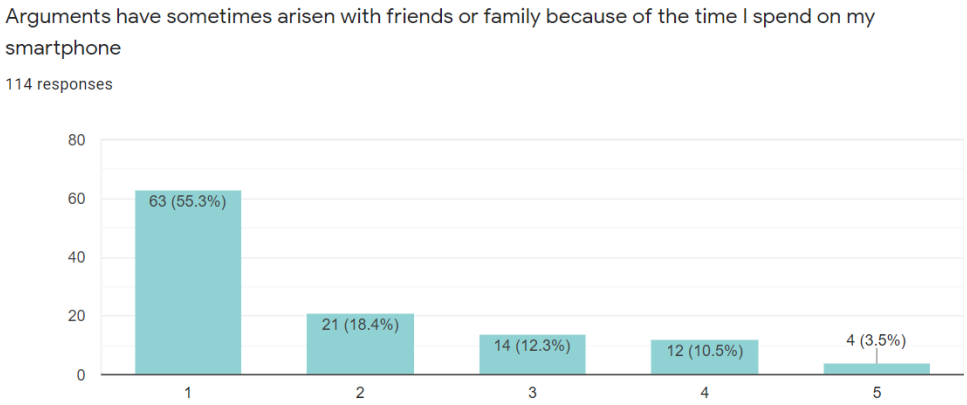


Figure B.45: Arguments have sometimes arisen with friends or family because of the time I spend on my smartphone
1: Strongly disagree 5: Strongly agree

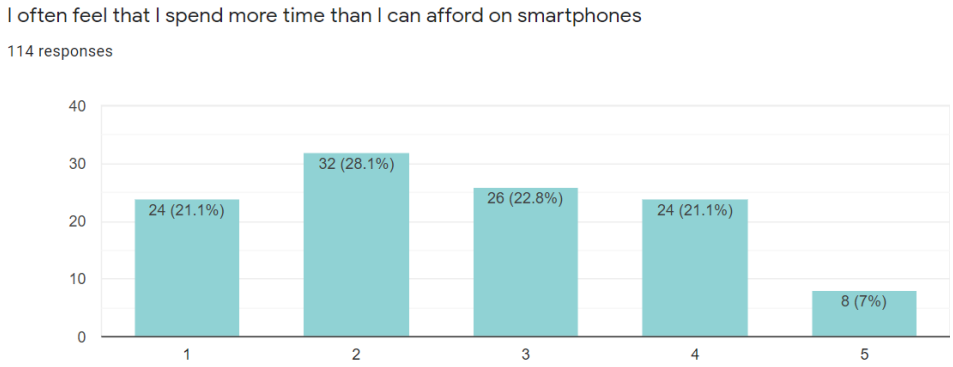


Figure B.46: I often feel that I spend more time than I can afford on smartphones
1: Strongly disagree 5: Strongly agree

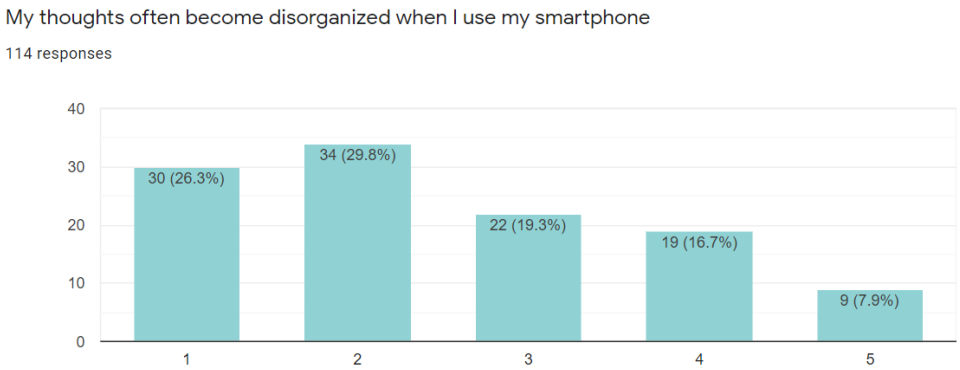


Figure B.47: My thoughts often become disorganized when I use my smartphone
1: Strongly disagree 5: Strongly agree

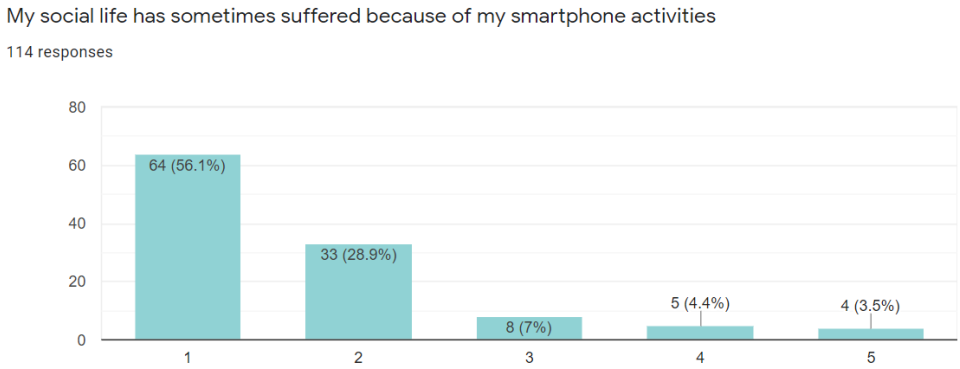


Figure B.48: My social life has sometimes suffered because of my smartphone activities

1: Strongly disagree 5: Strongly agree

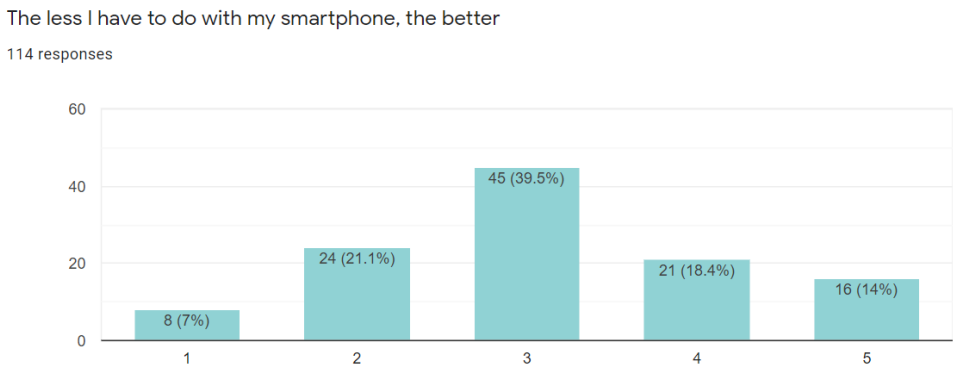


Figure B.49: The less I have to do with my smartphone, the better

1: Strongly disagree 5: Strongly agree

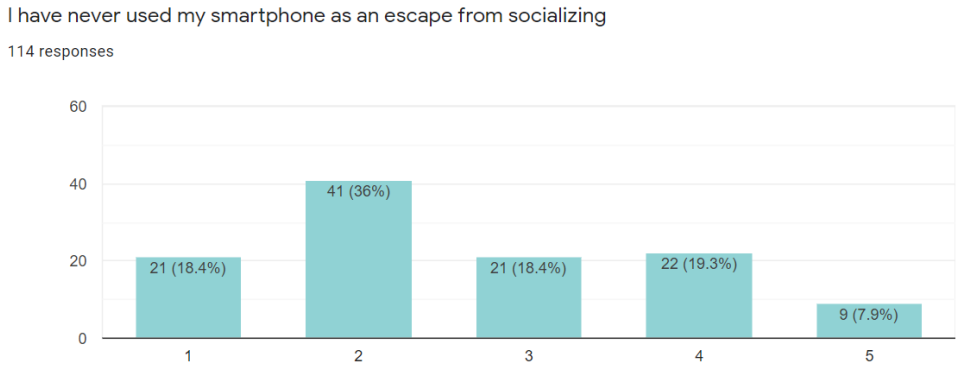


Figure B.50: I have never used my smartphone as an escape from socializing
1: Strongly disagree 5: Strongly agree

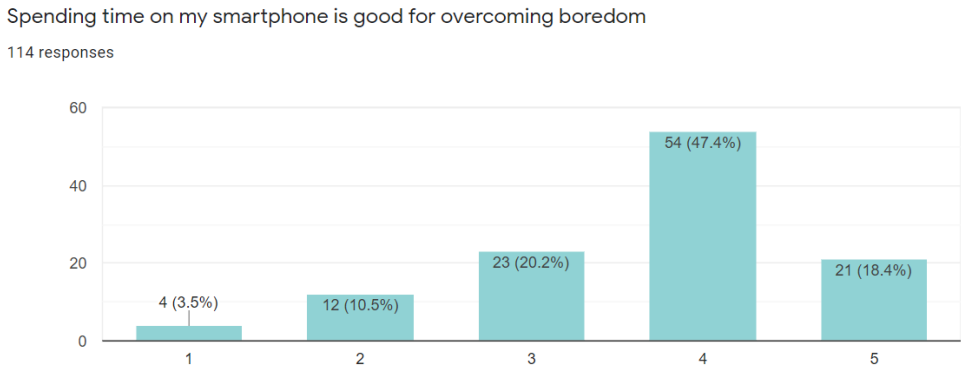


Figure B.51: Spending time on my smartphone is good for overcoming boredom
1: Strongly disagree 5: Strongly agree

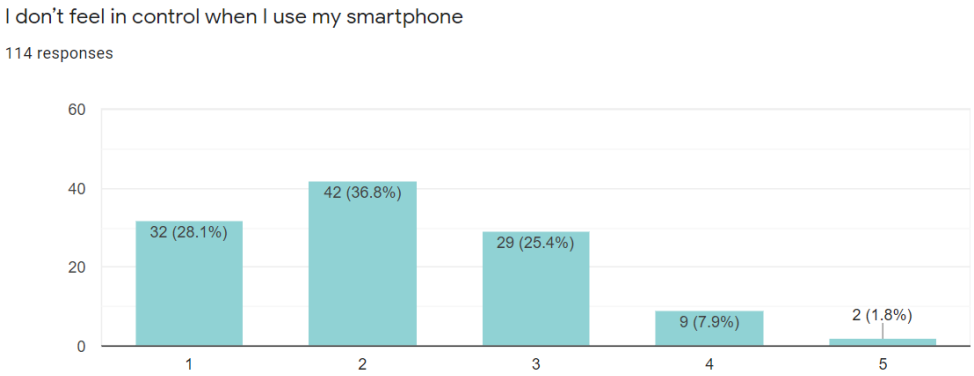


Figure B.52: I don't feel in control when I use my smartphone
1: Strongly disagree 5: Strongly agree

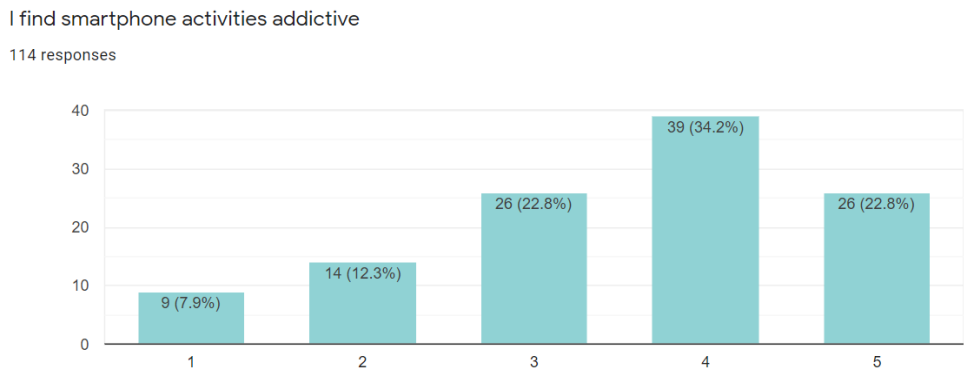


Figure B.53: I find smartphone activities addictive
1: Strongly disagree 5: Strongly agree

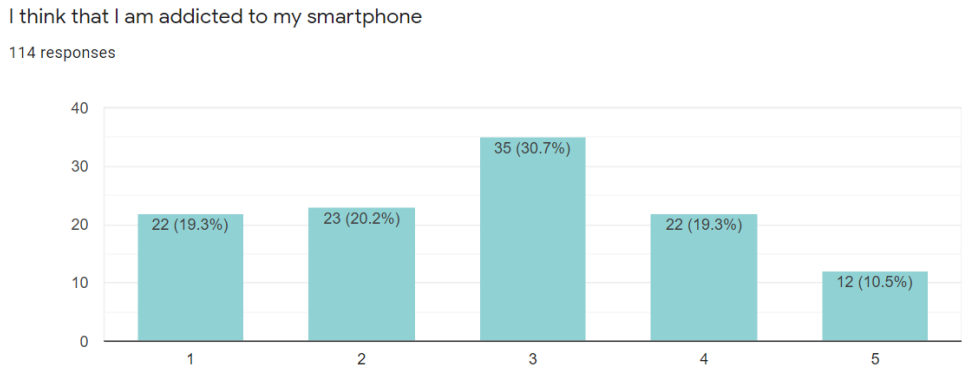


Figure B.54: I think that I am addicted to my smartphone
1: Strongly disagree 5: Strongly agree

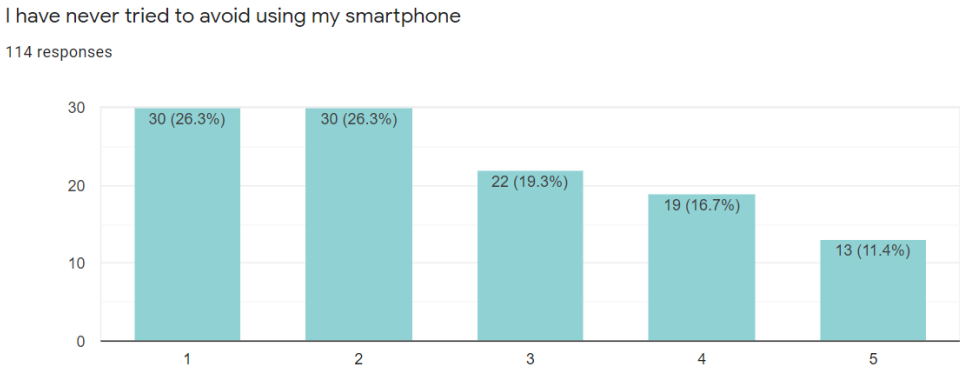


Figure B.55: I have never tried to avoid using my smartphone
1: Strongly disagree 5: Strongly agree

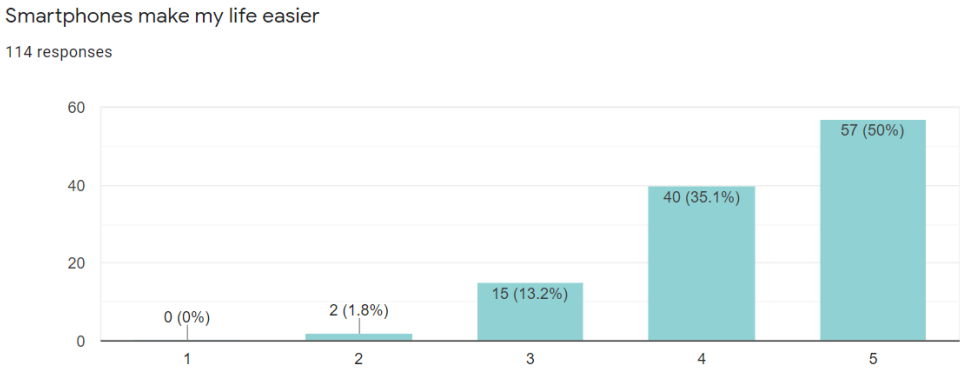


Figure B.56: Smartphones make my life easier
1: Strongly disagree 5: Strongly agree

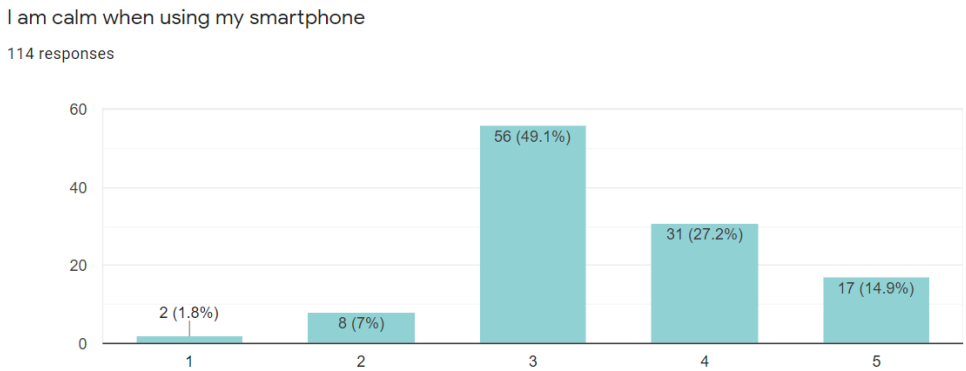


Figure B.57: I am calm when using my smartphone
1: Strongly disagree 5: Strongly agree

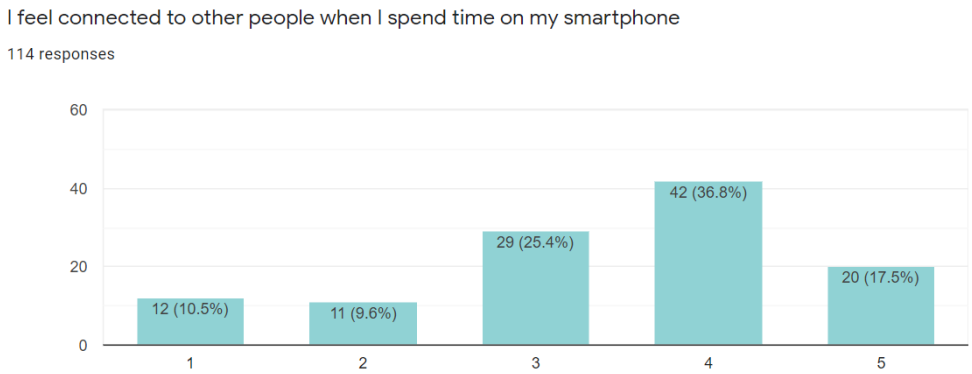


Figure B.58: I feel connected to other people when I spend time on my smartphone
1: Strongly disagree 5: Strongly agree

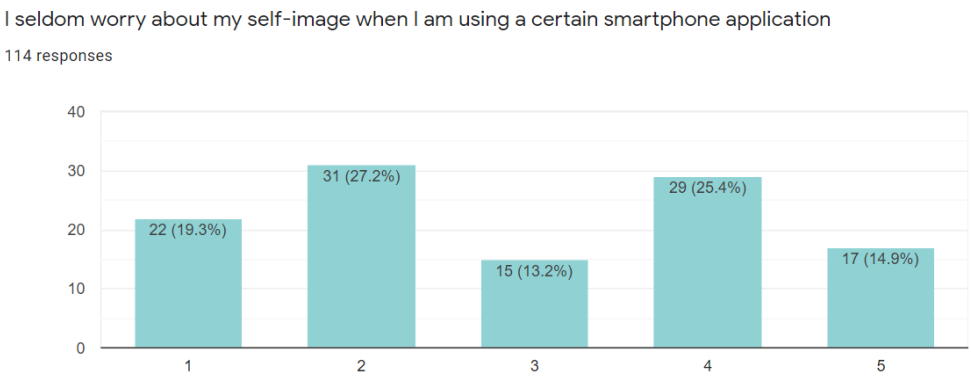


Figure B.59: I seldom worry about my self-image when I am using a certain smartphone application
1: Strongly disagree 5: Strongly agree

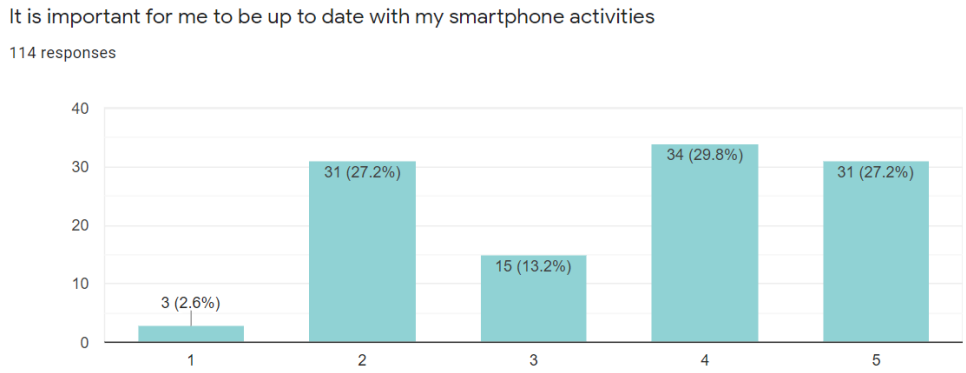


Figure B.60: It is important for me to be up to date with my smartphone activities
1: Strongly disagree 5: Strongly agree

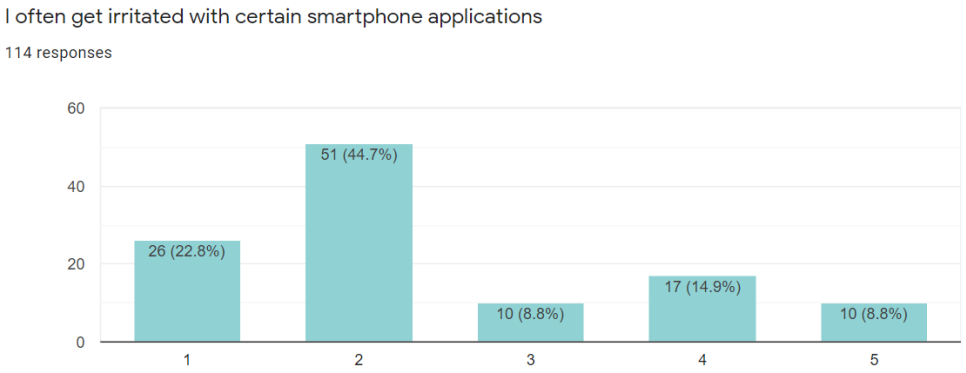


Figure B.61: I often get irritated with certain smartphone applications
1: Strongly disagree 5: Strongly agree

Has the current coronavirus outbreak, and related social distancing measures, changed your smartphone usage in recent days or weeks? If yes, how?
Contacting my family
nope
I use more my phone
Yes, I use more time on my phone, because my social activities can't find place outside my home or at my home, so that's why I am socialising myself by using my phone
Yes, I use more time on my phone, because my social activities can't find place outside my home or at my home, so that's why I am socialising myself by using my phone
I would say that I am using my smartphone a bit longer that before, but not a huge difference
Now that I am at home, I put my phone in a drawer far away to concentrate
I use it more
Yes, I spend more time checking my insta and Facebook feed
No
Yes, I spend more time on my phone checking social media than I normally did, because of the lack of socializing these days
Yes, I use it more.
Yes, I use it more often to keep communication with family/friends
Yes, i am using video calls more than before
I am calling more
Messenger calls
Use it more
I am spending more time on my phone
I use my phone a lot more compared to before the coronavirus outbreak
not really no
Not really as I mostly do calls/meetings on my PC
Yes, I call or talk to my family and my friends almost every day now since the coronavirus outbreak
no
Yes, using it way more
Yes, I use my smartphone much more to entertain myself
I downloaded Houseparty and use it with my friends. Otherwise I call my family more often, yeah.

No
checking way more the medias
Use it more in all ways
Yes, a lot, currently being confined in my appartment alone I use my phone a lot more than I do usually, which makes answering these questions difficult.
Yes, more texting/calling, but i also check twitter much more regular
It's increased it significantly
Not really, I use my pc mostly so the use is around the same
Due to isolation, my on screen time has significantly increased, because I am pointlessly scrolling through applications to kill time.
No
Yes, my screen time skyrocketed
more video calls, less usage overall
Sure, I do more Video/Audio calls
Yea, screen time increased with like 20%
I Facetime more
Increasing the amount of time I spend on my smartphone.
More free time leads to more time wasting, sometimes on the phone
I use FaceTime much more often to keep in touch with my friends. My screen time has also increased with minimum 30%
Not really
Yes, before Corona I tried to limit my usage.. It has now sky-rocketed compared to before.
No
Yes, whatsapp calls have increased.
My consumption has increased.
Yes, it has increased drastically
not really
I used to use mainly skype, now I also use discord, facebook video call, skype business, whereby +
Yes, I think I use it a bit more actually.
I use it muchhhh more!!
Usage/ screen-time increased heavily
Totally, my screen time has increased and I'm using it more for video calls and send more messages to talk to family and friends
Not much.

Yes, it has increased the number of meetings I'm attending through my smartphone, so it has increased my screen time
no
Yes, increasing screen time
YES, INCREASED SIGNIFICANTLY
Calls and Messages
I think not so much
Yes i use it much more, and can now spend hours on tiktok
More time home = more time on SoMe
Yes.i spend more time on my phone. I have used the news app more than I normally do, the same goes for Facebook Snapchat Og Instagram. I also got some new traningapps too help kill time. And FaceTime to call and see friends and family.
Yes, spent way more time on it to get the latest updates/follow the conferences, called more people too
Yes, I spend double the time on my phone if not more
Yes, I use it more than usual
Videocall
No
Yes, spending more time
Yes, more videoconference and more time spent
I videocall a lot more than before.
No
Spending more time on youtube, but not on the smart phone since I am at home where I have a computer
Yes, I was procrastinating with Netflix last days, but strangely podcasts (Youtube) allowed me to concentrate for work. Sometimes in the middle of the day, I am calling to my friends or family to get to know how they are doing.
Yes, I tend to make more calls over facebook and whatsapp
Not notably.
Yes, I spend more time calling, facetiming and messaging friends, classmates and family to stay in contact and talk about assignments/exams
no
Yes I communicate digitally with friends and family way more often
No
I defo use my smartphone more.
Yes I use Whatsapp more, and I am playing Games more.

use of houseparty app
Yes, I use my phone to communicate also with people I didn't use to text (school mates especially, face to face communication has been replaced with text messaging or video calls).
I don't feel like my screen time has increased a lot. However, I am using my smartphone way more to follow the news on a daily basis.
Yes, I am using my phone around 5 more hours for sure
I do more (video)calls with my family and friend on Whatsapp
More frequent smartphone usage (up 4/5 hours a day) to stay in touch with friends & family.
No
No
Yes it changed a lot, I use my phone more than ever. I'm always on except the work hours or study hours
yes, more time on twitter, news
Yes, I do lots of video calls now
No
It has increased
Yes, definitely spending more time on my smartphone to connect with friends and family
I use less my phone and more my laptop for social media. I do call / message my friends or colleagues more to keep in touch. But that's either on phone or laptop.
Yes, I am spending more time than I used to in using apps like Instagram and Whats app to stay connected with my friends
Yes. An increase in time wasting on social media
It reduced the usage of the smartphone, cause I use my laptop all the time.
I'm using it more to stay in touch with friends - mainly for call/text
Yes, it has increased. Less google maps. More frequently looking at the news. More facetime.
Not really
Yes. I'm definitely using my smartphone, but especially my computer almost the whole day, because I'm alone and I want to communicate with my family and friends.
Yes, I spend more time with my smartphone than before
I think it’s pretty much the same. I’m always on my phone a lot
More usage
Screen time has definitely increased, as to speak and meet with people you use your phone
No, I use it less than before.
Yes, increased significantly.

Has the current coronavirus outbreak, and related social distancing measures, changed your smartphone relationship in recent days or weeks? If yes, how?
Yes, I am more connected to my smartphone, because of work and family
nope
I used more News app like BFMTV and France24
Yes.. Because people are posting all kind of crap about the virus, which is not useful information
Yes.. Because people are posting all kind of crap about the virus, which is not useful information
I feel I spend too much time using my smartphone sometimes.
No, just communicating more
I use it more
No
No
Yes, I feel that most of the content I follow is connected to coronavirus, why I aim to spend less time on it
Not really.
Yes, I feel more connected my family.
K
No
No
no
Anxious about news
no
No
not really no
I do sometimes purposefully look up trends about the virus
Yes, watching news is more stressful
no
The same question as above
Yeams I rely on it more
No, not really
No
checking way more the medias

Not besides using it more
Yes it is almost my only source of communication with friends and family
Feel kind of anxious about checking the new numbers of infected people
No, I'm in a privileged position to not be too worried about catching coronavirus. So the news doesn't bother me as much
No i feel the same no need to panic. I have been an introvert since the begining nothing changed with the outbreak
No
No
On social media, I feel I have less to tell, yet there's a slight pressure of posting and on some days, when you see how productive/ creative/ cheerful others are makes me even more anxious.
less stressed
No
No
No
FOMO. I feel there's more going on in Whatsapp groups discussions, for example.
Any emotions are more related to the storm of negative news rather to using the phone.
No
Not really
I use it way more for brain dead entertainment. Facebook videos are my weakness
No
Yes, a little bit more anxious.
Not at all.
As above
for sure
No
Yes I feel a bit more anxious due to the cover-19 situation.
No
Usage required to keep social contacts. Increased boredom yields increased usage, too.
Not really, it's obvious that some news are upsetting but it hasn't changed my smartphone relationship
Not much
Not really
no

No
YES, DISTRACTION FROM MY STUDIES
No
No
Yes because of the distance i use my smartphone differently, i facetime much more and im tired of it but i need some human contact
No
No you see less people out having fun and spending money. That makes me feel better about being to broke too go out.
Not really, my feed is either climate change or corona related so not more anxiety
Not really
Yes, I have more call and video call
No
No
No
No
I feel more anxious in general. Including with the phone.
No
No
Feels like no.
No
No.
The news does tend to make me anxious but except for that I feel the same
no
Yes I avoid using social media because everyone is talking and panicking about it so it stresses me out
No
No, I like the news feed still.
Not necessarily scrolling but gaming yes.
No
Yes, I am thinking in particular of when I use it to read news.
Not significantly
No
More tired of using my smartphone
No

No
No
NO, I'm just getting bored because of the challenges on Instagra,
same + more time on messaging apps but mainly desktop apps for work
I appreciate having the technology more now
No
No
Not really
Yes, avoid reading about coronavirus
Yes
No, though I'm conscious I've spent more time on it lately
I forget that I have a smartphone these days. I own a smartphone for the last 3 years. I remembered how nice it felt before that I did not have to respond immediately to my messages. And that my friends and family were ok with that.
No
Yes.
Not really
No
No.. It's the same
Yes, I feel more anxious based on the increasing usage of my smartphone
I felt anxious in the beginning because I couldn’t control seeing all the information about the pandemic. Now, it’s back to normal
No
Nothing has changed much regarding feelings
no
I'm trying even more to reduce the time I spend on useless applications like Fb, IG and such.

B.3 Third Iteration: Group Interviews 1 - Lo-Fi Prototypes

B.3.1 Participants 15 and 16

Researcher: Tell us a little about yourself

Participant 15: I'm 22 and I study digital management at CBS

Participant 16: I study Political Science at Copenhagen University

Researcher: What do you think about the survey you filled?

Participant 16: I thought that the survey was good. There were a lot of interesting aspects. I was in a little bit of shock about my screen time. I was a little bit conflicted about where the limit is about smartphones and TV. If I am watching TV while cooking, does it still count as smartphone usage? Because my time was mostly spend on Netflix.

Participant 15: If you watch Netflix on your phone, probably. It is different for me because I watch it on my TV. Also since the quarantine started, I started face timing with my family and friends a lot more than normal. It is around 8h a day, but when I talk, I don't touch my phone - it is just there. Otherwise, I think that the survey was really detailed. But it did make me realize that I use my phone a lot. But it also might be because of the quarantine.

Participant 16: For me, the biggest question was "What do we define as smartphone usage?"

Researcher: The concept of "chill" and "relaxing". What do you think about this finding in general?

Participant 15: I think it's true. When I am on my phone I do this scrolling. This is how I try to relax. My phone is a way for me to relax.

Participant 16: I think that phone usage can be relaxing in a many ways. For me, I realize that I use my phone as background noise. Listening to music or watch TV while playing NBA. It is eather like constant using or as background noise.

Researcher: A lot of people mentioned that they are conscious of their self-image on social media. What do you think about social media in regards to self-image.

Participant 15: Everybody talks about these models on social media with nice pictures, like skinny girls and this really destroys self-esteem. For example, I started unfollowing stuff that make me feel weird. Not only people but in general. But it is true, a lot of people try to act as people on social media.

Participant 16: It varies on how people use their phones. For example, I use my phone watching funny videos, but especially for girls - they like watching videos for makeup and these kinds of stuff. And I can see a lot of girls try to look like the people they follow on SM.

Researcher: Have you ever feel uncomfortable when using certain applications? What about now during the outbreak?

Participant 15: It is not about self-image, but content in general. For example racists videos around this corona outbreak - and in general a lot of weird stuff. But I don't think SM can trigger some strong emotions in me. Every app has a lot of sides. It depends on what kind of account you follow. Maybe this is why it is so diverse because you can follow so many different content accounts. I think that the corona content that I see it is mostly funny memes, so I don't feel anxious about it.

Participant 16: I agree, for me, it's annoying seeing these kinds of content and making these miss information videos. I think memes bring a positive impact in order to think more positively. It is about a way of discussing common issues. In SM, the provided content is directly from people to people and we have seen so many misuses of that.

Researcher: Do you find smartphone activities addictive - over 50% said that they find them addictive, but when asked do you believe you are addicted to your smartphone - they said that they don't. What do you think about that?

Participant 15: I think you can get addicted really fast to useless stuff. For example, I downloaded TikTok because of my sister and I started spending like 6h a day watching videos on the app. But when it comes to chatting applications, you don't have to be active all the time. I think that it is mostly for apps where there is so much content - it is just never-ending and you end up scrolling and watching stuff for so long. For me when my phone broke, I realize how much I need it. Because everything was there - my travel card and so on. So maybe in a way, I am addicted, because nowadays it is hard to survive without a phone - but in a way, it is not only the apps, but also like phone numbers and so on.

Participant 16: I agree. I think what is so dangerous in smartphones is that everything is at ones - finding news, music, connecting with people, portable TV. I can totally see where this addiction is coming from because I can totally see that people can not survive without it in a way. Let's say that you want to go to sleep and want to say hello to a friend and then you end up chatting with him a whole night without realizing it. Or in my case, when I am cooking I am used to watching Tv from my phone as a background. It's the whole user experience that it is addictive. I think it is a good point. It is a one-stop for everything you need. We don't even need a credit card, we just use our phone and we instantly pay. We don't need a newspaper in order to follow the news. It is everything in one place. The practicality is what people look for.

Researcher: Do you think the word "addictive" has a negative connotation to people?

Participant 15: Yes, I think it is more "reliance" because they rely a lot on their phone

Participant 16: Reliance is good, but maybe also a necessity. If you don't have it, you feel how much life is hard without it. Even that being said addiction - it is something almost as useful as wearing shoes.

Researcher: What do you think about the ring limiter strategy concept?

Participant 15: I don't know if it will stop me from using my phone or I will just use it anyway. I mean I have these limits on my apps. Some apps which tell me like f.ex. on Instagram I have max 1 h per day and if I exceed it, if I want to check it - I still check it. So I don't know if this ring will help me using it less.

Participant 16: If we say I use my phone for 5h per day and look at where these 5 hours went (app related) I am thinking about is TV included as screen time when I watch it on my phone? There are certain things that are more harmful than others.

Participant 15: Now when you mentioned the loop, I think it will help because then you will actually realize how much time you have spend on your phone so you can do something more productive.

Participant 16: I guess I can see the purpose of that. Like, okay, 30 min have passed so it is like a reminder tool. If it is like a limiter it would not be a good idea.

Researcher: Is there anything you would like to share about the design or change?

Participant 16: For instance, it could be a lamp on your night table. If it is something like a ring, this means that it is kind of like peace of you. I see the potential, but I also see the challenge. Some sort of an AI lamp or I don't know.

Researcher: What do you think about the Bond Touch strategy concept?

Participant 15: To be honest, I think it is a bit weird. Because I guess you can just send them a text or goodnight-message instead of touching this

Participant 16: There must be some sort of like a thing already or like at least theoretically where you touch a doll or something and it make craters and like sort of a sensation and someone else like okay this person is like touching my shoulder, so I guess like that's like an ultimate version of what do you talking about does it make sense. But I don't think this is ideal. I don't think in practice it will work. If it was something more powerful - probably yes, but I don't think it will be useful.

Researcher: What do you think about the Content digest strategy concept?

Participant 16: I see a lot of issues here. Who is determining, who does that - is it some sort of an AI algorithm type of thing. I guess, it depends on the level of the AI and also, I think I don't know like that's like an extremely scary scenario. I guess that might be useful but that means that the basically the AI or the algorithm will both have to be more advanced than the humans themselves.

Participant 15: I agree. It has to be advance. Different people find different highlights in articles so like it maybe you're another aspect and what the AI says if

it's a long article, then there can be a lot of ways to summarize it.

Researcher: Do you think the endless scrolling makes you stay longer on your phone?

Participant 15: No.

Participant 16: Not at all. I don't think that's the issue. This is a small aspect of the issue I think

Participant 15: Something that puts me in the loop it's more like platforms where you have videos and pictures

Researcher: What do you think about the Challenge Application concept strategy?

Participant 15: In quarantine, I would use this I think this sounds fun even though I think the design looks really disturbing but I think it's fun at least you passed time somehow more interactively but if I'm on the metro like when life is back to normal again and for example, I'm on the Metro on my way to school then I would rather do whatever I want to do because during those times like you don't have that much free time so when you're on the way to school, you could like I don't know you could check what you have to do before the lecture or you could just text your friends or something so I think in the normal scenario I wouldn't use it.

Participant 16: Why is it any better than any other apps? what stops me from downloading like a few different games few different music apps really differently have like 20 different apps then I use them rotate them instead of others I don't see like how does this differ from just being downloading sudoku and playing sudoku. Otherwise, it just becomes another app another distraction for you.

Researcher: What do you think about the Alone Mode concept strategy?

Participant 15: For me, like I always use it do not disturb even like when I'm in school I also you just use it like even when I'm not sleeping I use it because then I don't get the notifications and I can just check it whenever I have time. it's really similar to do not disturb I think but I get the idea I think it's cool but it's just not too different I think from the other one

Participant 16: I don't know if I have anything to add

Researcher: What do you think about the Social Network strategy concept?

Participant 15: I think it would be a great way to learn the language to practice a language with me but I don't know if I would want to talk to a stranger for half an hour instead of talk, for example, face-timing my friend instead-but if you want to practice the language then it's a great way I think.

Participant 16: seems like another app to get hooked on the way I'm thinking the more the more I hear these ideas are just like another app so you actually just try to hook me on even more. It's like Reddit meets Twitter-ish

Researcher: Do you have any ideas of how you can foster a healthier relationship with your smartphone?

Participant 16: I have like the same thing that the same issue with just the concept of a smartphone - what it actually mean? What does healthy mean you know for instance say twitter, twitter is a really really nasty place but for me at the same time Twitter is amazing because I get the most efficient way information there is. So is twitter unhealthy for me - I would say No. Where does the limit go?

Participant 15: For me unhealthy means that I use it to thank for example when I have to study for exams I use it and I procrastinate instead of studying so I just end up doing useless stuff like scrolling on social media. Then I like for example the ring that you talked about that would work because then it would remind me of studying. But otherwise, I don't feel like it could be described as unhealthy after you have if you have nothing better to

Participant 16: It could be an app or it could be literally hardware that like a ring what you guys talked about or just kind of a like multi-purpose tool that it kind of includes both hardware and software but extremely smart and holistic now I'm gonna call it an app that includes where you can maybe say where you can prioritize some sort of apps and through that, you can reduce the amount of time spend. what are my priorities and based on that you can say okay if I really need to study on my exams I can program this thing to kind of literally tell me okay you've been using this is too much time to go to study and if the app tells me I have an exam where I need to study I am gonna listen to. Kind of an app where you kind of tell yourself what to do.

B.3.2 Participants 17 and 18

Researcher: Tell us a little about yourself

Participant 17: I just graduated so um and hoping to continue studying graphic design

Participant 18: I study physics and hope to be graduating this year

Researcher: What do you think about the survey you filled?

Participant 17: The main thing is that it made me realize how much I'm using my phone some questions I could um were positive but most of them make me realize actually that I'm using my phone so much

Participant 18: yeah I think it was kind of the same for me it just felt kind of depressing to fill out the questions because I was like okay I know I have a problem. there was this one question which was like uh do you something like that about your sleeping patterns and the relation to smartphone usage and I filled out the survey at like 1 30 in the morning on my smartphone so that was a good feeling well but I also, like that the questions came in the order

Researcher: The concept of "chill" and "relaxing". What do you think about this finding in general?

Participant 17: I feel like right now definitely is comforting because I connect with my friends and you know like with text and all that which is obviously in general as well but now it's more a bigger volume. The apps I use I feel like those are the things I select to have on my phone so like I obviously only download things that make me joy like brings me joy right so things I use yeah it's comforting.

Participant 18: I don't play games but I think there's a lot of stuff I use on my smartphone that isn't really comforting especially in times like this so I don't know it's not that bad anymore but I used to check the corona numbers like every 20 minutes. It really makes made me feel anxious to see the numbers rising all the time basically but I just want to add that I don't I never had like work on my phone so that's also something that you know like I never got work emails and like I never had work calls so I think it's also why it's more comforting than stressful for me

Researcher: A lot of people mentioned that they are conscious of their self-image on social media. What do you think about social media in regards to self-image?

Participant 17: I just feel like it's this like the culture built upon that there are so many great people doing so well um you know and all these famous people like models and or like they have the greatest pictures and I have also been pressured by small details like oh it's not good enough and I was also caring so much about the number of likes I was getting. But I feel like by a certain age you kind of overcome these but it also depends on what like a stage of life you're in how happy you are how many things are happening to you and all that so yeah I've had all the faces like I've been worried I don't know I've been happy with it and so on. It gives you like

a short term positive feeling but in the long term it's not really something that yeah helps you.

Participant 18: it makes you happy and I think just seeing pretty pictures I guess at least most of the pictures are pretty or seeing funny pictures I don't know yeah I like to see creativity and something different from everyday life.

Participant 17: some friends of mine girls they care so much about their self-image there and they care so much more about what's happening online that they don't live in the present and that can annoy the shit out of me excuse my language.

Participant 18: yeah exactly like you know when you walk on the street um when you're on a holiday and you have a friend who's always on the phone and actually missing out on those events happening right there but then they care about to post the The picture they just took five minutes ago

Researcher: Do you find smartphone activities addictive - over 50

Participant 17: I think that people think that yes i think these smartphone activities are Addictive but then at the same time, I'm like oh no I'm not addicted to my phone though

Participant 18: I don't know maybe it also very much depends on everyone's definition of addiction because something can be addictive and I know that something is addictive but I'm still not addicted to it

Researcher: Do you think the word "addictive" has a negative connotation to people? Is there a different word you would use instead of addicted?

Participant 18: Toxic. I mean I don't know I still think that even though there's a A lot of bad parts I don't know about smartphones it still gives me a better life in total I guess I'm not sure but I'm actually not sure about that I think if I would buy a phone which only has I don't know WhatsApp installed because everyone in Austria at least uses WhatsApp it would be fine and I would be fine.

Participant 17: that's your A choice like I also I haven't downloaded tick tock because I know it's addictive and I know I want to spend my time in quarantine on better things than that you see but I still think I'm addicted to my smartphone. it's rather a necessity than an addiction because I feel that it's necessary now to have it and not for all the texting and social media but also for google maps because I use that a lot to get to places and then I can leave without mobile pay or um and all that but calling people and texting people now it's just it's a necessity.

Researcher: What do you think about the ring limiter strategy concept?

Participant 17: it was crazy um yeah I mean it's a way if you really want to um focus on um decreasing your screen time I kind of feel like I have to see the others to give an opinion

Participant 18: this one sounds really intense to add another electronic gadget to your life to to decrease the usage of your smartphone I don't know if I'm that

convinced. I can't really see myself using it. first of all, I can't really see I don't really see myself wearing a ring in general so that's kind of uh yeah makes it difficult and Secondly, to be honest, I don't really see why I should use a ring when I could just I don't know how but I mean you can just use the screen time thing inside ios.

Researcher: What do you think about the Bond Touch strategy concept?

Participant 17: I think it would confuse me because then I get a vibration but who did I actually get the vibration from and then I would immediately check my phone if this person has written me a message or something. but even if you knew who the person were you would still check if he or she needs something or what he wants.

Participant 18: that would just be a new way of um making new form of social media then that's weird like yeah it's basically adding another layer

Researcher: What do you think about the Content digest strategy concept?

Participant 17: I mean it sounds good if you could like filter out the content you want things you're interested in, yeah I mean I like this one.

Participant 18: but then you could also just check the home page of the newspaper and read because the first five articles most of the time is the most important ones of the day. I think it's cool and I feel like this is also something you could apply for politics a lot that's just an idea I mean I think it won't make sense for for updates from your friends. yeah I'm a little bit worried because of I mean that that was the idea of the Facebook news feed they hope to to filter out the best stuff and show you the most important stuff at first and then the not so important stuff later and we we all know how that turned out.

Researcher: What do you think about the Challenge Application concept strategy?

Participant 18: It sounds like a good idea but on the other hand it may lead to you using your smartphone even more which might not be able to intended purposes

Participant 17: I mean I feel like I could use this in some situations as a brainstorm but it's kind of like I downloaded this app that reminds you to drink water you just kind of don't care about it because I'm using or like I don't care about.

Researcher: What do you think about the Alone Mode concept strategy?

Participant 17: I mean I think it's a good idea I don't have no idea but what does night mode do - does it do something similar?

Participant 18: I like it I feel like this is something I could have used during my bachelor thesis

Participant 17: yeah I also like it I think there should be more different modes and should be more customizable.

Researcher: What do you think about the Social Network strategy concept?

Participant 17: I don't know I don't think people will feel comfortable to talk to a Chatbot.

Participant 18: I don't know I think it kind of sounds like a harassment nightmare.

Participant 17: Yeah, what if that someone on the other side who answers you is like nasty or something like that. I don't like the idea.

Researcher: Do you have any ideas of how you can foster a healthier relationship with your smartphone?

Participant 17: If I have like 5 minutes free, I immediately grab my smartphone and check something so yeah I think it's way too intense in that regard.

Participant 18: I don't think my problem is this screen time definitely use Instagram way too much and I feel like our generation has used to um having the phone muted. so I never hear when I have a notification I always have this pressure to check my phone if something has happened someone has texted and I haven't tried any apps that lock your apps or reduce the screen time but I try to use my phone less and like um, use my laptop instead. I like the content filtering thing - I think it will help me reduce my time searching for content.

B.3.3 Participants 9, 19 and 20

Researcher: Tell us a little about yourself

Participant 9: I'm studying my master's in telecommunication engineering at DTU I'm currently on my last semester

Participant 19: I am also studying master's in materials manufacturing engineer. I'm working on my thesis.

Participant 20: I study innovation and entrepreneurship.

Researcher: What do you think about the survey you filled? Did it make you reflect on certain parts of your behavior?

Participant 19: not really I got the idea that I'm not in as sort of committed erase relationship to my smartphone as other people by taking this early so yeah I guess

Participant 9: it made me reflect also to realize how other people treat the phone like I try to the thing or at least I like to think that I use it as a tool but it's true that many times you sort of vocalize your relationship with other people through the phone so in the end, it's a bit unclear whether you're you know attached to a person or using your phone as a tosser and it's evidently around it's a bit weird how that being in the middle works but for me, it was quite useful to see it from another point of view

Participant 19: I just remember this feeling of being feeling different from what you would expect

Researcher: The concept of "chill" and "relaxing". What do you think about this finding in general?

Participant 9: I don't know your opinion or about this but I think it's um it's a bit like I think it shows perfectly how how addictive this is because that's basically the same reaction that drug addicts have towards their drug itself that is like you feel anxious and then that thing produces relaxation or sort of you know feeling release of some pressure. so I think it shows that there might be more addiction than people think. it's like also seems your user phone everywhere including like your most private moments of the day like you're having in your bedroom your sofa home I guess that also translates into whenever you're using your phone it can sort of creating that atmosphere that you're on your own so even in situations where you're not might not be too comfortable or that your other sort of stress or whatever that can make you feel in that bubble of everything's all right, calm when I'm on my own.

Participant 19: that is definitely an extreme case but I would I agree with it because of I have a sister who is very much that she she has normalized just having the phone in her hand wherever she goes and at this point she uses Snapchat instead of just calling someone for example. so they sound like clips of each other talk instead of just call which I don't know if I'm being a Boomer or something that it just doesn't

make sense to me.

Participant 20: the phone is the first thing I look at when I wake up just today I was on it like an hour before I got up and so I would say I'm addicted.

Researcher: Another finding is that social media is very strongly correlated with smartphones so when we say smartphone although people immediately think about social media what do you guys think about social media in general?

Participant 20: I love it. you can get addicted and I of course girl sometimes get insecure about the things they see on the social media and um yeah they can be addicting and most people use it just as an escape from their everyday life and entertainment also

Participant 19: I mostly use social media just to keep in contact with friends beyond that I don't really see the point of it. it's essentially a tool to stay in contact with your socializing through this tool but when the tool becomes your life then you might have a problem I don't know.

Participant 9: I've thought a lot about this or social media because of I I was using Instagram until three months ago that I decided to uninstall it from my phone but I gotta say that I think it is one of the best decisions that I made. I think it's very time consuming and it creates these fake connection between people. I think in Instagram it's more like people come in you can you can have two sides you can like basically use it for two perspectives like just watching how other people are living or how they show you their lives or you can be the one that it's always talking about their lives or showing everybody as well. it can create an image that people project and make me think that my life should be like that and that's completely unreal I think that's very unhealthy as well so I'm not a big fan of social media. it's a bit of you know try to keep the balance between using it for what is it supposed to be connected to people and falling into the addiction of itself or just keeping scrolling down and just being fed up with a lot of information about other people's lives that you probably don't need to worry about it.

Researcher: A lot of people mentioned that they are conscious of their self-image on social media. What do you think about social media in regards to self-image.

Participant 19: No.

Participant 20: Yeah. I think oh what will people say or is this funny enough

Participant 9: I think a little bit like there's I know as well that there are some places that I can post some stuff and others that don't like I really think of the audience usually like I'm not going to post bullshit on LinkedIn because I know that maybe my future employer would be there so I will try to look as professional as possible and try to be like the cleanest guy who is great University and has this great ambition and so on but then in Facebook, I can just like memes that I see and you know it's like depending on the audience. I think that's one of the reasons why I deleted Instagram because it was like a lot of seeing how people were fighting with

their own real selves because of the image that they needed to project so that was a bit weird for me or thinking about it.

Researcher: Have you ever feel uncomfortable when using certain applications? What about now during the outbreak?

Participant 9: I think that has a lot to do I mean this is the results of having a really good design or a very addictive design so from like from the user perspective, I think it's a it's not ideal because it's making you feel anxious and then also creating that need of you knowing everything all the time and not missing any single thing that everybody posts. but on the other side as if I look from the engineer's perspective that have the sign that it's like a great job because you created a UX to your product so it's magnificent.

Participant 20: I don't feel the needs like going to these apps to be updated I just go whenever I feel I have the time for it and but I could see like people getting like anxiety from answering people from like Messenger.

Participant 19: it's obviously not very healthy I'd say further mental health it's sort of a self-destructive the addiction I guess at that point. we feel the need to because we've addicted some people.

Participant 20: individual thing to find balance in these apps in this world.

Participant 9: There are two parts - going to Instagram and other applications just for the sake of going there and the other part is when it is useful like buying a bus ticket or paying - something for making your life easier. There are other things that are basically designed for you to be using them all the time and I think I think that's where I would draw the line between necessity and addiction.

Participant 19: no one's strictly addicted to holding a smartphone they're addicted to certain apps within this smartphone. You can split them in two - either necessity yeah that's the comfortable stuff that just makes your life easier and then there's the addictive stuff which might be games, messages, and so on.

Researcher: Do you find smartphone activities addictive - over 50

Participant 19: maybe it could be in the way that you can access your addiction elsewhere. For example, you can go on Instagram on your laptop. therefore you wouldn't be addicted to your smartphone you'd be more addicted to Instagram.

Participant 9: I agree like I don't see people being attached to their phones but more like what it's inside like this software. And this software you can find it on your laptop.

Researcher: What do you think about the ring limiter strategy concept?

Participant 20: You get lost track of time when you're on your phone but giving yourself a time span - I don't know for me it's annoying.

Participant 19: I feel like it's too easy to ignore so you can just always blinking

red but whatever.

Participant 9: it's like it's like me timer you can put on your phone like most of the people, I know that tried that especially on an iPhone because on Android you cannot say okay extend for 15 minutes but on an iPhone or iOS you can say okay extend for 5-10 minutes whatever. I think this will be the same - people will ignore it.

Researcher: What do you think about the Bond Touch strategy concept?

Participant 20: that's cute if you like oh my mom's thinking of me. I don't know maybe my feelings will get hurt she doesn't buzz me in.

Participant 19: It's a cute idea, but I don't see myself using it. Because you can't really say much from this buzz.

Participant 9: I agree with all it's very cute and well it can also hurt your feelings if someone forgets about you one day and you get used to this buzzing thing but yeah, I don't see myself using it. would prefer using these than just sending a message hey I guess I saw this and this being this thing of you.

Researcher: What do you think about the Content digest strategy concept?

Participant 20: I like it. Sometimes, I am just keeping scrolling and looking for fun things.

Participant 9: I mean it's a good idea definitely, because that's one of the things that they scroll down like being finished scroll down. I think it's a good way to block that behavior. I am going to use it on Instagram. It's not like I am reading things, I am just skimming.

Participant 20: I would use it on TikTok. It is endless.

Participant 19: It is a good idea. often when you check Facebook you sort of see something that looks cool and they need to scroll on yeah I mean suddenly it's like 10 minutes later and you don't know where the time went so sometimes but it's not often enough for me to use some sort of third-party app to limit it. I'm very conscious of how I waste my time.

Researcher: What do you think about the Challenge Application concept strategy?

Participant 20: I would use it. when you're bored for example.

Participant 9: I think it is a good alternative because if you are committed to start using your phone less and then for instance you have this time block and there's nothing else happening and you know that's it that suggestions of what you could use your time for it's I think it's a good opportunity. It shows good alternatives.

Participant 19: often if you're on your phone you're just trying to not be Bored.

Participant 9: I think for me would make sense to well let's say that the app

has a list of all the things that you want to do during the day and make some sort of connection between this list and your phone and suggest you to go and to your actual tasks.

Researcher: What do you think about the Alone Mode concept strategy?

Participant 20: I already have the night sign thing on so when I think after 7 or 8 my I don't get any notifications I have to get into my phone and then see a red dot. I removed all of my notifications on several apps I don't want that stress that anxiety to answer people all the time see my facebook notifications is so Stressful.

Participant 9: I really like the concept also the likely more profound pain that you mentioned of sort of normalize the willing of being alone. I think it's a good it could be a good tool for making people realize how beneficial it could be to take some alone time to meditate.

Participant 19: I don't really see the point of it because we have the night mode already. just leave your leave your phone in a drawer somewhere and it wouldn't disturb you at all.

Researcher: What do you think about the Social Network strategy concept?

Participant 20: I love this idea. I've tried to eat alone and during work it's so boring so and sometimes you don't know what to eat for the next day so you can get inspired by other people and talk to them.

Participant 19: I think it's a good idea because it sort of would break up your lunch for example and yeah just promote sort of cultural diversity.

Participant 9: I think in that framework of like lunch breaks make sense although the idea of the board a bit too much for me looks a bit myself a black mirror episode.

Researcher: Do you have any ideas of how you can foster a healthier relationship with your smartphone?

Participant 20: I have a lot of unhealthy relationships with like this device like when I go to sleep is the last thing I look at, when I wake up is the first thing. When I am outside - it is in my hand. I would use the speech-base network and the content digest.

Participant 9: I still find a bit contradictory to put something in the phone when you're trying to use less of your phone. if it suggests things from the real world like real other goals that are not related to your phone.

Participant 19: I feel like I spent too much time on my phone. it would be much better to have something else something more protective so I think I would definitely use this Challenge app which tells me to clean up or read a book. Alone time, challenge app

B.3.4 Participants 1 and 21

Researcher: (...) First of all, thank you so much for taking the time to join us to talk about your smartphone usage and your relationships with. We're going to Technical University of Denmark. And we want to get insight into students use off and relationship to their mobile devices, more specifically smartphones, and this is for a master thesis. And what we hope to do is to kind of understand how we can foster a healthier relationship to read through our smartphone. We will be recording the interview just so that we don't miss any comments, or and also for the sake of transcription. Could you give us permission to record into? Yes. So your answers will remain anonymous and we just work on first name basis just to maintain your anonymity during the call And I also just want to say that this is a focus group interview. And I will just give it give you questions to navigate the discussion, but the main conversation should happen between you two. And please maintain a respectful tone, just so everybody can get their opinion. Hear it out. And there are no wrong answers, but rather different points of views. And please feel free to share your point of view, even if it differs from what others have said. And keep in mind that are just as interested in negative comments as positive comments to please feel free to just criticize some of the concept ideas we go into further on, because we were interested in that just so we can improve the concepts. Well, okay, let's begin. Maybe we can start off by who you are and where do you study.

Participant 1: Okay, yeah. My name is barnabus if we if we stick to the first name and yeah I am I am also a student from DTU second year on digital media engineering. I'm from from Hungary originally. And I don't know what's what's really relevant for for this for this discussion. I like music, let's say.

Researcher: What do you study?

Participant 1: Digital media engineering.

Participant 21: Okay, I'm **Participant 21:** and I'm also doing the Masters at DTU. I did a Nordic masters so I did my first year in Chalmers in Gothenburg. And my second year, I'm doing it here with master thesis right now. And I study maritime engineering and naval architecture. And yeah, I was just really interested in the survey. The students as to what the conclusions you guys were drawing. So this was why I actually took the survey.

Researcher: Okay, thank you. Um, so I'm interested in hearing, first of all, first of all, what do you think of the survey and what reflections you've gotten through the survey by completing it, because I don't know if you've noticed, but the way that the survey was conducted and the questions was also a way for you to be aware or reflect over your consumption and also your relationship to your device. So what you think of maybe **Participant 21:** , you can start.

Participant 21: But it was an interesting survey. And it did make me consider like, I thought, I did not use my phone that much. But then you asked me to quantify

it. And then I had to really sit down and think and look at my phone and I saw that the image you had put off like average consumption was like some 40 minutes or something. And I saw my 40 to seven hours and I was like, okay, maybe I don't, so it's not so slow as i thought, but yeah, it was an interesting survey. it really make me think about maybe I'm not as low as I like to think I am.

Participant 1: My turn yeah. Oh yeah ah I don't remember exactly the questionnaire unfortunately but I still have some some points. Like for example one one thing is that if I remember correctly, most of the time you were referring to like what is my relation to my to my smartphone and for me, my smartphone can mean a lot of different things depending on what I'm using for me, so sometimes I feel guilt by using my smartphone. I don't know if I use it for Instagram or just useless stuff. But sometimes if I use it for really useful topic for finding out something, some some historical effect or something I did, then it's a completely different Or relationship to my smartphone. So maybe some sort of confusion came from that that you I if I remember correctly that you referred most of the time just like smartphones in general and that can mean different things. But but you can definitely ask for specific applications as well if I remember and those are really good I mean, me personally, I thought some some questions were crazy, but but I think they make perfect sense. But like, I don't know something like, if I remember correctly, like, is my relationship to my smartphone is like, personal or like some it's almost like like, relationships are personal or something like that. Yeah, I get that. It's it's a [...] but it seemed quite crazy.

Researcher: Okay, interesting. So we're gonna, because we're respecting GDPR requirements. I don't actually know or we don't actually know what you're specifically answered. So we're just gonna refer to the general trends and make you talk and discuss them. So the first finding that we found is that a lot of people refer to the smartphone and talk about the smartphone as being a tool to relax. So to calm down to feel chill, to kill time, a lot. A lot of people talk about brain dead entertainment is something that is comforting, relaxing, something where you don't need to be proactively focusing. What do you think of this, and this is over 60% that have written this, have reflected on this.

Participant 21: Well, I agree. I use it in the same sense as well. And I would say that a lot of people I know do Use it in the same fashion. And yeah, I mean, at some points it gets kind of blurry where I'm like I just like even in class I use it a lot and at some points I'm just it's really an easy way to sort of turn off your brain as you said. So when you're really just frustrated with something it's just right at your hands you just go there. Yeah.

Participant 1: I completely agree maker. Many times my fingers just moving without me noticing. And like, I don't know if it comes up into you, but as I close Instagram, I open up Facebook and I close Facebook and then I open Instagram again in like 30 seconds time difference and without me noticing, so that that means that my brain is completely shut. That I'm not thinking so I agree with this sentence.

Researcher: The next finding is.. first off before I say it, which application do you use the most on your smartphone? So what part of your smartphone do you use the most?

Participant 1: Should I check it?

Researcher: No, no, just when when I ask you now what do you think is the application category that you would use the most - like social media? contact applications? news?

Participant 21: Yeah, (..) yeah.

Participant 1: I think I would say. I don't know which category messenger is messaging apps like contact. So maybe maybe that's that's what I'm using for the most. Yeah, but I think that's it yeah.

Researcher: Okay. So according to the trend, and in the survey, a lot of people use social media and social media is often correlated with smartphone. every time we said.. So you're referring earlier that we are always said the word smartphone and never refers to something specific. And it was also to kind of understand what smartphone meant for our population who are university student. So what is it that immediately thought off when we said smartphone. A lot of people - I don't know if you remember one of the initial questions which was when was the last time you checked your smartphone and everybody referred to 'Oh, I just checked the messaging app, or I was checking social media'. A lot of it was purely social media and also the questions were referring to social media

What do you think of social media?

Participant 21: You're breaking up there. Yeah,

Participant 1: yeah, yeah, we may have some some hard time here hearing you but I understand the question, I think it's just for next time. Okay, so so just messaging us are they part of the social media category?

Researcher: It is.

Participant 1: Okay. Then I guess I guess I, I agree most of most of Yeah, I don't know.

Okay, I let you start with this one.

Participant 21: I see. I uninstalled all social media apps like Facebook and Instagram, and stuff from my phone. So the only apps I have are like messenger and WhatsApp. So those are the only apps I use for the most part on my phone. And I wouldn't call it social media, I would just say that's just keeping in touch with them. Social media is more like you're scrolling through posts and memes and stuff like that.

Participant 1: I would I would actually agree with this one. So So for me, it was a bit strange to hear that messenger was a part part of social media. Because Yeah, I agree. It's it's not really it's not content or publishing information. consuming the

content which was published by others and messaging is not really like that

Participant 21: yeah, that's it. Yeah, that's, that's exactly what.

Researcher: So you don't consider messaging application as social media? No. So just to challenge this, so, um, social media is meant to be a way to stay in touch with your friends and family or also to stay in to stay connected to celebrities. And messenger is a way to do the same. It's just a typical.. different type of content. Whereas messenger is mostly text based, and Instagram is mostly picture based. And how do you see the difference when technically it's just a different type of content that's being shared, but it has this Same overall purpose.

Participant 1: I think that the big difference here is that messenger and WhatsApp are private. So most of the time it's only between two, two individuals and posting something on Twitter or Instagram that's made for public

Participant 21: mass consumption, right?

Participant 1: Of course, of course you You're so so okay, if if the messenger or the whatsapp group, okay, so if there's a group in messenger or WhatsApp and that gets bigger, then I agree that it's almost almost like a social media. But that then it then it also behaves like social media because I don't know what's your experience **Participant 21:** . But my big messenger groups, they are basically meme pages. People are posting pictures and memes and stuff like that. So then it becomes like a like on social media. Until it's between two individuals, I think the big difference is that it's private.

Participant 21: Yeah. And also, it's like you're talking to friends and people you actually know, I don't think I use messenger stuff to any celebrity. And yes, if it's very big group chat Well, if it is like a lot of memes and stuff, it dies down it stops you know, like people stop posting and they move on with their lives. Whereas in like Twitter or Facebook, there's always something to, to you know, consume. I think that's the..

Researcher: okay. But so, um, as I said before, the most used category of apps on smartphones is social media, but then also over 50% has said that they worry about the self image on social media, and did you feel uncomfortable or sometimes hard to tolerate some social media applications, and you also feel anxiety sometimes or very strong negative or at least seen as negative emotions when Talking about social media. But then also it is the one that's the most used. And it's also the type of application that people feel the most prone to the most. It's the most needed to stay up to date. They feel that they should always stay up to date with their social media applications? And they also use them the most, but then they feel these seen as negative emotions. Why do you think so?

Participant 21: I don't know. Actually, the day I filled in your survey was the day I deleted my Instagram. I was just so sick of seeing people. I was like, okay, you are having fun during quarantine. I don't care. It was. I mean, I agree. I don't

know what to think really. I mean, I would say it's like mainly the fact that people are posting their highs and not their lows. So you are just constantly bombarded by people having the time of their life and you don't see the struggle behind it. It's kind of frustrating. If you're struggling here and no one's acknowledging that in a sense.

Researcher: Participant 1: ?

Participant 1: Yeah, yeah so that's that's completely true that it causes anxiety and low feelings but at the same time it it can definitely cause like appreciation and and good feelings as well. For example, if your.. I don't know.. one of your posts gets popular or something like that, then it's it's definitely a good feeling.

Participant 21: That's true.

Participant 1: I don't know - there's a trade over there.

Researcher: But does it balance out? Do you think it balances out?

Participant 1: No

Researcher: Then, why are you not.. why don't everybody like **Participant 21:** just delete their social media?

Participant 1: Haha That's a really good question. I don't know.

Participant 21: I just got frustrated and I don't post stuff because I like to think I'm a private person. So I don't have that balance at all. I just keep consuming people. And I don't post anything. So yeah,

Researcher: But that's interesting that you say that because over 60%, at least in an article I read recently, over 60

Participant 1: What, what, what consumers?

Researcher: Silent consumers is that you don't necessarily post a lot, but you just consume the content, and then just scroll through or like or comment sometimes under private friends, but it's not like you actually go out there. It's not like you go full influencer on it, then why? Yeah, then why do you still think that people if it's just the fact that you don't have as much attachment to the content or need to create content? Why do you still have the need to look at the content?

Participant 21: I think it's because you're stressed and as you said, the beginning, just want to turn your brain off. And it comes at the weight of a little discomfort. I don't think a lot of people mind it, as long as they're not. As long as they're distracted. They're fine.

Participant 1: I think I think it's also the the urge to stay up to date to to know what your friends are doing to know what's what's happening in the world to know what I didn't know the latest trends are in fashion or tech or anything. And and I if I remember correctly you asked if if you feel fear of missing out while browsing and I definitely answered yes, I definitely do. But at the same time I for some reason I feel like if I stopped seeing these then I would feel even a bigger fear of missing out

because then I because then I don't even know what's going on. And then I am, I don't know .. there I feel completely isolated. Or at least but I actually never tried maybe now I will I will completely delete the apps or something. I don't know I never tried. But right now, I feel like yes, I feel some fear of missing out. But if I would completely get rid of it and go completely blind, then I would even feel a bigger fear of missing out. But

Participant 21: yeah, I mean it is sort of kind of like a withdrawal because even though sometimes I type Instagram and I'm like, Oh, wait I don't have that. So it is a kind of withdrawals. Yeah. I mean, I didn't enjoy it too much at the beginning, so I'm trying to be like, you didn't enjoy it anyway. So let it go.

Researcher: So another finding that we had is - so 60% said that they defined smartphone activities addictive. However, 70% said that they are not addicted to their smartphones. Why do you think that there is this difference or this line set between smartphones activities and the smartphone?

Participant 1: I think everybody likes to say that they can stop their addiction anytime. Like if you if you if you ask a High School smoker they will say 99% that oh no, I'm not a smoking addict because if I want to I can I can just stop stop smoking next day. But then it turns out that the majority of them actually becomes a smoking addict so I think there's a there's a pretty big tendency to deny the fact that that you're you're addicted and until you until you don't try, you will not see.

Participant 21: And also is the same thing as what you said in the beginning. It's not entirely bad like smoking or something. It's like you also use it for stuff to look up stuff and look up tutorials on YouTube. So you can kind of justify it like, I'm using it mostly to learn stuff and only on the side I'm using it for games so it's harder to beat because it's something you used in a positive way as well.

Researcher: Do you think the term addiction is the current term because just to kind of reframe it in a bigger picture, right now we have Apple Pay or Android pay on the phone, we have bus tickets. We have Google Maps, we have everything Google Drive, emails, social media, everything is in this small device. And it's very interrelated into the culture. We're very .. more technological. Everybody has a smartphone nowadays. 100% of the survey respondents said that you had a smartphone. is it an addiction or would it be a ..? Is it just a necessity? Something that we just need in our way to become a citizen of the society?

Participant 21: I would say it is a necessity. Especially right now with the Coronavirus stuff. It's a necessity.

Participant 1: I, I also wouldn't call it an addiction.

Exactly because of this division that you can use it for good things as well. Like if you if you can distinguish really clearly, what part of the smartphone is is bad and time consuming and and and waste of time, that part of the smartphone, I can call them addiction, which doesn't provide any value to you whatsoever that I can call

an addiction but in general, yeah, but I would

Participant 21: But even the part where you want to go off and you just want to turn your brain off and relax, that's also a positive thing I would say. I would I mean, of course it's wasting time but if you did not relax, you would just you know, keep winding up. If you can. It's a very blurry line. I would say it's not a fine thing like Facebook is time we waste and you know, YouTube tutorials are good. It's not a fine line. It's not it's not a like a black and white line, I would say.

Participant 1: Yeah, yeah, I agree. I agree. So yeah, I wouldn't call it addiction, I would call it an attachment or something like that. Or necessity. Yeah.

Participant 21: Yeah.

Researcher: So based on some initial use of studies and also based on the survey, we have identified three separate problem areas that we have made concept ideas out of, the first one being, phone break. So this concept of taking a mental break and being on your phone just to kind of entertain yourself. And the second area is fear of missing out but related to physical distance.

Can you hear me? Yes.

And so if you're missing out related to physical distance, for example, as an international student to keep up to date with your family or friends back home, or Yeah, so it's really it's a physical distance. And then the last category being loneliness. Because.. when you're alone at lunch, or in the public transport or when you're by yourself and you're feeling lonely, you just go to phone as a way to deal with this. So those are the three different areas and within those, we have six different concept ideas. Those are very broad concepts, we have not detailed them. And the idea is that you.. we will tell you the general idea and you tell us how you would change it or how it would work into your life, if you would use it and if you wouldn't use it them at all, and also how you would change them or if you would just keep them as they are. Is that okay?

Participant 1: Can you can you maybe repeat this three three categories or, or something you mentioned?

Researcher: Okay, the first one being phone break. So taking up a break on your phone. The second being fear of missing out related to physical distance.

Participant 1: Yeah.

Researcher: And then the last one being loneliness.

Participant 1: Okay.

Researcher: okay, so there's we have two ideas within the category phone break, the first one being bring limiter. So how this works is, imagine you have a normal ring an accessory that you wear, that you get, and you you want to this ring will be attached or connected to a device. And for example, one scenario could be, say that you want 30 minutes of break on your phone, but you had a study session the

whole day, you just want a 30 minute break, and you just mark that down and the color of the ring changes based on the screen time. So after 40 minutes, it took so it gradually changes and then at 30 minutes, it turns red and it blinks red until your until you're done with using your phone just to kind of so you don't lose track of time. That's gonna be one scenario but it can also be attached to a – related to a specific application that you want to limit the consumption of or usage of. Or it could be also related to your general screen time. What do you think of this idea?

Participant 21: But it doesn't actually like turn off the phone or disable the app or something, right?

Researcher: it could. you tell us if you think it should or not, right now. iThis, this is just a broad idea, but you do tell us if you think it should turn off the phone or something like that.

Participant 21: I would say it shouldn't, because that would make it even more frustrating. And I would just throw off the ring. That's what I would do. And, and then it sounds like it's not not it's not invasive, so you don't feel like you're being actively monitored and stuff, but it might work. It's similar to the screen time thing in iPhone, I guess, where you set a screen time and after that, it just turns the screen blank and you have to select Do you want to use it more or something like that. I would say it should be like this. I don't know. Because if you make it harsher, you just throw it away altogether.

Participant 1: So it turns, it turns green when when you can start using your phone, right? And then it turns red again when you when you use all your time.

Researcher: Hmm, we don't necessarily have a green color for it when you start

Participant 1: Yeah, yeah.

Researcher: it's gray to start with. When you when you start using it's just gray - the normal color, the standard color, and then you set the limit in your phone and then after 30 minutes, it turns red and it blinks. it's kind of like a subconscious way to be like hey you you have done your 30 minutes. make you more aware of

Participant 1: Okay, okay, okay, okay, I see. Okay, but so it doesn't it doesn't let you know when you can start using your phone

Researcher: Well, it could work if you want. because right now we're thinking of it as a way to delimit or frame the phone break, but it could also be a way for you to know when to have a phone break.

Participant 1: Okay, okay, I see okay, no, no, that's that's my point. I think I think it should not let you know when when you can have a phone break because you should decide if you need one or not. And the.. and maybe if it lets you know that Okay, now you can go in a phone break, then you will have a phone break, no matter what. Even though you you wouldn't need it. So I think I think it shouldn't let you know when when you can have a phone break because because maybe you don't even

need it. But otherwise I like the idea. I really like everything which is tangible and wearable. I like these tech gadgets. So in general, I really like the idea.

Researcher: And in which situation would you use it? would you use it in the context of a phone break or related to the screen time of a specific application? For example, if you want to delimit how much you spend time on Instagram, or would you use it in relation to your overall screen time?

Participant 1: I think I think application specific like Instagram for example

Participant 21: Yeah, I probably would use it for a game or something.

Researcher: next idea.

Okay, so the next idea is Bond Touch. I don't know if you've seen it on 9gag or, yeah, this bracelet has been around but so the idea is that you have this bracelet and it's the Category FOMO and physical physical distance, say that I'm an international student and my mom lives back in Morocco. And just to keep in touch with her, um, I buy her a bracelet and I have it too. And when I think of her, missing her or something like that, I just tap on the bracelet, and then she gets a vibration so she knows that I'm thinking of her, this is the general idea. It can be used in the context of a family, friends. Anyway, it's it's a pretty broad idea. What do you think of this idea?

Participant 1: I think it's really cute, but it's really intimate; it's really, really intimate

Participant 21: Yeah, it's something you'd use for a long distance relationship or something, not with your family.

Researcher: Yeah, so you wouldn't use it?

Participant 21: Not for my family, no. Definitely no.

Researcher: But you would use it for a long distance relationship?

Participant 21: Yeah, I mean, this is sort of that kind of intimate thing.

Participant 1: Yeah, I think yeah this this could be integrated into a dating app or something. Yeah, exactly. Like Like you can you can send, send or attach to your Tinder matches or something like that but for I don't know, for some reason it's it's really intimate for me. But yeah the yeah i think i think i would use it maximum with two persons. like maybe with my with my girlfriend and with my really, really, really, really best friend or something like that but but I wouldn't be.. open the circle.

Participant 21: Yeah, yeah, definitely. I would not use it with my parents or my friends. That would just be weird.

Researcher: Okay.

Participant 1: But I really like the idea to send some sort of small message without the, without the phone. So the general basic idea I really really like but

for some reason for me, it's, it's a little bit too intimate. Because, okay, maybe it's because of the vibration and then maybe it's because you have to bear it. Because that that makes it almost like a touch, like a like a, like a virtual touch. like I can, I can touch my dad.. but maybe maybe if it's a I don't know maybe if it's a dashboard at home next, like next to your door or something like that which which has a counter, where you can check that Oh, okay, this this person thought of me, I don't know, three times today or something like that and maybe you can check it in your apartment or something like that, then it's then it's less less intimate than, than a vibration on your wrist. That is just an idea. To make it feel a little bit more.. I don't know.. further from the from the physical, physical touch.

Researcher: Okay. Next idea. Yeah.

Okay, so um, the whole information architecture right now and on different social media, news applications is: they want you to scroll a lot, you need to click from one place to another. You can't read one news article without having to read the three others to get the complete information. You need to scroll a lot through the feed to get like the whole overview. you need to swipe through stuff. there's a whole like spider web of information spread out so that you spend the most time and so this idea is inspired by.. there's recent initiatives that are being made by Instagram and Twitter to Oh, these were the highlights for today to make your stop kind of scroll. But we want to go further and like make content digest so it would help you summarize the contents do you spend less time scrolling and get the necessary info. How it could work. So I'm going to give you a scenario is so you say for example, I only want it specific to Twitter and I want it to filter out information that I want or I want it to summarize what is it the highlights that I have. It's kind of a technological implementational plugin into it. And but it can also work throughouy different applications. So different news streams. What do you think of this idea?

Participant 1:

Participant 21: ?

Participant 21: content digest, it sounds good. I am just trying to picture it in a in a platform where you just keep scrolling endlessly. I mean, yeah, I would prefer I don't know there's a part of me that kind of likes, the aimless scrolling. And there's a part of me that would really appreciate this sort of, like content, sort of, you know, concentrated in one place. I mean, I would say like for Really important things or maybe I mean, if you could select the topics which you really want to see all the content of like, I don't know, fashion or footballers, stuff like that then and then you could also like, scroll through.

Participant 1: Is it just me who can..?

Participant 21: Yeah, if you can like customize to which topics you want to, you know,

Participant 1: Is it just me who have connection issues?

Researcher: I think so

Participant 1: Or you also are having a awhere you also have a hard time hearing **Participant 21:** ?

Participant 21: I can hear fine. I can hear you.

Maggie Yeah, I can hear fine. Pretty well, actually.

Participant 21: Yeah.

Participant 1: Okay. Okay. Now it seems to be better now. Okay.

Researcher: Yeah, essentially, if you could just choose the topics you want to do. Okay. That would be nice.

Maybe just to detail a little bit more. Because right now Instagram and Twitter, you have these hashtags and you have categories that you can choose to kind of filter out after the content. The problem is, that it's still inspired by this infinite loop, so you kind of keep finding content, whereas this is kind of to stop you being like, Hey, this is the content for today, just to kind of limit a little bit this infinite scrolling infinite loop of information. Yeah, I just wanted to detail that out.

Participant 1: So So, so if I understand this correctly, like a machine learning algorithm or some sort of algorithm will filter the most most relevant information for you to to limit the content you're exposed to,

Researcher: to limit the amount of time you spend looking for the content.

Participant 1: Yeah, yeah, I think it's it's quite dangerous because I don't know if you if you know, the term like I think it's called an information bubble or something like that. Which is already present without these. I mean, okay, because because Basically this is already in place. It's just just the aim is not to limit your screen time. The aim is to have the most relevant content. But but but Facebook, Twitter and all these pages or applications, they are prioritizing the content which fits you. And with that. And with that you are not exposed to any other political views or any other type of content or stuff like that. It's really difficult to break this loop. And I think this will make it more more strong. And then you can really easily find yourself basically trapped in a really small pot of content.

Participant 21: Yeah, I guess it's similar to the YouTube's recommendation algorithm where it just recommends things similar to what you just watched. And it just keeps going on and on.

Researcher: Just to kind of correct. recommendation. You choose what you want to see on that day on that. It will be you who chooses the content and it gets digested for you, because YouTube and Facebook and all that is you watch something and then you think that you like it and they just assume and recommend you that information. Whereas here, you're like, Oh, I want to get information about art today. And then you find you the relevant information that they've digested or like..

Participant 21: I don't know, the whole appeal of social media is that there is this vast amount of information, you can choose what you want it because if you're digesting something, means someone or something is curating it for you. And therefore me personally, some of the appeal is lost. It's like, it's like listening to almost, you know, there's a sort of bias that comes in when you do that. And I think the whole appeal of social media is that everyone gets an equal say, and yeah, I personally, I would not. And it depends on the topic again, if it's something like news or something like that I would prefer a digest. But if it's something like opinion on a movie or something like that, I would like to see everything so

Researcher: Participant 1: , do you have anything to add?

Participant 1: Not not really not really for for some reason, I'm still quite quite a skeptic about about this one. Because Yeah, that's, that's true that you can choose your categories and stuff like art, or architecture or something like that, but those categories will already be pre filtered for you. So there's, there's no way you can you can choose from all the categories available. Because you just yeah, there's there's no way because there's too much but too many categories. Yeah. So I really have a hard time seeing how you are not stuck, you know, in a really small selection of information here. But yeah, I like I like the idea to filter out the content. But as these filtering methods work right now, I don't really feel that it's it's a it's, it's a good Good idea. But but maybe maybe in the future when when all these algorithms are more ethical and they are more advanced, maybe maybe it's a good way.

Participant 21: But even then I wouldn't recommend filtering because it's sort of like saying something is good and something is bad and who's to judge? So yeah.

Researcher: What if it was filtered not on the content but the amount of scrolling or swiping or..?

Participant 21: Yeah, but I mean, when you're thinking of like social media manipulate elections and stuff like that, this seems like something they would immediately jump on and make use of (...)

Participant 1: No, I agree. I agree.

Researcher: Okay, next idea.

Okay, so this is in the category of loneliness. So imagine you are alone in the train or alone and at lunch, your co workers couldn't join you that day. And you want to kind of alter how you use your smartphone or get inspired. So it's a little bit okay. So right now the app limit, at least in iOS, I don't know which system you have, but on the iPhone, when you have the app limiter, you can still extend it for 15 minutes or you can ignore it for the day. It doesn't tell you what you can proactively do with your time, now that you have spend all your time for that social media application or for that category. So this is kind of a proactive app limiter, that will challenge you to do different stuff. It could be still stuff on the social media stuff on the smartphone, but a different things so that you don't, you're not as dependent on these applications

to entertain you. But it could also be stuff that.. outside for example, go out for a walk, read a book, listen to this podcast, have a zoom call with friends. It's very, like a varied amount of challenges, but it's a way kind of to proactively limit you so kind of give you inspiration for what else you could do.

Participant 21: Personally, personally, I'm saying that I've tried this and it never worked, because I'd always be like, you are a fucking phone. Shut up. I will do whatever I want. But maybe people who are lonely they would maybe, they could take advantage of it. I don't know.

Participant 1: I like the idea in general, I would say.

Yeah, but let me let me think. It's like you really you really have to believe and you you really have to trust your phone here. That it that it knows what you should do, or something like that, like,

Participant 21: I mean..

Researcher: I'm sorry. You can still click on like through different ideas. It's not like that you have to do this.

Participant 21: Yeah, the thing is like doing something like this, the first step is to like acknowledge that you're lonely and then to sort of, like combat it using these ideas. Because I think I don't know what happened was it was some app. I don't remember what it was, but it was some sort of anxiety app and it was like, okay, go clean the room or something like that. And I'll just close the app and be like, Don't tell me what to do.

Researcher: Maybe just to reframe because I'm not sure you, you both understood me. When I say the category loneliness, it's like you people right now at least a trend is that people generally when you're eating alone, or when you're alone in the transport, you automatically go use their phone. And it's when that happens that we want to introduce this application. So it's not combating loneliness. It's in the context of feeling lonely, this could be a way to practice or make a healthier relationship with your smartphone. So you're not dependent on certain applications to entertain you but also give you like ideas for how you can use your time maybe better.

Participant 1: Yeah, no,I like it. I like it. And I think I I get the get the concept. Yeah, it's basically just reassuring you that you're not not alone. And you can you can do things to connect with others outside of the smartphone, and stuff like that.

I I genuinely like like that idea.

Participant 21: I like the idea as well, but I really do not see myself taking advantage of it. Because I feel like on some level I would just not listen to it.

Researcher: Okay, next idea. Yeah..

Participant 1: but they, they.. just one last question. The funny thing is that if you go go back to that screenshot, like most of the things, you would use your

smartphone for like zoom call with others, you use your smartphone for do karaoke or lunch, you have to use your smartphone to organize the whole thing. Okay, but for what you reading, it's something else but for meditation again, most of the people are using headspace or something like that. So it's, yeah, it's quite quite funny that..

Researcher: I think.. what we said in the beginning, with..we want to foster healthier relationships. And I think it's not we want to limit the screen time. But it's we want to foster healthy relationships and removing the smartphone from the equation would not be the solution. Because as you said in the beginning it's something that has become an attachment or something that is also needed in other contexts. So I think that's what the idea here is just give you other alternatives. So you're not dependent on certain applications to entertain you or to make you feel happy or not happy. So that's the idea. That's why the example here is related to the smartphone just to say, hey, it's not we it's just to give you a different way of using your smartphone.

Participant 1: Get it.

Researcher: next idea, okay, so this is inspired by.. at least I think it's been in both devices In the Android and also iOS, the sleep mode. And the sleep mode is similar.. No, the alone mode is similar to the sleep mode. So it will immediately push down your notifications and app interactions and it will let you focus on, for example, listening to music, podcast meditation. And what this whole thing is, it's mainly a symbolic frame for you to value your time alone. Because right now, the sleep mode is kind of like, subconsciously, it lets you know that hey, now it's time for you to sleep. So now you should let off your phone. But there is no initiative or incentive to Hey, you're now alone. You should not use your phone or I'm I'm not sleeping, but I'm alone. That's why I should not be using my phone. So this kind of more of a symbolic idea of, if there was a different mode in iOS or an Android to be like, Hey, I'm alone. Do not disturb me. And it was more to inspire, like a self love, self aware moment for yourself. So to promote this idea of it's fine to be alone without your phone.

What do you think of the idea?

Participant 21: This, I like. This, I really like. Yeah, the appeal of it is in the fact that it's a concept of like, you're going to like not use your phone, you're going to concentrate on one thing for the moment. I like this, I would really consider this. Because a lot of the time what I do is I start to do something for five minutes and a notification comes up. And then you go there and then you get distracted, and then you lose track. So I would actually appreciate this. You can actually you can actually just modify the phone in some way to do this.

Researcher: Yeah. But it's just more to promote this mindset, that..

Participant 21: sort of like a productivity zone. I like this.

Participant 1: Yeah, I agree I also really like it. I think I think there are existent

applications who are aiming for the same thing. But uh, but of course, of course, this one would be one level down and part of the whole system. So of course, right now, only those people are aware of these modes who are using those applications, those those meditation applications. But if if the whole thing would be built in, into iOS or into the operation system, then of course, all of a sudden a whole wider population would be aware that that it's a it's an important thing. So I think it's a good way to spread the word.

Researcher: Now on to our last idea.

Um, so this is a speech based social network, how it would work. So say for example, Today, my co workers can't eat with me. So I'm eating lunch by myself. And I don't want to feel lonely. I want to use my time a bit more differently at least. And so I talk into my phone to this app saying, I'm interested in discussing what do people eat for breakfast outside of Denmark, and then the question pops up and someone that is available in the same break. So 1130 to 12 will join me in and I will be able to talk to a stranger about this topic during my lunch break. Another alternative to this could be also just having it as a chat bot. So you talk about your day or you let out maybe you steam or anger or rant about your day or talk about the day to a chatbot that will work AI based. so those are the two alternative for this speech based social network. What do you think?

Participant 21: Is it similar to Omegle or something like that?

Researcher: I don't know it but I think it's more inspired by Quora so in quora, you write in a question and then an expert comes in, but here it will be more speech based so that you can FaceTime a talk or call you're like hey this person wants to discuss with you What do people eat for breakfast last time in Denmark and then you get to foster new knowledge whilst not feeling lonely because you're technically with someone. it could be connected to either your friends but it could also be with strangers.

Participant 21: So it's speech based mainly.

Researcher: Yes.

Participant 1: I think I think connecting to the friends would be would be a better idea at least for me.

Participant 21: Yeah.

Participant 1: Because I think just talking to a random stranger would not make me feel less lonely because because Okay, let's let's say there's a perfect example let's let's let's take the canteen at DTU. You are surrounded by thousands of strangers. So you are surrounded by people. Maybe Maybe you could you could also ask them some something but you would still feel lonely. Because because you don't have any attachment I think I think having the, I don't know the deeper level of the of the connection or relationship is definitely an important factor to feel not lonely So, it's like it's it's, it's a little bit like talking to a customer service or something like that.

You would, you would I don't think how, that's how less lonely you would feel. talking to friends or or people who you have a stronger bond with. That's that's really good.

Participant 21: Yeah, because it's talking it's more of an active thing you do. It's not something like it's not the equivalent of just mindlessly scrolling through your phone because the the here you have to really, I mean, I'm an introvert. So the very idea of like, calling someone on the phone sounds like so draining. And yeah, I do not see myself using this. Even when I'm alone, let alone in public. If it's like text based, like a chat bot, then maybe but speech based? I don't see.

Researcher: Okay. So those were the ideas. Now to kind of finish up, I have a concluding question. So which part of your relationship to your smartphone do you think is unhealthy? **Participant 21:** , maybe you can start

Participant 21: right now?

Because it used to be bad. And now I've sort of cut it down. Right now I would say it's YouTube. Because what used to happen was I would wake up in the morning and for two hours, just keep scrolling, switching through three apps. And the only reason I deleted the apps of my phone was that I it forced me to get up out of bed and if I wanted to use it, I could use it on my computer. So that's sort of forced me to get up. But YouTube's an app I do not I do not delete because the only app I can listen to music on and stuff. But now I wake up and for two hours instead of doing something productive, I just sit on YouTube. And because the recommendations are like, really like, oh, okay, you like this, you might like that. And I do like that. It just keeps going on and on. And yeah, YouTube, I would say, and I don't even subscribe to anything. That's the thing. I haven't subscribed to anything and yet they still show me random Do it yourself nonsense that I won't even ever actually do but I still watch the videos. I really wish I would like stop doing that. It's a waste of time watching videos of people making stuff that no way in hell I'm gonna make.

Researcher: And what if you could choose one of the ideas that we just mentioned or another idea that you have stumbled upon that you think is great - Which one do you think would help you cope with this unhealthy habit?

Participant 21: I would say the alone time thing like I would. I mean I can just force myself to like switch that thing on then at least I'd get up and do something I would say. I'd like to think that I don't know if I'd actually do that. I like to think that idea would help me the most.

Participant 1: , what is unhealthy with your relationship with your smartphone?

Participant 1: It's just a really small addition, it's super funny **Participant 21:** , because we are complete like like we did completely the opposite. I deleted YouTube like like two or maybe a month month ago, but I kept Instagram and all these things. Exactly the opposite like you only have YouTube but not the other ones. Yeah, it's quite funny. And by the way, those those those DIY videos, they are anyway I will I will send the YouTube video but they are Part of a really big scam.

Participant 21: Yeah. I saw that as well. YouTube recommended that as well.

Participant 1: Okay, perfect, perfect. Okay, so it's a whole content factory from Russia and anyway okay, okay, good.

So okay, what is my most toxic part? I guess I guess Instagram and OMG it's really awkward to to say but my friends made me download Tik Tok and I deleted it today I I had it I had it for two days. And that's that's really crazy that's that's really crazy. That's the worse, that's the worst.

Researcher: Why is it the worst? if you could..

Participant 1: because you you don't get any value out of that like like like honestly like that's that's completely useless because you You are not even connected to your friends you are you are seeing random and random people And, and you're not, you don't realize how much time you spend on it because you just scroll and, and you can scroll infinitely, like like just just scroll down, down, down, down down and the content never stops. So that's that's crazy. Anyway, I deleted that but Instagram is really similar because because the Explorer mode is quite similar you can you can scroll almost almost forever. This alone time is is really good. I also liked it, but at the same time of course now we are living in really strange times, in the coronavirus. And I actually really liked this this type of type of way that you you send some signal that you care about others, that you think about them because I feel really lonely many times Now during during self isolation, because I cannot meet people. And anyway, maybe that would be a good idea, but but not with the vibrated wristband. maybe, maybe with some sort of other way, but I really liked that idea that without a smartphone, you can let people know that, that they matter. Yeah, and I really like the ring thing. I will definitely try it out. But I don't know if it's only because I like these gadgets or because I find it useful. Maybe.

Researcher: Okay, cool. Thank you so much for joining us. If you're interested in hearing more about the project, drop us an email and then we will keep you up to date. If you have additional comments or stuff or ideas that you think would be better than the ones we have talked about. Please also drop us an email. We're open to anything And thank you so much for joining us and giving us so many awesome insights. Thank you

B.3.5 Participants 13 and 22

Researcher: I'm gonna do a little bit of a speed up version. It's gonna last approximately 45 minutes to one hour, depending on how much you have to say. Okay, so I'm gonna start off by saying hello, welcome. We're both at the Technical University of Denmark. And what we want to get inside is his students use off in relationship to their smartphone, and it's for in the context of our master's thesis. While we want to what we hope to obtain is an understanding of how we can foster healthier relationship to and from your smartphone. Your answers will remain anonymous and will not be shared with external partners. But for the sake of transcription and coding and categorization, we will be recording this interview. Is that okay with you? Yes. Okay, thank you. Just before we start, I want to just say that there are no wrong answers, but when different points of view, please feel free to share your point of view, even if it differs from what others have said. Also keep a respectful tone. Keep in mind that we are just as interested in negative comments as positive comments. And technically, we also are more interested in the negative comments because it will help us improve. Okay, let's begin. So maybe just start off by saying your name and where do you study?

Participant 13: My name is **Participant 13** and I study service management. Okay.

Participant 22: My name is **Participant 22** triangle, and I studied public health.

Researcher: Okay, cool. What did you think of the Survey in General? Well, before you answer, I'm more interested in seeing a conversation between you too . So I will be asking questions to guide the whole discussion, but it's more focused on the interaction between you two. So yeah, what is your opinion about the survey and did it make you reflect on certain aspects of your behavior. In regards to your smartphone,

Participant 22: um, I thought this survey was good. I thought it was a little bit long at some points about having to type in my own answers, which I also think the current context of use of smartphone made me reflect on how I normally use my smartphone.

Participant 13: I felt the same honestly .. I thought it was a bit long.

No, but, um, and I mean, I but I thought the question made sense as to where they wanted to go, and the information they wanted to get out of it. Obviously, the length of the question also made me kind of think it was similar to the other question, but then it's formulated in another way. So it made me think a little bit more about my previous answers as well. And yeah, I think the survey was good.

Researcher: So as we said before, like as I said in the survey, we are complying with GDPR requirements so I don't know actually what either of you have actually answered. So I'm going to discuss some of the general trends and I want to hear your

opinions and make you discuss it. So the first thing is over 60% have said that do use their smartphones to relax a lot of people use the terms kill time, chill, relax on our phones. You also use the concept of brain dead entertainment. What do you think of this statement?

Participant 13: I agree. That's also my answer. It was to entertain myself and yeah,

Participant 22: yeah, I definitely say kill time. I think sometimes for more entertainment, I might end up going like more to my computer rather than my smart home if I have like longer period of time for entertainment, but I think definitely like killing time when you're like waiting for things to happen are like waiting for people like, I don't know, then it's just like easy way to like be entertained in a short for a shorter period of time.

Researcher: Okay, um, what application do you currently use the most? Or like, what category of application Do you use the most right now on your smartphone?

Participant 13: Uhmm, like social media like Instagram, Facebook,

Participant 22: um, I say currently, my trends and usage of smartphone have enormously changed because we're inside all the time, which I think is very important, but I think regularly I would check a lot of different social media apps. I think the one I'm most common like frequently uses WhatsApp, because in the end, I mainly would use it like Instagram I'd use to kill time, but when I'm actually using my phone, it's mainly to communicate with other people. Talk to friends who are not in the same country, time zones, things like that.

Researcher: Okay. So generally the trend that we have noticed is that when we talk about the smartphone, although people correlate it with social media, and what do you think of social media? **Participant 22** , you can start.

Participant 22: Yeah. Um, I think I think it's a, I think it's a useful way to keep in touch with people that you don't necessarily talk to you all the time. So for example, knowing that friends that you're not particularly close to that you don't talk to you regularly what they're up to. And I've definitely found myself studying in Paris that a lot of people would come through Paris and then it's hard to like keep track of everyone's schedules, but then you see another post on social media. It's a really great way to get in touch with them again, be like, Oh, hey, like I noticed you're in Paris. I live here. Like, do you want to get a drink, like catch up, go for dinner. I think that's a really great way. To keep in touch with people and like, kind of follow people's lives that you don't see all the time, but that you still appreciate and would like to keep in, like, in kind of your circle of friends. So I think that's a good way. And and yeah, I mean social media is taken off in so many different ways to be like, inspiring of like, in like when you see people do things like wow, like I want to do that too. And so I think it can be like a really, it's an amazing tool for a lot of different things.

Researcher: Mm hmm.

Participant 13: Yeah, I agree that it's useful to like widen your connections and your network as well. And just being able to keep in touch with other people that you're not able to talk to daily or just, you know, see on average or on the daily so I think it's, it's a nice tool for that

Researcher: Yeah. What do you think about the fact that..Sorry, it's just because one of the participant texted me. Um, what do you think of the fact that people so strongly correlate smartphone and social media so that they immediately pick up social media when we talk about smartphone in general?

Participant 13: I think it's the feature that they use the most. So that's why they immediately think about that. And I also do that.

Participant 22: Yeah, it's the most handy way to use like, Instagram and messenger and things like that, or like Facebook, just because otherwise you have to pull out your computer like here you have it on, wherever you are. If we I think that's why, because you can just give access to immediately wherever you are.

Researcher: Right now, at least according to the findings, people are 60% people, people worry about the self image on social media and have feelings of being uncomfortable or anxiety or having strong negative emotions when talking about social media. But then at the same time, as I mentioned earlier, it's the category of application that is the most used by university students. And it's also the category of application that people feel the most prone or to need to be up to date with. Why do you think so?

Participant 22: Um,

Participant 13: yeah, go ahead.

Participant 22: I think like, kind of like, I think social media as much as you're able to keep up with it, it puts a lot of pressure because you see everything else. So it's like, I I personally use it more as a way I really like to keep, like, up to speed with people's lives, because I've moved a lot and I think it's a really good way for that. But you also get pressure of like, seeing people's lifestyles that you don't have. And I think that can make a lot of people uncomfortable, especially as a young person where you don't necessarily have a job. You don't necessarily have income. You don't necessarily have all these opportunities for travel that other people have who have I don't know really travel bloggers or anything like people who are able to create lifestyles through using social media. So they definitely make you uncomfortable and not feel as... I don't know, you're not able to show your qualities as much. So there's definitely pressure to show your.. the best version of yourself kind of

Participant 13: I agree. Like you kind of end up comparing yourself.

Participant 22: Yeah.

Participant 13: With how other, you know, around your age, are living or how

you could live could be living, I guess. Or how you could see yourself.

Participant 22: Yeah.

Researcher: Another finding that we've found is that university students find smartphone activities addictive. 60% of people have mentioned that, however, 70% of the respondents from the survey, think they're not addicted to their smartphone. Where do you think the line is drawn between being addicted to the smartphone activity versus being addicted to their whole phone.

Participant 13: I think people understand the concept of finding it addictive. But then I don't think everyone is able to take a step back and realize that they're addicted to it. Yeah, it's a cause and effect. Like, if it's addicted, then naturally you get addicted to it. But then I think people immediately think, oh, but I know, it's addictive. I know when to stop. But in reality, you actually don't stop when you need to.

Participant 22: I think it's. I agree, like, generally like you don't consider yourself it also depends on what where the line is for addictive like how many hours a day is considered addictive, which I'm not currently aware of. So it could be like, Oh, I don't feel like I'm addicted. Like, I don't use it that much. But then it's like comparing, like, how much do you actually use it to be addicted? Technically, I think it's kind of like, a hole, like a black hole. like kind of like, you know, when you find when people talk about like, oh, like, I clicked on this one YouTube video, and then I just clicked I've done another one. And another one another one. Social media is the same thing of like, Oh, I found this person on Instagram. Wow, who's this other person, you click on them, like you, like, fall into a hole of like just spending a lot of time just like looking at random things.

Unknown Speaker But then, so do you think that addiction is measured in terms of what other people are doing?

Participant 13: Not really, I think it's measured on [you] not [being] able to restrain yourself. Like if you're not able to go a day without saying, today I'm gonna take some time to, you know, meditate or something and just take a step back if you feel the need, whether it's a reasonable or not, but if you feel different, it's like a strong need to go on your phone or to do this thing without having any restriction. Like, I guess. Yeah,

Participant 22: yeah, I kind of agree. I think it was I would define addiction based on a certain number of hours that you surpass showing that you spend a certain amount of time per day on your phone.

Researcher: And then... how would you compute that certain amount like this? This threshold..

Participant 22: well, I mean, you'd have I think most iPhones have like they show you how many hours you spend. I think you can scientifically look at what would be considered addiction. I think there's a way..

Researcher: Then, that would be depending on other people that's why I was asking you the question how do we not..

Participant 22: Not on other people because you make a..

Participant 13: It depends like you are saying but then if that norm changes, you know, if they make that, for example, like three hours would be the average but because everybody's, it's become more like common to use the phone longer longer in doing this, then the average can change to like five hours and that will be the norm without you feeling.

Participant 22: I don't think I'll do it based on the average numbers of hours of use, I do it on the percentage of hours out of the day. So out of 24 hours, if you take up a quarter of your day spent on your phone, that's addiction. So that can be in between this amount of hours. So it's out of 24 hours, the percentage that you spend in your phone. So it's not an average of like, people spend an average of five hours. So if you're in the five hours because everyone spends that time, you're not addicted. I'd be saying it on. If this percentage of your day is spent on your phone, then it's an addiction of some sort. And then **Participant 13** pointed out something about not being able to like put your phone down. I agree. I particularly agree that about that with social media. I think it's very different because a phone, especially since a lot of things are distance. I know I particularly like my need to be on my phone is to talk to people who don't live in the same country as I do. So that's why I want to be on my phone and like check my phone. It's more to be able to talk to these people. Which, then you can is, I don't know if you consider still social media or is because yeah, so I guess like it's a communication tool in addition to social media. So yeah, it makes you spend more time on your phone, but it's communicating with people that you care about, which you don't necessarily see every day.

Researcher: But maybe to just to challenge that a little bit. So we live now in a society that's very technical, technological, technologically connected. So we use phones to Apple Pay, or we use our phones to get on the bus, to find our next itinerary, to connect with our friends to call our friends or family. And we have emails on it work stuff, everything is in the phone right now. So is it really an addiction or is it a necessity to become a citizen of today's society?

Participant 13: I think it has become a necessity.

Participant 22: I think it's become a necessity, but I also think it's an addiction. I think it's both. I think the time that you use. when you're using your spare time when you could be doing something else on your phone, I think that's where it's an addiction, whereas like if you're checking your emails because you're or you're talking to someone, really I feel like social interaction through social media is less of an addiction than just like, Oh, I'm just scrolling and wasting my time and like, kind of getting lost and like killing time. Whereas, like, you're on your phone for a purpose. Like, I have an email like I got an email or I'm looking at the news on my phone, or I'm, I'm talking to my grandmother on like, I don't know, WhatsApp, I

think it's a different use kind of use. So it is a necessity because everyone's so busy. It's a necessity to like keep in contact with people, I think for sure.

Researcher: Where do you think the line..

Participant 13: It's also part of being in the society. Sorry. Yeah. Just, I think also like the, not the pressure, not really a pressure but if you see most of your peers doing like on their phone, interacting through social media, and you're the only one I guess you can take you can keep it to to a minimum where you don't have to constantly be on it, but for example, a person that uses no social media or no.. doesn't even own a phone or something, I think they will have a little bit of a disconnect with others in society that are that are used to having that way of life, I guess.

Participant 22: I think so. But then there's a line for sure. Because it's like it's becoming a necessity. But I think particularly for like work emails, that means you can get your emails, anytime of day, weekends, everything and you're notified on your phone and you see it whereas you might not log on to your computer and check your emails until you start work. And so it's just like, you're never you never stop working really either. So I think that's the negative side of like, always being connected. Like you always know like, your work is there kind of

Researcher: Participant 13: , do you have any last comments?

Participant 13: No. I agree with what has been said.

Researcher: Okay, cool. So based on the surveys and also the initial user study that we did, we have identified tree uses, case scenarios in which the smartphone plays a less healthy role.

The first one being phone break. The concept of phone break here is understood as when you're taking a break, for example, you having a study session the whole day and you just want to have a mental break. So you just go through your phone and you scroll, that could be a phone break. Another scenario is fear of missing out but related to physical distance. So for example, being an international student or having friends internationally and wanting to stay connected with them and fill the void of being far away from each other, you're more attached to the phone to stay in touch. And the third one being loneliness. So for example, it can be in different contexts it can be when you're eating lunch alone. For example, if you're not with your friends, if you were alone into into train at a boss, it could also be when you're in a social interaction. group where you don't feel like you belong there. So you feel a bit lonely. So you go for your phone. So that those are the tree case scenarios. And based on those, we have six concept ideas that we want to get your feedback on. Remember that we really wants to also hear the negative feedback. So please give us that. And we.. these ideas are very broad in the sense that we won't go into the detail and we want you to take it in and make it your own and tell us how it would work into your everyday life and how it would really not work into your everyday life. Give us this context, but also tell us if you would use it or not.

So the first one being the ring limiter, how it works is so it's an tech gadget, an accessory that you get, and then it's connected to the device. And one scenario of it being used could be so for example, I've been studying the whole day and I want a 30 minute break on my phone just to kind of let off the steam of having to focus so much. And so I put a time limit of 30 minutes and I connect it to my ring, and then when I'm scrolling through my Instagram, my Facebook, this color changes gradually until I reach 30 minutes, then it becomes very red. And then it blinks red until you have stopped using your phone in the entertainment frame. What do you think of this idea? Oh, by the way, it could be related to, for example, the phone break, but it could also be related to a specific application. For example, if you want to control how much time you spent on Instagram or it could be related to overall screen time.

Participant 22: I think it's a good idea. I don't I think I feel like you don't necessarily need a ring to limit it. Like Can you if it's programmable into the app of like, shutting it down?

Researcher: It's more of a subconscious reminder because.. but yeah.

Participant 13: I mean, I think it's a good idea if it shows like, because I tried the the reminder like just on the app and with a time limit and It worked, but just a little bit for me, because I still have the option to

Participant 22: extend it haha?

Participant 13: or to remove it. And also, when I was putting the timer, like the restriction, it wasn't very realistic, you know? So it was I would choose which apps like different, like entertainment, Safari and stuff like that. I would put different times. So at the end of the day, instead of being like four hours, like, for example, it would be like six, because we have three and three on each one of them, you know. So if it's I think it could work if it's an overall, you know, limit.

Participant 22: Yeah, I guess it would then depend if it like limits still like kind of, like you said, because I think it's important to limit for certain apps because I think communication apps should not be limited because what if there are like email, it should not be limited, because though that's when you get information that you might need, or someone like sends you like Link though to something you're studying, like the group chat and you're like, oh, wow, like this is exactly what I needed. But if your phone's like limiting, then you won't necessarily get the notification for like a whatsapp group of like providing you because I know for my my master's degree, um, everything was on WhatsApp. Everything's on WhatsApp still like group chats of like, oh content of Oh, here's like the I found this activity that we did in class like, Oh, can someone send it on WhatsApp, you're getting information like articles, everything is on there. if people have questions that you can also have questions. It's it's used daily every day. So not having that connected. Connectivity can almost be like a problem when you're studying as well. So I think you'd have to be limited to like these social media apps that don't actually provide you with useful tools while you're working. Yeah.

Researcher: Okay, and we can move on to the next idea. So this is Bond Touch. So how it works. It's a bracelet so imagine me I'm going, I'm living here in Denmark, and I have my mom back in Morocco. And I want a way to fill the void of fear of missing out this physical distance. So I have this bracelet that she also has, and when I miss her or I feel like hey, I just wanna let her know that I'm thinking of her. I click on my bracelet, and then she gets a nudge or vibration or some sort of way to know that I'm thinking of her. Um, what do you think of this idea?

Participant 13: Oh, I mean, I think it's nice and just like cute. It's you know, it's nice to have a little reminder that someone is thinking of you and to send it to someone, but i don't i don't think i would buy it though.

Participant 22: Yeah, I think it's a cute idea but what I it kind of reminds me I was there not like this thing that you could like get that made it seem like it was like someone else kissing you. But it was like, just like an app. It was like some like technology device. It kind of reminds me of that for some reason. of like, Oh, you like miss your partner who lives far away and there's like this thing you can feel like there, whatever. Anyways, I think I think I'd still prefer to communicate with someone that I care about. As as much as the nudge is nice, um, I feel connected with someone when I know what's going on in their life. And so and it's nice to feel thought of and i think i think it is really good idea but I think it would have to be like, paired with a communication to like a communication tool of like, verbal communication as well because

Participant 13: I think that there has to be a little bit more than jusy, just a reminder that so many..

Participant 22: because a reminder it like I'm like I'm like in a long distance relationship as much as like a a buzz thing is nice. I would rather FaceTime or like talk on the phone, then just get buzzes and you're like, Okay, that's a nice thing but I don't know anything that's going on your life. I feel very distant still. So yeah.

Researcher: Do you have any last remarks **Participant 13** ?

Participant 13: No, I think it's good..

Researcher: making sure before I move on to the next idea. Okay, so this one is inspired by so you already mentioned a little bit, but this infinite loop of content. So right now, everything is you can scroll forever on certain applications Twitter. Tick Tock is also a new entertainment device that has infinite scrolling Instagram. Also the way news are architectured right now, you have to clink, click from news article to news articles just to get the full information, everything is just made. So there's a big spider web of information. If you want a full picture, you need to like spend a lot of time so this is a content digest, it would work as a plug in. And it will help you summarize content to spend less time scrolling and you get the necessary info quickly. So kind of filter out the content. You can be specific to a specific app. For example, here we have the example of Twitter, so that you can maybe filter out what you're interested in. Or what information you're interested in getting. But it could also be

related to different news articles. So you can get a kind of a bigger picture of it, or related to social media. What do you think of this idea?

Participant 13: I like the idea. I think it wouldn't work on for example, teens, because I think they want to know everything, whether they're interested in it or not. But I think like, for our age and up, I think it's very useful. Because, you know, sometimes you just, the more you get useless information, you kind of find yourself like scrolling to find just like this one thing that is interesting and that you can relate to. So I think it would be a nice thing to have it filtered so you just see the things you're interested in that day, and you can kind of move on.

Participant 22: Yeah, I agree. I definitely think it's a good idea. I think I'll just add that for I mean, Twitter last maybe I personally don't use Twitter, but yes, I think for Twitter, like it's very much used and can be very political and like news articles, it's very good. I think for like Instagram, it would just have to see whether it's filtered out to because if it's the highlights based on personalities you follow or based on people that you actually know. And so I think sometimes it's nice to like know what I don't know, like a professional athlete is doing. But most of the time, I'm more interested in like what my friends are doing.

Participant 13: But I guess you can filter that.

Participant 22: Yeah, I guess Exactly. That's, I guess it would depend on how the filter is set to make sure that you get content from people, you know, it's not just the most popular, like the most liked posts, for example, and it wouldn't be filtered based on likes, because otherwise you wouldn't actually get content from people, you know. And that's all that's just full comment. But I think it's good idea.

Researcher: Just to clarify, **Participant 13** , which application would you use it on? If you had this content digest?

Participant 13: Uhmm, I don't really..I don't really use Twitter. So I don't really know how to How it works. But I think it could be nice on Instagram like I know they have some things similar with their feed, but I still feel like you get a lot of once you start with, you know, you're interested in beauty it's not it's not narrow enough it's more like a wide range. So I think this would be nice to have it like, more narrow. Okay, but yeah, Instagram, I guess.

Researcher: And then **Participant 22** , it's Instagram too?

Participant 22: I think Instagram and sometimes Facebook as well because I feel like Facebook you.. like some things that Facebook Facebook's just older. I don't know about you, **Participant 13** , but I realized that I've liked weird pages when I was like 13 and then all sudden they posted something and I'm like, why do I have this? I don't want this. And then I unfollow it but then was like, sometimes you forget. Yeah. And so like, that'd be great if those were just like filtered out like I don't really care to see this. Sometimes like seeing people tagged in something or like I don't really care that you were tagged in like, a dog post like, that's great. I

don't really want to see this. no offense filtering through that is like, that's great. Like maybe like, just showing posts like when people are tagged like in your, like the people you talk to you the most, which would make sense being like, oh, like I talked to **Participant 13** the most and like, I'll see when she's tagged in a post, I'll be like, oh, haha, like she's tagged in that, that's totally **Participant 13** . I don't know, but I don't really.. there're most people I don't care.

Participant 13: And sometimes you can even see like, what the person has liked, you know, they could literally like a post and you'll get a notification or see it on your feed, and it's just like, you don't really need that information.

Participant 22: No, it's just like too much like I don't want this. So I would filter that'd be great to filter out Facebook as well [..]

Researcher: um, next idea. Okay, so this is inspired.. This is in the category loneliness and when I say loneliness, it is more like these moments where you out of loneliness go to your smartphone. So for example, when you're alone in the train, or if you're eating lunch, alone for some reason, or if you just want a situation where you feel like hey, I, I'm alone. So I'm you go to phone as a rescue, but it's also related to the current app limiter. So I don't know how it is an Android. But in iOS right now, you can extend the app limiter. And it just like the snooze button, so it's very easy to just snooze for it. So this idea is basically to give you a way to challenge you to do something different. So you have reached this 15 minutes of app interaction with the social media that you said that you wanted to only use for one hour, for example, that day. So what else can you do? So for example, it could, like the idea is not just to make you not use your smartphone, but it's also give you other ways to not be as dependent on certain applications for entertainers. For example, hey, you can go do a zoom call with your friends and do karaoke. Or you can go listen to this podcast or you can also go outside for a walk or just give you different ways So that you're not relying on specific application to entertain you, but you have a wider option but also options that let you do stuff outside too. What do you think of this idea?

Participant 22: I think it depends on the moment. I know like, the moments I've eaten lunch alone is because I find it awkward more than like, I feel alone. Or like when I'm in a group of people and I'm like, Huh, they're just talking about things I don't know I just feel uncomfortable. And so it's kind of to hide my discomfort is to look at your phone you like I have friends in it just to feel less awkward. I don't know if I actually like in the train is to pass time. But I don't know if I use it more as like because I feel lonely or just because I feel uncomfortable. Um, which I guess can change based on situation. But I don't think I necessarily if I feel uncomfortable, I don't know if I'd necessarily zoom call because then I wouldn't be able to like, like try to make the situation better.

Researcher: And also the other stuff is not. I think the example here is just relate to zoom call just to show you that you can do something in your smartphone too. But it could also be read a book or count how many plates around you or yeah..

Participant 13: I think it's a nice reminder of the options because sometimes you just like, it may be obvious, but you can't think of it. And I think I would use it also, like, for example, in this situation, where I am by myself, like at home all the time, so it's nice to, like have some something that can remind me, Hey, you can do this. You can read a poetry book or meditate for 30 seconds or just something to do, you know?

Participant 22: Yeah, I think that too would be nice. I think it would, if it was like a wide range of activities then you can pick from

Participant 13: Yeah, I wouldn't use it for a public setting because I I think again, it's not the aspect of loneliness more than the aspect of feeling awkward.yeah.

Participant 22: Just Yeah, maybe in the train, I would definitely consider like reading something. Or I feel like then the train is when when if I would maybe read like news on like a news app because you're like, just need something short to do. Um, so if there's like, if there was like a Yeah, if it was suggested like, oh here like get your like daily news if you like your commute is taking the subway every day. I know in Paris, I actually would get in the habit of if there was they, they give like newspapers. And so I would if I could, I would always grab one of the free newspapers and I would read my horoscope and in the metro, or like, look at the weird articles in there, because it was also a way to pass the time and then you're not on your phone. But if your phone provides you with those kind of like quick stories are like horoscope kind of things that you're just gonna read for 20 minutes, I think it's like can be really cool.

Participant 13: Yeah.

Researcher: Okay, I'll move on to the next idea.

Okay, so this is inspired by the sleep mode that is currently available on all devices, I would say. And the idea is more symbolic here, where just like the sleep mode allows you to think, Okay, I'm going to sleep. So Oh, just to maybe to detail what sleep mode is. It's like an option. So you can go in do not disturb mode. And so calls are silenced, notifications are silenced. And so there's no app interaction really coming through to you. And so the alone mode is kind of to encourage this state of, Hey, I'm alone, and I'm taking this moment to be self aware and take time to myself and doing something for myself. And for example, like, to listen to a podcast and meditate, kind of a self love moment, and just taking more time for yourself, just because sleep mode right now is very encouraged. But it just promotes this idea of like when you're going to sleep, this is when you should not be disturbed. But you should also not be disturbed when you're having a moment for yourself alone. So this is the alone mode. What do you think of this?

Participant 13: I like the idea. I don't really use the sleep mode just because I turn off like the sound from my phone when I go to sleep. But I think it's a nice thing to have. So you remember, like you kind of forced to have like this moment for yourself, really take the time for yourself and like a nice reminder as well.

Participant 22: I think it's a good idea. Um, I tend to my my habits because when I was younger, I didn't have any data for a very, very long time. So I've gotten into the very big habit of turning off and on my data whenever I use it. So generally if I don't have one Wi Fi, unless I take out my phone to use it for something, my data is always off. So I, so I explicitly do that. Which means I'm only contactable if by a text message or a phone call. But I think it's a good reminder to have like alone mode. And I mean, I think since I switch off my data a lot like not when I'm home, because I have Wi Fi. But for example, even Wi Fi, if you're like studying, I always switch off my Wi Fi. So it's like you only get like text messaging phone calls, like really for emergencies. If someone's like, Oh my god, I really need to call you like you have your phone number. You can, like we don't need to use like, if you really have an emergency. So I think it's a I think it's a good idea because it helps to do that. And I think it helped me also to continue to do that even when you're home because you have Wi Fi. But in my personal use, I feel like I've because I didn't have data for a very long time. I've gotten into the habit of just turning it off. And so being less accessible when I'm out doing things but When you're home alone, I think it's one this is really good.

Researcher: Any last remarks, **Participant 13** ?

Participant 13: No.

Researcher: Okay, so this is the last idea.

This is a speech based social network. So to give you a context, imagine I having today my coworkers can eat with me and I'm having lunch by myself. And I have a lunch break between 1130 and 12. And I'm interested today in talking about what do people eat for breakfast outside of Denmark? And I just talk into my phone I say, Hey, this is what I think could be interesting. And then the question pops up and someone else either in my in my friend circle or someone around the world that has a break in that same time span will be able to have a phone call or FaceTime call with me to talk about this. Another scenario of this same speech based social network would be to, if you're having a like a rough day or if even if you're having a nice day. You will be able to talk with a chat bot. to kind of let off the steam or kind of to allow you to talk about it. What do you think of these ideas?

Participant 13: I think it's actually nice because I was thinking of the pen pal system. Just, you know, because especially in the situation that we're now kind of got me thinking like, how do you normally meet new people, you know, in social setting like, Yeah, I know people use Tinder, but what if you don't want to, you know, hook up with someone or for romantic purposes, I think. I mean, of course, you can write in your bio, I'm just looking for friend but then the whole platform is not catered to that like it's misleading. So I was, you know, thinking, Oh, back in the days, back in the days, people used to use pen pal, you know, they would write to people from the other, like another country. And then it's not so done anymore, but I was thinking of doing like a, of searching for a platform that could do similar things in that so I

like this idea.

Participant 22: That's true, I see where it can be very appealing. I don't know if I would necessarily use it. Um, I think I tend to be particularly interested in maintaining relationships that I have, I think through my degree and through like my life experience, I've moved around a lot. I'm doing internships for short, short terms in new places. And so I find it, it actually can get to a point where it's very tiring to always start, like conversations with people even sometimes in person is just like over socializing. And I feel like I need to really, really want it to go follow through with a conversation with someone I don't know. And to be like, like, I'm gonna socialize and then tell you all about myself and like, we're gonna create a relationship where we don't meet, I think, I don't know I think before I might have had more of a mindset to but I think currently because I did an internship abroad recently. I think I would not have the the energy, to be honest, because sometimes even like in person having [..moonrise?] is kind of like I just kind of want to be with not have to make so many social efforts all the time.

Participant 13: But it sounds like in that case, this platform will do fine for you, because it doesn't sound like it's necessarily to have a long conversation and really, actually get to know each other, which I think you could if you really end up having like a connection with the person that you're talking to. But I think it's just simply like, you know, asking a question and getting like others opinion or

Researcher: It's inspired by Quora. I don't know if you know that platform. Quora is like a platform where you can type in a question. It's more text based, but you type in a question and then an expert around the world, kind of gives his two cents about it. And then you kind of start a conversation. It's to kind of get a different perspective on questions or topics. So it's not more it's That's why social network is maybe not the best here. It's not to make really friends, it could become a friendship. It could like blossom to that. But it's more of like, Hey, this is something I've been thinking about. And I think I want different opinions about it because it is an information bubble you kind of get stuck in when you're only interacting with your friends because you you are similar to some extent, or, more or less.

But yeah, and it also could be really like this network could also work maybe with friends or So would you use it if it was with your friends?

Participant 22: I think I would use it more like kind of as you're mentioning in a professional context, if I had a question, I don't know if I have regularly questions that I like have that I share with a bunch of people because I'm like, What if this is a weird question. It's weird. I don't want random people to judge me.

Participant 13: But I think it's it I think I would use it just because like if it if you can do both, like have your own group, you know of people that you know, like friends, and then just ask some questions or and, and get some replies that, you know, it's like purposely just to ask a quick question and not to have a long conversation. And then also be able to ask, you know, I guess other people that you don't know

when to have a general opinion, I think I would use it. I don't know if I would ask questions like that directly. Like, I can't think of something here. But I think it would be nice just to read as well to see like, what other people like questions are, and maybe that'll, like, give me an idea of something.

Participant 22: Yeah, I don't, I don't personally think I'd use it. I think. I think it really depends on how it's used like for for small things like, like culture. I think it can be very interesting. But then I think there's also the possibility of like, making sure who's answering because if it's more of a technical question, making sure there's not misinformation if we think about like the pandemic.

Participant 13: Like you wouldn't want too many...

Participant 22: Ensure there's not someone giving their opinion about what things that they aren't informed about would be my only concern.

Participant 13: Like you don't want medical opinion on that side.

Participant 22: Yeah, exactly. You don't want people I like asking people have questions about health care or like, currently pandemic situation, but you don't want I wouldn't want like some random person being like, this is what I think. And then you just like then it becomes one of those chains that people kind of argue in, this is my fear. And so I think it would depend on the context. I don't think I personally use it, but I can see how it can be a good tool for people who want to explore but I think culture would be really interesting.

Researcher: Okay. That was the last idea. So kind of to run off the conversation. I want you to tell me, what do you think is unhealthy about your current relationship with your smartphone? Maybe **Participant 13** , you can start

Researcher: if you want to, I can let **Participant 22** go first.

Participant 13: Yes.

Participant 22: Um, probably I should disinfect it more than I do. Like, what..

Researcher: Unhealthy in the sense of..

Participant 22: It's part of it though. We touch our phones a lot, since it's so I think it's important to be clean, especially in this time of pandemic. Public Health. What can I say? This is this is what we're all thinking but not saying.

Participant 13: I don't think she meant. I don't think it was hygiene question.

Researcher: I was starting to think that uhmm **Participant 22** is very slow today haha.

Participant 22: no, I just like, I'm looking at my phone and like, I'm looking at the case. It's like, you know, it's like a clear case and they like, change color. And I'm like, wow, this kind of looks gross. so sorry. But it's part of like use. It's like also be clean. Um, what would I change? Is that ..was that the question?

Researcher: What do you think is unhealthy right now with your relationship and your usage of your smartphone?

Participant 22: Oh, I probably spend way too much time because I have way too much time. I think I think I have it. I think it's unhealthy because I have too much time. I think if I had less time I'd be more productive. But and do other things. I think it's hard to disconnect. I think I have a hard time disconnecting with things. So I think it's once I get like sucked into my phone, then I like then I go down like the rabbit hole. But I think it's not starting which is healthy. Like it's not healthy because I think I got sucked in easily

Researcher: So, it's the infinite loop content, that kind of?

Participant 22: exactly. Or just like, and, and there's nothing like currently nowadays, there's nothing to like, make me stop. There's not like, Oh, I have to go do this thing outside. Like there's nothing to make you stop. And so like that's what's super dangerous about it because there's endless content and there's nothing, no commitment. I currently have, um, because, um, yeah, I don't have a lot of stuff to do on top of everything else because I'm in an internship. But, um,

Researcher: Is there any of the ideas that we just mentioned or any idea that you personally have that you think would help with this?

Participant 22: I think I think some of the ideas were really good. I really like the one about highlights of content. I think that's really good. Because I think, I think I would use it all.. like, actually regularly. I forget, I don't know. I don't know if the like physical objects I would end up doing because I don't think I'd invest that much into it. I don't know if I'd end up purchasing it. But I think that one was like, a really good idea. And if there was another one that I liked, I forget which one

Researcher: Which physical object: the ring or the bracelet?

Participant 22: I mean, both like I probably wouldn't buy them because I'm cheap.Like I can't buy this

Participant 13: I mean. If you can get the same function on your phone, like You can still text someone that you care about and say, hey, I've been thinking about you. How are you doing

Participant 22: You can send them a Facebook wave.

Participant 13: Yeah, then you wouldn't spend money on an accessory.

Participant 22: Yeah, this is like, as a student. I think I probably would not pay for it because I don't have that money. Or depending on how much it cost I probably wouldn't pay for it. Because, yeah, limited budget. But yeah, I think I definitely use it. I don't have necessarily any other ideas. Maybe like, I don't know, I, I don't know, because I think the things I would think of would be like, too much. Meaning like, all data should be shut down and really all internet, you know, but like, that's not what we want. But it's because like, I would want to be stricter on myself. So I

guess something that would help me like, be strict on myself like, like timers are like, you can't don't use your phone between this time and this time. So I would like go exercise. Somewhere, but that means my computer has to have it too, because that's the problem. If you don't take the phone there's always computer.

Researcher: Yeah. Okay. So you want some kind of alarm time planner thing? [...] for your screentime?

Participant 22: Yeah, I was just like, yeah, like, um, during these like, like two hours like Wi Fi is like gets disconnected and like you need to put in like a password or I don't know something to try to like, because it's the disconnection I think that's harder for me. It's not like I don't it's not Yeah, I'd love to go for a run. It's not that. Actually I don't want to but it's just like getting disconnected from your phone and having that like, break and sometimes it's harder for you to make yourself have that break. Whereas if someone else's if it's just like, during the day, like all this is like the timer like yeah, I have to like it just helps you put it down.

Researcher: What about you, **Participant 13** ?

Participant 13: Can you ask the original question?

Researcher: Yeah. What do you think is unhealthy about your relationship with your phone?

Participant 13: And I think, um, because I don't have like a realistic limit to it. You know? I allow myself to indulge. So maybe that's a, maybe that's a something I need to fix. Yeah, I think that would be it, to have more restriction

Researcher: But more of a more realistic restriction, I think, yeah, probably Yeah. You don't know what limit will is something that you can actually..

Participant 13: ..that is doable for me that you know, as well as what would be, I guess, healthy as well.

Researcher: Which one of the ideas you think would maybe help you with this? Or do you have an idea of how?

Participant 13: I think like a mixture of the reminder. So it wouldn't be with a ring, but just like the limit on the phone, but and the app with the message of, you know, what you can do to have that kind of a reminder. So instead of, hey, you spend this amount of time on your phone, maybe, you know, have suggestions. So what you can do instead or just a reminder that you know, maybe try to focus on your mental health you know,

Participant 22: I'm gonna bounce off of what Participant 13 said because I think that's a good idea maybe like it'd be Um, so like having that like, let's say you you're like okay I want to spend like maximum like this amount of time. Then you have your reminder with like a notification popping up with alternatives but you have like a list of like goals for yourself and then so the things that pop up are like a reminder of the goals that you have set yourself, so like, really, like run I want to

exercise I want to do an online class I want to like bake cookies I want to do this and like it pops up a reminder of like alternative things you can do with your free time be like remind me like you wanted to do this, this this and this today. Do you want to keep using your phone? kind of like a guilt trip you

Participant 13: ..or even like a message that says 'take a break from your phone and make yourself a cake' or something

Participant 22: Yeah exactly. But I think it could be really good if it's linked to like personal goals that you've set for yourself for the week, or like long term, like, you wanted to learn a foreign language, maybe think about like, doing like Duolingo for a bit or something like that, although it's using your smartphone, but it's like, in different way than just scrolling. Or like, you wanted to bake a cake. Like, here's, um, like, do you need to, like, be send some recipes, so you can like, just like push you to like launching that maybe? Or like, Oh, you plan to work out like, here's like a link like for some, like, workout? videos? I mean, it's kind of using your phone, but it's like not being like stuck in front of it.

Researcher: Definitely. Okay. Thank you so much for joining us and for giving your insights. If you have any ideas that pop up for today or for the next days and you just want to share them with us. Please drop an email, a message you know, you know me, if you're interested in hearing more about the project, also let me know because then I'll give you updates. And yeah, thank you so much for your time. It was really nice.

Participant 22: Well, thank you guys. I think it's a really interesting topic, and very relevant to everything that's happening nowadays. And yeah, so I'm curious to see how it will turn out.

B.3.6 Participants 23 and 24

Researcher: Okay. I'm just going to start the interview. If the person comes on later, yeah, we will, we will try to include him. So first of all, Good afternoon, and welcome to our session. Thank you so much for taking the time to join us to talk about smartphones and their relationship to a smartphone. We're both with the Technical University of Denmark. And what we want is to get insight into students use off and relationship to your smartphone, and its indicate and the case and the context of our master thesis. And what we want to we hope to obtain is how we can foster healthier relationship to improve our smartphones. Your answers will remain anonymous and will not be shared with external partners. And we will work on first name basis as we will be recording the interview for the sake of transcription and coding categorizing the data afterwards. Do you give us permission to record this into First of all, yep. Okay, perfect. Um, I just before we start a conversation, it's going to be a focus group interview. So what I'm interested in seeing and hearing is the conversation between you too. And there are no wrong answers, but right at different points of view, so please feel free to share your point of view, even if the differs from what the other person have said. And keep in mind that we are just as interested in negative comments as positive comments. And also that negative comments are also the most helpful, so please feel free to share them. And please also keep a respectful tone when you talk to shareholders to make sure that everything goes smoothly. Yeah, okay. Let's begin. Maybe just to start off, introduce yourself by saying: What's your name and what your current occupation is?

Participant 24: Sure.I'll go first. My name is **Participant 24** . Hello. I'm currently a PhD student in UCD. My PhD specializes in speech based technology and perception of it and how that impacts language production in human machine dialogue.

Researcher: Okay.

Participant 23: Okay. My name is **Participant 23** . I'm also a PhD student but in Nice, so at a French University, University of Côte d'Azur, and I'm a PhD student in linguistics, studying speech perception by modified speech professions, by musicians and non musicians.

Researcher: Okay, cool. To start off, I'm just going to ask a very open question. What did you think of the survey? And did it make you reflect on your behavior in relationship to your smartphone?

Participant 24: If I'm honest, I did that many surveys. I can't remember which one it was.

And I would say it hasn't had any impact on how I actually use my phone if I'm honest, because I can't remember it.

Participant 23: I remember because I I got the service through my sister who is Nermen's friend. So I remember like the context better. Probably But I thought

it was kind of a not well timed survey, given the context, especially in France of confinement. So when I received the survey, we were already in confinement. So clearly, your cellphone usage is completely different during confinement as it is, during normal times of the year, and I wasn't sure if the cell phone, like questionnaire was about now, so how do I use my phone right now? Or how do I use it generally, in my life? And so there are a few questions that made that particularly unclear especially about how much time do I spend on my phone? And how much time on average and how much like looking at your phone data of how much time you spend on it, which is really not realistic compared to how I use it. normally. Um, so I thought that was kind of a big downside of the questionnaire. And I'm sure unfortunately, I feel like that will that will really influence your results.

Unknown Speaker No, definitely. Just to clarify, it was in general, we look at a general trend of smartphone usage, but Obviously the corona virus outbreak has spread through a lot of European countries. I don't know if you can hear me..

Participant 23: yeah.

Researcher: Okay. But it spread very quickly to a lot of countries. So we have to take that perspective into account now in our Master Thesis. But yeah, the original idea was to just look at our smartphone usage in general

Participant 24: I have suffered with that. Actually, I was doing a lot of them. And they were all kinds of the same issue: Do you want it based on now or do you want it based on..

Participant 23: I think it was unclear in your questionnaire, because you especially given the context. And you did, you did put out the questionnaire in this context that it should have been more specific in the beginning that it was on your normal cell phone use. And some of the questions that you can't answer like, looking at how much how many hours you spent on your phone. Like, I mean, they should they should be in according to the context, as that's when you are sending the questionnaire, but I mean, yeah, you could probably like write that in afterwards.

Researcher: So we're going to discuss a little bit about defining so we have from the survey and obviously due to GDPR requirements, we don't actually know what either of you have said. So we're just going to go in general terms and say a little bit statistic wise what has been said and then you can reflect on it or discuss it. So the first thing is the general population of the survey said: over 60% said that they use their smartphone to relax and a lot of the words or expressions used is kill time, chill, relax. It's comfortable; expressions like brain dead entertainment is used very much. What do you think of this finding?

Participant 23: So, again, is this in the current context or in my usual context?

Researcher: In your usual context.

Participant 23: Okay.

Researcher: But you can reflect on the Coronavirus situation. But the study is on the general.

Participant 23: Okay, just checking, I would say I don't know that Yeah, I use my phone to, to sometimes to relax, I guess

Participant 24: It's perfect to me. That's exactly what I do. Sitting on the sofa. Last couple of hours, just flick through stuff without actually reading half of it.

Unknown Speaker Hmm. But **Participant 23** , you were asking into the difference before: was it in general or during the current situation? Do you think that your way.. it's less relaxing to use your phone right now?

Participant 23: Well definitely because I like can't talk to anyone so I live by myself. So I literally by myself all the time so my phone is the only interaction I have with with any one at all, which makes its function completely different from when you usually have Your phone and you send two texts to your friends when you're meeting or, and then you have, you know, live interactions like right now my phone is the only source of interaction with with anyone. So all interaction with my phone is not relaxing in the same, it's not. It has a different function in life.

Researcher: Okay.So according to the survey, the most used category of application on the smartphone is social media. What do you think of this? And what application category would you.. are you using the most in general, but you can also reflect on what you're using now if it's different, but in general, what do you use the most?

Participant 24: To me, it's pretty much the same as normal, just maybe using it a bit more frequently. So social media definitely is what I use the phone most for. And that would go from Facebook just goofing off looking at crap and not really paying much attention to using WhatsApp, to keep in touch with the guys in the lab in the university and just chit chat nothing major just to kind of keep keep in contact with them while we don't see each other. and Twitter for getting people to do my questionnaire.

Participant 23: yeah, mostly Facebook and Instagram, I think like kind of as much time on on both. But like I definitely spend way more time on my phone looking at Facebook and Instagram now than I do at other times since I like I don't have any other interactions with people. So that is kind of it is kind of different but I do look at Facebook regularly in on a daily basis, support environment and Instagram as well but less less frequently.

Researcher: Okay,another finding us around 60% say that Social media make them worry too much about their self image. And sometimes it makes them feel uncomfortable. And it also sometimes brings strong emotion, like anxiety and stress to them. But it's also the application category that you feel the most prone and need to be up to date with. And it's also as I said earlier, the application category that people use the most, why do you think so?

Participant 24: It's designed to do that.

Researcher: Yeah.

Participant 24: Facebook and Instagram in particular, are designed to do exactly that. Like the the feed of the feed of notifications is timed perfectly to your personal need to to go near those, those notifications like their.. Facebook, they know exactly what they do.

Researcher: You think it is the design of their interface that has this duality of feeling.

Participant 24: Yeah.

Participant 23: Yeah, I would say I would probably agree. I think they know that that is kind of like one of the mechanisms they use to hook people into using Facebook. And I think people on Instagram as well. But I think people have known that more about Facebook since it's been around longer, and always been kind of like how to get people to spend more time on your website. And it definitely Yeah, I do think I do think there is an intentional part. I don't personally feel like I don't, I haven't personally felt like I haven't personally felt pressured from either Facebook or Instagram, about personal self image. And I think that's also due to the fact that I don't follow on .. I don't really follow other people, aside from people that I actually know. And I was talking to friends about this recently, but it depends how you use Instagram for example. So since I only know the people that I follow, the pictures that they take don't really, I mean, I don't feel better or worse about myself, from those pictures of people that I normally appreciate, that I follow.

Participant 24: I think that's exactly I was gonna I was just gonna add that as well like, but that it depends what you use it for, they'll keep feeding you the same thing. So if you're inclined to look at images of other people, and spend a lot of time thinking about your own image in relation to those, it's going to be like a self fulfilling prophecy where they just keep forcing more and more of these kinds of images. Whereas if you're spending your time on Facebook looking at cookery stuff, they'll keep giving you cookery stuff. Yeah. You know, it's like it just keeps reinforcing it. If you have issues and you go and use these sites, it just reinforces those issues like that's the way their algorithms work like you know,

Researcher: Another finding in the survey is that the general population find smartphone activities addictive. 60% However, 70% have marked that they're not addicted to their smartphones. Why do you, Where is the line drawn and why do they need to distinguish between these two?

Participant 24: so like addiction itself is .. there is a huge gray area between being addicted to something and being prone to do something quite often because you know if that makes sense like defining something as an addiction from a self report basis is like is going to be riddled with inaccuracies anyway because some people will be addicted but won't recognize they're addicted. Some people will actually just

be like, can't use it a lot but not really addicted but consider themselves addictive to know because it's that that subjective impression of what addiction is. But that wouldn't surprise that.. the figure doesn't surprise me. I'd say the vast majority people don't think they're actually addicted.

Participant 23: Yeah, I agree that if you were asked to ask anyone if they were addicted to Anything.. addicted has such a negative connotation, but I don't think I don't think they would respond seriously with Yes, I'm addicted to blah, blah. But um, I do think I do think that phone usage is addicting, because it creates a constant stream of interaction with other people. Which is why when you are in confinement, like it is addicting, because that is your only source of relations with anyone else. But when you are in the normal world, anytime you're feeling or thinking that you need to connect to people, the phone is really easy to do that, whether it's with local images or reading something, or Yeah, anything if you even feel like you're always connected, which can be which can be addicting, I think.

Participant 24: Yeah. And really what you said earlier about it kind of honing in on those kind of mindless behaviors, you know, where you're just doing things without thinking too much about it, by timing notifications by giving you notifications. Things that you're very familiar with. So it's like, just appealing to that system, one in your brain fast acting, not thinking. But yet, most people have the capacity to engage the system too and just go, you know, actually, I've been doing this a bit too much. Now I need to take some steps to keep away from me for a bit or something like that just until my behavior kind of calms down.

Unknown Speaker So to challenge that a little bit, considering the current context of us being very technologically connected right now on your phone, you can have your bus ticket you can have you can look through travel itineraries on Google Maps, you can pay with Apple Pay Now, you have emails, work emails, you have everything inside that device. Is addiction really the right term to use here?

Participant 23: I'm sorry, can you repeat the end of your question.

Researcher: Yeah, of course.

Participant 24: You've got work emails and we got?

Researcher: So we have everything Inside this device, whether it's work or ordering food or getting your bus ticket or Apple Pay, so everything is inside the device. So is it really correct to call it an addiction? Or is it just a necessity now to have a smartphone or to be attached to a smartphone in today's society?

Participant 24: Yeah. Maybe the definition falls on what you're using doesn't, it? if you're using it as a tool, then it's not like for paying for things for using maps for doing things like that, then it's not really an addiction is same as wearing a pair of shoes. Whereas if it's social media use that that's that's a different kettle of fish all together. Like that's where addictions and body image problems and all that kind of stuff can definitely come in. So it's more to do with the what's on the device than

the device itself.

Participant 23: I would agree. I would agree as well. And I think that the idea of maybe the image of addiction to phones maybe comes from a point of view from people who haven't had phones as involved in their everyday tool usage. Like, if it's especially older generations, I think when you say that young people are addicted to their phones and see them with their phones all the time, also aren't coming from that idea of, oh, wow, you can use your phones to Google Maps or your bus ticket or to read the article from the times that you wanted to read. They don't think of phone as that kind of tool. So it might also influence this idea of, of this image of people being glued to their phones all the time, and not so much as the tool that they can be.

Participant 24: I think some of that comes from like egocentric biases as well as you know, where you've got older people who are probably not using their smartphones to the full functionality. They're probably using them for a couple of games and a couple of social media apps. And just assume that everyone else has got a phone in their hands. doing exactly the same thing. They are not using it for Maps. They are not using it to do statistical analysis or, you know, I don't know who will go for that. But, you know,

Participant 23: I don't think that but

Participant 24: It's literally impossible. I am trying to do factor analysis here and I can't imagine doing that on a smartphone.

Researcher: Okay, so those were the main findings from the survey. Based on these findings from the survey and also from some initial user studies that we conducted. We have identified three narratives or scenarios in which we have found the most unhealthy relationship or the less the less healthy relationships to the smartphone, the first one being, phone break, the concept of taking a break on your phone, to mental breaks just to entertain yourself. For example, if you were having an intensive study session the whole day and you want to take a small break, you take a phone break. That's the first scenario the second being fear of missing out but due to physical distance, for example, if you have an international network and you want to stay connected and ensure that the relationships are somewhat somehow the same, or if you're having your family or friends or partners in a different country, and you want to keep it as, fill the gap with the smartphone, and the last one being loneliness, it can be by, if you're eating lunch alone, and you want to feel less lonely during the lunch break, or if you're taking the train or bus alone, or if you're in a social context in which you don't feel comfortable, so you feel lonely, so you just go to the phone. So those are the three key key areas. And based on those we have formulated six concepts, ideas that we want you guys to give us your feedback on.

They are very broad and not detailed. So what we want you to do is first of all, give us your honest opinion about them. Also tell us how you would take this idea and make it your own how it would fit into your everyday life or if it would not fit

at all into your everyday life. And if you have any additional features or aspects of the idea that you think should be developed further. The first idea is ring limiter. So this ring would be a tech gadget or an accessory that you would wear and it would be connected to a device and for example, say that I have had a very long study session and I want a 30 minute break on my phone. And I put this 30 minute break and then the color of the ring change based on the screen time and when I reached 30 minutes, it turns.. it gradually changes to red. And when it hits 30 minute mark, it gets red and it starts blinking until I'm done, leave my phone, but it can also be used in general to your specific screentime related to an app for example, Instagram, or it could also be used in general to your overall screentime if you want to monitor and limit that. What do you think of this idea?

Participant 24: I think it's a great idea. it's very good idea. I mean, like, part of the problem is that we, when we're using phones is the kind of mindless thing that we were talking about before. So having that something objective telling you exactly in the same way screentime does when it comes up and gives you a hours or whatever, but on an ongoing basis, rather than once at the end of every week. You get that data, you just ignore it. If it's there, while you're while you're actually in the midst of using it, I think that'd be a lot more helpful.

Participant 23: Um, I don't know I don't really I don't really use my phone that much when I'm during the normal day. I think I'm probably emphasizing this, like way too much, but I think it's actually really hard for me to almost remember how I use my phone normally because I'm in my apartment for a month. So I have like, a month is a long time to be using your phone in a completely different way. And to remember, I usually do everything, but I don't actually use my phones that much like I respond to messages pretty quickly. So maybe messaging, but messaging is kind of a different type of like, it's not the amount of time that you spend messaging people, usually you can limit or you put your phone away if you're at work or whatever. Um, and I don't I don't know if I would use it personally that much, but I could see it being a helpful thing for other people.. to just in general, to monitor and be able to monitor what you are doing.

Participant 24: I really find that useful actually. I do slip into patterns regularly where I find myself on my phone quite a lot. And I just like, oh i have to kind of take a step back.

Researcher: But we mostly use it in relation to a break. So you're telling yourself Hey, I want this 30 minute break and I don't want to overstep it or lose track of time or would you use it in terms of a certain application or your overall screentime?

Participant 24: I would probably use it as a sort of cumulative thing throughout the day. So it wouldn't be like I'd want times of the day where I can use the phone, but like having allocated amount of time, spending just wasting time. And that would be more for just like social media apps and stuff like that, rather than tools so that you can use tools, your payment methods and all that whenever you wanted to. But

you could still limit the amount of time you're spending using apps like Facebook and things.

Researcher: Okay, and the next idea is Bond touch. It's a bracelet that keeps you connected to your loved ones through touch. So how it works is for example, say that I am an international student here in Denmark and my mother is back home or a friend of mine is back home in in Morocco, for example. And I want to be able to send her a way of me thinking of her so for example, I just Click on this bracelet and then it sends a nudge or vibration to the other person wearing also the bracelet and then it will keep you it will kind of fill the gap of the distance because you have this gesture touch aspect of the bracelet. What do you think of this idea?

Participant 23: Um I think I think it could be a good idea for elderly people maybe to be in contact with people that they .. if there's an emergency like that kind of usage of being in contact when they need it and kind of monitoring your health type of things. But I don't think that's a very positive. I don't think it's I think it's one of those like too connected tools, that we're already very like pretty connected, that I don't think we need another like another tool another especially physical object tools to be connected through

Participant 24: I agree, it kinda.. it has kind of a novelty. It's a nice idea. But it has that kind of novelty sort of vibe to it where it would be something people might use for a month, and then it'll go in the drawer and never be seen again.

Researcher: Yeah. Okay. The next idea is a content digest and to kind of put a frame around it. So you kind of mentioned it earlier, but it is.. right now interfaces and social media, but also a lot of news applications are designed with this infinite loop content. You can scroll forever, you can find 3000 articles about the same subject. And there's a whole spiderweb of information being spread around so you only get the full picture once you spend a specific amount of time on your smartphone. So this content digest would be a way to summarize this content to spend less time scrolling or swiping or clicking through the different content streams. So you get the necessary info. A scenario of this could be, for example, if you use Twitter and Twitter does a very long stream of information. And it's hard sometimes to get an overview of what the information actually is. So to help you filter out and get the necessary information, so it would be kind of a plugin, but it could also work throughout different news streams or through different social media applications as a way to kind of get an overview or get the bigger picture without having to scroll forever.

Participant 24: I think I think it's a really good idea, but it's going to be trite, like developing something like this will be is full of ethical issues that like I've seen, I've been to conferences where a lot of ideas like this have been kind of floated. It's just that notion of tailoring news. Or the 'you're the censor' of what someone else receives is, is problematic. I mean, that's not worse than the problem of getting a continual loop over

Participant 23: I think it's almost kind of like the same idea. It's not a continuous loop. But it is kind of the same kind of filter of what you're seeing without choosing.

Participant 24: Yeah, yeah. And even if you give people access to, to decide the parameters of what gets select doesn't get selected, you still recreate in that kind of bubble effect where they're just seeing the same thing over and over again, then it just continues, you know, I think, yeah, I think that's already a severe issue with social media that needs address so yeah.

Researcher: The next idea, I don't know if you're familiar with the current app limiters on either iOS or Android where you can limit your interaction with certain applications.

Participant 24: I know of them.. maybe..

Participant 23: I do.

Researcher: So basically, right now, you can through different application, either through the build in application or operating system, you can limit your interaction with certain applications. So for example, if you want only to use social media in general for one hour today, you can do that. And then it would pop up a message after your one hour interaction with all social medias and be like, Hey, you, this is an apple (...) update. And in iOS, you can extend it for 15 minutes or ignore for the day. And I think in Android, you can't but at least a lot of people have voiced that they kind of end up snoozing, this app limiter notification because they're doing something and it just is a kind of stoic message telling them hey, you're done for today. And inspired by this but also in the context of loneliness when you're alone in the train, or if you're eating alone, or if you're just in a social context where you feel like you go to your phone to kind of fill the void of not being with other people want us to do our proactive app limiter. So for example, say that you spent your one hour of social media, it will kind of give you ways to do.. entertain yourself, either with a smartphone, or something and your surroundings. For example, instead of using social media, you can go take a zoom call with others, or you can go listen to this podcast or read a book or take a walk or count how many plates are in your surroundings, or how many people wearing red, kind of give you challenges to do to alter your attention and dependency on certain applications for entertainment.

Participant 24: Yeah, I like the idea. I think it's good having that kind of distraction rather than just having a cut off zone. Right. You can't use this anymore. But I feel eventually, once the novelty of doing these challenges is worn off, that people will do exactly that. They'll just don't mute it again. What they were doing before, it doesn't have the same kind of separation as the idea of the ring. Warnings is a degree of separation with the ring that kind of makes it you're more likely to actually pay attention to it than something that is still on the phone, you know?

Participant 23: Yeah, I think I agree. I think it's a good idea. Like, it's a nice idea. And, like, could be useful, but I don't know how long term it would be. I

feel like if you're really looking for long term effects, in my opinion, like long term effects on smartphones, I feel like you're learning about how you can use your time and monitor your own phone, such as an like, as a person, rather than making your app or a phone thing to monitor. I think it's more of a health type of monitoring people would really need to work on rather than, like, Oh, I'm gonna have my phone, tell me not to do that. well, in the end, it's your own decision of do I do actually not want to do this or do I want to do this and so it's more of a self monitoring that would have a bigger impact in my opinion on people's addictive phone usage or other phone usage. But it is a good idea.

Participant 24: Yeah, I'd say particularly if you've got some feedback about usage in, in within society, like how long the average most people who live in your area use their smartphone for. So nobody wants to be at the bottom of that pile, you know. So if they see that they're there, they're running five hours when everyone else is doing three, they are inclined to actually step in and make an effort to change that.

Researcher: Another respondent voiced maybe the idea of integrating it with a to do list. So for example, if you have a to do list of stuff, for example, if you need to clean the kitchen, and you need to pet I don't know, feed the dog and integrate that with a challenge application so that it also becomes stuff that you actually already need to do but maybe you are procrastinating What do you think of this add-on feature to it?

Participant 23: I actually just downloaded a to do list app because it's very, very hard to self motivate when you're in confinement and you don't actually have any like, like things to do at any time. And as time goes on, it's harder and harder to motivate yourself to do really normal things. But, um, I don't know if that would actually help in that kind of app. Like, I think it would help but I feel like once confinement is over, I'm going to probably going to delete that app because I'm fine with writing it in my notes, whatever for things that I actually need to do, whether it's grocery shopping, or or even feeding the dog, but like maybe for some people that would be helpful. I think it depends on how you really interact with the phone, how you..

Participant 24: It's a really subjective thing, I would find that really annoying. If someone was telling me to do things that, if my phone started telling me to do things that I was supposed to be doing, I would find that like really annoying. I would probably throw that out of the window. Yeah, I prefer the idea of the challenges. But like, I mean, that's a very subjective thing some people would prefer.

Participant 23: Yeah, it is very subjective

Researcher: Okay, and the next idea is the alone mode. So it's inspired by, there's a sleep mode on phones right now. And this sleep mode kind of puts you into, do not disturb and calls are silenced and apps interactions are also silenced and this sleep mode kind of promotes this idea of when you go to sleep, you should kind of

shut down your phone or like, take some time for yourself. And so inspired by that we want to do an alone mode. Where here it's it's more symbolic than actually something different. But if you have ideas for how it should be different from the sleep mode, please let us know. But the alone mode is kind of to promote this self aware moment, being by yourself is something you should do. It's something that other people do too. And it's kind of a self love, self awareness moment, where aybe the interaction would be limited to listening to music or listening to podcasts or meditation or more productivity based tasks. Or.. Yeah, so this is diet, the main idea, what do you think of this?

Participant 24: Again, this kind of, I don't know, it's good idea, but it is.. I don't know. Yes. So the first idea, the first thing that came to mind was this, that that sounds very similar to just having a meditation app. But then if you can change what you might be doing during those times to suit yourself, then that's a.. that's a good idea.

Participant 23: Yeah, I think for me, when I heard alone app, I thought, I thought of more of the times when you were talking about people who are, you know, feeling alone, whether, you know, it's an awkward social context or the bus or waiting for a bus by themselves and I think that in a totally different direction, that could be very, very useful. Especially if it's a situation which could be potentially uncomfortable, like waiting for a bus at night, and you need to be on your phone, whether it's looked at anything, because you don't want to look like you're available to be talked to, by, by anyone. And I think that kind of direction of alone mode in a kind of, you know, occupy me type of thing could could be, you know, could could be interesting. Otherwise I yeah, I feel like it's kind of just sounds like the sleep mode or, you know, maybe leave your phone at home if you're going to do an activity.

Participant 24: Yeah, I think there are already lots of kind of apps that do each of those things individually. Whenever an app that will do that, or feature on a phone that would do that, do all of that collectively, and you could customize it to yourself would be more useful for people. I don't know, myself using any of those apps, they go out the window after a week because one thing we never have is enough time. I start timetabling things that are just for myself, like exercise meditation, they just go out the window because I don't have time to fit them in when I've allotted them. And then it's not that you know, you've already missed that day, by the time you do start again tomorrow, you give up

Participant 23: Yeah.

Researcher: Okay. Um, the last idea is, um, so we didn't find a very perfect name for it, but right now it's speech based social network and how it works is so say that I have a lunch break today and my coworkers can't join me for once and I have a lunch break between 1130 and 12. And I'm, I don't want to be alone. I want to feel less lonely. So I talk into this app. And I'm like, I'm actually interested about hearing 'What do people eat for breakfast outside of Denmark?' This is a topic I've

been thinking about lately. Then I type it in and it becomes a box. And so either your friends or any stranger in the world would be able to see this. And if you have a break in that same time span, this would be a topic of conversation that you talk for 30 minutes or less if that that's the, what you have marked down. That is one dimension of this application. Another dimension could be so say that you had the long day and you just really need to talk off, maybe let off some steam. Or maybe you just want to talk about your day something nice happened. Then you have an AI based chat bot, and then it asks you some questions and then let you talk through it.

What do you think of these ideas?

Participant 24: I don't know. Again, it's kind of.. it has just as an air of novelty about it. I don't know how long lasting something like that would be. It's like something of you might enjoy using a few times. Then, just going back to having lunch as you did before.

Participant 23: Yeah, I don't know how I feel like there are other things that kind of do that, like talking about any topic, isn't that kind of what like Reddit is? I mean, I'm not very familiar with Reddit, but I think that's kind of the idea that you like write something.

Researcher: It is definitely inspired by Quora and Reddit and in general this idea of like, but I think here the the main keyword is speech based. So it's something is just more like, when you have a lunch break, it's more like a face to face. You talk with someone leaves when you? Yeah. So here, the idea is to have this conversation, not the text based aspect of it.

Participant 23: I think the text based aspect of a lot of these things like Reddit kind of gives you a security. Personally, I'm not sure if I'd be like, oh I'm on my lunch break. I'm going to talk to a random person about, you know, about. I don't know what topic like maybe, but it kind of goes quickly into maybe a creepy like, chat, chat call type thing that you're not really sure like I would, I would want to take a chance that I might fall on someone who's going to be weird during my 30 minute lunch break where you just want to Relax.. I don't know. I don't know, maybe like, maybe but..

Participant 24: yeah. And if you if you if you have like it was just a system based I mean, that's just what Siri does.

Participant 23: Yeah, yeah. and then you just talk to Siri. I don't know, I don't think it's a very, very I don't think it would be long lasting either unfortunately. And like, I think that overall from the from this survey and the talk I mean like on one hand you have the addiction to phones, social media and the tools and then a lot of apps trying to limit between the two. Like, I mean, at the end it kind of can become more and more app, you know that you have that's like, more space and more time that you're supposed to dedicate your energy to, you have to like write in. I mean even to do lists you have to write in your to do list on your phone. Do them like

Yeah.

Researcher: But I think maybe just to clarify, because I feel like you keep talking about a third party app, it can also be something integrated into the operating system, at least as we envision it. So it doesn't have to be an app, it doesn't have to be a separate thing. We're also taking into context, it could be something already plugged into the system or part of the system. So it doesn't have to be something you download and have to maintain. But something that's just there if you want to deal with it, for example,

Participant 23: That makes sense. Sorry.

Researcher: No, no. Just because the last tree.. I felt like you thought it would be a separate app, but it doesn't need to be a separate app.

Participant 23: Okay. Okay.

Participant 24: Yeah, I don't know. I can see problems of how it might work. Like, and you have the issue where you don't want to talk to someone you've never spoken to. A lot of people are just not gonna want to talk someone they've never met before. And if you want to say this was built into the iOS on this smartphone. It's going to have to be someone you know who's been to Denmark. How are they gonna tell you that information? like that's private information that someone might not want you to know. If you were looking for someone you already know, for instance, to fill that social gap, and then you can replace that person with Siri anyway by just saying, hey, Siri, what people in Denmark eat for breakfast? And she'll tell you. So, yeah, I don't know how useful

Participant 23: but I mean, it could be something that you could you know, instead of being like question it could be I feel like there are apps that kind of do this but could be like one of those things where you can connect with people who are having lunch at the same time and who'd be like, Oh, sure, someone can join us for lunch. As a, you know, who's free for lunch now? And everyone you know, kind of like a dating app like everyone who's like around you answers yes or no. And that's a very different direction, but it would be a solution to the problem as well.

Participant 24: I love that. If you're having lunch and someone says to you, can I join you for lunch and you don't want to talk to you?

Participant 23: Yeah, yeah, that would be really awkward, but like if it was like an app that that said, you know, one person free for lunch and people could see it like, oh, there's one person for lunch if they wanted, they were like, Oh, sure there's three of us someone else can join that we don't know. And they could say come here or not. quite rejective, no one answers.

Researcher: Okay, to round off a bit he conversation, I want you to reflect on what you think is unhealthy about your General, smartphone usage and your relationship to your smartphone usage. Or in the case of **Participant 23** , if you don't remember you can just talk about right now ,what do you think is the most

unhealthy aspect of it? Maybe you can start?

Participant 24: Me?

Researcher: No, I thought **Participant 23** .. but I'm sorry..

Participant 23: um, I think in general, I probably like spend too much time in the mornings and evenings on social media, because I think that's kind of when you're like, Oh, I want to disconnect and then you like, look at your phone when you're disconnecting. I think that's probably the worst habit, whether it's now or at any other time. Um, it's worse now because like, like, I don't actually talk to anyone. It makes that like, the need for feeling connected all the time, even worse. So it's kind of more understandable now than it is generally, but I say that, yeah.

Researcher: Do you think any of the solutions that we just or the concept we just talked about would help you with this? Or do you have an idea for something that would help you, um, have a healthier relationship with this problem?

Participant 23: Yeah, I think I think it could, like maybe something's like the time limiting or something. Or maybe it's like, if you like, could block an app off after a certain time. Maybe that would help. But I think maybe it helps but I still, I still believe that the real problem would be some kind of, you know, like, General sociological awareness and talking about it and education about using this tool slash, social media game thing that is your phone, you will have, like it hasn't really been addressed in the kind of society type of issue that know how to interact with because it's so new, like apps are so new and even. Yeah, we're talking like 10 years of it being used not.. and five years of the way it's been now so people don't get it. I feel like that people just can't we haven't learned how to have a normal or like a good relationship with our phone. I don't know, if having the app change that will help more than, like, really, you know, learning.

Researcher: Would it work to have it more as an integrated part of the interface so that not like an app but more of like, so you say I only want to spend 30 minutes in the morning and 30 minutes in the evening. On my social media.

Participant 23: Yeah, maybe like maybe that would work. Like I said, I think that that could be, that could be a good solution. But I think a long term solution would be like, just general education and awareness about how to use your phone, because in the end, like, in the end, you can put your timer on. And if you don't like it, then just take your timer off, you know?

Researcher: Mm hmm. And would the challenge application work in this context of giving you other alternatives to use your time differently, or would you just ignore it?

Participant 23: Well, I think it depends, like confinement is really pretty depressing. So if you're like sitting in your bed, because you don't want to get up and looking at social media, whether you have like another thing to do, like, it's not, I mean, you know, it's like one of those social contexts of you kind of like need

interaction. That's why you're on social media.

And that's like a sociological issue of needing interaction and how phones create this possibility for interaction with social media. I think that's a different issue than just..that can just be regulated by an app unfortunately.

Researcher: What about you, **Participant 24** ? What do you think is unhealthy about your current or general relationships to your smartphone?

Participant 24: Don't think I'm too bad, probably periodically use social media too much. Normally for a distraction. If I'm trying to learn something really complicated. It's an awful habit, just going on there every four or five minutes but generally, anytime I get quite bad, I kind of notice it, you know, just make an effort to stop it, stop doing it. Just put my phone somewhere. Tend to leave my phone in my jacket pocket when I'm working and just turn it off.

Researcher: Would any of the solutions that we just mentioned or something else well, you just mentioned that you put your phone in the.. put it away..

Participant 24: I tend to prefer basic practical measures rather than more apps, because I try. I tried using a couple of different apps things before, but just like you just end up with more things to do. And more reasons to be looking at your phone. I actually end up end up looking at my phone more often, rather than less often, because I'm tending to the app, you know so yeah, I find practical measures, like just leave my phone in my pocket or something like that is is a better solution.

Researcher: So you wouldn't use any of the solutions that we just discussed?

Participant 24: I might use the ring actually the ring, I kind of like the idea of the ring. If you do have to tend to it's just there doing its thing and it gave you some information at the end of the day that you could look and count those hours and stuff like that. I might find something like that useful.

Researcher: Okay, cool. Um, that was it for the questions. Thank you so much for joining us. If you're interested in hearing more about the project, please let me know so I can keep you up to date. And if you have any additional comments or other ideas that pop up throughout the next days or the next week, please let us know so we can take them also into account. And yeah, thank you so much for joining us. It's very helpful.

B.3.7 Participants 2, 25, 26 and 27

Researcher:

Okay. Hello. Nice to meet y'all. Welcome to this session. First of all, thank you for taking the time to join us to talk about your smartphone usage and your relationship to smartphone. She will be mainly taking notes. But yeah, you can see her. We're both at a Technical University of Denmark. What do you want to get out of this to get an insight into students use off and relationship to the smartphone. And what we hope to do is obtain an understanding as to how we can foster healthier relationship to improve our smartphones. Your answers will remain anonymous and will not be shared with external partners. But for the sake of transcribing, we would like to record this into you. Do you give us permission for that? Sure. Okay, perfect. First of all, before we start, I want to just refer to this as a focus group into what I'm interested in is seeing you for guys talk to each other. I'll just navigate the conversation and give you questions to lead the discussion, but the you are supposed to talk to each other. And we will go with first name basis just for the sake of keeping them the personalities anonymous. I'm also please keep a respectful tone when talking to each other. There are no wrong answers. but rather different points of view. And please feel free to share your point of view, even if it differs from what others have said. Keep in mind that we're just as interested in negative comment, comments as positive comments. And actually, the negative comments are more than welcome, because that will help us improve our concept ideas when we show them later. Okay, let's begin. Maybe just to icebreaker a little bit. Can we go around and say, what my name is and what you study and yeah, maybe where you are in the world. **Participant 25:** , you can start

Participant 25: Alright. Okay, so my name is **Participant 25** . I'm studying in Germany. I'm currently doing my master in Computer Engineering. Yes, software communications more specifically. Yeah, that's it.

Participant 26: Okay, I can continue. Yeah, I'm **Participant 26** and I study in Denmark, transportation systems. And I was the previous semester in Germany at the Technical University of Munich in an exchange and I am a master in negative feedback and negative comments, so you're welcome.

Participant 4: Should I go

Participant 27: Yeah, go.

Participant 4: Alright, so I'm **Participant 4** , I am a Bulgarian who studies and lives in Copenhagen, Denmark. I currently. I currently am doing my master's degree in software design specializing in software development. I have just my thesis left and basically that's what I'm doing right now. Yeah, also working part time. That's me, unless we have some more specific questions.

Participant 26: Do you like cats?

Participant 4: Kinda. Can you, can you not tell?

Researcher: Last one first.

Participant 27: So hey, my name is **Participant 27** . I'm also coming from Bulgaria. I study and work in Germany. I'm during my bachelor right now at software as a software engineer. I'm also working part time as a student. And yeah, that's basically all.

Researcher: Just to kind of open up pretty easily. What did you think of the survey that you formulated, all of you completed the survey, I imagine?

Participant 25: it's too long. So actually, I actually thought that it's way too long for a survey because usually if people want participants to take a survey seriously, usually, in my opinion, at least it should be not as long as this one was because in the beginning, you're concentrated, you're answering the questions truthfully, but when it's like 25-30 minutes later, and then you're thinking, when is this going to end?

Researcher: okay, but I meant it more in the sense of like, did it make you reflect on your smartphone behavior a little bit when you did this because even though the questionnaire was long, it was angled or asked in a sense that it would make you think about how you use your smartphone and what your relationship is. Um, can you please discuss this?

Participant 4: Maybe I can start if you want. I mean, it did. It did have some pretty nice questions. But what I found out is that a lot of them are actually repetitive. Like, I don't know if that was intended or not. Maybe Maybe it was just to see whether we would show the same behavior but as **Participant 25** mentioned, at some point, if it's like too long or something you might have lost interest in it, and that might have affected it but in general, I think the questions were pretty nice defined. They did make you think about what you use your phone for and why. In my opinion,

yep. I agree with that statement. Actually. They do really actually, after I did the survey, I was just thinking that I'm not using my phone too much.

Participant 27: Actually, I realized the same thing that I'm barely using my phone.

Participant 25: Yeah.

Participant 27: Yeah, most of the time just to check in with friends make a couple of make a couple of calls, play a few games. And that's it. Not like a lot of people that are not leaving their phones. You can see like their phone is attached to the hand. You cannot take it off.

Participant 25: Yeah.

Participant 26: I think that the survey was quite well done. Yeah, maybe it was too long. In particular, I think in the third section when there were like, I think thirty question or something like this one where there was strongly agree or strongly disagree. I think that maybe I don't know how you base that survey. I think that you

want to like to make cluster or something like this one. But yeah, maybe you just should reduce the question because it was maybe too long. And in this way, maybe you can, you can have many people that they can start the survey, but they don't finish it. So you have a lot of missed data in this way. And second I installed because I have an Android system, the app creen time. And like every day you have like in the percentage if it's up based on the previous day, or if it's down. So every day, I just check and I hope that it's more down than the previous day.

Researcher: Thanks, but so you didn't have the app before the screentime app?

Participant 26: No, I just installed it because you recommended in the survey, actually, you it was kind of mandatory, because if you don't install the app, you don't know, you can not provide the data: how long your phone.

Researcher: Okay, um,

Participant 4: I have a question actually for the two guys living in Germany. This is because almost nobody that I know there uses the smartphones so much. But as far as I know, you don't really get any data in Germany. Like you if you want to have decent amount of mobile data, you actually have to pay like a lot a lot while in Denmark for like, you just pay like the lowest price and you get like 100 gigabytes of mobile data. Don't you guys think that if you had the data that you would get here, for example, you would have used your phone more?

Participant 25: No, actually, ah, for example. Sorry.

Participant 27: Can I answer to this one because I have a little bit more knowledge about this. Yes. Well, you're completely right about this. In Germany, buying a mobile data is a lot. It's not that cheap. Like you said in Denmark. For example, for two three gigabytes. It depends on the company, you have to pay like 12 or 13 euros per month.

Participant 4: And for this money here you get 100.

Participant 27: Yeah, or the other case around this, you need to have a contract there, you're like you have almost unlimited internet connection. So you can use your phone like 20 gigabytes or 50 gigabytes. You cannot use it in the whole of the month, but this will cost you like 50 euros or something like that. And most of them is when you buy a new phone, you get a contract, and this is the cheapest way to do it. Otherwise, if you just go to the shop, get a contract, you'll pay almost the same money but you'll get nothing.

Participant 25: But actually, just to mention regarding **Participant 4** 's question for me personally, even if I had more than the data I have now which is actually three gigabytes per month because I get a package, which is like eight euros per month. And I can talk indefinitely with people and I have three gigabyte volume of data which I can use. I never actually use it for the whole month. So even if I had more, it'll be the same, it'll be the same outcome.

Participant 27: And please be anonymous then don't say other people's name.

Participant 25: No, we're on a first name basis. So if I say **Participant 4** , it's fine.

Participant 4: I think they record the video so, so you can see, not the video.

Researcher: Anyways, when we transcribe, we're not gonna write your names, we're just going to give you initial or random names, so don't worry. Okay, so, um, we are complying with GDPR requirements. So we don't actually know what each of you have answered, but we're going to talk about the general trends. And we want you to kind of reflect on it. So the first one is around 50% of people. No, more than 60% of people say they use their smartphones to relax. And a lot of expression that are used in terms of smartphones is Oh, I'm just going to go chill. I'm just going to go kill time. There's this brain dead entertainment notion of using your smartphone? What do you think of this statement?

Participant 26: I think that it makes sense because when someone uses a smartphone in most of the time is just like also in a relaxing position, maybe you're in your bed, or maybe you are on your sofa. So it's just also maybe where you are in that moment that give you the impression that is just like relaxing.

Participant 27: I would say more about killing the time because actually, I use a lot of my phone when I'm traveling. You need two, almost two hours in a direction to go to work and then I'm using my smartphone at most otherwise, when I'm home, I'm just going to check the hour if I don't have a clock next to me or I'm just going to call somebody else. So I will not say more for relaxing rather for killing time.

Participant 4: Yeah, that sounds that.. I also agree with what **Participant 27** just said mostly, I mean, I personally never use my phone to Relax. I mostly use it to when I need it for something either for like directions or something when traveling. Or maybe maybe if I want to get connected with somebody or when I'm expecting something like an email or something for work or for the university. But yeah, for me using my phone is never related with relaxation or whatsoever

Participant 25: actually I share the same opinions since I mostly use my phone to check if there's something from work and to answer if there's if somebody has some questions for me, and I'm not currently on my laptop or desktop. Especially I've noticed that since the quarantine started my phone usage is even less than it was before Of course because Before I would mostly use it when I'm on my way to work or to the uni.

Researcher: So you use it less right now?

Participant 25: Yeah, a lot less. Literally less than probably 15 minutes per day. Okay, unless I'm calling someone, but otherwise, it's less than 15 minutes per day for browsing or anything actually.

Researcher: So the next finding we found is that most of people when we say

smartphone immediately correlate it with social media. So would you associate smartphone to social media, and actually around more than 50% use social media as their most preferred smartphone application category. So if there's contact applications, news applications, it's mainly social media that is the most used, what do you think of this statement, and also maybe reflect on what kind of smartphone application is the most used for you. **Participant 25** , maybe you can start as you were the last one

Participant 25: Okay, so actually, it's, for me personally, I do use it for social media. But as I mentioned in my previous answer, I would, let's say when I'm at home now during the quarantine, I would not use it for that because I rather I'd much rather use my desktop to check my Facebook or WhatsApp or anything else, not my phone. But if I'm traveling somewhere that that's what I would mostly use it for. So I think it's pretty that's pretty straight for that for me specifically. Yeah, that's what I would use it when I'm using my phone, social media. That's how I associated it with.

Participant 27: with this one I'm hundred percent going to agree with **Participant 25** , because With social media if I'm at home I will never use my phone I will just check everything on my laptop because on my laptop I have more opportunities to do more things if I want to share something it's going to be quicker and like I said with a lot of options rather than my phone and yeah, I am also not using my phone really that much I'm staying almost all day at home. I'm just using it to contact my family to contact my friends, to write a couple of messages, a couple emails but that's it. I'm using it a little bit more for calling because alright, everybody is under quarantine and yeah, you need to hear how you have family How is your family doing? Are everybody okay? That's it. otherwise for socialize? Yeah, okay. To check up some news but not not that much. Really.

Participant 26: Yeah, I think that it's just because a lot of the apps that you use on mobile, all the social media apps are apps that you don't use as much often on your laptop, because maybe for every one of us, we have the idea that the laptop is like a tool that you should use more to work. And maybe you can use the phone just to get in contact with your friends. And also because a lot of people they prefer to chat with many contacts instead of make one call. It's like a kind of way to optimize time. This way, I can just talk with many people instead of make one call about an hour. So yeah.

Participant 27: With this, I would agree that I do kind of, I do kind of like, think of my phone as... I mean, when I think about my phone The first thing that I think is social media. And it's mostly because I do use my phone to be connected with people. And technically, that's what social media is, it's just a platform that allows people to share stuff. So I would even like going from what **Participant 25** and **Participant 27** said, I can say that, for me personally, I hardly ever open any social media on my laptop or computer whatsoever. I only use my phone for that. Unless I have to have like, like some some longer serious conversation where I would

have to type a lot because I'm not really a fan of typing on my phone. That's the only reason I would prefer opening social media on my computer than on my phone.

Researcher: Can I just ask a general question. At least, yeah, Reddit, do you think it's a social media or not?

Participant 25: 100% social media

Researcher: Okay, just to clarify because I think.. so you don't use.. Do you use Reddit? at all?

Participant 25: A lot.

Participant 4: A lot.

Researcher: A lot. Okay, yeah, figured out.

Then, do you use it on your laptop?

Participant 27: Barely.

Participant 4: Shame on you.

Participant 25: Actually, I do use it on my laptop. But now that you mentioned it, I am thinking how every time I'm going to work, I'm actually browsing Reddit. So yeah, yeah, but if I'm at home, I would use it on my laptop. Yeah.

Researcher: So you, except for **Participant 26** , the rest will be more prone to use your laptop to browse through that content stream rather than use smartphone. just to make it, to clarify,

Participant 27: yes.

Participant 4: I use my smartphone.

Researcher: You use your smartphone, but would you prefer doing it on you.. because **Participant 25** and **Participant 27** ..pretty..

Participant 4: No.

Researcher: Yeah. Okay, so you prefer a smartphone to browse through the..

Participant 4: To browse. Like he says, Hey, if you talk about like Reddit or Twitter or Facebook whatsoever, I would prefer to use my smartphone.

And **Participant 26** , are you agreeing with this too?

Participant 26: Yeah, yeah.

Researcher: Okay, cool. Um, so why do you prefer using your laptop to browse through the content **Participant 25** and **Participant 27** ? Because, technically, right now, at least the updates for the social media applications are more up to date, sometimes on the smartphone, and sometimes the whole interface is more

Participant 26: user friendly.

Researcher: Yeah, it's different but it's also.. like it's worked around differently for the smartphone to make it a little bit more user friendly. So how come you prefer it on the laptop?

Participant 25: So for me personally, I mean, even if it's more appealing to use them on your phone, I can I can have multiple tabs open on my, on my laptop so I can be in Facebook, Whatsapp and read Reddit at the same time. And it's a lot quicker for me to go through these tabs if I'm using them. And it's a lot quicker for me to also go through, let's say the Reddit topics or whatever they are. I mean, that's one reason.

Researcher: And why is it quicker? Is it because the interface is bigger?

Participant 25: Yeah, the interface is bigger. I guess it's also more appealing for me to use them on my laptop to check to check these.. to check Reddit for example on my laptop. It's basically if I would have the choice to do either on my phone or my laptop, I would always choose my laptop.

Researcher: And it's because the interface is bigger on your laptop.

Participant 25: Yeah, yeah, that's that's one big reason for it. Yeah.

Researcher: Okay. So for you, it's not very important the whole on the go element of the smartphone you prefer just having a bigger interface so that you can browse information better.

Participant 25: I mean, smartphones are still important. As I said, if I'm not at home then I don't have other choice. So that's only if I have a choice. Yeah.

Researcher: But the smartphone is definitely an alternative to the laptop for you.

Participant 25: It's an alternative. Yeah.

Researcher: Okay, what about you **Participant 27** ?

Participant 27: Yeah, well for me it's more or less the same like **Participant 25** said I would also prefer on my laptop because I can do I can be in a couple of websites at the same time. So if I have a group and I want to share some information with people I if I have multiple tabs, I can just copy paste and it will be hundred times more easier rather than with the phone. And yeah, for me, it's really easier to be on the laptop. And also I as a secondary option, of course, when I'm outside I can use my phone, like I said, to check an email because when I'm outside I'd prefer to - how should I say it? - to enjoy the weather outside or to be with my friends not to look at my phone.

Participant 25: Actually, to build up on that also typing is a lot easier as well. If you use social media on your laptop, you're a lot faster in writing so and you're wasting less time. I mean, actually, maybe that's not the case for all people. I guess there's some people that are typing quite very fast on their phones. But I'm mostly fat, fingering most of the keyboards letters, so..

Researcher: Okay. So, another finding that we found is that over 60% of people say that they have, they worry about a self image and that you feel sometimes uncomfortable and have strong emotions such as anxiety and stress, sometimes due to.. feeling less productive when when using social media, but then at the same time, As we said before, it's also the category that's the most used, and also is the one where people feel the most prone and need to be up to date. Why do you think that people have this duality of at the same time, they use it a lot and they feel the need to be up to date with social media. But then at the same time, um, they feel strong emotions, such as anxiety, stress, or sometimes feeling very worried about the self image or uncomfortable. And also maybe sometimes feelings like oh, annoyed, hard to tolerate?

Participant 27: Wow

Participant 4: Can I just say that I didn't quite get that.

Participant 25: Yeah, me too actually.

Participant 4: To clarify. You're saying that people want to stay updated, therefore, they use their phones a lot, but then at the same time, they worry that other people would criticize them for using the phone. Is that?

Researcher: No, it's not that... So imagine, I use my smartphone a lot. This is an example by the way, I use my smartphone a lot. And I feel the need to be always up to date, I always need to check my social media. I always use social media but also feel the need to up being up to date to my social media every hour, for example. But then at the same time, I worry a lot about my self image, how I'm portrayed in social media, and also feel uncomfortable sometimes with social media. And I get annoyed and like some social media apps I can have a hard time tolerating and I feel unproductive when I am on social media. Why do you think that a lot of people have this situation? over 60% as I said feel the situation but then at the same time, still keep on going to social media when they don't have these? There's more a negative connotation to it, at least and the way they feel about it.

Participant 25: ... I guess...

Participant 27: You want to continue or should I?

Participant 25: No, no, no. You can go

Participant 27: Well I guess as much as they're browsing in social media or doing whatever, they're happy. But at the same time, they're realizing how hooked up, are they to the social media that they're like, just say, like, social media junkie or something like that. And I guess after they realize, so what are they doing, how they're wasting their time? It's basically not nothing that much important. They just cannot stop. And I guess this is why people get depressed because they're happy doing it. But after realizing more they're doing it. They're getting depressed because they see okay, they have.. today I have lost for example, like five hours. I'm up to all of the data. Okay, everything what is happening right now I know it, I'm happy.

But at the same time, you realize, Oh, my God, I wasted like five hours of my life. Where is my day going? What am I doing?

Participant 25: I don't think that has anything to do with the self image of a person actually. And I mean, in my opinion, at least, I don't quite agree on that statement.

Participant 27: Okay go.

Participant 25: I mean, in most cases, I assume. So let's say people who are browsing constantly through their social media, and let's say they have a lot of friends, which are currently traveling there. They're traveling there. And for example, going around in the Philippines, the USA wherever. And they see themselves, for example, studying still in the university or something like that, and they want to be doing the same thing. And that's depressing them in a way. So I guess, but they still continue to browse Of course, even though they see that some people are at that very moment, for example, living their lives better than them.

Participant 26: I think that sometimes we just like to browse on social media because like, the major part of the day, we feel lonely. So for that reason, we want to do it and Because our emotion is that we feel lonely we we start like to use a lot of social media and forget about what's our job that day and about all the psychological effect that you could get to using a lot of social media. I think it's more it's more something psychological because there are many studies or many research that for example, if you use a lot to your form before to go to bed, you can suffer of insomnia and all that other stuff. So I think that sometimes it can be like a preset, or like **Participant 25** said that you can be just like jealous about the experience over that someone else is living, but it's also true that maybe, I don't know it cannot. It cannot have a good effect to be all the day looking at the display over the phone, for your eyes and also for your mind.

Participant 4: , any roundind off?

Participant 4: Yes. So to kind of follow up on what everybody said, first of all, I personally don't have that problem. Even if even if I do end up browsing a lot, at some point.. I never really post anything. So in any way that's like me, even even when you browse you don't post so there's nothing to worry about nothing about your self image or whatsoever because like there's nothing to show basically nothing to tell.

However, like **Participant 25** and **Participant 26** just said that like people seeing other people traveling and stuff, maybe maybe that's maybe that's part of what makes people anxious and worried about their image. Because if you are a person that truly wants to be active and wants to share stuff all the time and have like cool posts and likes and stuff and like you, you do something and then you don't maybe you don't feel as appreciated as the guy who is in the US posting pictures from the Statue of Liberty or something,

Participant 26: but also mostly in the social media, I think that everyone will also show the best part of ourselves. So we just show our success in the social media like if we if we graduate, if we travel, if you are with a group of friends and so I think that is a kind of feeling that it could be quite common many people that use social media that can be jealous for just like some achievement or whatever people like if they graduate like if they travel, yeah, all this kind of stuff.

Participant 4: Yeah, but don't you think that a lot of people actually lie about... you can, for example, go on vacation and it could be raining, basically, the whole week? And that one sunny day you have you're gonna make pictures and you're gonna post them one at a time. Like, I'm sure a lot of people are doing it.

Participant 26: Yeah, yeah, but that's true but of course, you don't want to show your rainy day you want to show just your success on the social media. So maybe you don't want to share that you failed one exam, you want to share that you graduate at the end. So it's the same for the travel. Yeah. And for many things, we just want to show our success in the social media, not our failures.

Participant 25: Yeah, I mean, what I observed, actually was from knowing some people which were, which were obsessed with social media, basically, that means checking it every time. When they wake up in the morning, the whole during the whole day. Like every, literally every 20 minutes. And that's what usually they complain about that they're not doing enough and something like that. For me personally, that's not the case. As I'm not browsing social media. It's almost not as much at least, or not at all, even some days. But I understand that some people could feel like that when looking at themselves and what other people other people are accomplishing. And also, I might disagree with **Participant 27:** 's points. I still think it's somewhat relevant because if somebody spends like five hours a day, browsing through their social media, they would in the end feel non productive. And maybe that also could make them depressed, that they're not doing anything to fix their life, for example. Something in that manner.

Researcher: So you agree with him?

Participant 25: I mean, I don't quite agree with him, but I kind of understand his point. Like, it could be a reason let's say.

Researcher: Okay. The last finding that we're going to talk about is um, so the university students or like the student population that have answered this survey find smartphone activities addictive. 60% have agreed with this. Oh, and however, 70% of these don't believe they're addicted to their smartphone. Where do you think the line is drawn? Where 60% think that they have addictive smartphone activities but they are not addicted to their smartphones

Participant 4: Can something not be addictive without you being addicted?

Like what what would be a good example here like I mean a lot of people the only the only thing I'm, I personally am addicted to when it comes to the phone is the

comfort that it brings whenever I'm outside. Basically I don't get to think of when my train is going to be here or like which street to go to or where to go to eat or whatsoever. Or like what time does the shop close also, it just brings a comfort that I would say, personally I might be I let's say that I'm addicted to or is addictive. But it's not like I can't live without it that..our generation wasn't born with smartphones. So we know what it's like to have to remember stuff. I know a lot of people don't know that, but ..

Researcher: You are making us sound sound very old.

Participant 25: Yeah.

Participant 4: It was a long time ago.

Participant 27: Come on.

Participant 4: So yeah, like this, this this would be this would be my explanation about it. Like, it's a comfort that is addictive. Like it's it's nice. I don't need to I don't need to think of like, I don't need to think of Hey, well, what time should I What time did I have to go to the station or something? I could, I can just pull out my phone and check. But I mean, I wouldn't say that I'm addicted. If I If I can't do it or if I decide to stop doing it, then I'm not going to do it like.

Researcher: Can I challenge that a little bit? If you're addicted to smoking, why are you not addicted to a cigarette?

Participant 4: I think this is two different things.

Participant 27: Definitely

Participant 4: So, smoking is addictive, but I'm not addicted.

Researcher: Smoking is an activity that you can do with a cigarette.

Participant 4: Yeah, but the thing is that you say that smartphones are addictive not that people are addicted to them, which are two different things. Being addictive is something that might cause addiction. And then being addicted means that you are already like..

Researcher: So, then being addicted is a state before addiction?

Participant 4: It's more like a property of a non connectivity in my opinion. Butt I mean, that's, that's me.

Researcher: Okay. Someone else wants to say something.

Participant 26: maybe?

Participant 26: Why me every time?

Researcher: Because..

Participant 4: You have to break the ice after my denial.

Participant 26: Yeah, I think. Did you say that the smartphone are addicted

and was it not addicted? The question?

Researcher: smartphone activities are addictive but you don't think you're addicted to the smartphone.

Participant 26: I don't know what I can answer about it. I'll jut pause for the moment to give me time to think.

Researcher: Okay, what about **Participant 25:** or **Participant 27:** ?

Participant 25: Well, now when I think about it is you asked us whether how would one actually distinguish the border between being addicted to a phone and not being addicted to a phone right, that was part of the question. Yeah. So, I mean, usually, probably 99- 95% of the people when they go out to the moment like they would first see that their phone is with them, right? But that doesn't mean that they're addicted to them even though they will always bring it when they're going outside. So, I guess the addictive one would be when, let's say when when you wake up in the morning and that's the first thing you're thinking about is to check your smartphone and see and keep yourself up to date with social media for example. Now, that sounds a bit addictive. That's it. That's at least where I would draw that line.

Participant 27: Well, in my opinion, I cannot draw a line because every person it's for himself. I mean, for me being one hour on social social media in the phone for me, this is going to be addictive for example, but for some other person if it says like After seven hours still on his phone, he said, No, no, no, I'm not addicted. Because for him, this is not an addiction for being so long on his phone, this is why drawing a line of being addicted or not, it depends on your personal mind.

Researcher: Do you think we as an individual can decide whether we were addicted or not?

Participant 27: Yes. Yeah.

Participant 25: No !

Researcher: Do you think a smoker can.. knows that they're addicted to smoking?

Participant 27: Yeah, because I'm a smoker, and I smoke. And I know that I'm addicted.

Participant 25: I mean, but that's you.

Participant 27: It depends. Yeah, but it depends on the person for example, you can be a smoker, you can be addicted to cigarettes, but there are people which are overriding, which are smoking like two packs a day. It means every five minutes they have a cigarette in their mouth. There are smokers, they're addicted, but for them, smoking like two packs a day. It's something normal for me smoking up to 10-12 cigarettes per day, it's normal, but I'm still addicted. So drawing the line for for me, it's something different.

Participant 25: So you think it depends on the person?

Participant 27: Yeah. For me, it depends on the person.

Researcher: The person can can identify themselves whether they are addicted or not?

Participant 27: Yeah.

Researcher: So as long as you know that you're addicted, you know?

Participant 25: But there's so many examples in the world that that's not the case. There are so many people that would not that would not say that they are addicted to something like for example, drugs, alcohol. There are... There are a lot of examples in which people actually think that that's completely normal when when it's not, that's not something up for them themselves to decide.

Participant 27: Yeah, My point exactly how can you draw the line?

Participant 26: I think that you can draw the line just when maybe you don't use that tool that can be for cigarettes, or like drugs for some days, and you show that you're independent in.. These things, just..

Participant 25: Actually, that makes sense. I agree with that. If you can, if you can, let's say keep yourself away from from these so called addictions for some period of time, then that maybe proves that you are actually capable of living your life without them.

Participant 4: But then how much is the timeframe that you have to stay away from it in order to prove it?

Participant 27: Yeah, where where can you draw the line?

Participant 4: Maybe..

Your idea..

Participant 25: I'll write some set of truths now in the internet and share with you the Google document and have it.

Participant 27: I think your opinion with **Participant 26** is either you're addicted or you're not. Either you smoke or you're not either you drink or not.

Participant 26: Because I think that okay, for example, I did. Okay, I just make an example. I was brought in Estonia in Tallin, and it was like a project in wild and we didn't use the

Researcher: Did we lose you?

Participant 4: Yeah you have to again.

Participant 26: Did you say no?

Researcher: We didn't hear you the last.

Participant 26: Can you listen me now?

Researcher: Yeah, we can hear you.

Participant 26: Okay, I hope that ..

Researcher: We can hear you know but we didn't hear what you just said.

Participant 26: okay, okay, I just like. two years ago in Estonia.

Participant 27: So far, so good.

Participant 26: Okay, I did a project in Estonia just like go and we didn't use the phone at all, because it was like a project in the wild. And I think that I just used the phone 20 minutes in two weeks. So just proving that I didn't use the phone at all in two weeks. It means that I'm not addicted to the phone. It means that like when I am in a different environment or when I am in a differential situation, I can also try to avoid the use of the phone that It means that I am not addicted, maybe if I smoke cigarette in that kind of situation, I continue to smoke cigarettes because it's something that I'm addicted. So it depends just like if in a moment of our life that can be in our comfort zone or not. We just give the proof that we don't do these kind of things. It can be one week, it can be two weeks, it can be one month. It's hard to establish the time. But in that situation for 2 weeks I didn't use the phone. In that case, it means that I'm not addicted.

Participant 27: Wait, How did you? How did you feel during this time when you're not using your phone? You feel good or bad.

Participant 26: I feel good, but it's also linked with something that I said before. Most of the time we use our phone, at least for social media when we feel lonely in that situation. I was like with a group of other 25 people every day, every minute every single hour. So I think that I never feel lonely in that situation. Because every time we're in contact

Participant 27: Okay, did you miss your phone during those 20 days?

Participant 26: Yeah, not at all. because I got my phone with me it was like in my bag, I just didn't use it at all. But it was not that they. That they took them at the beginning of the project, okay, give us the phone you can not use at all for two weeks. We were free to use it.

Researcher: Okay, just to maybe to round off this conversation.

Why do we talk about addiction in regards to smartphone when right now, in a society, you can Apple Pay, you have your bus ticket on your phone. You can Google Maps itinerary, you have your work emails, you have social media, you have the camera, everything is in the smartphone. Why do we talk about addiction and being hooked on the smartphone when it could be called a necessity to be a citizen of society to have this technological device and stay connected on the go? What do you think of thi?

Participant 27: It depends on the usage of your phone. It depends for what you're using your phone, if you stick out to those apps that you need during your day, to show your ticket in the bus to check your traveling destination to check your working email, then you're not hooked up. Those are basic things that you need to do. Those are things that are helping you like playing games for three, two hours a day or just browsing somewhere. pointless. Then that's another topic.

Participant 4: Okay, this is I think this is basically what I tried to say. Like, I mean, we can we can go without it. Anybody can go without it. But why would you go without your phone if you can have it and as you said, like, stuff like mobile paying or like having your bus ticket on your phone, like the phone is basically a small device, a pocket computer that allows you to not only to stay connected, but it has certain social benefits. That Yeah, like you can you can actually say that in some countries, if you don't really have a phone, if you don't have all the other mobile features, then you can't actually be a part of the society..

Participant 25: I don't have a concrete opinion on this matter to be honest.

Participant 4: Don't you have something on your phone like mobile banking? Where's your bus ticket? Where is?

Participant 25: I don't have mobile banking, but..

Researcher: do you really only use your phone to check Reddit on the way and the train to go to work?

Participant 25: Yeah, I mean, and for course. No, I mean, for course as well. And also, I mean, generally, I would check my For example, I will check messenger and WhatsApp also when I'm not at home. But that's what I would use my phone for. or checking up if somebody from work, wrote me an email or something like that. But yeah, that's what I would use it for

Researcher: but would you be able to go through your day without having your phone? So say that from tomorrow on you would, okay, imagine that the situation was different and you would go to work every day and school or whatever you do. And you would not have your phone so you only have your laptop. Would you be able to function the same or normally?

Participant 25: For sure, but it would feel weird. It would feel weird when I'm out. But I definitely think. I mean it would feel weird that I don't have my phone with me and everyone currently in. In the in the modern world is basically hooked to their phone in a way that they know that if anything happens you can call somebody That's the first thing you're looking for when you're going out. And people are dependable on their phones, but that doesn't mean that they're addictive to them. They're addicted to the phones. So.

Researcher: Okay, **Participant 26** , any comments?

Participant 26: Yeah, I think that you would use your your phone less in this

example because if you can use just your laptop, for sure. It's like all the operation that you do every day, you're not going to do with your laptop. Like I'm not going to check maybe my bank accounts often I'm not going to check like if the train is on time I'm not going to check if the bus is on time. I'm maybe I'm not going to use my phone to make the check-in for a flight and all the rest of the stuff. So for sure, I will try to instead of like do this operation many time because maybe every one of us check if the trains on time, three, four times in 15 minutes to check because Maybe if we if you can take your brain just for 60 seconds you want to check quite often if the train is on time or not. So be you you will do less operation and based also on this activity that quite often you do just like a take your phone from your pocket, it's also something that help to be addicted to your phone because it becomes like a normal reflex for yourself. Just take the phone from your pocket and look at it for everything.

Researcher: Okay, so based on these, this survey and based on some initial user studies, we have defined three case scenarios of where the the smartphone becomes an unhealthy aspect of your everyday life and the first one being phone break. So when you take a break on your phone, so you take a mental break you entertain yourself this.. what we talked about a little bit in the beginning so the phone break, the second being fear of missing out due to physical distance. So for example, say that you're an international student to keep in touch with your friends and family back home. But it could also be when you have a very international network and you feel you want to filll the physical distance. So you keep in touch or stay in touch with your friends more, or you stick to your smartphone more. And the last one being loneliness. And that's due to, or it's in the context of when you're alone in to train or if you're eating alone, or if you're in a situation with people where you feel not part of the group so you feel lonely, so you end up using your smartphone. Did anyone follow me so far? Or did you understand it?

Participant 27: You lost me at the second one.

Participant 4: , you are making a weird face.

Participant 4: I mean I was too busy looking at the screen at the same time, like what are we, what are we supposed, what are we looking at?

Researcher: I'm thinking I'm gonna get into there but right now there's three categories phone break, fear of missing out due to physical distance, and the third one being Loneliness. And within these categories we've made six concept ideas that we're going to run through. And we want to hear your feedback on them. And we are presenting to you very broad ideas. So you tell us how you think it would work into your everyday life, if you're thinking this is a bad idea, and then it would not work at all. And yeah, just your general thoughts and what you would add or remove from the idea. So the first one is the ring limiter. So what this is, is an accessory or tech gadget that you have that is connected to your device, how it would work, for example, is say that I have a long day of study sessions and I want a 30 minute

break on my phone just to kind of relax or whatever or just to kill like I don't know to relax, and I put a timer for 30 minutes and I connect it to my phone and then I go through and then the color gradually changes until it hits 30 and then when it has hit 30 minutes, the ring is red and it blinks until you stop using your phone. It can also be working and related to for example, especially fixed social media application. For example, if yoou don't want to use Reddit too much. You can say, hey, if I've used in more than one hour I wanted to start blinking. Or if you want to do it in general to your overall screen time, what do you think of this idea?

Participant 27: A good one.

Participant 25: It's okay. But I would not prefer it, I don't know. So, the idea is basically that somebody who is addicted should get the ring so that they can stop and fight their addiction. Is that the goal of the ring limiter?

Researcher: No, it's to foster healthier relationship so that you spend less time because right now the way that the smartphone activities applications are made, it's s this infinite loop of information so you get you lose track of time and you kind of keep scrolling, keep browsing content information, for example, Reddit, you just you can browse forever, YouTube, you can see the next video forever. So this is kind of to remind you and make you aware of the fact 'hey, you're spending enough time' to kind of hold yourself accountable. It doesn't need to be for someone that's addicted because I don't think or at least that's what we talked about it. Someone can have, have an addictive behavior in relation to certain things, but not be addicted to it. So it doesn't necessarily need to be someone that's addicted.

Participant 25: I mean, I don't know if it helped that much unless it has electroshock or something like that. Because you can always browse through the next story of Reddit and even if it's blinking, correct, you can just hide it or ignore the color. I mean, that's, that's how I see it at least.

Participant 27: And that's coming from Germany.

Participant 4: But you know, if you are using the ring, it means that you actually want to change so having the ring means that okay, I assume that if you do have the ring, then you're not ignore, like

Participant 25: Actually, yeah, that makes sense what **Participant 4:** is saying.Yeah, I agree with that point.

Participant 4: If I'd want to ignore it or don't want to limit my time then I'm not gonna get the ring in first place right?I personally think that this is a good idea. But then, yeah, social medias are made to be infinite infinite like most of them. The only one that I know is actually the one that I prefer is Twitter that doesn't have that infinite loop.

Participant 25: How so?

Researcher: How? yeah.

Participant 25: How so when you can always go to the next tweet or go to the one..

Participant 4: This is the thing I have my phone. Okay you can it. There it is. Nice, phone edition now. Okay, so I have my phone if I log in right now. It will show me like he will. If I go to Twitter right now. It will fetch the newest tweets and it will tell me like There are new tweets and by clicking the home button it will take you to the top like basically to to the newest tweet. But if I keep on scrolling down, I will eventually end up on the tweets that I saw last. Like it doesn't change it's not an infinite loop they all follow up and they.. there's text, always the same. I don't know if that makes any sense.

Researcher: No, it doesn't. Why, why is it super calm? Okay, **Participant 26:** . Do you have any last comments before we move on to the next idea?

Participant 26: No, I agree with them. It's based on our awareness if we want to just like to check ourselves, if not there are people that are not going to wear it.

Researcher: Okay, next idea.

So, this is a bracelet that it's in the category of fear of missing out physical distance with your loved ones. It could be family, partner, friends. You call it. So it's a bracelet that you share with this person. And so for example, say that I am an international student in Denmark and I want to keep in touch with my best friend or my mother back in Morocco, and she also has a bracelet and every time I think of her before I go to sleep, I just want to kind of send her a little nudge or so then when I click on the bracelet, then she will receive a vibration or nudge. What do you think of this idea?

Participant 25: I mean, it's cool.

Participant 4: How is it gonna keep you away from your phone? Like

Researcher: It's a bracelet instead of the smartphone?

Participant 4: Well, why would you rather give a vibration to your mother's hand instead of saying hi or something?

Participant 25: I mean, it's just better if you write her right? Because as **Participant 4** just said why just Give her like change of color or vibration or whatever. Just think this instead of having communication.

Participant 27: No, no, actually, this with the bracelet. I think it's a good idea because most of the people when they call somebody after just they're keeping it on their phones. I mean, they're checking something after that.

Participant 4: So, here's, here's the way I think this is gonna work. Let's say that I want to focus. And when I when I do want to focus, I keep my phone away. But let's say that I'm focusing right now and I have a bracelet that starts vibrating. What am I going to do? I'm gonna look at my phone and see who it is right? I think that this is gonna work the opposite way like this is actually gonna encourage people

to use their phones more.

Participant 25: Yeah, that makes sense.

Participant 26: I agree.

Participant 27: I agree.

Participant 4: Yeah, it's like the smartwatches or the smart..

Researcher: Do you have anything to add **Participant 26** ?

Participant 26: No, no, but just a question Where do you take inspiration for this bracelet?

Researcher: It's a 9gag video.

Researcher: This is actually a real thing

Researcher: It's a real bracelet that people can buy.

Participant 27: oh my god!

Participant 25: oh my god! Oh, can I buy it from Amazon?

Participant 27: don't google it right now come on

Participant 4: I mean there are like smart wrist watches or whatsoever right but they are actually made to yeah to stay even more connected with your phone then

Researcher: I think this one is made for like lovers.

Participant 25: Smartwatch is the perfect sync I'm using when I'm driving

Participant 4: The ones for lovers look a little bit different.

Participant 27: That's another topic.

Researcher: Right, next idea. This one is kind of dead.

Okay, so, okay, in the framing of this infinite loop of content. We have this idea of content digest. So this is mainly inspired by the fact that right now if you go through social media and news articles, you can swipe forever, you can scroll forever, you can click article to Article just to get a whole overview of the spider web of information. And so this content digest would be like a plug in, or a separate app, you tell us what you prefer, where you kind of put it in either application or different news streams that you take into and it'll help you filter out the content. So that you spend less time scrolling or less time looking for information but the content gets summarized for you so you get the necessary info. What do you think of this idea? here it's about Twitter. But.. is it **Participant 4** 's twitter?

Participant 4: Just look at the left screen picture and you will know.

Researcher: There's a lot of Liverpool stuff so I figured out it was you.

Participant 25: I think that's the that's actually genuinely something that would

help. Actually, I think Instagram has something like that at the moment. Because when you.. that, it just tells you that you have already covered all of the news stories or something like that.

Researcher: Yeah.

Participant 25: And this is something that's definitely going to help more than a vibrating bracelet. Yeah.

Participant 26: Yeah. Yeah, I think that's a that's a nice idea. It's a it's like a robust idea to highlight to the content that you're interested in

Researcher: And..because right now the idea is that you filter out so for example, if you say you want to know everything that's happening with Liverpool FC right now. Then you just kind of filter that out information out in your different streams that you use, like Twitter or Facebook and you just get it all together. So do you have the highlights from all the applications in use? Or would you use it mainly for one application at a time?

Participant 4: Well, I was actually gonna bring that up that this idea is cool and this is gonna help but it's gonna help you mainly browse like one social media, but who does that most of the people are all around social medias. So hitting this message for a lot of people would mean Okay, I'm done with Twitter, let's go to Facebook or..

Participant 25: But I thought the idea is for all the I mean not specifically for Twitter, isn't it for all these applications like Twitter, Instagram, Reddit and stuff like that?

Researcher: Exactly. It's supposed to be for all of them.

Participant 25: Yeah

Participant 4: So you basically want to design a new platform that combines like stuff from all the social medias?

Researcher: It could be a new platform, but it could also be a plug in to the current platforms.

Participant 26: I think that it can work because most of the time at the beginning, we are not ready for the changing but after like one month we are getting used.

Participant 25: Yeah, that's true.

Participant 26: Yeah.

Participant 25: I agree to that.

Participant 26: So I think just like after one month, we will get used to do it and it will be fine. Maybe we'll, if we just try to conduct an experiment so you can see that after one month the time on the phone is reducing.

Researcher: next idea.

Participant 25: but how would actually...Okay, nevermind.

Researcher: No, ask.

Participant 25: No, how would you actually filter them out? I mean, how would you know what I'm interested in specifically, like if there are one, let's say in **Participant 4** 's case, there are 1000 topics for Liverpool out there. How do you know which are the most important for him to to see?

Participant 4: It's the people that I follow, basically.

Researcher: Yeah. It will be a machine learning algorithm. So it understand from your current preferences, like what do you follow but also, you specify the filter so that you can find the most accurate information. And maybe it could also learn from getting feedback from you saying, Hey, this is not what I wanted or something like that.

Participant 25: Ah, okay!

Participant 4: This actually can be further inspired. And this can be an idea. This could be further inspired by a new thing that they introduced to Twitter. So instead of following random people and thinking of, hey, which account I should follow or unfollow, now, you can just follow trends. So I can I can, for example, just follow the trend, Liverpool, and oh, maybe you can do that in Instagram as well. I'm not sure. But it would, it would just show me like the most the most tweeted or like the hottest topics in the past, I don't know, let's say 12 hours or whatsoever. So combining with let's say that I followed certain trends, you can actually combine them from all the apps and filter just the most commented or the most viewed . So this could work.

Researcher: Okay. And the next idea is a challenge application. So this is in the context of, first of all, like when people are in the train alone, or if they are eating lunch alone. They usually go to the smartphone as a way to cope with this lonely moment they have. And this challenge application would be could either work as an app where you go in and find ways to entertain yourself when you're alone. But it could also be related to I don't know if you know, there is opportunity to limit your app interaction with certain apps on Android and iOS, an app limiter, I don't know - do anyone know it? No. Okay. Anyways, long story short, you choose the app that you want to limit for example, say that you only want to spend 30 minutes with Reddit and then it would let you spend 30 minutes and when 30 minutes has happened, then it comes up a pop up being like you've spent 30 minutes. And on iOS, you can extend it for 15 minutes or ignore it for the day. But usually you, you have to.. you can't use this app anymore. And here just this would work more as a proactive app limiter. So it will tell you hey, what you can do instead. For example, it could give you ideas to use your time on different apps. So you're not dependent on one app to entertain you, for example,' oh, you can zoom call. You can listen to

a podcast. You can read this book', something like that. But it could also be stuff like going outside for a walk or listen to some music or something like that. What do you think of this idea?

Participant 25: I like the idea of doing karaoke in the middle of a train and everyone listens to me. That would be cool.

Participant 27: You want to get kicked out of the train.

Researcher: Any other comments?

Participant 4: Yeah, it would be cool to do karaoke while you're eating. But how? How is? How is the pushing? How is the idea of pushing me towards another app gonna keep me away from my phone?

Researcher: I think because the overall idea is not to make you stop using your phone, it's to foster a healthier relationship. The problem right now with phones at least as we see it as a dependency on some apps to entertain you or to keep you calm or to kill time, right? But if we spread out this dependency, so it's not you're not dependent on what app but you just go through this. It'll give you an alternative as to how to spend your time better. This is the idea behind this.

Participant 4: But you talk about addiction to smartphones and how..

Participant 25: No, but actually,

Participant 4: I'm on the smartphone. And this, same as the vibrating bracelet in my opinion. It's not going to limit my time but just give me new ideas of what to do with my smartphone.

Participant 25: But Previously, we had a topic about what was the depression and stuff like that that could happen to people, when they overuse social media, right? Maybe this app itself would not help from limiting your time from the phone but would rather help you to, would rather pay help people like that to not be as depressed because they would have to constantly change not not let's say be stuck Facebook looking loop or on Instagram looking loop So they would rather change the applications and that could improve their mentality.

Participant 4: Yeah, from this point of view, it does make sense.

Participant 26: Yeah, I'm agree what, what they say. But I don't know if the challenge application can be can be a good idea. I think that the previous one, the idea of just like allied to the content. Yes, it's better.

Researcher: Participant 27 , any last remarks?

Participant 27: No, I agree with the guys.

Researcher: Cool, next idea. So this is inspired by the current sleep mode that is on phones. So instead of a sleep mode, we want to promote the idea of a alone mode and it's more symbolic in the sense of; so the sleep mode right now it's like Do not disturbm, calls are silence and notifications don't appear, and the alone would be

a moment for you to kind of take time for yourself. And be self aware of it but also proactively taking time for yourself to kind of promote that symbolic 'I'm now taking time for myself', either to be productive, either to kind of have a meditation moment, listen to music, listen to a podcast, so kinda it's more to promote a different mode so not only sleep mode, so when you sleep you don't use your phone. But when you're alone, you also want to be by yourself or be productive or take a self-love moment. What do you think of this idea?

Participant 25: If it was called forever alone mode mode, I would buy it. I would give you money for it. No Joking aside. So that would actually limit like you would not be able to access any apps.

Researcher: It could work like that. Yeah.

Participant 25: So it's like airplane mode in a way because Instagram, Facebook, all of these are connected to the internet, messenger WhatsApp,

Researcher: It's similar to airplane mode but it's more symbolic in the sense of you actually go in and say, Hey, I'm alone, but maybe you can still get calls for example.

Participant 25: Yeah, okay.

Researcher: Or you could mark down emergency stuff that you need to get in, for example.

Participant 25: I mean, I don't..

Participant 4: I would..

Participant 26: you just say that in this mode, I can make things that they don't provide me the opportunity to interact with other people. So I can just like listen music or a a podcast or make something that cannot help me to interact with the world outside or with other people. This is what you want to say.

Researcher: Yeah. So you are by yourself, so it promotes you to take your time by yourself. And of course, you can listen.. like you not actually on your phone, you're not supposed to be actually connected to the phone. You're not online.

Participant 27: In this case, what is the difference between going into this mode and just switching your phone off?

Participant 25: Now I should mention, I think it's because of the calls like it's, it's like airplane mode with extensions.

Participant 27: Okay.

Participant 25: But but actually similar to the airplane mode. I don't think people would actually use that to be honest.

Participant 26: Like, yeah, but maybe it can be also based on the name because you call airplane mode. You just think that you can use it in a flight or maybe only

when you sleep because a lot of people use that kind of mode when you sleep so maybe if you call a mode like Alone mode and you try to and yeah, you draw to show that is for that kind of okay, yeah is for this kind of activity just when you want to be productive or when you want to just like to relax yourself in the.. I don't know, some people they can start to use it also if it's quite similar to the flight mode

Participant 25: but is it like configurable for ..so would the user is able to configure what they want to filter out from this mode?

Researcher: Yeah, that's an that's an option.

Participant 25: Okay, then then it can be quite helpful. Yeah. But again, for that to happen. The person must know how or how much they are or they are not addicted to their phone when they use it right because if I am using let's say a lot of hours browsing social media but I feel like it's and I can still think that everything is fine and I will never enable it for example. So it's for it would be used only by people who in a way know and so they know that they're addicted and that's why they use it. so that filters like most of the people. At least, that's how I see it.

Participant 4: I have an idea about that. And this is actually something that I would use and that I would, I actually would like to have on my phone. So let's say that I do have that DND mode or forever alone or test mode, alone mode or however you call it. I would like to have a mode like this that would switch my phone off like switch my notifications and stuff. But first of all, yes allows me to filter like Let's say I want to filter my work email because of.. I don't know maybe I'm expecting an important email or something. But at the same time, I want to I want to be able to, let's say, let's say that somebody messages me, and I'm in DND mode. Well, I would I would just send an automatic reply saying that I'm focusing. So like, sorry, sorry that I can't answer right now. But I'm focusing, I would like that person to have the option to actually activate my phone. Like, let's say that they will, they will, they will be given an option to reply and actually trigger my notification if it's something important, because this is basically what happens like, I sit in a focus, let's, let's work. I sit and focus. I always put my phone to the side. But then whenever during the day, I'm expecting somebody to message me or something. I'm expecting basically something important, then I can't really push my phone aside and any notification that I get makes me actually pick up my phone and look at it. And that does waste time. And that makes me, throws me out of focus again. So this will actually be good if people could trigger your notifications only for something important.

Researcher: Okay, thank you. next idea. last idea. Um, it's a speech based social network. We don't have a better word for it, but I'll explain what it is. So, imagine that you're having lunch alone today because your friends or your co workers don't have time. So you have a lunch break from 11.30 to 12. And today, you feel like hey, I'm kind of interested in hearing what people eat for breakfast outside of Denmark and you don't really want to spend your time during lunch just scrolling through and being alone, so you speak, speak this out to your phone. And then it

kind of pops up as a question and then people either as your friends or strangers can see this question and be like, Hey, I also have a break, a lunch break in that time let's let's meet up or like let's talk. And you could have a phone conversation with them or FaceTime or video call is what it's called? Yeah. and talk to them. That is one dimension of it. Another dimension of it is for example, at the end of your, your day, or during your lunch break, you just feel the need to talk let off some steam or talk about your day or rant. Then you have an AI based chat bot that allows you to kind of let off your steam or ask you the right question and then you just talk talk talk. What do you think of these ideas?

Participant 26: Kind of Siri?

Participant 25: Yeah.

Participant 26: But the, in with the this idea, you should use your phone less.

Participant 25: Definitely not.

Participant 26: Yeah. I just didn't get, at least which is the which is the goal of this idea

Researcher: So the idea here is to have a healthier relationship with your phone so instead of just scrolling through information endlessly without actually proactively taking in something then you get this to talk with someone through the phone but you're not actively looking in the phone you're just talking with someone through the phone. So that device is you're using the device to communicate with someone but not just to consume endlessly brain dead entertainment or content.

Participant 26: Okay, so kind of what we're doing right now.

Researcher: You can say that.

Participant 27: Then, I find it it's a good idea.

Participant 25: I, it's for me, it's a this is essentially another social network application just like Facebook or as you say like it will remove the scrolling. Yeah, that's true. You will not have to throw a scroll through the stories or through the Reddit topics or anything but It can still be, it can a lot of people can still ask for stuff, which is irrelevant. Just like what Facebook information gives your or what like a lot of Reddit topics would give you like they would, they would still be, they could still be talking about memes, for example, or something of the sort.

Researcher: But it's supposed to work a little bit like a speech based Reddit or Quora

Participant 25: So it's like another social network application?

Researcher: To some extent but it's more like to make you instead of just endlessly scrolling, you just say say to yourself, hey, I have a 30 minute break and this is what I'm gonna discuss this topic instead of just scrolling for information that you're not interested in maybe,

Participant 26: I think that the idea is good because at least it reduce the eye contact that you have with the former. Yeah, if you want if your goal is to reduce the eye contact or like to scroll in social media I think yeah that you can fit it can work the The only thing is that it's more useful the solution with like other people, you just like.. just with a topic and you start to discuss, I think that after a while people get bored to discuss with an AI system that that of course also have some boundaries and some leads. So after after a while it will start to repeat the same stuff

Researcher: okay, cool um so to round offthe conversation, I'm going to ask you what do you think is unhealthy about your current smartphone behavior if you have anything unhealthy about your smartphone behavior. And if you could choose one of these applications, which one do you think would be the most appropriate for your current problem? Or if you have an idea for yourself like a personal idea that you think would be the most appropriate. Maybe, **Participant 27** , you can start.

Participant 27: Well, I don't know if I'm the perfect guy for this answer to this question. All of all, I don't have a Twitter account. I also don't have an Instagram account. So I'm not that much hooked up to social media. I guess I'm the person that who doesn't like to tap a lot prefer to communicate more to talk with people. This is why I'm going to stop on the last suggestion with the last application with the speaking because I would like to prefer to talk to people rather than keep scrolling and to keep searching.

Researcher: But you don't think anything else with your smartphone in general is unhealthy?

Participant 27: Well, no because..

Researcher: yeah?

Participant 27: yeah, because I'm barely using my phone. I'm using it only for the basic stuff for the things that I need. Not for going through social media or something like that very, very often.

Researcher: So, the solution that you think is the most appropriate is the last one for you.

Participant 27: Yeah, yes.

Researcher: Okay, **Participant 4** ?

Participant 4: For me, I think the biggest.. I wouldn't say that my relationship is unhealthy with my phone, maybe maybe it's good to like reduce my time a little bit. And yeah the solution that I like and that I would pick is I don't remember which number was it but the one with the DND mode or..

Researcher: Forever alone?

Participant 4: Sorry?

Researcher: Forever alone mode?

Participant 25: Forever alone mode!

Participant 4: Yeah the forever alone mode, in a way that I would like to I would like to have something that would allow me to filter important notifications through like all other notifications.. I would like to have something that allow me to say okay, today I'm expecting this person to call and like Maybe an email from somebody and unless the notification is from these two people then don't even bother vibrating or ringing whatsoever. This is this is what I would like. So I would go with the, the forever alone mode.

Researcher: What about you **Participant 25** ?

Participant 25: I'm actually quite happy with my phone usage at the moment because I barely use it. Like, for example, even yesterday, my phone was turned off because there was no.. there was no battery remaining. So I just saw it today in the morning. And that's like, more than 12 hours, which I haven't even considered using my phone. But I do think that some tendencies can be limited like when I'm going to work if in the cases I'm not browsing Reddit I've seen myself, at least before to either read some lectures from the uni, or just increasing my knowledge in some topic. Software Development related or anything of the sorts, so I would actually use I would definitely use the application which shows you the most interesting topics for you, like the one that was shown with the Twitter. I think it was the second one. I'm not sure which number it was.

Participant 26: It was the third one.

Participant 25: Yeah. So I will choose that one. So that even if I'm browsing Reddit, it comes to an end and then I can do something useful afterwards.

Participant 26: Yeah, I think the same of **Participant 25** . I think that should be of option because it just allied the main trend, main topic. And it's what I think most of the people need, it's just like to change their behavior and use their phone less. Maybe they are not too much stronger to do it for themselves. But if it's something that you try to impose to them, they they will get used to it. For sure. I think that is the best idea. And the worst is the idea of the vibration

I would.. If I actually had them, I would put them on both my hands just to see how.. I would ping myself.

Researcher: Okay, thank you so much for participating in the interview. It was really helpful to get your feedback. If you're interested in hearing more about the project. And if you have any additional comments or ideas that pop up throughout the next days, please also let us know because we want any feedback that you have. And thank you so much for taking Friday afternoon, evening ish early evening off for us. Yeah. Thank you.

B.4 Fourth Iteration: Group Interviews 2 - Final Prototype Solution

B.4.1 Participants 28 and 29

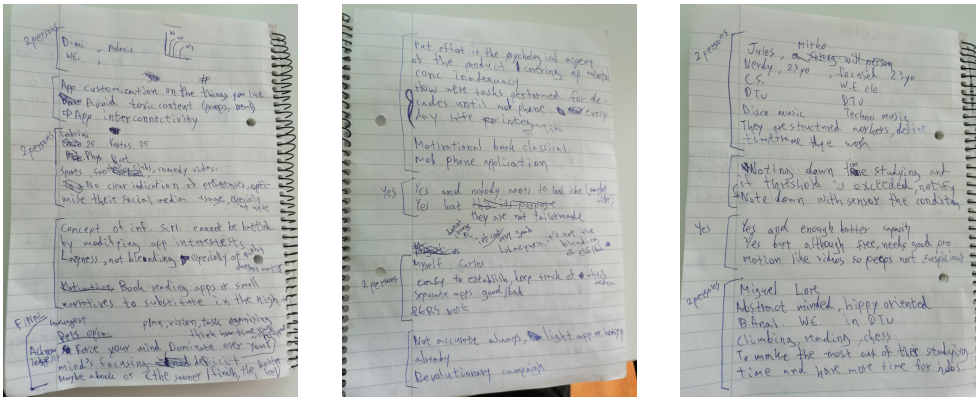
Ring limiter **Researcher:** : Describe 1 person who will not use this idea and why?

Participant 29: : Gender is male. He studies computer science at DTU. He will not use it, because he is confident of what he has to do. So he doesn't need such a bracelet, because he feels that he can also control himself.

Participant 28: : I think that it will be a male, who is nerdy. He will not use it because he is a structured worker that define clearly the timeframe that he needs to perform certain tasks. And he is also stubborn in a way that if he finds a problem, he is not gonna spend time not looking at the problem, but he gonna go into the problem and try to solve it.

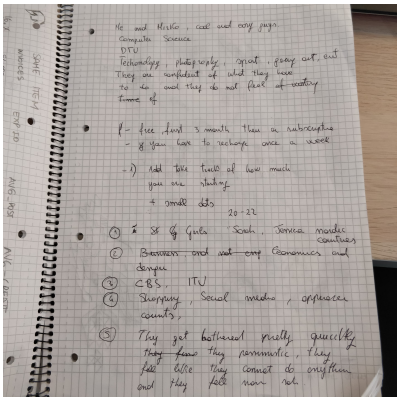
Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 28: : Since it is difficult for this person to procrastinate. It could be nice if it was nothing down the time that they are studying, for example, and certain thresholds are exceeded. Like they're saying some studies are saying that you can study for 45 minutes and take a five-minute break. And the second bullet point is because it's an extra feature maybe that a sensor in the thing that is measuring some faults or something else are the time you're spending focused and studying and they can identify whether or not your performance is going down. So you should like to take a break.



(a) Part 1 (b) Part 2 (c) Part 3

Figure B.62: Participant 28 Notes



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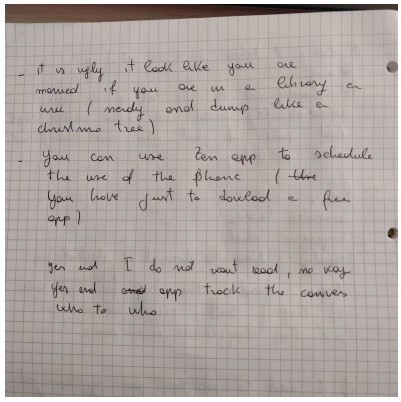

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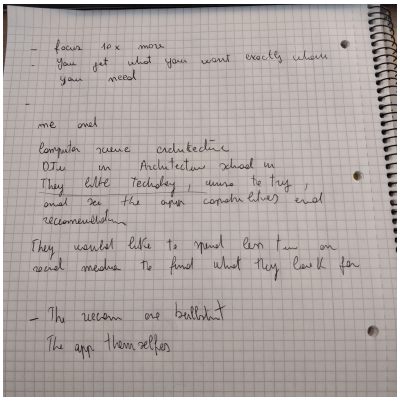

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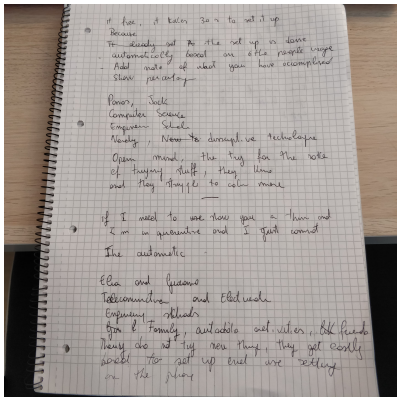


(d) Part 4

Figure B.63: Participant 29 Notes

Participant 29: : That it is free and it has to be charged once a week.

Researcher: : Describe 1 person who will definitely use it

Participant 28: : So I wouldn't mention my two flatmates. Yeah. Ah, they're both males. They're both around 25 to 27 years old. And I would say that they are minded that their mind might escape the brain easily and travel around so it's difficult for them to be concentrated in tasks. Why I believe they would use it is because they would like to make the most out of their studying time and not procrastinate too much extending the amount of time that they need to perform their tasks. And therefore, they can have more free time for their hobbies.

Participant 29: : Girls, 20-22 years old. Studying design. They both like shopping for social media. Appearance counts. They definitely use it because they

get bored pretty quickly of studying.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest instead?

Participant 29: : also maybe a little bit nerdy and down, because you're like a Christmas tree if you're using in a public place.

Participant 28: : The device might put us in much more pressure when using it. inside the brain inside the mind that some changes need to happen.

Challenge Application + Alone mode **Researcher:** : Describe 1 person who will not use this idea and why?

Participant 29: : They don't feel they need something to control them. they are not in line to try something new.

Participant 28: : it's the content is pretty much similar to the ring before. I would imagine somebody who doesn't want t o be controlled. And I have personally I've tried something similar in the past, like an app that counts the time that I'm spending in my phone. , but it was irritating when the app was saying to you know that you cannot use it anymore. It was like a judge above your head.

Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 28: : the strength is that is very easy to establish and try. you can also keep track very well of which applications you're using. Extra feature - the mobile phone should be classified in terms of use and like trust so you can have an idea of how quality was the time that you took the break, to spend time on your phone.

Participant 29: : It should be free, has to recognize what they automatically have If I'm spending time reading or if I'm spending faulty quality time, another feature would be like, what you can add a note to the beginning of the day. What you have to accomplish? What are your thoughts today? And then when you actually accomplish a task you, Yeah, of course, you can say I'm done or not done. And then you see a percentage on the say the screensaver on your phone.

Researcher: : Describe 1 person who will definitely use it

Participant 29: : I would say related to computer science. So whether it's engineering schools and their interests are a little bit nerdy. Why would they use it is because they are really open-minded and they really try; they really like to try things just for the sake of trying them. Because they know that they struggle with their concentration. They want to change and this is why they like to try the technology. But can help them to be more efficient, more productive.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest

instead?

Participant 28: : I would say the weaknesses of this app could be the accuracy. I was not really certain about the results of the app that I was personally using in the past.

Participant 29: : The weakness could be that if I use Facebook for work, the app would not recognize it as a work activity.

Content digest **Researcher:** : Describe 1 person who will not use this idea and why?

Participant 28: : I would put myself inside. And a friend of mine. Why would we not use it because we have already outside personalized these applications like Facebook and Instagram, let's say two big examples to reflect what we really are into like the news or the politic views or memes or aesthetic pictures, photographers, instead of doing the regular counting of other people's lives. That is the trend in social media. And we already have filtered what this application has done, let's say until a certain degree and in our phones so than being finished content, which I really liked as an expression.

Participant 29: : Okay, Docomo and Ilya. Okay, they're 24 years old. They are in the engineering field one study telecommunication the other one electrical engineering, they interest is like they like to stay with family they like staying with friends. They like outdoor activities. they would not use it because they really dislike trying new things.

Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 28: : ah major strength is the up customization on the things that you're really interested into with a practical formulation through the use of the hashtags, for example, and the second strength Is there some pressure can be put on the campaign for avoiding toxic content that you find a lot in the apps in the in terms of toxic people. it's a modification for one application or related to the other application. So you can say, you don't need to go into each individual application and modify or configure what you're really into..

Participant 29: : I really have no clue because the app itself i think it's really complicated so readily did this thing, but you can tailor what you want and say, then the app will recognize these topics or whatever. I think it's already a mess.

Researcher: : Describe 1 person who will definitely use it

Participant 29: : He'll do the x thing with friends, do outdoor activities kind of things.

Participant 28: : They are both into sports, a bit of football, football clubs, committee videos. And they're using their social media and their mobile phone like too much. And also during the night like more content, infinite scrolling into

unnecessary and random stuff, and I believe that they would meet to optimize their social media phone users through a useful content that you can produce by using this application the intense digest articles in order to eliminate content digest, in order to eliminate all the time and spend during the night scrolling through stuff that they are not really into it and it makes them feel neutral.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest instead?

Participant 29: : the worst weakness of this product is that the recommendation it gives you a recommendation in terms of what you have to watch and what you don't have to watch. They are like awful meaning but you feel like it gives you a teaser but the feature is not working that much.

Participant 28: : I will repeat myself with the concept of the infinite content and the infinite scrolling. In my opinion, this is super difficult to be battled and by modifying the application interests that you have inside is not gonna change too much our mobile phone behavior. It's when you pick up your mobile phone, you might not even feel the need to pick it up. But you're doing it out of laziness, laziness. So it's not as if it is good content that you're scrolling through, or if it is a random content that you're scrolling through that you're really caring about, you just feel like you're avoiding your tasks or avoiding going back to sleep.

Researcher: : Which one of these 3 projects, which one would you go forward with and why? If not, then why again?

Participant 28: : As you understood from my answers, I have a kind of different approach to the whole subject. I would not choose any of the three projects. And this was an outcome over the plan of evasion of structured tasks that I had the tasks that they were exciting me and now I will say, fulfilling one after the other one. So I think that what could help in this case, it's not maybe a product but it's like the mind states that we should force our minds to be concentrated and be focused. I would say that these three projects are a more and not radical, but a more direct and like a patch up of the whole problem. But the whole problem is deep inside our minds and in my opinion, we should start working from there.

Participant 29: : meaning the coolest project would be the last one, I think is the more useful one. But on the other hand, it is impossible to implement. So I believe the second one though, is it's definitely easier to develop. And people definitely can. They are used to the smartphone. They're used to install apps, they're used to this kind of approach. So probably there is a market there. But I think that is definitely different from the existing solution. There is nothing out there at least that I know that there's something like this. First, second is the fact that it can actually help you by not using the smartphone at all. Almost I would say, because you have this ring and you don't have to check the smartphone to see the time or to see what So you then that gets distracted, right? And notice physically. The thing when it's physical,

you can touch it and you can lock in this kind of thing. and also in one of the points that are probably the easiest one to implement. I'm not an electrical engineer, but I mean three lights with thumbs up I think it's not that difficult.

Participant 29: : A person who is willing to buy a ring watch to change his behavior.

B.4.2 Participants 4 and 16

Researcher: [random conversations]

Good afternoon or is it the afternoon? Yes, it is. Thanks for taking the time to join to talk with us. Okay. You've both been with us in the last group interview. So I'm not going to go too much in detail about what the subject is because you know what the subject is. I'm just gonna say that your answers again will remain anonymous, and we're recording this interview for the sake of transcription. Are you okay, **Participant 16** ?

Participant 16: Yeah, I'm just trying to find something good to put on.

Researcher: Okay.

Participant 16: I'm listening. I'm listening.

Researcher: Okay, but so what we are gonna do right now.. So a little bit about the structure. We're going to show you a video and then you will receive some questions after it; another video, questions; another video and questions. So three videos in total so you'll be seeing three concepts that you have, to some degree, already met in the previous group interview. And finally you have one last question.

[random conversations]

Anyways, so first of all I just...before we start the video, I want you to remember when we're having a discussion to always think of.. like reflect about what the other person is saying. So what you can add or what can you challenge in the other's opinion. And yeah, enjoy the videos. They are a little bit humorous.

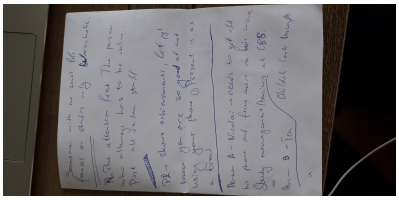
Participant 16: Nice.

Ring Limiter Video [video playing]

Participant 16: Are you selling the ring or is this like a commercial?

Researcher: It's supposed to be like a Kickstarter video.

Participant 16: Ah, okay.



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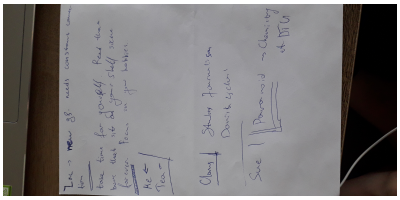
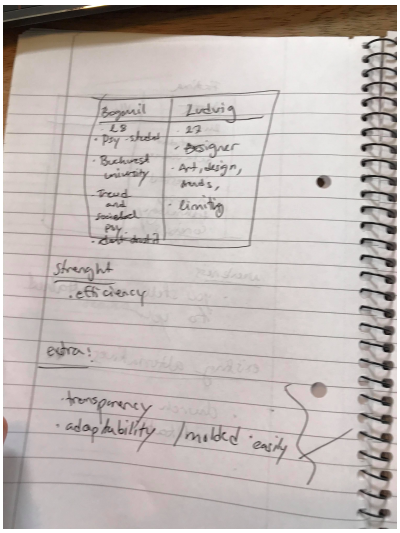


(b) Part 2

Figure B.64: Participant 4 Notes



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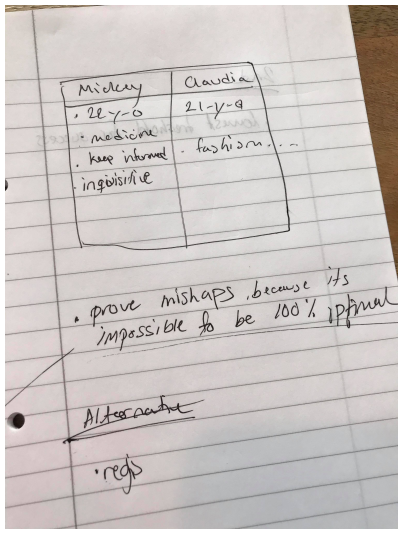

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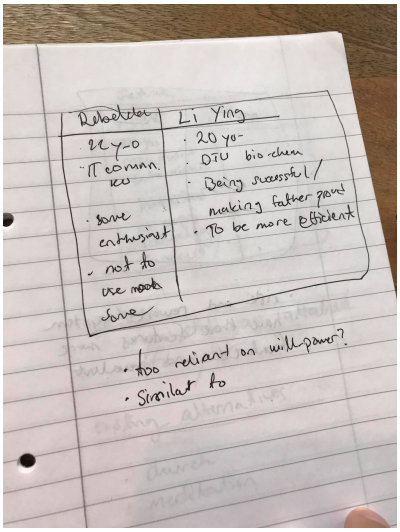
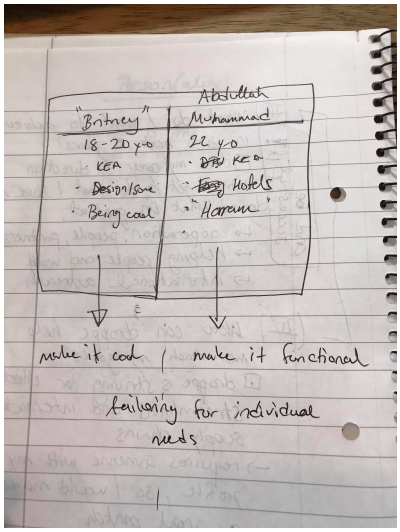


(c) Part 3



(d) Part 4

Figure B.65: Participant 16 Notes

Researcher: Okay. So first of all, what we want you to think of is...do you have a paper and pen in front of you? or close to you?

Participant 16: Me?

Researcher: Yeah.

Participant 4: Yeah, I do. It's been given to me.

Researcher: Okay, good. Yeah. Okay, cool. So, I want you to take this paper and pen and I'm going to ask you.. so the first thing.. so these questions are going to come up again with each concept. So please listen to the instructions now. So first of all, I want you to describe two people that would definitely not use this product that you just saw. And I want you to imagine how they look, name, gender, you can draw them you can write that, do whatever you want. Just please write it down because we want these notes from you afterwards. What do they study? So also.. please, as our focus is university students think of your student friends or recently graduate friends. Where do they study, what are their interests? Why would they not use it?

Participant 4: So we can't use boomers.

Researcher: No. I'm starting the timer now.

Participant 16: Can they be fictional friends?

Researcher: Yeah. It doesn't need to be real friends. It could be just someone you imagined to be a good user category that would not use this. So did you understand the question? This is for people that wouldn't use it.

Participant 16: Got it!

Researcher: Okay, time is up. **Participant 4** , do you want to start by presenting?

Participant 4: Um,yeah, I mean, it's not like I have much... but thinking of two people, I really couldn't think of two friends kind of cause I don't know it's just 90 seconds, so I just thought of like general description of people who might not use the ring or not make that.. the first person would be the one who has absolutely no social life and complete workaholic. So, basically a person that doesn't doesn't really go on his phone or doesn't really connect with anybody. So a person like this, that is mainly focused on either studying or working. This person wouldn't really need it, now that I mention that, I actually have a friend so she is.. So she is a she's a girl and she studies the same thing as me. We actually do our thesis together right now. So she actually barely uses her phone. She doesn't even have like any, any chat applications like messenger or WhatsApp whatsoever on her phone. She only uses her phone if she has to call somebody. So this person doesn't really need this ring because she doesn't sound like she's gonna make any use of it.

Researcher: What are her interests?

Participant 4: Finance, she's interested in financing. She has a bachelor in IT

technologies or something. Right now she's.. the master that she's doing is a software design. She works as a consultant at the moment

Researcher: What are her personal interests?

Participant 4: Investing and finance as well, like it's not like she has some like side hobbies.. maybe that's why, maybe that's the reason why she doesn't really go on the phone that much. She's mostly focused on what she's doing and what she's learning at the moment.

Researcher: Okay. Do you have another persona or?

Participant 4: Yeah, the other one is.. will be just a general description.. is the person that is 24/7 on social media, posts pictures of everything, his breakfast, his lunch, his cooking.Even his time in the bathroom, I would say like is the person that can't spend an hour, not an hour; can't spend a minute without being on social media. That kind of person. I mean, we.. there are a lot of people like this. I don't have any close friends that are like this. But I have a lot of friends on Facebook that are doing it.

Researcher: Why would they not use the ring?

Participant 4: Because they don't want to.. and like if you, if you spend your whole day on social media and if it's so important for you to show everybody what you're doing and get those reactions or whatsoever and then I don't see these people ever wanting to limit their time at all. Like if you spend that much time then you obviously don't even think of, don't even think of it as a problem or addiction or whatsoever.

Researcher: Okay, **Participant 16** ?

Participant 16: So my first person is called Britney. She's 18 to 20 years old. She studies at KEA, some sort of design or social media. And her interest is being cool with her friends. Kind of what **Participant 4:** said. She's just like hip. Yeah, she wants to keep up with the latest Tik Tok stories or whatever. She's dancing. She's dancing with her partner, or she's using her partner to be cool. Why would they use it? Yeah, that kind of answers it. My second person is called Abdullah Mohammed. He's 22 years old. He studies at KEA and he studies Hotel Management. He thinks it's Haram. He wants to only have the wife's ring in his hand and also the cool like... anyways. Yeah. And he uses it to.. he doesn't want.. he's interested like to keep up with the latest developments in travel industry. So he's like checking out the Instagram like on a non stop basis to kind of keep up with the trends and keep up with his homies Abdudeshak and Abdulrahman

Researcher: Okay. Cool. Thank you for that. Next slide, please. Okay, now that you have described your two personas, please keep them in mind. Imagine now that you are the project lead for this solution. So you've been given this ring and you're the project lead. Which strengths would you highlight to make it more interesting for your two personas. So these two people that would not use the ring, what would

you highlight ot them so they could start using it or they would consider using it? And would you add any extra features to make the solution more effective? If yes, what? You have 60 seconds. I'm starting the timer now.

Participant 16: Remind me again, was this ring supposed to kind of limit the use of social media or the smartphone all together?

Researcher: It's supposed to make you.. to help not lose track of time when you're on your phone so that you take more.. So when you're on your phone, you know, okay, I spent this amount of time on my phone already.

Participant 16: Okay.

Researcher: Okay,time is up.

Participant 16 , maybe you can start this time.

Participant 16: There's a kind of... Okay, maybe more for Britney. So make it cool. Make it have some like really nice features that will make her.. make it like really approachable for young people.

Researcher: What features?

Participant 16: For Abdullah Mohammed..

Researcher: No, no, no **Participant 16** , **Participant 16** - what features would make it cool for Britney before you go to Abdullah?

Participant 16: I don't know like, you could have some like design, some design features.

Researcher: Mm hmm. So make it customizable?

Participant 16: Yeah, that was going to be one of the things I was gonna say.. Make it customizable for each'd needs. And maybe there will be a way to make the ring viral. So as in like have some functionality that can make it viral. Such as play a song after 15 minutes and then it could be like Rick Astley. I don't know.

For Abdullah Mohammed, make it functional. So when the ring...when the 15 minutes has gone by or whatever the timer was, it could remind him that 'do you want to be successful? Go look at the hotels now' or something. So as in, make it like really specified for the user and like tailor made for each one so basically making it not only lights or coloring or a beep making it something more pragmatic into say whatever the needs are of the person are. Yeah.

Researcher: Okay, would you add any extra features? Other than the customizable thing.

Participant 16: So I don't know but i i would like to.. maybe this ring could be a Linux based program so we can program yourself some own apps into it and own... So kind of make it like an open ended platform? I don't know. I don't know if this is, yeah. Make the whole platform moldable according to the user.

Researcher: Okay. **Participant 4** ?

Participant 4: So, for the first person that is not really on social media, I wouldn't, I wouldn't really present it to her like, it's not like she needs it or she's gonna use it. If you're not on social media, if you're not interested in these stuff, then why would you be interested in something that would eventually limit your time? Like, you don't really need it. But for the second person, for the person that is like, always there and always interested in everything, then I think the way to present it and make them use it would be to just, to just advertise it as the new trend, like the new modern thing to do. 'Hey, look. Everybody's using that ring now.' And a feature that I would add would be like the possibility of sharing achievements. Like, let's say that a person do take, does take the break, so after the break, you can share and show everybody 'Hey, look, I'm doing very well with not using my phone, even though I'm on the phone all the time, except for the break.' But if you actually give them the chance, like Brittany, was that the name of **Participant 16** 's?

Participant 16: Yeah, Britney.

Participant 4: If you give.. I'm just gonna use the same name because I didn't I didn't name my second person.. But if you give Brittany the chance to like say 'hey guys, look at how well I'm doing with this new challenge. Like I'm not using my phone and taking breaks', I'm pretty sure that they're actually going to use it and like, even if they just use it to show off and keep in touch with the trend, they're still going to use it. So they're still going to take breaks so it might actually be effective.

Participant 16: Amen to that **Participant 4** .

Researcher: Okay. Next slide. Okay, so now we're going to turn around the tables, so now we want you to describe two people that would definitely use it. So how do they look? Please write down what you think during this 90 seconds. And you can also draw them out.

Participant 4: Draw them?

Researcher: If you want to. **Participant 4** is inspired now.

Participant 4: I don't have the time.

Researcher: Okay, time is up.

Participant 16: Just give me two more.

Researcher: Okay, well maybe **Participant 4** can start this time?

Participant 4: All right. So person A, that would be Nikolai. What do they study? He studies management at CBS. Interests? Their interests is in.. he's interested in.. what is his interests? I didn't think of that. Let's just say that he is interested in the latest like, business approaches and stuff, the latest technologies, talking about management. He's interested in like Scrum and all these stuff that I don't really know a lot about. So why why would they use it? Why would he use it? He would use it so he can limit his time on the phone and focus more on his work.

He has, let's say that he has like that project approaching him. And due to, I don't know, let's say customer problems, or the customer just changed their mind at the last second. So they have to make changes in the way like they're already going with. So he would definitely make use of this to limit his time and focus more on his work.

Person B is Tea. She is studying at the ITU university. She's doing a computer, a degree in computer science. Her interests is front end development and web developing, the latest trends. Why would she use it? She would simply use it because she's at her last semester and she's currently doing her thesis. But we, probably all of us, I don't know if.. I don't know **Participant 16** about you, but I know that all three of us are doing their thesis. So when you do your thesis, you.. it's really easy to distract yourself with anything you would find in the room, even just a napkin on the table. At least that's true for me. So I would really use like the bracelet, even not only for my phone, but in general, like remind me to go back to work, like stop distracting yourself and focus on what's more important. So Tea is in that exact situation and Tea wants to focus on her thesis.

Researcher: OK, Perfect. **Participant 16** ?

Participant 16: I don't know if I can.. if I'm going to add anything new.

Mine are more or less kind of similar but but my first guy is called Lee Ying. He's a 20 year old. He studies in DTU Biochemistry. His interests is being successful and or making his father proud. So he's using the ring to be.. streamline his time use and to be extremely efficient. So he's gonna make.. Now I'm going through what's gonna.. what the streaming has to have.. is sort of like a really practical excel sheet function where you can like time your time use, time usage. So you can also effectivise it by saying 'okay for four hours, you study math, two hours, something else', so on so and so on. So social media 10 minutes break, for instance. Other person is called Rebekka, she's 22 year olds. She studies IT & Communications at KU. She loves SoMe. But she doesn't want to.. get too entangled into it. So she sets ths timer to.. instead of using four hours each evening or to be like, two hours in the phone before asleep. So she puts that bad boy on.Yeah.

Researcher: Okay. Cool. Thank you. So next slide. So now imagine that you're a rival company of the solution. So you have a rival solution, which weaknesses would you highlight to make it less interesting for these two persons? And what existing alternatives would you suggest instead? So something that would serve the same purpose as the ring but like that already exists? You have 60 seconds

Okay, time is up, **Participant 16** , maybe you can start this time.

Participant 16: I guess, I would say maybe that this kind of say that it's a gimmick, that it relies too much on the personal willpower of the user. As in isn't really that much more different for them to, for the user to say, why don't you just make yourself a schedule on your calendar or something, and live by that, instead of just having something like that. I don't know. Yeah, like, how is it just different than you making your own calendar? I don't know. Or you could just say that while

you have these kind of fancy, what are those Alexa's and Google whatever those things I don't know what the status with those guys are but maybe they already have something similar? I don't know, maybe they don't. So is it different than having some just like speaker like machine in your room, kind of dictating what you're supposed to do and what you're not supposed to do. And that being said, maybe they could add like a camera or something, which is like extremely, like a black mirror kind of stuff. But, uh, like, maybe it could be some sort of augmented reality kind of thing, which doesn't necessarily have to have any hardware on yourself. Except for some sort of software in the room. I don't know. But now I'm just brainstorming, so..

Researcher: Participant 4: ?

Participant 4: So my weaknesses would be related to what **Participant 16** just said about not having any hardware on yourself. So speaking generally for both personas, as a weakness I would show first the fact that you're actually wearing a glowing ring, right? I mean, come on, you're kind of an adult and you walk outside, go to work or to school with like a glowing, childish looking ring. Like, that's, that's really not like something that I personally would do, for example. And then with that ring, like when you have I mean, I hope it's not as big as shown in the videos, because this actually make it almost impossible to wear. But let's consider that it's actually a small ring, but it's still visible and it's still not a regular ring. So going outside in public at work or at the university, anywhere, like you, you would eventually be questioned. Like, what is this on your hand? Why are you wearing this? Why is this shining? Like why is it red now? So you usually don't want all the people to know when like, you don't want to be like oh, it's just that I have addiction. So I have to wear this to fight it or, oh, well, I can't stay off my phone. So I'm just using this. So instead of that, I would just suggest something like, either using a calendar or like schedule, as **Participant 16** said, and just, like, do it yourself without anybody knowing. Or you can just do like, you can just use the app that we use for timing our screen time. And maybe.. there's definitely other applications. I don't know if that exact application can do it. But there's definitely other applications that could, that allow you to set up a filter and they would like not let you use let's say Instagram after you reach 30 hours or 30 minutes screen time for today. So just in general use something that people can't see.

Researcher: Okay, do you have anything to add or to challenge there, **Participant 16** ?

Participant 16: No, I think that it's a really good point like hardware can be kind of stigmatize itself quickly if you're using. I don't know. So again, it's about twisting the narrative into something cool. But yeah, maybe, I guess the ultimate solution would be to have some sort of non hardware kind of originality.

Researcher: Okay. Now, we are going to talk about the next concept, which is.. Yeah, you're gonna see it.

Digital Friend Video [video playing]

Researcher: Okay, so this is the screen time app. This is a combination of two ideas that you saw on the previous round of group interviews. Again, I want you to describe two people that would not use it. How do they look? Name, gender. What do they study? Where did they study? What are their interests? And why would they not use it? I'm starting the timer now.

Participant 4: Can we use the same people or?

Researcher: Yeah, you can

Okay, time is off. Also, please remember to write notes in the paper so we can have it afterwards. **Participant 16** , maybe you want to start.

Participant 16: I need to be honest with you. I honestly don't see anything wrong with that. So I don't really know it's hard for me to start creating the profile (...) when I don't see anything, like why wouldn't anyone do that? You know what I mean? Like, I don't do, but that's just because I'm lazy. So if we're going with laziness, then we can go like basically anyone. So regardless what they're studying or what their age is, then it's extremely individual.

Researcher: Least likely to do it. Do the least likely profile. For example, you said lazy, so a lazy person. So describe a lazy person,

Participant 16: Least likely people to do so is actually either less educated people or lazy people. So either someone who might be maybe like not so motivated or doesn't really know that that's a problem or doesn't care.

Researcher: Okay, and you can't put name, gender, study, interest on this. It's fine if you can't, I'm just asking.

Participant 16: I can't, sorry.

Researcher: No worries. Okay. **Participant 4** ?

Participant 4: Oh, names and studies. I mean, I'm just gonna go with kind of the same people. Yeah, any student basically, any student basically can make use of it and..

Researcher: And people who would not use it?

Participant 4: Yeah, I'm going there. So a person that would not use it would be for example, I came up with Zach. So Zach is again, any.. just a regular student who studies something in a Danish University. And Zack just found his.. just got together with that new girlfriend of his. So he wants to be in touch 24/7. They just, they literally just started their relationship. So would never want to be alone. He would always want to be in touch, stay connected and like not miss a single call or single message. So that's why they wouldn't use the alone mode.

Researcher: What about the other person?

Participant 4: Yeah, the other person would be, Brittany, the one from the previous video suggestion. The one that is never alone is always on social media and always has the urge to share everything she does. Yeah.

Researcher: Okay. Cool. So next slide. Okay, so now again, imagine that you're the project lead for the solution. Which strengths would you highlight to make it more interesting for your two personas? Or for the people that you envision this being not likely to use it? And would you add any extra features to make the solution more attractive? If yes, what? I'm going to start a timer now.

Okay, time is up. **Participant 4** , do you want to start?

Participant 4: So, strenghts that I would highlight... The main thing that I would highlight is that every person has to take some time for themselves. Like, this would be the perfect time to using that filter, it would be the perfect time to read a book that has been on your shelf since forever. Or maybe focus on some hobbies that you have and you always push aside. We often, it often happens that you start browsing something on the internet or on your phone and you end up watching a weird video on YouTube. I don't know, which which brand of batteries last longer, or something like this. So this would be like the perfect. This would be the perfect tool that you can use to force yourself offline and focus on something that you always wanted to do.

Researcher: Would you add any extra features?

Participant 4: I mean, not really. I don't see what could be added there. Maybe something like..maybe the ability to receive like an urgent call or something. So you know that if anything happens that actually requires your attention you would be notified.

Researcher: That's actually part of the solution. I just.. we didn't.. it's not visible very clearly but as per your suggestion last time, we have included it.

Participant 4: Alright.

Researcher: Um, **Participant 16** ?

Participant 16: I don't know if this kind of blend together what strengths and adding any extra features but I think some sort of risk and reward system will be nice. So say you only keep it, you do only keep it to like 15 minutes, instead of just hitting the snooze button for half an hour or whatever, you get some sort of a penalty or award. So I don't know, that's kind of vague what I'm just saying but so it has more power and weight to it to press the, you know, to do those settings and to then obeyed by those set rules. And..

Researcher: Before you go to the next point, which penalties and rewards would motivate you?

Participant 16: You could take.. it would be like in the app, you could set them yourself. So say you could briefly kind of say that, okay. I need to write in my thesis

like you guys need to for instance, so you know, it could remind you to do that? Or, you know, I don't know if that's anything new but or risks is that you could.. your phone could turn off itself. Like, fuck off and it shuts itself off. Why not? If you accept it yourself, who sets the like the parameters of the app? Why wouldn't you be able to do that? So have it like.. have something like that? Or another risk would be like some sort of like really annoying sound.. like, you know, from the Dumb and Dumber, the guy when Jim Carrey makes the [sound] sound or something like that? Yeah.

Okay, and then have these this app or this feature kind of more prevalent, and more kind of just featured. For instance, in the phone settings itself. I honestly didn't even know that this Alone setting existed, I know that you could set the.. I knew that you could set this, like time limits for the individual apps, I had no idea that the Alone setting even existed.

Researcher: It doesn't exist. It's a Kickstarter video style. So it's supposed to be like, oh, it exists in your settings now, but it doesn't exist yet. The vision is that it should be in your settings so you don't have to..

Participant 16: Okay, but that being said, even the the app limits we have now, even those guys, I just happen to come.. run into you know, so to have it really kind of integrated in the whole user experience the same way when you set up your.. for instance, when you set up your new phone, and while you do that, when you sign up to what time zone is, for instance or language, you could immediately start setting up some parameters how to use it. So making it really grounded in that. I know that might be a bad business case for the phone companies themselves. So that's why they're kind of like putting in deep in the trenches because they really want everyone to use their phones. So, but that being said, it could be something to think and keep an eye on.

Researcher: Okay, thank you. So now, next slide, describe two people that would definitely use it. So again, same drill, but this time people that would use it.

Participant 16: Can you just say everyone?

Researcher: Specifically like person that would 100

Okay. Time is up. So **Participant 4** , do you want to start?

Participant 4: Yeah. So person one would be Nikolai the example that I gave in the previous, the previous example with the ring. So in order to focus on his work and his studies, he would definitely use the Alone mode cause this would help him like I don't know read that new book that his boss suggested or maybe sit down and read on his subject. Then Person two would be.. I can give an example with myself, I will definitely use that. So person two would be **Participant 4** , he studies at ITU and finishes his master's degree in software design. I would definitely use that. I am kind of using something like this but not really. I just throw myself away when I'm trying to focus but if I had that option, then I would definitely make use of it as well.

Researcher: Okay. **Participant 16** ?

Participant 16: So one example could be Fatima. She's a 24 year old DTU student in data science. She's interested in computers and various forms of technology. She studies hard and she works a lot. For instance, in Microsoft, so why would she use it? Because she's, although she knows and she's interested in technology and using it. She's conscious of the drawbacks it has on a human mind. Therefore, she does actively pursue these kind of opportunities that makes her use the technology she loves and adores, but in a responsible sustainable matter.

Another example could be **Participant 16:** , the 24 year old political science student from Copenhagen University. He's interested in the global world matters, but he sometimes sees himself getting drifted away. So he sets his parameters so that he can keep keep doing what he's doing. But in a reasonable manner, or reasonable way, for instance, not get too attached to Twitter, for instance, or some other forms of what he or she sees unefficent.

Researcher: Okay. Next slide. Okay, so now imagine that you're a rival company with a solution: which weaknesses would you highlight to make it less interesting for these two people you just mentioned? And what existing alternatives would you suggest instead? I'm starting the timer.

Okay, time is up, **Participant 16:** , do you want to start?

Participant 16: Um, I guess now is what we define as a weakness. That's a key question here. I could go say well if I am to find a weakness to this, is the fact that you're still using your phone. And you're just kind of like playing games with yourself. So you just being.. you're attaching another feature to your phone, therefore you use it more, I don't know. So existing alternatives, meditation, read books. Don't use your phone, find alternatives to not to use your phone. Get away from it altogether. go to church. go for walks, be with your friends. I don't know. Find ways not to use the phone at all.

Researcher: Okay, go tell that to Fatima and **Participant 16:** . Okay. **Participant 4** ?

Participant 4: Oh, I personally can't really find any weakness in using this as I think that it's something everybody would make use of. If however, I have to convince somebody then I think a person like Brittany, the one that doesn't go off social media would be very easy to convince that this is not a good thing. Like just say, hey, Britt, what if your friends pose that really cool photo and you're not one of the first one to comment with? You're not gonna be the star player in that new trend or something, then this will definitely push that kind of people from it.

Researcher: But how could someone convince you to not use it?

Participant 4: Me to not use it?

Researcher: Because you're likely to use it. If it worked. If it existed, you would

use it. So how can someone?

Participant 4: If you said.. if you didn't, if you don't include that filter that I can allow like Person A to notify me if they want to, then this would be, this would be a reason why I won't to use it. Because basically, that's what I do. For example, when I'm at work, I just have my phone on the side. But most of the time when I do receive a notification, I need to look at it, just to see who has reached.. who has messaged me, or what have I received? And like, I just see that it's someone that I don't really care about right now. So I put it away, but I still waste that time and I still lose focus just to pick my phone, look at it, say okay, whatever. I'll talk to you later and throw it away again. So, as long as I have.. as long as I have the possibility of selecting a certain notification that would still go through the filter, then there's no way you would make me not use it. I would use this like on a daily basis.

Participant 16: To kind of add what I.. can I add just quickly and the reason why I went that way is because if this is to be successful, I mean it's gonna be functional. Good for everyone because say I guess the weaknesses that.. I guess the main weakness of this is the will, actually the interest of doing it so in the first place so if Britney, as **Participant 4** said, if she doesn't have a will to do like to do this, there's not gonna be, she's not gonna set those things up. So I think that the treshold of doing this is so low, but I guess the weakness is that whether you want to do it at all in the first place. So as in how do you keep, how do you make someone do it if they don't even want to do it in terms of like, for instance the ring, there's a question of.. do you want to.. there's a question of design and a question of, like, do you want to have a piece of hardware on yourself? You know, I don't even want to have an apple. I don't even want to have an Apple Watch, because I don't think it's not.. just it's not for me, because I think it's just weird. But so here is.. if you're already using your phone, you like your phone. So then if you have this amazing feature that limits your use of phone the way you like it to be useful. So then the question is, what do you like it to be? Does that make sense? So essentially, the question of weakness is about willpower and willpower is almost impossible to kind of manipulate unless you do it yourself. You set yourself the parameters and whatever. Sticks and stones I talked about, like risks and rewards, you set them up. You can give the tools for someone to set it up. But you cannot go past that. Okay.

Researcher: Thank you. Now, the last idea. Yeah.

Content Digest Video [video playing]

Researcher: First of all, is it understandable because this is the same solution as in the group interview, but it's just more developed.

Participant 4: It is.

Researcher: Okay, cool. So now again the same task, described two people that would not use it.

Okay, time is off. **Participant 4** , do you want to start this time?

Participant 4: Yeah. So the person that doesn't want to use it is named Klaus, Klaus studies at the Danish school in journalism. He wants to be a journalist. These are his interests. So Klaus wouldn't use that filter simply because he doesn't want to limit what he sees on social media because as a journalist, he wants to always see new things. He always wants to be in touch and stay in touch with all the new trends. So using that filter would actually cause him limiting what he sees, so he wouldn't like that. And then second person, I couldn't think of a second person.

Researcher: Okay, that's fine. **Participant 16** ?

Participant 16: So the first one is Bogomil, 28 years old from Bucharest University. He is a psychology student. He's interested in Freud and societal psychology. He does not use the app because he doesn't trust it. Who and why someone curates the whatever he wants to look at it so he does not trust even if it's a super advanced AI or whatever, he does not trust it, because there's just, as kind of **Participant 4** said, you know, he sees that he's clever enough to distinguish. Other one is Ludvig, 27. He studies design, whatever university that is. He's interested in art, design and trends and something like that. He does not use the application because, again, there's a funnel, there's a bottleneck. So that's not the whole truth. So it's kind of counterproductive to what he - okay, could be a she - but he sees, you know, to be just like the world at the moment. So it limits the spectrum of the reality.

Researcher: Okay, cool. Next slide. So imagine again that you're the project lead for the solution, which strengths would you highlight to make it more interesting for these two personas or one persona that you just mentioned and would you add any extra features? Timer is on.

Okay, time is up. **Participant 4** , do you want to start?

Participant 4: Yep. So, what I would tell Klaus is that he can like..just to point out some strengths. First of all, maybe the app would allow him to filter the fake news. So he would actually turn it into his advantage by filtering out only the trusted media that he wants to follow. This way, he won't be bothered with any fake news or whatsoever. And then the second strength, I would point out is to.. not a second strength but extra feature, I would suggest, would be to just point to like, let's say some very important media that he follows and be notified. I'm not sure that this is actually gonna push him away from his phone, but it would notify him as soon as they like release some content or put some content online this way he would know that he's going to be one of the first people to see it.

Researcher: Okay. **Participant 16** ?

Participant 16: I guess the main point of this thing is efficiency, right? So you can effectively see the same amount of value for 15 minutes as you can see in 30 minutes. But just a quick drawback of that is that.. it's like, if you're giving the [drug addict] like a better drugs, would he use less drugs than he used before? So if you have an app that makes it even more like Twitter premium, why would I use less? Like that's what I don't get. Well, now that.. Sorry, I derailed for a second. What

extra features would I add is that: transparency is really key. What is curating my content? And how, why and so on. And the second is the adaptability; now that you know what these parameters are, what is this agency that is controlling me? How can I adapt it or mold it in a way that I feel more comfortable with it? If there's something that just.. some cloud, some magical being that just dissect all the things that I want to do.. you know, for both of them, both Bogomil and Ludvig, have all sets of challenges with it, without these extra features.

Researcher: Yeah. Okay. Next slide. Okay, so now describe two people that would definitely use it. Yeah, it's the same drill.

Okay, time is up. **Participant 16:** , do you want to start this time?

Participant 16: Sure, so the first person is called Mickey. He is a 22 year old student (...)medicine student. He likes to use. He just likes to keep well informed about like the world beings and what's happening around him. So and he is inquisitive. So why would he use it ? It is because it just makes it more efficient and he would just.. he doesn't need to go deep into the feed to kind of just find his main information. So it just makes it more efficient for him to kind of just dip his toes in without you know having to check everything. So he just blindly believes it and trust it and he just doesn't need to use that much of it, in that case. Another one is a Claudia, fashion student. She has curated the.. She trusts the.. whatever the AI to curate the content in the best, best way so the she can do her work, again more efficiently and more streamlined way or just follow the whatever the makeup people or whatever you girls do on social media

Researcher: Wow, the stereotype.

Participant 16: I've made it broad.

Researcher: Okay, **Participant 4** ?

Participant 4: Okay, so, person number one is, again, **Participant 4** who studies at the ITU. He is basically going to use it because he doesn't like when, even though when, for example when he goes on Twitter even though he follows specific medias, specific people, they often just share some random stuff, some random pictures or whatsoever that like he doesn't really care about. So he would love to be able to filter that out. The second person is Xu. Xu is a student at DTU. She studies chemistry. She is one of these people that are convinced that the coronavirus is caused by the 5g and she easily gets paranoid about anything she sees on the internet, such as the fact that 5g causes Coronavirus.

Researcher: Who's 5G?

Participant 4: I can't hear you.

Participant 16: 5g not.. like the Internet.

Researcher: Okay.

Participant 4: So it's the upgrade of 4g that...

Researcher: Yeah, okay.I thought it was an organization but it's just yeah, I understood it.

Participant 4: It's a way of transferring data. So, yeah, she could even get paranoid when she reads that the earth is flat. So she would definitely use it in order to, in order to limit these kind of. I mean, I wouldn't call them fake news just because I don't believe in them, but people believe in them, then maybe they're not fake. Maybe we're all wrong. But anyway, she could make use of that filter to limit such information.

Researcher: Okay, next slide. Okay, so now again, before we go to the last question, so imagine that you're a rival company of this solution. Which weaknesses would you highlight to make it less interesting for your two personas and what existing alternatives would you use, would you suggest them to use instead? Timer is on.

Okay, time is up. **Participant 16:** , do you want to start?

Participant 16: Yes. Like weaknesses I've already kind of talked about before, so I don't need to highlight them too much. So what they will do is that they will just do a study or a few studies and improve the mishaps and the fallacy of these algorithms or whatever this you know, doing it. So if you're, for instance, using it to do a fact checks, like a reading, so then you would just, it's really easy to kind of prove it not functional. So because I think I personally don't believe that this would be possible because it's never going to be 100

Researcher: Okay, **Participant 4** ?

Participant 4: Just a little, just something to envision. I don't think that any other media, like any actual media that works for somebody is more reliable than like Twitter, for example.

Participant 16: No, but yeah, then you can ask yourself, well, what the hell is like good out there.

So just, just because they work for somebody and they work for money and these money come from people of interest. Anyway. One of the disadvantages that I would point out is what **Participant 16** said earlier about, like privacy and how reliable this thing is. Because basically, it's a filter that I'm going to give access to. I'm going give that filter access to, basically, all the content on my phone. So who would.. how are people actually going to guarantee me that whatever is filtered for me doesn't get stored somewhere or that like, yeah, like. Where's my privacy in this? There's going to be a filter that will decide what I want to see and how to present it to me. And it's actually going to know what I'm looking at, at all time. Existing alternatives, well, I'm not too familiar with the social medias such as Facebook and Instagram, and Tik tok or whatsoever. I'm only familiar with Twitter more or less. So in there, you can actually filter out, they already filter out your content based on what you follow, based on language, based on location, like lots of things. So you could just, you could just use what's already built in the app. Like you can just limit what you

see by just following the trends that you want, the people that you want.

Okay, next slide. Okay, so last question. Imagine that you're the CEO of a health tech company, and your focus area is on tackling smartphone addiction amongst university students, herein consider your own environment and friends. Out of these three projects, which one would you go forward with and why? Also, if you wouldn't go forward with any of them. What would you do instead? You have 30 seconds.

Researcher: Okay. Time is up. **Participant 4** , do you want to start?

Participant 4: Yeah. Do I necessarily have to point out one or can I combine two of them?

Researcher: You can combine two of them.

Participant 4: Right. So what I would do then is just combine the mixture of the second and the third solution. As I said in the video, I myself, **Participant 4** , the master's student at ITU, would definitely use the second solution in order to be able to just throw my phone away and not think about it at all knowing that if anything important happens, I would be notified. So I would definitely use this as a driving force to like introduce the project to all my friends and all the people around me. So just use this to stay focus. Use this to put your phone away. And I don't know like to bump up your grades or your productivity or whatsoever and then when you are on your phone, like after work or like in your free time, then use the third solution to not spend too much time on it. It's just time wasted of unnecessary stuff as...again as I mentioned, I've been in a situation where just out of, out of being bored or something I've ended up watching a video of like which brand of batteries last longer on YouTube. And I'm pretty sure we've all been there at some point. And like out of random suggestions and and out of random things we see, we often get carried away so while you use your phone, just make use of the third solution and that will help you limit your distractions.

Participant 16: I will go with the second option because I think it has the lowest threshold of success

Threshold of success?

Yes to success, as in like it can be most likely to succeed. Because third option is absolutely ludicrous. I would, I don't even I wouldn't even consider it to like, for this purpose, I can see, I can see if you can just, it's about this.. basically effectivise.. more efficiently using what you're using, but it's not solving the problem, I think as in what you're looking for, as I said, like if you're making the drug stronger and better, you're not using less of the drug, so to say. So now, the second one, I think it's also because it doesn't, doesn't require too much hardware and too much work to make it accessible and easy for everyone to like, hop on board with everyone else. You just need the phone. You're using it already. So in essence, it'ss just an app and software. So that's why... And then you can just tweak within that application.. kind of the..work on the challenges and make the..whatever the..suggestions we came

up with, work on those. So yeah, I think the second one by far. The first one maybe if, I mean, but again, the challenge with the first one even if you make it kind of successful, I think the amount of overall quantity of people using it, it's not going to be as high again because of you know, having ring on your hand blinking, you know,

Researcher: What if it was vibrating instead of being in color. What if it was vibrating, like the ring was doing a nudge or something so you knew 'Okay, your time is up'.

Participant 16: I think the whole..just the concept of adding things onto yourself.. regardless how fashionable, even if it's a Gucci ring, whatever. I still think that not all the rappers would have it, you know what I mean? I don't know if that metaphor works, but if it's invisible, you know. If it is already in what you're using, you know? If you like to be blonde, it's easier to color your hair instead of just putting a wig on, if you have hair. Okay, maybe that metaphor doesn't work, but you got what I'm saying. Right?

Researcher: Yeah, I got what you are saying. Okay, cool. Okay, well, that was the end. Thank you so much for all the insights, it was very helpful. Please send a picture of your notes.

Participant 4: Okay.

Researcher: Yeah, even if they don't look nice. It's just for ourselves to document a little bit the process, right? Because we wanted to make you guys work with paper and pen, a little bit more. And yeah, thank you so much. And if you think about anything in the next few days. If you are like, 'Oh my god, I should have said that', then just drop us a message or go across the room and say it. Yeah, thank you so much. That's it. Sorry, we went over time again, but..

Participant 4: It's fine.

Researcher: cool.

Participant 16: Yeah, I'm sending the pictures now.

Researcher: Yeah.

Bye!

Transcribed by https://otter.ai

B.4.3 Participants 30 and 31

Researcher: [random conversations]

Okay, cool. So hello, my name is Nermeen. This is **Researcher** . Yeah. Thank you so much for joining us this late afternoon for talking with us. I'm going to start off by explaining a little bit what the concept of our project is, just because yeah, you haven't encountered it as much.

Researcher: So the focus of the project is so we want to get insight into students use of and relationships to our mobile devices (...) we hope to obtain insight into university students phone usage in order to understand how we might foster healthier relationships to and through mobile devices. Okay. So your answers will remain anonymous, we will not share them with external partners and we will be tape recording this session just for the ease of transcription later in the process. Do you give us permission to record this session?

Participant 31: Yes.

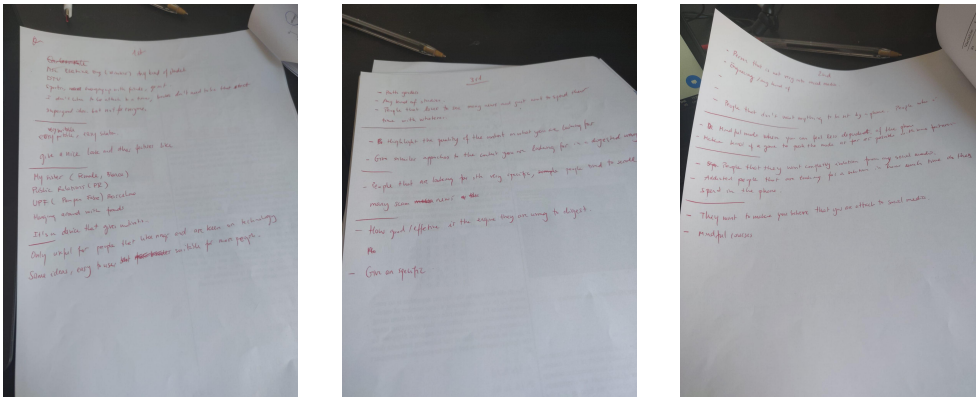
Participant 30: Of course.

Researcher: Researcher , you can start sharing. Okay, so today we're going to show you three solutions. And yeah, we are showing you a video and I'll be giving you some cases that you have to work on but yeah, let's just jump into the first video first.

[random conversations]

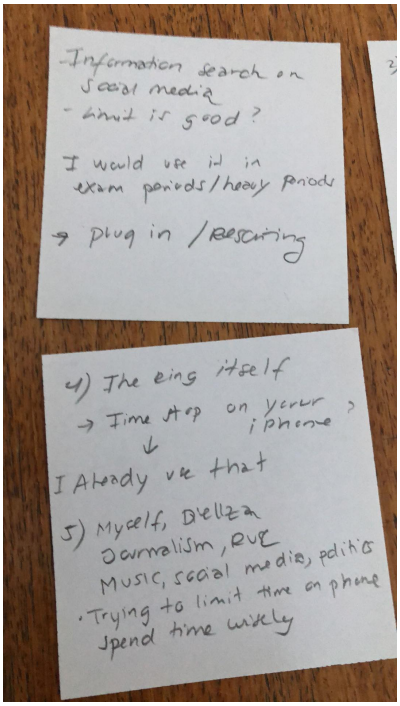
Ring Limiter Video [video playing]

Participant 30: Do you have the music in the background? Or is the music of

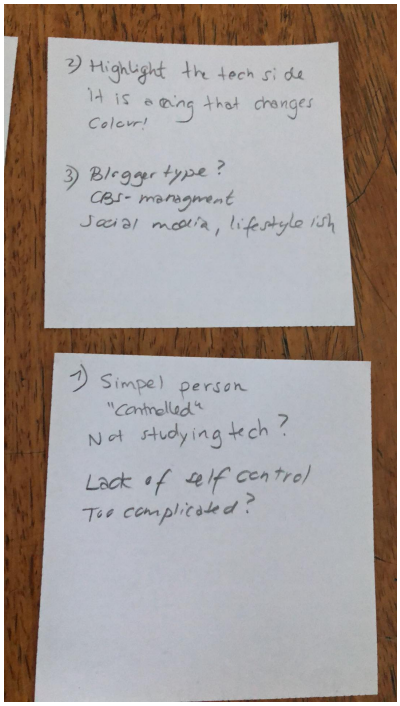


(a) Part 1 (b) Part 2 (c) Part 3

Figure B.66: Participant 30 Notes



(a) Part 1



(b) Part 2

Figure B.67: Participant 31 Notes

your computer?

Researcher: We have music in the background of the video.

Participant 30: Okay, okay.

Researcher: Okay, so this is like a Kickstarter like video. So this is why, there's no actual purchase, but it's just inspired by that. Okay. Now you got introduced to the ring. And what we first want you to do so you have a piece of paper and a pen in front of you, we want you to describe one person that would definitely not use this. So how do you?

Participant 30: Can it be us?

Researcher: Yeah, it can be yourself.

Participant 30: Okay, okay.

Researcher: And describe how this person looks, name, gender. What do they study? Where do they study? What are their interests? Why would they not use it? We're doing our thesis on university students, so please do it with the student

population. You can draw, you can write down, you do whatever. I'm turning on the timer now. 90 seconds.

Okay, time is up. **Participant 31** , do you want to start off?

Participant 31: Yes, um, I think I'm seeing like a person who is maybe very simple. A simple student, I don't know, like, if I don't know if I can, like, define the gender, it can be both women and men for me. And I see them not studying (...) I see them not studying something tech, maybe. Maybe something... For example, I don't know if I would use it, because I think it was a little bit complicated maybe with the app and also like I, I wrote down that you have to kind of admit to yourself that you have like, some kind of lack of self control in regards to like you using your your cell phone. And so yeah, I didn't write any more down, actually. And maybe it was like a little bit too complicated, maybe to use with the app and for me, for example.Yeah.

Researcher: Okay, cool.

Participant 30: Should I go for it?

Researcher: Yeah.

Participant 30: I will put myself as an example. Because even though the idea is super interesting, and it can help people to.. that they take a lot of breaks and they want to just set a time on it. For me, for example, it doesn't. It has no sense to havea device that is going to tell me when I have to go back to do something. For example, I could do that with my phone now, putting like an alarm. I never do that. I don't like to be attached to any kind of restriction. So even taking a break, I'm taking a break because I want. In my case, I study electrical engineering at DTU. And my kind of interests I have is, again, hanging out with people and I love to hang out with people, cooking, sports. And having this kind of device just to settle my.. because in my life, I would say, I don't have my schedule on every, every morning what I would do. So I don't like to set times for everything I do.

Researcher: Okay. Next slide. Okay, so now I want you to imagine that you're the project lead for the solution. So you've been given this ring and you're the project leader. What are the strengths that you would highlight to make it more interesting for the persona that you just discussed and would you add any extra features to make the solution more attractive. If yes, what? You have 60 seconds. Please use the paper and pen to document your findings because we will use them in our thesis.

Okay, time is up. **Participant 30** , do you want to start off this time?

Yeah. The strengths I can see in this device is that it suits very well, because it's a ring. So it will never give a problem to whoever user wants to use it. So it's very.. So apart from being sold as a device that it can help you with a timer of how to schedule your brakes. I would say it is interesting that it's just a ring. And it's not like a big device that it can be uncomfortable for you. So I'll highlight that. And the extra feature I would add to this device, in my case, for example, I don't know if

I like to wear rings, I would think having a fashion ring, not a fashion like a normal ring that it can look fancy even though you're not using it for the purpose of having this break things. I think that would be nice.

Participant 31: Actually wrote down, like highlighting that it is a ring that it doesn't like, doesn't take a lot of like space. It's not a huge thing. It's just a little ring that can help you and it's easy to look down and you're already using your hand so you can just look at your finger whenever and I think it's cool that it changes color. I really like that. So I would highlight that. And I don't know if I would add any extra features other than like highlighting the thing that **Participant 30** said. If they can make another design I don't know, which kind of design the ring was supposed to be just like a round thing or are there other designs. For example, like..

Researcher: We haven't thought of any designs yet..

Participant 31: okay, for example, like I'm into, like, it could be like a little rock and that rock could change color or something. I don't know, to make it more like, versatile for..

Researcher: Maybe just to ask like a challenging question. You said earlier that you are a person that would not use this ring. It's complicated, but then you didn't address the complicity. Like how the complicity could become a strength through other measures. So I don't know if it did make sense but how could you make..?

Participant 31: I think it's like for myself, I have like a hard time like, like, you know, with the app watches and all the tech things like if I have to connect like a device to an app, I have like difficulties like using that. So that's why I thought it was a little bit complicated.

Researcher: Okay, now we're going to turn things a bit around. So next slide. Now I want you to describe one person that will definitely use it. So that will have any usage for it. And so the same drill, how do they look, name gender, what, where, interests and why would they use it? I'm setting the time up now.

Okay, time is up. **Participant 31** , so do you want to start off this time?

Participant 31: Yes. I'm feeling I'm becoming like very stereotypical, but I thought of like this person type that could be maybe a girl or woman and she could be into like, the blogging world, if that makes sense. And she could be like studying at CBS or anything like management wise and she's into social media so she's interested in like lifestyle and also like tech and how that can like help improve your life and and she would use it because she needs to define her time on social media because she also wants to be like present in real life.

Researcher: Okay, so blogger.

Participant 31: Yeah, I thought of like this blogger because, like if you make a fashionable ring, it can be like, like a new thing, to like, it's cool to be offline with this ring. You know what I mean?So to make it like fashionable?

Unknown Speaker In my case, I thought about my sister. I don't know why. My sister, she's a female, but I would say that this ring can work in whatever gender as long as you like to wear rings. She is studying Public Relations in Barcelona and her interests are like I would say everything and nothing at the same time. So it's the kind of person that is.. everything is fine for her. And I would say that she would use it because this ring at the end if you have a lack of motivation, for example, when you are studying when you are working, and you are like I don't want to work.. if you, if you have this ring at the end, it can give you just a bit of motivation of saying 'Okay, I'm gonna take a break of half an hour and then I'm going to go in' and then having.. my sister is the kind of person that having time completely scheduled.. completely opposite of me.. is super fine. So I will say for people that they like to just schedule their time to know what they're going to do and to follow like some steps, this device will help them.

Researcher: Okay. So now, I want you to imagine that you are a rival company of the solution. So you have a rivaling solution, and which weaknesses would you highlight to make it less interesting to your persona that you just described, and what existing alternatives would you suggest instead. You have 60 seconds

Okay, time is up. **Participant 30** do you want to start?

Participant 30: I would say that companies that are rivals to this device, they will...that it's only useful for people that they like to wear rings. I would say it's not going to be used for people that they never use it. They can be.. It's going to be used as well for people that they are keen on technology. As, as we were saying before, and if you don't know, if you don't like to play with technology and you need an app to do everything, you will kind of struggle a bit and can say like, I don't want to use it. So the existing alternatives that I would suggest instead would be that the idea to keep it the same. But instead of using a ring, give me something more suitable for everyone. I don't know what. maybe I don't know an app for the phone. It does the same with light and you put the phone on the table. I was thinking about that and something that is like only one device because if you use the phone, it's more easy, it's easier for the people to just set all the instructions they need to go through.

Researcher: Okay, are any existing alternatives? So you mentioned the phone?

Participant 30: No, I don't have yet.

Researcher: Okay, cool. **Participant 31** ?

Participant 31: Well, I wrote down that yeah, it's, it's meant for people who like to wear rings. So not all can use them. And I wrote down that the exisitng alternatives can be like, I use like the time stop thing on the iPhone, just like you set a time and for example, instead of timeout I can only be one hour on Instagram or anything else. So that's, that's the thing I use, for example, and then it just stops like there comes like a notification that says like, now you have used your time. So..

Researcher: Okay, cool. So now we are on to the next solution.

Digital Friend Video [video playing]

Researcher: Okay, so that's the second solution. We're going to go through the same structure as we did before. So first I'm going to ask you to describe one person that would not use this.

Okay, time is up. **Participant 31** , do you want to start?

Participant 31: Yes. Well, I know that we.. We're still in the student part, right. I had to like talk. Yeah. Because then I would have said like, maybe an elderly person would not use it so much. But I think about actually my brother. I don't think he would use it because he's not using his phone so much. And like he's in high school. And he's a male. And where does he study? He's studying in Copenhagen and his interests is a lot on like gaming. So he just uses his time on gaming and he will not use it because he simply does not use his phone so much. So that's it, but otherwise, I actually think it's like very good-

Researcher: What about you **Participant 30** ?

Participant 30: In this case, I think because this app would be very useful for people that they are.. they believe that they are addicted to the phone and they want to change it. But otherwise, there is like a lot of people that even though they are addicted to the phone, they don't accept it. So this app for people... To put an example, I can put myself again, sorry for that. But I would put myself again, because even though I use the phone, for example, when it's quarantine time, so just like COVID video just came up. When you are at home and you have many things to do, and you have friends. At the end,the use that you give to the phone is the use is for your personality. So it's like, as long as the use of the phone doesn't affect your personal life, meaning that you're with friends at home, and instead of being with your friends, you are with your phone, then you will be aware of this application. For example, in my case, I think that the use of the phone I use.. I use this phone only for self pressure. And I don't think, I just avoid anything else. So I wouldn't use it because it will give me nothing because I know that, I know that I am I'm not afraid about how much time I'm using the phone or worried about it. So I would think it's like..

Researcher: But the app is not only for controlling your screentime. It's also.. so the alone mode is supposed to be this mindfulness app so that you spend like not.. just focus your time on something not technological so you do something outside of this sphere.

Participant 30: Are we just thinking about the specific situation that we live in right now with the COVID or in general?

Researcher: It was just an example to position the video in but for example, because we don't really go into the Alone Mode too much in the video but it's like an active mindfulness. And so, when you activate it, then you can allow only certain persons to contact you in case of emergencies. So you can allow keywords. So for

example, if the word emergency, hospital or urgent comes up in your deactivated notifications, then you got them, but otherwise you would only be able to listen to meditation, music or podcasts. Or just go for a walk so your phone would be on complete standby mode. Therethe use scenario is not only to 'oh, I'm addicted, I need to spend less'. But there is more 'Hey, I'm, I take some time away from my phone'

Participant 30: Because if that's the idea, I was thinking that the idea is magnifique because at the end, since we are.. so the things that we are young people I'm talking about, like student life. So being young people that we have been grown up by phones, so we already know a lot of it and we spend a lot of time. So being aware of what is outside is good as well. So having this app that says to you, okay, the phone is just to emergency calls, do for your life, forget about the phone. It's super nice.

Researcher: Okay, cool. So next part. So now again, imagine you're the project lead for these solutions, which strengths would you highlights to make it more interesting for your persona and would you add any extra features. If yes, what? I'm putting a timer on

Okay, time is up.

Participant 30 , do you want to start?

Participant 30: Strength I would highlight is the idea of living without the phone not being dependent on the phone. So having an app that it's able to just allow you to use the phone with a good purpose, I think it's a super good idea. What I would add like as an extra feature, maybe to make it as well as a game, as how, how far I can push in this isolation mode. So to be aware of yourself that I don't need a phone to survive, because at the end, the main thing about the phone is communication, right? So you can call your friends and you can hang out. So if you can get these basic modes, where it just goes that you call, you meet, and all the social media, everything else is out. And you make this kind of game that you can push it as far as you can. I think it could be nice.

Researcher: Okay. **Participant 31** ?

Participant 31: Well, I would highlight the mindfulness piece of it, I think. I think that was that was quite nice. And I really like that you can, like get an overview of how much time you're actually spending on your phone. Because sometimes we actually forget how much hours we like spend on the phone. So it's good, like, just to get like, like an overview of how much time you're spending on your phone and like, compare that to like spending on something else, for example, and there you like, take the mindfulness on. And like get it together and say like, Okay, if you spend like one hour here, you can do yoga one hour or anything like, like, spend your time otherwise .Yeah. And add any other extra features, maybe I would build on the mindfulness. Do something there. I don't know quite what that should be. But expanding that universe maybe. So you can like, transfer those hours into the mindfulness.

Researcher: Okay. Cool. Okay, next slide. Now again, we want you to describe one person that would definitely use it. So turn the tables.

Okay, time is up. **Participant 31** , do you want to start?

Participant 31: Yes, well, I would definitely, definitely use it myself. I study journalism. So my interests are like politics. I'm also into social media, art and music and so on. And I would use it because as I said, I'm already actually using it. I really like to have an overview of how much time I'm spending. And right now, for example, I'm trying to like use my time a little bit more wisely. And I just deactivated my Instagram account, for example, because I felt that I was spending countless hours just scrolling into, into nothing. So that was also like a challenging thing for me and it's actually going quite good. So yeah, I would use it to get like an overview. And yeah.

Researcher: Okay. **Participant 30** ?

Participant 30: So in my case, I would like to share more than one person because it came to my mind more than one. So first of all, I would say is like for people who are very supportive that they don't want to pay attention on the phone, even though they have some social media, and they want to be completely isolated in that. I think this app would be super helpful then to just have a phone with whatever social media whenever they want. And meanwhile, I put these mindful mode and then i forget. And the other people I would like to say that... can take all kind of people. Doesn't matter I would say neither the age, neither what kind of studies they have and where is it then. And I would say people as well that they believe themselves, that they have a problem with the phone and they want to change. So this kind of people that they want to change the problem they have of 'I spent too much time in the phone, I don't know how to solve it', and I think this tool would be super nice for them to at least start somewhere.

Researcher: Okay, cool. So next slide. Okay, so now again, imagine that you're rival company of these solutions. Which weaknesses would you highlight to the person that is interested in getting this and what existing alternatives would you suggest instead? 60 seconds

Unknown Speaker Okay, time is up. **Participant 30** , do you want to start?

Unknown Speaker This answer is not..so I would say that the weakness that they can just highlight from it, it's like the scam companies that they want to make you think that whoever is selling this app is selling it because they are saying to you that you have a problem. So it's kind of like you need..they're selling you that because they think that you are super attached to social media while this is not what is happening to you, so as an existing alternative they will say to you, for example, they will give extra mindful courses, through apps through phone onsocial media, just to make the social media even bigger. That's the only project now because I think that the idea of the screen time is super useful... I don't see any bad, any weakness.

Researcher: Okay, cool. What about you, **Participant 31** ?

Participant 31: I don't see any weaknesses, like I use it myself. But I can see like, yeah, I wasn't really thinking of like how I should define a weakness by it because it's not like it's just like an overview for me. And I can see like the thing if, if it becomes like that you just spend your hours somewhere else on social media, for example, just do mindfulness, it's like, in the end it's going to be like the same thing. Maybe. Yeah. And for existing alternatives, I don't know if I've seen any alternative to this. No, maybe there's like an app or something else. I don't know. I haven't come across. Okay.

Researcher: Now on to the last solution.

Content Digest Video [video playing]

Researcher: Does this idea makes sense because it's one of the more complicated ones.

Participant 30: Yeah. Let's gonna summarize it. So basically what it does is whenever you watching Twitter or Instagram, it filters what you're watching.

Researcher: Yeah, to some degree. So basically, you get this app and it gets built into your settings, and then you choose applications you want it to be turned on. And then, when you go inside this social media application, or yeah, so Twitter, for example, you could choose which categories or information categories that you're interested in, so if it's a football club or something like that. So you help filter out and it also only shows you the highlights, so you don't have to scroll through and look for information you want. You just get what you want, like as information, and it's like a more compact version of it so that you don't, you're like okay, you've seen these top five articles about football?

Participant 30: Yeah. But this is specific for someone who wants to know a lot of information or something, right?

Researcher: No, so it's inspired by, you know on social media and a lot of apps are built on this infinite content loop. So you can scroll forever. You can swipe forever, whether it's Instagram or YouTube or Twitter. And so it's kind of to highlight so instead of you losing track of time and just scrolling endlessly.. so getting just the key information from what you want.

Participant 30: But this key information at the end is going to be a scroll that is going to be endless as well of this key information, right?

Researcher: No, so the thing is..

Participant 30: There's a limit?

Researcher: There's a limit and it shows you these are the highlights for today. Like when you reach the end of your scroll, it shows you these are the highlights today you are done, a little bit like on Instagram, I don't know if you've seen it but on Instagram at some point, if, after a few scrolls, then it shows that you have seen

the highlights for today and here, inspired by the same thing, it would show you the most interesting like you will filter out the articles but then you'll also be like ' Hey, this is done, you're done'.

Participant 30: And does it give you the chance to jump to other higlights. Does it give you the chance to jump to other higlights later?

Researcher: Yeah, you can choose another category.

Participant 30: Okay, it's not like it forbids you to do it.

Researcher: No, no. Okay, so based on this, describe one person that would not use it. I'm putting a timer on.

[random conversations]

Okay, time is up. **Participant 31** , do you want to start?

Participant 30: Good luck!

Participant 31: Yeah, this one is like a little more difficult for me. Who wouldn't use it? Because I feel like it's, it's actually quite good that you can.. Yeah, categorize what you want to see and like be the own, like in charge of what is thrown at your face. But on the other hand, if I should take myself maybe as an example, maybe I would feel like I was missing something, if I limited myself into categories, maybe I would get some kind of FOMO of missing out of in anything else. And maybe if I categorize my own interests in.. For example, I only want to see this, this and this, I think that maybe I could be missing something else. And I would only like cleanse myself those like categories and I wouldn't evolve or use social media in a different way. Because maybe sometimes when you go through these endless hours of like you, you just you also discover a lot of new things. You may be discovering new music, new artists, new people that you can get inspired. So maybe by limiting yourself into categories, it wouldn't broaden your perspective. Or maybe you wouldn't. You would just use social media the same way every day and you would see maybe the same things every day. if that makes sense. I think this was this one was like a little bit challenging for me.

Researcher: Yeah, but you're talking about information bubble, so being stuck in this?

Participant 31: Yeah, exactly. I mean, you see, you see different things maybe every day, but it's like under the same category, like, if I were to like, say, Okay, 'I want to see about Coronavirus every day' like it, uou know, it's like, you don't get, yeah..

Researcher: Okay, cool. **Participant 30** ?

Participant 30: I think my opinion is gonna be similar to **Participant 31** now because the thing is that this app is for people that they [don't] like to get any Tweets.. with one.. they will have like.. when at the end, they might. But at the end, the good thing about Twiiter I would say is that you can finish looking for something

completely different. But you have arrived there through the, whatever news you were looking for. So just setting something and adjusting something into one specific feature will be like, maybe you will miss a lot of information in the meanwhile. So people that they want to use in social media, like something that to just stay with it, stay at home looking at it and then just discovering something with no specific aim. I would say that these people that they have no specific aim on looking in Instagram and Twitter because like okay, I want to know about football. I want to know about food. I want to know like, I want to see what is happening, I will say it's not useful for these people.

Researcher: Okay. Next slide. Imagine that you are the Project Lead for the solution. So which strengths would you highlight to make it more interesting for the persona you just described and would you add any extra features? I'm putting a timer on.

Participant 30: [random conversations]

Researcher: Cool, time is up. **Participant 31** , you want to start?

Participant 31: Yes. Well, I was thinking that if we talk about, for example, using social media in regards to information search, it's quite a good example of limiting yourself. It's gonna like, yeah, you don't have to spend so much hours on like if I were to write an article and I wanted to find some information on social media, I could plug this in. I can say I want to know about that, that and that, that would like limit my search, you know, like looking for a scientific article or something you.. maybe like, that could be an extra feature. It could be like using some search words or anything that could like numb your search more down or something. Yeah, I don't have anything else.

Participant 30: So I would say as a strength is to highlight the quality of the content that you're digesting. So.. if you're looking for some content that.. to ensure that your customers will have like the best content of what they're looking for. The other thing is like a difficult task, but highlighting that would make like people interest on this digesting content. And as a feature, I would say that apart from the content, so instead of like when you go for the engine, and you put like the content you're looking for, so imagine that you're looking for some, I don't know, just to give the example that you gave before: football, right? So that you have fun in this football, like a very specific content, but then when you finish with your scrolling, then you have another feature that will give you the chance if you want to go for another digest content related to football, whatever for example sports, so you can get like a lead that it will give you another like scrolling page with the limit that it would have a limit but with like a very, with a content with a lot of quality. So I would say that.. like as a tool that it gives like the customer like quality news, in order to [filter] like this bullshit that there is nowadays in the social media, everywhere.

Researcher: Okay, cool. Next. Describe one person that would definitely use it then.

Okay, **Participant 30** , do you want to start?

Participant 30: So here I think, if we compare it with the other two, this one would be part of like more generic people like there is not a specific people that they will not use it or they will use it. So, I would say that people that they will use it will be people that they are looking for something very specific. So, they are looking for specific content that they only want to get information about that and they don't want to get anything else. So, it's a good tool for it. As well as this is a good tool for example, the video you put, the guy, the wolf or whatever, Diego. Diego, it's a good tool for him to like.. it's a person that is spending all the time scrolling out scam news. And he can be forever there, it'ss a good tool to just restrict and people's time in the device. I would say that, that's it and people that they are tired to have this news. A lot of news about nothing. They want more quality news, I would say that this is the app for that.

Participant 31: Okay, cool. What about you? Well, I thought about myself under like exam periods where I still want to be on social media, but I want to have it restricted. I want to see what my friends are doing. I want to see the things I'm interested in but I don't really want to see anything else because I know that I will have like this subconscious like scrolling thing going on. So yeah, that's more like it.

Researcher: Okay, cool. Next slide. So imagine that you are a rival company of this solution. So last thing before the final question. So which weaknesses would you highlight to make it less interesting for your persona? And what existing alternatives would you use instead?

Okay, time is up. **Participant 30** , do you want to start?

Participant 30: Yeah. I would say that the weakness that they will highlight would be how good is the engine? I would say is about tech, the answer I'm giving but it's like how good is the engine behind that to filter all this content like as a machine learning or whatever they using to do it? How efficient is it? so I think they can look for leaks there.. saying like, 'Okay, they are saying to you that they are like highlighting something but then at the end, you get a lot of scam news that you don't want or you get data that you don't want'. And as an existing alternative, I would suggest, for example, talking about the Instagram, sometimes in Instagram, you'd like to see some very specific people, it is true that Instagram already when you enter, it will give you people that you will see the most. But in, as **Participant 31** was saying, in exams period, it would be a good alternative to just select the people you want to see..no one else, even though you're following 2000 people. So to make, like more specific for you, yeah. That would be it. Sorry for my short answer here.

Researcher: No, no, it's fine. **Participant 31** ?

Participant 31: Well, I thought about some of the things I said like in the first question, maybe the thing about like, How good is restricting yourself and you put yourself into little boxes if you're missing something. It just becomes the same. Yeah. And I don't know about existing alternatives. I didn't think about that. Sorry for

my very short answers.

Researcher: No, it's fine. Last question, now imagine that you're the CEO of a health tech company, your new focus area is on tackling smartphone addiction amongst university students. So herein, consider your own environment and friends. Out of these three projects, which one would you go forward with? And why? Also, if you wouldn't go forward with any of these projects, why again, but also what would you do instead? You have 30 seconds.

[random conversations]

Okay, time is up. **Participant 31** , do you wanna start?

Participant 31: Yeah, I think I would go forward with the plugin. Actually.

Researcher: The last one?

Participant 31: Yeah. The last one. It got me the most I think. And the reason why is because I think it's quite interesting. Like, the dilemma of like, also because first of all, it's a plugin you can always like, or you can always get it away, right?

Researcher: But both the second idea and the third idea are plugins.

Participant 31: Okay, yeah, good. See, I'm not like tech [person] But yeah, I think I would, I would choose like, if I was the CEO, I would choose the last one. And even though the other ones were quite good as well. I just like the idea of having like a plug in where you can use it also as a, as an information search. Yeah. Now that was quite selfish of me thinking that way but..

Researcher: How does it tackle the area of smartphone addiction, then?

Participant 31: Um you could tackle it by like I saw like Diego, he didn't use it as much I think which is quite good, you just see the content you want to see, you don't spend endless hours. Your girlfriend don't get mad at you. And I see it as a way of like, just shorting your time and see what you want to see. That could help like with addiction

Researcher: So not lose track of time?

Participant 31: Yeah, I think like that's the perspective not lose track of time, getting more like an overview of what you're like using time on.

Researcher: So quality over quantity?

Participant 31: Yeah. And just also like limiting your time. And you can do that by like choosing what you want to see, so you can like be in control of what you're actually using your phone [for].

Participant 30: I would definitely go for the second one. Because, first of all for the smartphone addiction, the tool is giving is..basically you can use the phonebut you will have no feature on the phone. So, it would be like having a stone in your hand. And it will be like very useful because there is like this characteristic that you

can put something like calling emergency or calling the doctor, whatever, it will be keep going. Right. So as a CEO of a health tech company, I think in selling this app, where you can see first of all, which is the use that you are spending in your phone, in social life, in social media, when reading newspapers, in playing games in your phone, whatever. Plus, being able to enter in this mindful mode, where you can choose to stop using the phone and do something else, I think is the one I would go for it.

Researcher: Okay, perfect. So thank you so much. That's the end of the interview. If you have any additional comments or insights that come up in the next few days, please share them with us. You know my contact information. And please take a picture of your notes because we want to use them for documenting our Master this.

Participant 30: Good luck with this.

Researcher: And yeah, thank you so much for joining us.

Participant 30: No problem.

Participant 31: You're welcome!

Researcher: Thank you and have a nice weekend as well.

Participant 30: Thank you guys.

Participant 31: Thank you.

B.4.4 Participants 9 and 22

Ring limiter **Researcher:** : Describe 1 person who will not use this idea and why?

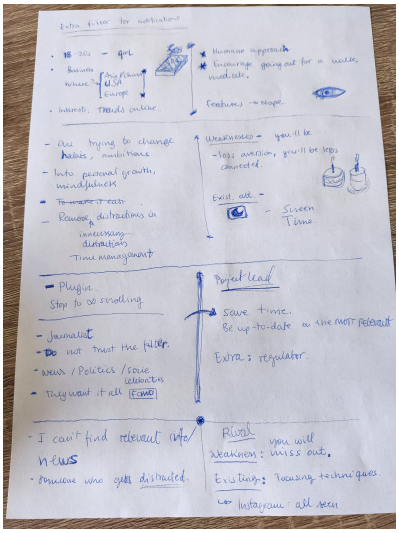
Participant 9: : I don't think there is a specific gender. I just think that probably man will use it less. I think that the person who will use it would have some kind of interactive degree, some type of art, dance. Something that is different from the typical textbook study. In developed countries. So they will not use it since most of their time is related to dancing for example, where they do not use their phones.

Participant 22: : I focused more on the fact that it is a ring. So probably this will be Daniel, he is in his 20ties and studies business. I imagine that this person is into sports so these kinds of people don't usually wear any kind of accessories, just because it is not comfortable to be fully active while wearing them.

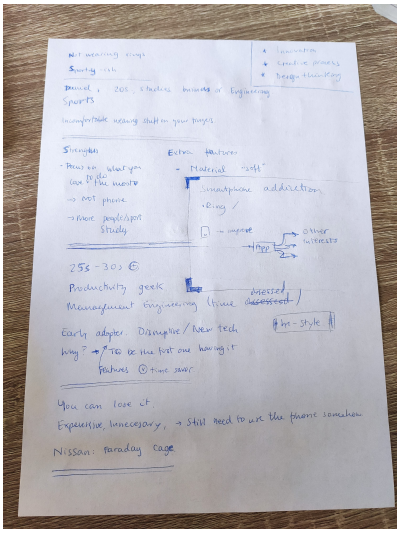
Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 22: : It will allow you to focus more on things that you love so it will help you not get distracted. An extra feature that I would add - probably for some it will be uncomfortable wearing ring all the time, so if it is made from some kind of material that is not steel or something that is more comfortable for the finger.

Participant 9: : If you can have some sort of smartwatch, why can't you just

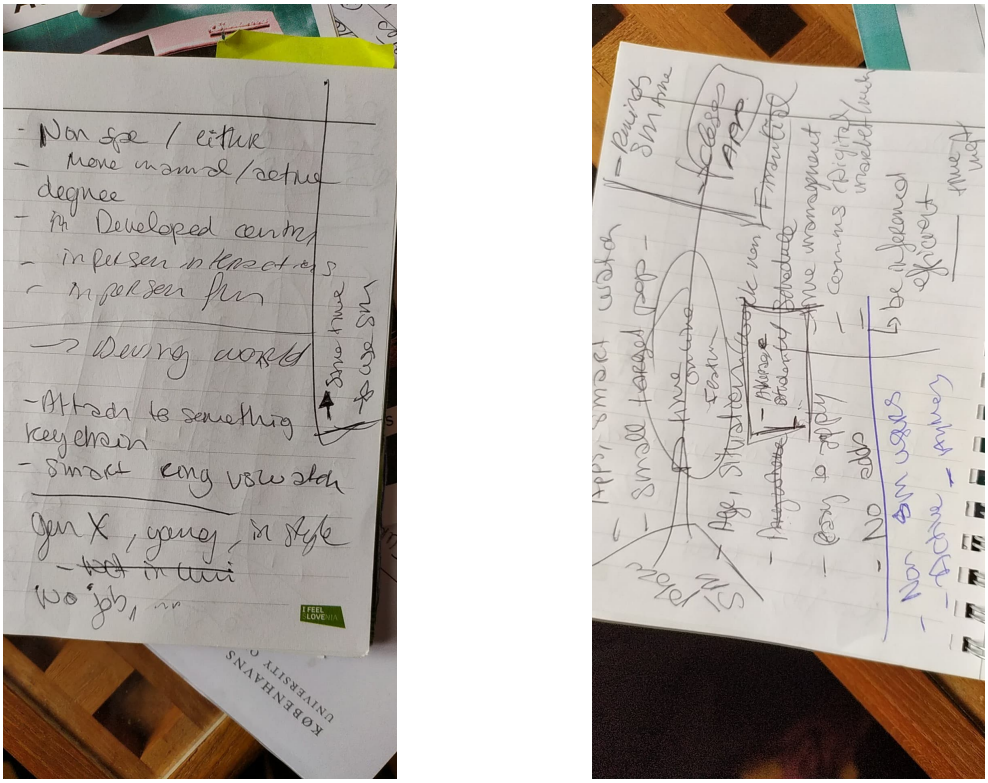


(a) Part 1



(b) Part 2

Figure B.68: Participant 9 Notes



(a) Part 1

(b) Part 2

Figure B.69: Participant 22 Notes

wear your smartwatch instead of the ring. In the essence of tracking activities. I want to highlight that it is small and doable.

Researcher: : Describe 1 person who will definitely use it

Participant 9: : I still think that it will be generally girls who will use it. I think somebody from the younger generation, maybe late high school or early stage of university. It will be from developed countries as well. The younger generation would like to keep up with the trends and I don't somebody who has a full-time job will use it - because you kind of develop your own mechanisms and don't need to track your behavior.

Participant 22: : I agree. I think that the person who will use it will be focused on building some kind of mechanisms in order to be more productive and focused. The interests of this persona will be technologies and will want to be the first to use

these things.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest instead?

Participant 9: : You can lose it easily. Another point could be that it might be expensive. And in order to use it, you need to use your phone. So this might lead to using your phone more than expected. Maybe an alternative could be, for example, couple of years ago Nissan included a feature where you put your phone aside. There was a metallic box next to the driver where you put your phone and basically you don't receive any notifications since no signal was going through this box. Something as simple as that might help.

Participant 22: : I think there are a small number of people who might use it. Even if you focus on students, I think that it will be hard to find students who want to use it and afford it. Because a lot of students don't have high paid jobs. Existing alternatives - if you can make it as an application or app feature, you don't need to use a ring. Even if it is build in your smartwatch, I think that the watch is more multifunctional than a ring.

Challenge application + Alone mode **Researcher:** : Describe 1 person who will not use this idea and why?

Participant 22: : The person I imagine that will not use this solution is somebody in their late teen years. Started university - I imagine somebody who is using social media a lot. Their interests are online, they are comfortable there so they don't **Researcher:** if they should use their time in something else.

Participant 9: : I think the opposite. I think older students because as you get older you kind of navigate through channels you are interested in so you don't get that much lost. It could be a wide range of things they could study. If you are an active person you don't intend to use your phone that much. If you have a job on top of your studies so you will spend less time on your phone if you study and work because you don't have enough time.

Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 9: : It is easy to apply. You just go to the app settings and allow it. It could be applied to any app. I don't know if I would add another feature. Maybe if there is a way it blocks ads because ads are distracting and you click on things and kind of lose track of time.

Participant 22: : This app is trying all the things that you can do. I will use it. Especially now, it will encourage me to go for a walk or something like that. I would not add an extra feature.

Researcher: : Describe 1 person who will definitely use it

Participant 9: : The person who I imagine is somebody who is trying to change their personal habits and is interested in personal growth and mindfulness. Someone who's interested in techniques on how to be more productive or how to waste less time um and they would use it because it's a tool to remove unnecessary distractions from your life.

Participant 22: : I think the same thing it's not really about the look or the gender for this one. for what they study I think it would potentially be like communication digital marketing or media even like journalism. I think it's about time management.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest instead?

Participant 9: : You can show them that it is a good way for them to spend less time on social media.

Participant 22: : A weakness is that you have to find a person who has a problem with social media. Existing alternatives - the feature that shows you how much time you spend on your phone is a good alternative.

Content digest **Researcher:** : Describe 1 person who will not use this idea and why?

Participant 9: : Somebody who is not that invested in social media. So you would not need that feature since you are not using social media that often.

Participant 22: : Knowing that this app exists I am not sure why people would not use it. So I thought of somebody who is studying communications and journalisms and they want to be up to date with what is going on and being constantly updated. And they don't trust this filter and want to know all the news related to the interested topic.

Researcher: : Imagine that you are the project lead for this solution. Which are the strengths of this solution?

Participant 9: : I think it is a good reminder of how much time you spend on social media. Phone time is more about the general idea where you can spend time checking your email or answering messages which I think is not the same. Once it comes at the end of the highlights it actually closes the app.

Participant 22: : Filtering all the information and picking only the most important information. An extra feature would be some kind of regulator where you can choose if you want to filter it a lot or not that much - you can choose chunks of information you want to receive.

Researcher: : Describe 1 person who will definitely use it

Participant 22: : I think that it would be somebody who is interested in what is going on on social media but at the same time doesn't want to spend that much

time there. They have trouble finding what is relevant information and important news. Regardless gender and age - I don't think that is that much relevant.

Participant 9: : I agree about the focus aspect. It could be a good idea for somebody who gets distracted easily. And by filtering the information it will kind of decrease the distraction in social media. I think anybody who has difficulties focusing will benefit from that.

Researcher: : Imagine that you are the project lead for this solution. Which are the weaknesses of this solution? What existing alternatives would you suggest instead?

Participant 9: : I think a weakness would be that it is for people who use social media users - you need to use Instagram, Facebook, Twitter a lot in order to be effective. An existing alternative - maybe the app where it shows you how much time you have spent on the different apps. It obviously is not the same thing but it could be a potential alternative.

Participant 22: : For somebody who is doing journalism for example could be a bad thing because they might miss important news since the phone might filter something that it thinks is not relevant for you but at the same time it is. Existing alternative - I know that Instagram has some kind of a limiter.

Researcher: : Which one of these 3 projects, which one would you go forward with and why? If not, then why again?

Participant 22: : Out of these 3 projects, I would choose the Challenge app + Alone mode. I would choose that one because I think that it will add little more motivation for personal growth and trying new things. Also the phone can suggest things that you want to do from the list you have provided.

Participant 9: : I think I will go for the Content digest. Even though I do like the Challenge app idea, sometimes you are not on your phone to waste time - a lot of people use their phone to relax and work. It can be relevant to what your day has been like. I think that most people use their phone when they are bored so sometimes it might not be relevant. I don't think ıwill buy the ring. I don't own that much technology so I don't think I want to invest in that. If there are other ways of what that ring does I will go for that.

Participant 22: : I would not use the ring because it is just another gadged. After 3 years there probably will be another version of it and the current want that I have will probably end up in my drawer and me not using it. So I don't think that it will be something that I want to spend my money on.

B.5 Fifth Iteration: Think-Aloud Usability Tests

B.5.1 Participants 32

Researcher: How does your idea Alone Mode look like?

Participant 32: I would use it for mindfulness and productivity.

Researcher: Which apps would you allow?

Participant 32: I would like to have notifications from my calendar (to keep track of my tasks) and emails (to keep track for mails from colleagues)

Researcher: Which contacts would you allow?

Participant 32: Close friends and colleagues that I am working with now. Buddies in the groups I am currently working with. It depends on my current working situation.

Researcher: When would you want it to be on? And, when do you want it to be off?

Participant 32: I think I would like it to be on during some kind of period and also it will be nice if I can adjust that period for the specific days. I would like it to be time-scheduled. I would like it to be off during the evenings, lunch breaks also weekends. I want to be connected to my social media and I want to get notifications from there. Maybe during the weekends not when I am studying, so I would not like to get notifications.

Researcher: Where would you want it situated? Should it be easily accessible?

Participant 32: I would like it to be in the drop-down menu on the top.

Researcher: Are there any features that you think are very important to include?

Participant 32: I don't have any thoughts. I would like not to have any adds.

Researcher: Do you have design preferences?

Participant 32: I want it to be consistent with my phone design.

PART 2

Researcher: From your drop-down menu, click on Alone Mode and turn it on.

Participant 32: It's pretty easy to follow.

Researcher: Select "No one" to be able to contact you when in Alone Mode.

Participant 32: I would click on "Everyone" and I will choose "No one" and I will press "OK"

Researcher: Click add button to select apps which will be allowed to use when in Alone Mode. Activate "Headspace" and "Spotify" (in the same order)

Participant 32: I would click on the plus icon. I would click on the switch

buttons next to Headspace and Spotify icons.

Researcher: Go back to "Alone Mode" settings

Participant 32: I would click on the top arrow to go back.

Researcher: Click add button to add "Alert keywords" . Add 'emergency' as a new alert keyword

Participant 32: I would click on the second plus. Then I would click on "add keywords" and type "emergency" and I would click on the bottom-right arrow circle to add the keyword.

Researcher: Select 'emergency' to be part of your keywords and then Go back

Participant 32: Then I would select it and click on the top arrow in order to go back.

Researcher: Describe what you see. Do the categories make sense? Is it aesthetically pleasing? Does it give you a good overview?

Participant 32: I see all the choices I made. All the apps I want to be active and the keywords I want people to use in order to contact me. The categories make sense. And yes, it gives me a good overview.

Researcher: Go back to your Home Page

I would click on the top arrow.

Researcher: Describe what you see - Did you notice the greyscaled apps? What do you think of this?

Participant 32: I see all my apps being blurry. And I see normal icons for the apps I chose to be active. I haven't seen the icon next to the apps's title.

Researcher: Open "YouTube" and after that cancel the pop-up notification

Participant 32: I will try to click on the "YouTube" icon. I see a notification saying that I should continue my alone mode. I think this kind of pop-up notification will motivate me not to continue with YouTube. Customizing the pop-up notification would be a good idea, but I think that I will be too lazy to do that.

Researcher: Open "Headspace" (Let's assume that you are trying to spend some Alone time and meditate). While you are meditating, you receive a notification. (Have to click on the screen so you can see the alert notification). Describe what you see

Researcher: Does this screen make sense for you? Do you understand that the alone mode when you reply to the message?

Researcher: Would you prefer if the alone mode was automatically turned off and you directly saw the message with the emergency keyword?

Participant 32: I see a notification from Alone Mode and I see that I have received a mail from somebody who used "emergency" in his mail. I would also want

to see some part of the message. Like Google for example - seeing the first part of the message when I receive it.

I actually don't want to see that it is from Alone Mode, I would just want to see the message.

I want to approve when my Alone Mode is turned off and if I reply I don't want the Alone Mode to be turned off automatically. I didn't know that from the beginning. Maybe it is a good idea to put some text which will tell you that it will get turned off automatically.

Researcher: What do you think of this feature? Would you use it?

Participant 32: It looks very similar to Samsung's Focus Mode, but yours have some new features added (like turning off). I will use it during my studies. I think it is a nice idea. I am a bit afraid of my privacy because this means that the app will read all my messages in order to see if alert keyword has been used.

Researcher: Would this help you foster a healthier relationship with your smartphone?

Participant 32: I think it might be. The problem is that in case I can't access my YouTube from my phone I might just go to my laptop.

B.5.2 Participants 33

Researcher: How does your idea Alone Mode look like?

Participant 33: I will try to lock all of the social media apps. Or maybe the ones that you have the option to scroll infinitely. I will probably leave on the apps where I can only communicate with people because this could be productive sometimes. I will use it for both productivity and mindfulness reasons. But mostly I will use it for productivity because I find myself wasting my time on my phone.

Researcher: Which apps would you allow?

Participant 33: WhatsApp, meditation apps, apps where you listen to music, read books.

Researcher: Which contacts would you allow?

Participant 33: I think the closest family and friends so I can be available for them if there is an emergency.

Researcher: When would you want it to be on? And, when do you want it to be off?

Participant 33: I would have it rescheduled but I want it to have it turn it on and off whenever I want. For example, I would like to prolong it if needed.

I don't want it on during the afternoon and in the evenings. I would not want it on when I am leaving work because normally this is the time where I connect with people and check social media.

Researcher: Where would you want it situated? Should it be easily accessible?

Participant 33: I would like it to be there the sleep mode and do not disturb mode are located.

Researcher: Are there any features that you think are very important to include?

Participant 33: I think it will be relevant if you can choose from different categories of apps that you would like to limit - the amount of time you want to spend.

Researcher: Do you have design preferences?

Participant 33: I would like it to be consistent with my phone design but at the same time motivate me to use specific productivity apps.

PART 2

Researcher: From your drop-down menu, click on Alone Mode and turn it on.

Participant 33: It is easy to follow.

Researcher: Select "No one" to be able to contact you when in Alone Mode.

Participant 33: I will click on "Everyone" and select "No one" then I will click

on “OK”.

Researcher: :Click add button to select apps which will be allowed to use when in Alone Mode

Researcher: Activate “Headspace” and “Spotify” (in the same order)

Participant 33: I will click on the plus sign and then click on the switch buttons next to the specific apps I want to allow.

Researcher: Go back to “Alone Mode” settings

Participant 33: I will click on the top arrow.

Researcher: Click add button to add “Alert keywords” **Researcher:** Add ‘emergency’ as a new alert keyword

Participant 33: I will click on the plus sign. I will click on “add keywords”. Then I will tap the different letters in order to write the word into the input area.

Researcher: Select ‘emergency’ to be part of your keywords **Researcher:** Go back

Participant 33: I will select the word and then click on the top arrow in order to go back.

Researcher: Describe what you see **Researcher:** Do the categories make sense? **Researcher:** Is it aesthetically pleasing? **Researcher:** Does it give you a good overview?

Participant 33: I can see that I am in Alone mode. It is pretty easy to see when it is on and off. I can see that there are 3 different features - where you can choose who can contact you, what apps you allow and what keywords you allow people to reach out to you when you are in Alone Mode.

I think they make perfect sense - the categories. It gets through everything that offers you and also it is very minimalistic at the same time.

What I don’t see is the automatic reply - to customize what people will receive as a reply when they want to reach you - you can choose text and also when you want to go into an app.

Next to “Contacts” should be the feature about the message people get - the automatic reply. And next to the “Allowed apps” you should have the option to customize the message you will receive when trying to get into a specific dissabled app.

Researcher: Go back to your Home Page

Researcher: Describe what you see

Researcher: Did you notice the greyscale apps? What do you think of this?

Participant 33: I see that all of the apps that are not allowed are greyed out

and I can see the Alone Mode icon next to the apps so it let me know why they are greyed out. And I can see that the apps I have allowed are fully accessible. At least this is what I have perceived. I think this is nice, because it makes it very obvious which apps are accessible and not. I think the grey scale is fine. I think that the colors should stay the same because users associate the apps with image and if you see something else you get a bit confused.

Researcher: Open "YouTube" **Researcher:** Cancel the pop-up notification

Participant 33: I expect not to be able - yes. When I try to open YouTube, I see that I am in Alone mode. I like that I have a motivational message. I think I don't want to be given the option to turn it off directly. Instinctively you will just go to turn it off, because it is just one more tap. Maybe add an extra step or go to "Settings". If you would like to turn it off, please go to "Settings" and I would not provide a link, so I put the temptation away.

Researcher: Open "Headspace" (Let's assume that you are trying to spend some Alone time and meditate). While you are meditating, you receive a notification. (Have to click on the screen so you can see the alert notification).

Researcher: Describe what you see **Researcher:** Does this screen make sense for you? Do you understand that alone mode when you reply to the message? **Researcher:** Would you prefer if the alone mode was automatically turned off and you directly saw the message with the emergency keyword?

Participant 33: I like the way it is shown to you that there was an emergency and that's why it gives you that notification. What is odd to me is the question: "Would I like to turn off the Alone mode" and the options I have is to "Reply". This does not seem to be related to the question above.

Maybe if I swipe down I would like to see a sentence of the message I got. I want to reply to emergent things but not necessarily take me out of the Alone Mode.

Researcher: What do you think of this feature? Would you use it?

Participant 33: I really like the idea - especially for myself and people my age group which tend to overdue their time spent on their smartphones. If you want to do something that it is not part of your goal it reminds you to stay focused.

Maybe if there is an option where I can add goals for the day in, so this way I feel motivated to finish them. I would prefer it to be simple.

Researcher: Would you recommend it?

Participant 33: Yes, I would.

Researcher: What would you add or change?

Participant 33: I think the features we talked about - customizing your messages.

If you set goals for yourself and you are not using the apps related to your goals

(for example reading) it reminds you that you haven't followed your schedule.

Researcher: Would this help you foster a healthier relationship with your smartphone?

Participant 33: I think so, because it will allow me to not give into distractions as much and if I see that I am in Alone mode and it doesn't give me access to distracting apps this will help me to put down my phone and continue focusing.

B.5.3 Participants 34

Researcher: How does your idea Alone Mode look like?

Participant 34: I am way too dependent on my phone to do it. I am always on my phone. Even now I am looking at it - will I get something. I think it is because I don't want to miss out - I am always getting snaps from my friends so for me it will be more like mindfulness. I started doing meditation lately, so I think that my phone might be a problem. I am getting problems with my eyes but I don't know if I am ready to do something about it - what am I going to do without my phone? Everything is on my screen, so I don't know what I will be doing without my phone.

Researcher: Which apps would you allow?

Participant 34: I don't have notifications on for most of my apps. Maybe just messenger, because my mom texts me there.

Researcher: Which contacts would you allow?

Participant 34: My mom, but if somebody wants to contact me, I don't think I will put my mindfulness above. I will still take this call.

Researcher: When would you want it to be on? And, when do you want it to be off?

Participant 34: I can't picture myself using it. I am associating it with existing apps, so it's like I put a label on myself. I realize that I am always seeking to text people, meet people. And if I am not physically with them then it is through my phone.

Researcher: Are there any features that you think are very important to include?

Participant 34: I think it is all in the way you communicate it. If you promote it in a positive way - hey this is not away from us to take you away from your phone and it is about your mental health. Not play it negatively like - you are spending too much time on your phone.

Researcher: Do you have design preferences?

Participant 34: My mind thinks about a tree. Maybe something like an organic shape - this is not a software but something that helps you with your mental health.

PART 2

Researcher: From your drop-down menu, click on Alone Mode and turn it on.

Participant 34: Easy to follow.

Researcher: Select "No one" to be able to contact you when in Alone Mode.

Participant 34: It is pretty straight forward.

Researcher: Click add button to select apps which will be allowed to use when in Alone Mode

Researcher: Activate “Headspace” and “Spotify” (in the same order)

Participant 34: It is easy to follow.

Researcher: Go back to “Alone Mode” settings

Participant 34: I would click on the top arrow in order to go back.

Researcher: Click add button to add “Alert keywords”

Researcher: Add ‘emergency’ as a new alert keyword

Participant 34: Easy to follow.

Researcher: Select ‘emergency’ to be part of your keywords

Researcher: Go back

Participant 34: I would click on the top arrow in order to go back.

Researcher: Describe what you see

Researcher: Do the categories make sense?

Researcher: Is it aesthetically pleasing?

Researcher: Does it give you a good overview?

Participant 34: No one is allowed to contact me. I can use Headspace and Spotify while being on Alone Mode and my keywords are added. So if someone is texting me with one of those keywords, then I will get a notification from the app.

The categories make sense.

Researcher: Describe what you see

Researcher: Did you notice the greyscaled apps? What do you think of this?

Participant 34: The apps I haven’t allowed are blurred. I think this is a good indicator that I am in Alone mode. So if you put it on mistake, you can easily understand why the apps are greyed out. And it helps you to be more aware of what you can use - only these two apps. Making the screen black and white this would be a little bit more aggressive.

Researcher: Open “YouTube”

Researcher: Cancel the pop-up notification

Participant 34: It’s a good thing that you can turn it off. Do you really need it? But also, like, if you read the message is like, Okay, do I really want to do this like, Okay, I’m actually doing pretty good. Maybe it’s better not to. So I think it’s a matter of urgency, like, if you really have to, if you’re really done with it like, or if you just need it for one minute, I don’t know, I feel like I would need this kind of escape door just just so I don’t feel really, really constrained. And I feel like yeah, most people have this fear of commitment, right? Like, I have, I have to have a way out. I cannot fully commit to this thing. So yeah, I think it’s a really good feature.

But, maybe like most people are like me. I don't know, but just because I'm so addicted to it, I think I would know, you know, but, uh, yeah, maybe something. I'm sure you thought about it like a password for it. to kind of put people off a little bit, or like make it a bit easier not just one click away. Um, honestly, I don't know what to think about it. I'm sure it would be a good way of. Yeah, as I said, make it a bit harder to disable. And at the same time still allowing people to back off from it.

Researcher: Open "Headspace" (Let's assume that you are trying to spend some Alone time and meditate). While you are meditating, you receive a notification. (Have to click on the screen so you can see the alert notification).

Researcher: Describe what you see

Researcher: Does this screen make sense for you? Do you understand that the alone mode when you reply to the message?

Researcher: Would you prefer if the alone mode was automatically turned off and you directly saw the message with the emergency keyword?

Participant 34: So, I think that once I'm actually meditating, I would get annoyed. Now I'm doing it like it took me so long to actually start doing it. And I'm so proud of myself. And who sends email and what's the emergency and who are you like? It depends on a lot of creation.

Well, if we, if it would be my phone, then of course, I would know who's sending the email. But what if it's just like, you know, a newsletter using the word emergency?

Ignore reply, maybe ignore or see, maybe I just want to see you not reply.

I would just like to reply, and then Get back to it.

Yeah, I think that would be much better than actually having to click and get out of the app. And then I can just like, see for myself and decide for myself if it's actually an emergency or not. And if it's not, then I can just ignore without having to exit the app.

Researcher: What do you think of this feature? Would you use it?

Participant 34: Actually, I think it's it's pretty good idea. And I was pretty excited when I finally introduced the report of your screentime. You know, it's kind of, maybe you could I don't know if thought about it, but maybe you could include it in that way and have like, How much time did you use in your alone time and kind of because I feel like if you see the overview of it, and then you see how you evolve, then you kind of have more. You're more inspired or motivated to use it more. Once you make it like a competition, let's say, because whenever I see, okay, your screentime was 70% down this week, I'm like, good for me. You know, it's like I'm really proud of myself that I actually managed to cut down on it. So that can kind of like motivation. vacations like, hey, you've done really good this week. Keep it going. I think that would be helpful.

I don't think I would incorporate it in my daily routine, let's say but certainly

if, if I would decide somehow to, you know, take a break from my phone, I think it would be really helpful.

Researcher: : Would you recommend it?

Participant 34: : Yeah, I think I think actually, my friends would love it. They're all studying medicine. So they're pretty hardcore study studies. So I'm sure they would love it. Because I know for sure they're using the apps and this is so much more.

Researcher: : What would you add or change?

Participant 34: : I think it would be cool to have some, like notifications, like maybe just once per week, so it's not really buggy. But like, hey, if downgrade this week compared to last week is so much better, and then you start to feel like you're actually making progress now.

Researcher: Would this help you foster a healthier relationship with your smartphone?

Participant 34: I think the problem is that we're all aware that our habits are not healthy. But I think very few of us are actually willing to do something about it. So maybe this is like a small step towards that, but I honestly doubt if it's possible to have a healthy relationship. We've gone too far, you know, this is like, an extra limb for me. Yeah. So yeah, but definitely a good step towards that goal.

So obviously now would be reducing the time I use my screens because my eyesight is bad. So like, I have physical signs, okay, this is bad for you. You should stop but I just I just can't so I just don't.

I see it as something that's necessary. That's part of me. Basically, it's really weird. How would it be more healthy? I don't know, maybe maybe it's about social media as well, because there's a lot of crap in the news as well. It's like fake news. I think it's a matter of content as well, of what I'm thinking about not only like how much time I spend on it, but what I'm consuming as well. Because everything that's on there, it's kind of messing with you.

I am so used to using my phone so I don't see it as unhealthy. But if I really stop and think about it - everyone is doing it. If I stop doing it, maybe it is the new normal. I think that FOMO is what makes people use social media so if there is something about that I would use it.

B.5.4 Participants 35

Researcher: How does your idea Alone Mode look like?

Participant 35: I think I would go with the productivity part. Mm-hmm. Because of course like when you hear all your notifications and everything like while you're doing something you're more prone to kind of stop and go check it. So I think it would be really nice if I could like to turn off some of them but still keep, for example, my email notifications which are important.

Researcher: Which apps would you allow?

Participant 35: Just emails.

Researcher: Which contacts would you allow?

Participant 35: Um, I think if it was during the time where I was working, I would only leave like people that are directly related to my work so that they are able to contact me. Also my family.

Researcher: When would you want it to be on? And, when do you want it to be off?

Participant 35: Um, I think it would mainly be doing like working hours. I think it would also help me to kind of set the time for me to Work and then you know, after that I can just relax into other stuff. So during the week, like during the working hours.

I think scheduling would be nice because you don't always have the same like schedule every day. So it would be nice to schedule it according to your needs.

Researcher: Where would you want it situated? Should it be easily accessible?

Participant 35: Either like directly there in the main menu that you can access really easily, or actually like having it as an app on your home screen is also a good idea.

Researcher: Are there any features that you think are very important to include?

Participant 35: I guess it would be really nice if you could, like, really customize it like a lot to yourself, um, be able to kind of choose the apps you want to turn off, turn on and like maybe set the times when I'm really being like making really flexible so that everyone can make it like personal.

Researcher: Do you have design preferences?

Participant 35: No, I think as long as it's like user friendly, I don't really mind design.

PART 2

Researcher: From your drop-down menu, click on Alone Mode and turn it on.

Participant 35: Easy to follow.

Researcher: Select “No one” to be able to contact you when in Alone Mode.

Participant 35: Pretty straight forward.

Researcher: Click add button to select apps which will be allowed to use when in Alone Mode **Researcher:** Activate “Headspace” and “Spotify” (in the same order)

Participant 35: Easy to follow.

Researcher: Go back to “Alone Mode” settings

Participant 35: I would click on the top arrow.

Researcher: Click add button to add “Alert keywords” **Researcher:** Add ‘emergency’ as a new alert keyword

Participant 35: Easy to follow.

Researcher: Select ‘emergency’ to be part of your keywords **Researcher:** Go back

Participant 35: Easy to follow.

Researcher: Describe what you see **Researcher:** Do the categories make sense? **Researcher:** Is it aesthetically pleasing? **Researcher:** Does it give you a good overview?

Participant 35: Okay, so I can see that no one can contact me right now. Then I can see that the only apps that are allowed are that space and Spotify. No. And I have my alert keywords which are emergency hospital and urgent. So I think these categories make sense.

Maybe like a timer? No. Okay, that word that you could set when it would actually just turn itself off. So you don’t really have to think about it now.

Researcher: Describe what you see **Researcher:** Did you notice the greyscaled apps? What do you think of this?

Participant 35: Okay, so the apps that are off now are kind of like shaded. Yeah. And you can see the ones that are on like, bright compared to the others. I think it’s really nice. And it’s clear like which ones are active and which ones are not. maybe not to recognize them would be the easiest so you can actually choose what to click on.

Researcher: Open “YouTube” **Researcher:** Cancel the pop-up notification

Participant 35: Can I actually do that?

Yeah, that’s nice. I think the turn off the mode should be harder to access.

Researcher: Open “Headspace” (Let’s assume that you are trying to spend some Alone time and meditate). While you are meditating, you receive a notification. (Have to click on the screen so you can see the alert notification). **Researcher:** Describe what you see **Researcher:** Does this screen make sense for you? Do you understand

that the alone mode when you reply to the message? **Researcher:** Would you prefer if the alone mode was automatically turned off and you directly saw the message with the emergency keyword?

Participant 35: And then once you would click reply that would turn off the loan load would just send you to the email?

Maybe it would be nice if you could just go directly to the email without necessarily turning everything off. Because then you just focus on the emergency part without having all the other notifications come in.

I think it would be good to have a bit more information. I would prefer to answer the message and still have the Alone mode on.

Researcher: What do you think of this feature? Would you use it?

Participant 35: I think it's a very good idea. Um, I think it already happened to me sometimes that I was actually, you know, wondering, or like telling myself, what would be nice if I could, for example, turn off certain things on my phone for a certain amount of time, it would probably really help me to be more productive. So I think it's a very good idea, and I would definitely use it.

Researcher: Would you recommend it?

Participant 35: Yes, my supervisor maybe because she always gets distracted with older emails.

Researcher: What would you add or change?

Participant 35: Have you thought of actually also giving an option where, like, you set a timer for example, for when you want it to be off and you can actually Absolutely not turn it off. Mm hmm. Like maybe a password thing, or like, just like for example, if someone really wants to be productive and I would probably use this like, let's say now I need four hours of, Okay, I'll just leave whatever is really important on and the rest will be off. Because like like this if you started clicking on applications, you have the option to actually turn it off and open it

Researcher: Would this help you foster a healthier relationship with your smartphone?

Participant 35: I think so. Yeah. I mean, I think at the beginning, it would always be hard and tempting to kind of, you know, go back to what you're used to, but it's a thing of habit. So if you would really get into using this, then I think you could really, you know, get used to just doing it automatically at some point.

B.5.5 Participants 36

Researcher: How does your idea Alone Mode look like?

Participant 36: Yeah, actually, like sometimes when I whenever I look at my phone like it's even if I'm looking for one reason immediately I, as soon as I touch my phone, I forget and then they just move into something else look into social media. And then if I try to be productive, then what could have been only like 30 seconds or something becomes like 5-10min even half an hour, right.

Researcher: Which apps would you allow?

Participant 36: Apps related messaging, so WhatsApp Messenger. I think, pretty much show me those two. I don't scroll through the messages. I just replace them mostly replay and then I just use them anymore. What struck me the most is social media like Twitter, the actual Facebook and Instagram.

Researcher: Which contacts would you allow?

Participant 36: Like close friends and my family

Researcher: When would you want it to be on? And, when do you want it to be off?

Participant 36: for like a tool better to have both options available. Because then you can scale but sometimes you can also, like, move right? When you went to be productive on it, and then if it's scheduled then I would rather do it like from 10 - 15:00.

Researcher: Where would you want it situated? Should it be easily accessible?

Participant 36: In the drop-down menu. Not scrolling too much.

Researcher: Are there any features that you think are very important to include?

Participant 36: Not that I can think of any right now.

Researcher: Do you have design preferences?

Participant 36: I think that as long as it goes well with the design of iOS.

PART 2

Researcher: From your drop-down menu, click on Alone Mode and turn it on.

Participant 36: Easy to follow.

Researcher: Select "No one" to be able to contact you when in Alone Mode.

Participant 36: Easy to follow.

Researcher: Click add button to select apps which will be allowed to use when in Alone Mode

Researcher: Activate "Headspace" and "Spotify" (in the same order)

Participant 36: Easy to follow.

Researcher: Go back to “Alone Mode” settings

Participant 36: Click on the top arrow.

Researcher: Click add button to add “Alert keywords”

Researcher: Add ‘emergency’ as a new alert keyword

Participant 36: Easy to follow.

Researcher: Select ‘emergency’ to be part of your keywords **Researcher:** Go back

Participant 36: Easy to follow.

Researcher: Describe what you see

Researcher: Do the categories make sense?

Researcher: Is it aesthetically pleasing?

Researcher: Does it give you a good overview?

Participant 36: I’m seeing a menu with four options, allowing me to set on and off the low note. And then specify the three things that you told me about the contracts that we want to allow to continue during the alone mode, the apps that I want to be accessible and the keywords and whatever I feel is that it is really simple.

I’m just unsure about whether this is going to be like a permanent state or do I have to modify it every time?

Researcher: Go back to your Home Page

Participant 36: Easy to follow.

Researcher: Describe what you see **Researcher:** Did you notice the greyscaled apps? What do you think of this?

Participant 36: The apps I have not allowed and grayscale. This definitely shifts my attention to the apps I have allowed.

Researcher: Open “YouTube”

Researcher: Cancel the pop-up notification

Participant 36: I think it’s actually nice because it’s like it doesn’t, it doesn’t allow like a mid ground, right? And I feel like turning it off. It’s like, personally for me, it’s the message of a journal trying to focus anymore. Which means man makes me reconsider what I’m doing.

And I think the fact that it is like a motivating statement at the beginning, you’re doing pretty nice, like encouraging to keep working.

So, for me, this is a good experience that I will be looking for while using this kind of mode. Because if you actually want to turn it off, you don’t want to go through, like a lot just turn it off. No, I want to turn it off quickly, but I also want to feel like

this message really makes me conscious about me turning it off.

Researcher: Open "Headspace" (Let's assume that you are trying to spend some Alone time and meditate). While you are meditating, you receive a notification. (Have to click on the screen so you can see the alert notification).

Researcher: Describe what you see

Researcher: Does this screen make sense for you? Do you understand that the alone mode when you reply to the message?

Researcher: Would you prefer if the alone mode was automatically turned off and you directly saw the message with the emergency keyword?

Participant 36: If I get an emergency I guess I won't be focusing anymore or anything like to attend emergency writes.

Researcher: What do you think of this feature? Would you use it?

Participant 36: it's nice. I am not too sure if I have something similar before, but differently, at least with this prototype. I liked that it was easily accessible. I would use it also. I will also, think it would be nice to include a set of suggestions for like, emergency words, because sometimes I myself cannot come up with all the possible emergency words that could be used.

Researcher: Would you recommend it?

Participant 36: Yes, in normal talk. Not actively recommend it.

Researcher: What would you add or change?

Participant 36: Alert keywords suggestion list.

Researcher: Would this help you foster a healthier relationship with your smartphone?

Participant 36: I just use my phone without any purpose. And I feel like this will help me to be more conscious about it, which is, which I think is accomplished by this message that is displayed when you try to click on an app that is grated, shaded. I think it will help me be more conscious about how I use my phone in ways and have a healthy relationship.

APPENDIX C

Additional Interview Quotes

C.1 First Iteration: Initial User Studies

C.1.1 Morning routine

"It actually plays a role in my wake up process (...) so first, I open my eyes, I'm really tired and then while checking Instagram, the news, Facebook, Reddit and all this stuff then in that half an hour, I slowly wake up so that's basically supplement for my waking up"

- ***Participant 1***

"I use my smartwatch to wake up. It has to communicate with my phone. When I wake up, I check my notifications on my phone, since it is silent during the night. "

- ***Participant 10***

"First to stop my alarm. And then just to check, because I usually in the morning have a lot of notifications from the apps. Doesn't matter if it's Instagram or messenger, but people have sent me memes or my parents are texting me. And yeah, it's just to check my notifications if there's something really important to answer."

- ***Participant 12***

"[First thing in the morning] I turn off my alarm. (...) Check for messages as well. (...) Social media sometimes. (...)maybe like 10 to 20 minutes."

- ***Participant 13***

C.1.1.1 Evening and bedtime routine

"And then I have a really long going to bed process because I check crazy amounts of useless information on my phone like, okay, I take on my PJs, then I do something on my phone then I go and brush my teeth then I do something on my phone then. I don't know - I go to the shower and then do something on my phone like it's really scattered. Yeah, my bedtime routine is is horrible"

- ***Participant 1***

"If I'm in bed for like 30- 40 minutes and I can't sleep, I go on my phone."

- ***Participant 2***

"Well, I'm in bed around midnight, but then, I don't know, it depends how much time I need to fall asleep. If I'm too tired, I'm falling asleep immediately. If I'm not sometimes it takes me like, one hour even two, if I'm on my phone, which is usually"

- ***Participant 12***

"I mainly use the computer for leisure time or so to speak. After I eat, the break that I take is on the computer and when I try to sleep, it will be on my phone. I think I usually stay on my phone until I get tired, which would be around like 9.50 or 10."

- ***Participant 13***

C.1.1.2 Breaktime routines

"Actually I sometimes do that. that is only if I just want to take a break and I just go to the toilet with my phone"

- ***Participant 1***

"I think Instagram is something that I can't live without. I like to see photos of what other people post and take a break. I can't work without a break, I am not productive without a break - if there is an alternative - like sometimes I make tea and I am not looking into Instagram. (or talking with somebody else). I have this kind of routine to use it for 10 mins. I usually don't exceed these 10 minutes."

- ***Participant 5***

C.1.2 Habits

"Yeah,it's like an instinct. (...) It's completely a habit. It's completely a habit for spending time. "

- ***Participant 1***

"I think because it becomes a habit. (...) it just feels so normal to everyday."

- ***Participant 6***

"I do check my phone. I think out of habit sometimes. Like if I receive the message, then I check it but mostly I think it's out of habit just to check (...) if I've gotten a message even though I don't have any notification or if you know something new pops up on Instagram or Facebook. (...) I would just take it just to do something different."

- ***Participant 13***

C.1.3 Comfort zone

"Because I love my phone to be organized. If I have like everything is on one side or the other. Yeah, [changing the apps positioning] will be (...) annoying"

- ***Participant 2***

"I think that moving the [app] icons actually made it worse since I had to search for every single application when I needed it."

- ***Participant 4***

"I wouldn't keep my phone grayscale to reduce my time on social media; only if it was only on the apps instead of the whole interface"

- ***Participant 5***

"[The greyscale challenge] (...) it's uncomfortable. It would decrease the screen time but it's not sustainable"

- ***Participant 9***

"My challenge was to have my colors on my phone like black and white for a week, so Thursday when I put the colors off, and I was like 'Oh, my God, this is so strange. I don't know if I can do it for one week'. (...) 'if my colors are not on, I will not be attracted to my phone anymore'. I was like that the first day I was like 'my phone is not attractive to me anymore. I hate it. It's so boring. I don't know what to do on it when it has no colors.'"

- ***Participant 12***

C.1.4 Alone

"While I eat alone, all the time [I have my smartphone] (...) Sometimes as well. If we run out of topics or something or if I am excluded from a discussion with my colleagues or something like that, because they are talking about some professional stuff then I check my phone instantly."

- ***Participant 1***

"A few months ago - taking the train to go home [alone]. I thought I lost the phone. Everything was on my phone - the phone is essential during travel. I was outside my comfort zone. I lost my connection to the world at the moment I needed it. I needed to solve things differently to have the day how I wanted it to be."

- ***Participant 3***

"When I am eating breakfast - yes, because I am alone and I don't have anybody to talk to"

- ***Participant 5***

"Most of the time, [I use my smartphone], when i am alone (...) In the evening, normally I try to not use it much when I'm with people, when I'm eating.."

- ***Participant 6***

"During lunch, I don't use it when I am having lunch with the other, but when I am alone - I am on my phone."

- ***Participant 10***

"For me, the most important is google maps, so I can check where I am going, to check when the bus is coming. Then it is important for me to listen to music while traveling (...) Just like a distraction while I eat."

- ***Participant 11***

"[When I am commuting alone] I listen to music all the time or I'm scrolling on Instagram. All the time. When I'm in the metro, my face and my eyes are on the phone. Sometimes I even see people who are like in the metro, and I know them, but I'm so focused on my phone and I don't even see them and then I have to be sorry: 'sorry, guys.' (...) because there I'm alone. For example, if I'm at school and I'm around people, I sometimes forget about my phone. But when I'm home, I also forget about my phone because I'm putting the TV on and someone is talking to me, you know, but when I'm in the metro, I seriously need to listen to something. So I need my phone to put some music on. And then I'm traveling for around 30 minutes. So 30 minutes, I'm just scrolling and looking at some things on my phone.(...) When I'm alone, I need it the most (...), sometimes I'm taking the metro with one girl that I know. She's living close to me. And then I just see myself that I'm not using my phone. I'm just keeping in my hand, but I'm not even unlocking it."

- ***Participant 12***

"Yes, I do play music while I walk to distract me."

- ***Participant 13***

"If I have a message or sometimes when I'm bored, I'm on Facebook, but it depends on the conversation. (...)If the other people are boring.."

- ***Participant 2***

"(...) usually another distraction on the phone, but still, it would allow me to check something and occupy my mind"

- ***Participant 9***

"(...) when I am bored, I go to Instagram, just for the sake of going there. Sometimes I have seen everything on Instagram and I would scroll through because I am bored (...) [social media] is good as a distraction when you are bored. I am also used to it, but I want to change it."

- ***Participant 11***

"I think.. so maybe when I feel alone you know. Not conversating with someone or not having someone to talk then I would go on my phone. I think some people choose to read a book, but I just choose to be on my phone (...) Other than that, I think when I'm home and I just need something to do. (...) I wouldn't know what to do by myself, I think to be honest, yeah."

- ***Participant 13***

"I think when I am in public, and (...) I don't feel like talking with people, I don't feel comfortable with them. Then I'll be on my phone. (...) I would just browse social media (...) Just to have something to do, I guess.. to feel busy. (...) I don't remember the first time but I remember (...) a specific time where it made me think that I could rely on my phone (...) I was in the bus. And for some reason, I started to feel very anxious. And I felt like people were maybe staring or judging or I didn't know what to do or who to call so I just tried to focus on my phone and use it as much as I could at that time. (...) I can focus on that rather than people around me. (...) "

- ***Participant 13***

C.1.5 Deconstruction of time

"(...) that's just my feeling and the screen time shows something different"

- ***Participant 1***

"Maybe I am not aware, but I don't feel like I have to track my time."

- ***Participant 5***

"Sometimes, I can not keep track of everything I do, but mostly I am trying to set up some limits (...) sometimes I lose complete track of how much time I spend on my phone, but around 45 min."

- ***Participant 8***

"(...) if I watch a video I don't realize how much time I have spent."

- ***Participant 11***

"Yeah, [losing track of time] usually happens.(...) It's sometimes around 30 minutes (...) I feel like I'm losing a lot of time when I'm watching a video. "

- ***Participant 12***

"I think I lose track of the time in a sense where like, I can always see how much time I've spent on it, but I don't get a sense of reality. Like if an hour passes by I don't go 'oh, I've been on my phone for a whole hour', it's not like that. I know how much time I spent on it. But I don't really put in perspective and say 'Oh, that's too much'."

- ***Participant 13***

C.1.5.1 Procrastination tool

"Because sometimes it distracts me. Like while I'm studying and I don't want to study if I receive a notification immediately I will go on my phone. So it's just like an excuse to not study."

- ***Participant 2***

"(...) when I am studying, not as productive [because of the smartphone] (...) less interesting to study and can get very theoretical (...) I'd rather focus on easier things"

- ***Participant 3***

"Mainly when I am working on something that is a bit boring and when I have my phone, it is very easy to get distracted."

- ***Participant 5***

"I feel like I need to study a lot of things and I'm just procrastinating those things and I'm just doing something that (...) is funnier, and it's less boring (...) because I need to prepare for the interviews and stuff and that's something that it's not motivating me and it should."

- ***Participant 6***

"When I know that I have to study or do something and my focus and motivation are not that much and I find myself watching some videos on Youtube, then I feel less productive."

- ***Participant 8***

"(..)in scenarios when I am not too motivated to do my tasks"

- ***Participant 9***

"It is not really losing track of time. I know how much time I am watching this video - I know what the time is, but I just keep on not starting doing something else."

- ***Participant 10***

"(..) if I have to read something for school I can easily get distracted."

- ***Participant 11***

"(...) because I'm not doing anything when I'm on the phone. I'm just procrastinating. (...)When I am supposed to do schoolwork, but I choose to reach out to the phone."

- ***Participant 13***

"So the thing is that whenever it turns out that I [am] actually kind of addicted to my phone and use it more, I always feel bad so that would be guilt again. But I'm yeah, I'm really bad at getting rid of bad habits, actually. I'm really bad. And, I don't know I always feel guilty."

- ***Participant 1***

"Because after being on the phone for a long time, I just cannot sleep like my sleep goes away and then I cannot sleep (...) I don't know if it's the blue light or something and it's just like changing the patterns of sleeping."

- ***Participant 6***

"I stay up on the phone because I am not that tired. Or maybe this is what I think"

- ***Participant 11***

"[Because of the smartphone I sleep] Like a half an hour later (...) I think it's because I have something to distract myself that I would rather do (...) So I just scroll through the phone."

- ***Participant 13***

C.1.6 Urgency

"My phone is next to me, not under my pillow. The phone is always on, however, it is disconnected from the network. The sound is on vibration, so if somebody needs me for something important, it wakes me up."

- ***Participant 4***

"Maybe sometimes I feel anxious just to check my phone if I receive something (...) If I don't have my phone, it's like 'Oh, I need to go and get my phone and see if I receive anything' (...) It's that feeling of missing something that you need to check (...) I guess I just got so used to it to have the phone next to me and just check. It is something that I'm doing [subconsciously] without thinking (...) like contact with friends and family."

- ***Participant 6***

"(...) it would be weird - because I am used to being able to check the messages relatively often (...) especially in student organizations, urgency is important (...) For urgent stuff, we talk through messenger. For less urgent, it is on slack but the fact that it is on my phone makes it feel urgent"

- ***Participant 9***

"Yes, it is on, next to my head on sleep mode."

- ***Participant 10***

"(...) my phone is turned on but my Wifi is not so I'm not receiving notifications while I'm sleeping (...)It's next to my bed, but it's not under my pillow."

- ***Participant 12***

C.1.7 F.O.M.O

"(...)there's definitely a part of the fear of missing out in the morning because, mostly with the news, I'm quite interested in what was happening in the world and if if something happens during the night like something big like, I don't know, the President of the United States dies or something like that then I would feel really really stupid 'Oh, I I went all the way until three o'clock and I didn't know about this thing'. And that that makes me feel a little bit strange"

- ***Participant 1***

"(...) When I was feeling quite down and saw everyone doing all the crazy stuff and having a lot of friends and smiling all the time and stuff like that and that happens quite often."

- ***Participant 1***

"I would like to say no but there might be cases where I feel this way - mostly in connection with life from back home or family gatherings and I am not part of it. Happy to see they are having a good time but I am not there. But no stress or anxiety."

- ***Participant 3***

"(...) sometimes I feel like that because I haven't done like the things (...) then I cannot go there because I thought I have waste my time on my phone or in Netflix or those things, and then I felt need to finish these things and then I cannot go to this event because I need to finish this and I didn't do that I felt like missed out of consequence. (...) Because I see that it was fun afterwards"

- ***Participant 6***

"When friends from back home are meeting; I am more prone to check the phone (...) Especially with friends back home, when I was in Asia because I couldn't be involved in my circle in Spain - more sad than anxious. Homesick"

- ***Participant 9***

"Yeah, I don't know, mainly, when I think about people who are back at home, because I have a lot of friends who stayed to study in Bulgaria, like, they choose to stay there. And sometimes I feel like I'm here. I know that I can contact you. I know that I can call you all the time but it's not the same when I'm not there."

- ***Participant 12***

"I think I do [have F.O.M.O] because I'm constantly updating and seeing if there is something new happening (...) I'll feel sad that I was not participating at the event. But I'd want to recreate it in a situation where I'll be there or have the opportunity to do it myself"

- ***Participant 13***

C.1.7.1 Content

"I use Chrome and Twitter to check the news. I use them because on Twitter there are journalists that I follow and I like to read discussions, which sometimes I find interesting. Chrome, just use a browser but it's basically where I search all my news (...) [it is] the one I need the most tho, to find something, to learn about something, to read news about coronavirus"

- ***Participant 5***

"YouTube I use the explore page. Twitter is through the feed. Messenger is 80% messages and 20% video calls. Instagram is mainly stories and explore/search."

- ***Participant 10***

"Okay, so I'm using Netflix mainly to watch Friends and YouTube, I'm using it for listening to music, but not that much for watching videos. So entertaining myself mainly with memes and funny pictures is something that really makes me happy and makes me laugh. Yeah, and if I have to choose between watching a funny video or watching a funny meme, I would prefer a meme."

- ***Participant 12***

"I think it's depending on the content (...) Well, I can get specific movies on Netflix (...) Whilst on YouTube, I can listen to some music. And I can switch to listening to a podcast or I can switch to just simply watching a video following someone's life."

- ***Participant 13***

C.1.8 Notifications

" (...) I don't think I will put the notification back. It actually felt quite great. And actually some time I did not get distracted like for example when I'm watching Netflix with my friends then many times before I had my phone next to me and and every time I get a notification from messenger I checked it and I actually realized that we watched the movie the other day and my phone was on on the kitchen counter not even with me on the sofa which is crazy and I could without any disturbing stuff watch the movie for the whole length and that was because I didn't get notifications from messenger. So yeah, that was good (...) but yeah, so this notification stuff it was a little bit strange because only messenger was affected by that so YouTube and Instagram and Facebook, they were not really affected by you know notification stuff (...) So I should get some other methods to get rid of those."

- ***Participant 1***

"(...) it's not because it would decrease the access to these applications"

- ***Participant 2***

"I already don't have them [notifications on]"

- ***Participant 5***

"Instagram is when I see a notification or when I feel horny"

- ***Participant 10***

"I would still go but less because there were no notifications so I would go when I had time."

- ***Participant 11***

C.1.9 Infinite content loop

"(...) most of the time it's opening Reddit, or YouTube and you just click on one link after another because everything is interconnected. And also I really have a hard time keeping focus so many times if something pops into my mind like I don't know, for example, right now I'm quite interested in the Democratic primaries for the US elections and then boom, something pops into my mind and I google it instantly. And then I like click on a few links, and then something else pops into my mind and then boom, I commonly leave the previous one and then go to the other one (...) [it]prevents me from from being (...) useful for hours sometimes because I just lost myself in YouTube videos and Reddit and stuff like that."

- ***Participant 1***

"It takes more time for me. I used to watch a lot of videos in YouTube and stuff but it just takes more than two hours so that's why I'm not using them anymore"

- ***Participant 6***

"I watch this one YouTube video and then I continue watching and I end up like watching 5-10 videos. I lose like 30-40 minutes of my life doing this."

- ***Participant 10***

"(...) I give myself like half an hour to an hour. (...) And then I find a video or something and I just keep binge watching something. And yeah (...) So it ends up being 2-3 hours (...) also made me realize that I got dependent on just being able to see a certain content or being on it all the time."

- ***Participant 13***

C.1.9.1 Passive consumerism

"like it's not interactive what I do on the phone usually. It's just like looking at news or videos."

- ***Participant 1***

"Facebook, I use it to watch videos, news (...) And my friends if they post something (...) or if someone tagged me on something (...) Because I don't really post anything on this app."

- ***Participant 2***

"It is probably more after lunch because I need to relax for a little bit. Also, when I come back, I just scroll through some news. It is relaxing because I don't have to think that much, I am just reading."

- ***Participant 5***

"I use Youtube late at night when I am the most tired because it's garbage/-trash tv. But it is accessible (...) Twitter has been meaningful even though it is 90% garbage, 10% meaningful. But I don't think that there is an application I can not give up from."

- ***Participant 10***

C.1.10 Relationship maintenance

"Yeah, with my family but I think that's pretty necessary that's that's a bit because that's the only way I keep touch with my family and that's usually one hour per two days"

- ***Participant 1***

"my mom is always calling me. My brothers. Sometimes my sister (...) and she's in different time zones. (...) Because we are not living in the same country so it helps out to keep in touch (...) like with my brother we love to send us funny videos or dogs videos."

- ***Participant 2***

"The fact that I moved to another country challenges me to be more on the phone: keep relationships with parents cause I have to but not using it as much with friends and can clearly see the effect/prefer to see them in real life. (...) nice with a smartphone to mimic the everyday interactions (...) [social media] is nice to check up on international friends"

- ***Participant 3***

"It helps me connect with people around me. It also helps me to stay updated with the world around me."

- ***Participant 4***

"The distance with my family. I would say, I talk once a day with my family - one day with my father, the next day with my sister. Sometimes, it happens that I don't talk with them for days, but mostly it is at least 5 min a day."

- ***Participant 5***

"Since I am not from here, it is very necessary for me to keep in contact with my family. I feel homesick and I feel less sad when using the phone to contact them (...) [If I couldn't use my smartphone] I would be devastated because I would miss them. I would mainly feel anxious because of the loss of contact with the family. Especially cause now it's the only way to see your family and this is why I would feel like that."

- ***Participant 8***

"It takes time [to maintain relationships through the smartphone] but I do it because, in the long term, I see myself living in Spain so I want to maintain the meaningful relationships there.. keep up with them so everything would be the same.. fill the gap (...) allow contact for friends that are not physically there"

- ***Participant 9***

"Then, I'm, since I'm an international student and my parents live back in Bulgaria. I'm usually talking with them, like to see how they are doing, to see how their day was and they are asking me questions like, how have I been today and (...)I'm spending like, around two hours talking with them (...) if one day, I don't call my mother. I will feel so bad about that.

Like I just want and need to hear her voice every day. So I think this relationship with her is really important. It's a lot making an impact on my phone usage (...) if my parents were here, probably my phone usage would be down like a lot."

- ***Participant 12***

C.1.11 Social norms

"(...)because I cannot meet them [with my friends abroad] all the time (...) you can meet only with a really limited group of people right? So yeah, let's let's take me as an example. I think I made like 10 or maybe 15 people regularly but then I'm still in touch with more than 50 at least on Instagram and Messenger"

- ***Participant 1***

"[I can't give up Whatsapp] Because it helps me to keep in touch with many people from around the world. Yeah, sometimes I only have them on Whatsapp. And I have pictures like we share pictures and stuff like that. So for example, I changed my phone and I lost some pictures, some conversation on WhatsApp and I was really pissed. And I still have my old phone because I'm trying to find a way to put them in the new."

- ***Participant 2***

"[The app I can't give up is] WhatsApp at the moment (...) Because otherwise I will lose contact with my family."

- ***Participant 6***

"Friends from Greece, when we text since the communications are mainly through texts. Also my family. Most of my communications go through Messenger (...) The problem is about the calls, like when my parents are calling. My father also does not have Facebook, so I call him directly."

- ***Participant 10***

"I talk to my family, so I have to use it for video calls and contact my friends as well. I usually don't text people, but I can't see them on a regular basis"

- ***Participant 11***

"Facebook - I don't like the way it is developed. But most of my friends are only there (...) 90% of the people use messenger."

- ***Participant 4***

"I use Messenger because everybody uses it here in DK, I actually didn't use it 2 years ago before moving and WhatsApp because back home everybody uses it "

- ***Participant 5***

"I have few friends that don't have Facebook and we just use Instagram to chat (...)[I can't give up on]Viber (...) because this is the only way for me to communicate with my family."

- ***Participant 8***

"[Why did you choose Whatsapp over Messenger?] I don't know actually, maybe it's because in Bulgaria, Whatsapp is not that popular. Not many people are using it (...) And my parents are like the old generation, I barely even told them to use messenger. "

- ***Participant 12***

"(...) I have around 800 on Facebook and 300 on Instagram. So like, I've chosen like the closest, not that I have 300 people close to myself, but like, for example, I have friends of my parents on Facebook and I don't have them on Instagram, so I prefer Instagram because of that."

- ***Participant 12***

"[I use Instagram the most because] (...) because it's one of those platforms that other people use the most."

- ***Participant 13***

C.1.11.1 Lack of reflection

"I am surprised, it makes sense but never thinks about it timewise; don't feel guilty or sad about it"

- ***Participant 3***

"In general, I expected that I spent less time on my phone (around 10h weekly). I didn't expect that - I don't know how I feel."

- ***Participant 4***

"Sometimes I am surprised by how much time I spend on them."

- ***Participant 8***

"Very shocked by the actual result"

- ***Participant 9***

"I thought that it would be even less, but I was not that surprised. It is almost the same. I tried to not be that much on the phone and I forget about the apps when I didn't get the notifications."

- ***Participant 11***

"I expect it to be lower and I was really surprised that it was higher."

- ***Participant 12***

"What?! It's more? I don't know. I wouldn't have expected that (...)This surprised me a lot that I use Messenger that much."

- ***Participant 1***

"[Surprise about Instagram's high placement] Yeah. Because when I go on Instagram, it's like 10 seconds and then you know, so it's crazy (...) Like what the fuck?"

- ***Participant 2***

"Facebook is surprising - 33 mins for Facebook, I would never have said it, because I don't even like Facebook."

- ***Participant 5***

"I completely forgot about YouTube. I didn't consider it as an application that I use that much. I use it mainly for listening to music."

- ***Participant 8***

"Kind of reflect on what I chose to spend my time on.(...) it's not something I'm proud of. (...)I think I don't have other ways to entertain myself (...) or that's the easiest way to entertain myself sometimes, yeah. So I choose to go on YouTube instead. Because it's easier and it's in my reach."

- ***Participant 13***

C.2 Second Iteration: Smartphone Usage Survey

C.2.1 New routines

"My screen time has also increased with minimum 30%"

- ***Survey respondent***

"More frequent smartphone usage (up 4/5 hours a day) to stay in touch with friends & family."

- ***Survey respondent***

C.2.2 Boredom

"Increased boredom yields increased usage, too"

- ***Survey respondent***

"it has increased. Less google maps. More frequently looking at the news. More facetime."

- ***Survey respondent***

C.2.3 New sense of availability

"I spend more time on my phone. I have used the news app more than I normally do, the same goes for Facebook Snapchat Og Instagram."

- ***Survey respondent***

"spent way more time on it to get the latest updates/follow the conferences, called more people too"

- ***Survey respondent***

C.2.4 Human connection

"Yes, I use more time on my phone, because my social activities can't find place outside my home or at my home, so that's why I am socialising myself by using my phone"

- ***Survey respondent***

"I spend more time on my phone checking social media than I normally did, because of the lack of socializing these days"

- ***Survey respondent***

"I use my phone to communicate also with people I didn't use to text (school mates especially, face to face communication has been replaced with text messaging or video calls)"

- ***Survey respondent***

"I use it more often to keep communication with family/friends (...) I feel more connected to my family."

- ***Survey respondent***

"(...) because of the distance i use my smartphone differently, i facetime much more and I'm tired of it but i need some human contact"

- ***Survey respondent***

C.2.5 Saturation of content

"Any emotions are more related to the storm of negative news rather to using the phone."

- ***Survey respondent***

"The news does tend to make me anxious but except for that I feel the same"

- ***Survey respondent***

"I avoid using social media because everyone is talking and panicking about it so it stresses me out"

- ***Survey respondent***

"my feed is either climate change or corona related"

- ***Survey respondent***

C.3 Third Iteration: Group Interviews 1

C.3.1 Alone mode

"Sort of like a productivity zone. I like this."

- ***Participant 21***

"Actually similar to airplane mode. I don't think people would actually use that to be honest (...) The person must know how or how much they are or they are not addicted to their phone when they use it"

- ***Participant 25***

C.3.2 Speech-based social network

"I think the text based aspect of a lot of these things like Reddit kind of gives you security (...) I might fall on someone who's going to be weird during my 30 minute lunch break where you just want to Relax (...)instead of being like question it could be(...) like one of those things where you can connect with people who are having lunch at the same time (...)kind of like a dating app like everyone who's like around you answers yes or no. And that's a very different direction, but it would be a solution to the problem as well."

- ***Participant 23***

C.3.3 In Summary

C.3.3.1 Infinite content loop and losing track of time

"I don't have like a realistic limit to it (...) I allow myself to indulge."

- ***Participant 13***

C.3.3.2 Fear Of Missing Out

"I have a lot of unhealthy relationships with this device like when I go to sleep is the last thing I look at, when I wake up is the first thing. When I am outside - it is in my hand. "

- ***Participant 20***

C.3.3.3 Challenge Application

→ Reminder of other options

"I think it's a nice reminder of the options because sometimes (...) it may be obvious, but you can't think of it."

- ***Participant 13***

"I mean, I feel like I could use this in some situations as a brainstorm but it's kind of like I downloaded this app that reminds you to drink water you just kind of don't care about it at some point"

- Participant 17

"In Paris, (...) I would always grab one of the free newspapers and I would read my horoscope and in the metro (...) look at the weird articles in there, because it was also a way to pass the time and then you're not on your phone. But if your phone provides you with those kinds of quick stories (...) like horoscope kind of things that you're just gonna read for 20 minutes, I think it (...) can be really cool."

- Participant 22

"It's not going to limit my time but just give me new ideas of what to do with my smartphone."

- Participant 4

"It's good having that kind of distraction rather than just having a cut off zone(...)But (...) it doesn't have the same kind of separation as the idea of the ring(...) [which] you're more likely to actually pay attention to (...) than something that is still on the phone"

- Participant 24

C.4 Fourth Iteration: Group Interviews 2

C.4.1 Potential users of the Ring Limiter

"Girls, 20-22 years old. Studying design. They both like shopping for social media. Appearance counts."

- Participant 29

" my sister, she's a female, but I would say that this ring can work in whatever gender as long as you like to work rings"

- Participant 30

"So I think that what could help in this case, it's not maybe a product but it's like the mind states that we should force our minds to be concentrated and be focused. (..) "

- Participant 28

"Out of these 3 projects, I would choose the Challenge app + Alone mode. I would choose that one because I think that it will add little more motivation for personal growth and trying new things. "

- Participant 22

" (...)would definitely use the second solution [Challenge Application + Alone Mode] in order to be able to just throw my phone away and not think about it at all knowing that if anything important happens, I would be notified."

- Participant 4

"I will go with the second option [Challenge Application + Alone Mode] because I think it has the lowest threshold of success (...) most likely to succeed (...)because it doesn't require too much hardware and too much work to make it accessible and easy for everyone to like, hop on board with everyone else. You just need the phone."

- Participant 16

"I would definitely go for the second one [Challenge Application + Alone Mode](...) very useful because(...) you can put something like a calling emergency or calling the doctor or whatever, it will be keep going"

- Participant 30

C.4.2 Potential users of Alone Mode

"They really like to try things just for the sake of trying them. Because they know that they struggle with their concentration. They want to change and this is why they like to try the technology."

- Participant 29

"The person who I imagine is somebody who is trying to change their personal habits and is interested in personal growth and mindfulness."

- Participant 9

" I just throw myself away when I'm trying to focus but if I had that option, then I would definitely make use of it as well"

- ***Participant 4***

"Fatima. She's a 24 year old DTU student in data science (...) she does actively pursue these kind of opportunities [that] makes her use the technology she loves and adores, but in a responsible sustainable manner."

- ***Participant 16***

"I would definitely, definitely use it myself (...) I study journalism (...)I'm trying to like use my time a little bit more wisely. And I just deactivated my Instagram account, for example, because I felt that I was spending countless hours just scrolling into nothing."

- ***Participant 31***

" people who are very supportive that they don't want to pay attention on the phone (...) And I would say people as well that they believe themselves (...)that they have a problem with the phone and they want to change."

- ***Participant 30***

C.4.3 Content digest

Unlikely users

"Klaus wouldn't use that filter simply because he doesn't want to limit what he sees from social media because as a journalist, he wants to always see new things (...)he always wants to be in touch and stay in touch with all the new trends."

- ***Participant 4***

"He does not use that application because, again, there's a funnel, there's a bottleneck. So that's not the whole truth."

- ***Participant 16***

Potential users

"I thought about myself under like exam periods where I still want to be on social media, but I want to have it restricted. I want to see what my friends are doing. I want to see the things I'm interested in but I don't really want to see anything else because I know that I will have like this subconscious like scrolling thing going on."

- ***Participant 31***

"I don't see any weaknesses (...) like I use [something similar] myself"

- ***Participant 31***

C.5 Discussion

C.5.1 Multifunctionality

"It is not the phone itself, it is the easiest way to keep in touch. It is a small thing that you always have in your pocket - you can call, it is simple."

- ***Participant 5***

"Yeah, I think because I have a specific time where I have my computer and it's not as comfortable like I don't, I cannot walk around with my computer, I cannot, you know, I have to be in a certain position, like sitting and stuff like that to use the computer comfortably. That's why I opt for the phone I think."

- ***Participant 13***

"Sometimes for like inspiration (...)Like, I don't know how to do my hair. (...)...how to dress... stuff like that (...)"

- ***Participant 2***

"Weekday, (...) I need it cause there is a lot of things I check on my phone - train situation, health recommendations, alarm, making sure friends and family are alive, time, really need music."

- ***Participant 3***

"I mostly use my phone to check the time. Almost always. (...) It will only bother me if I have to go to an unknown place, where my phone would help me navigate."

- ***Participant 4***

"Sometimes, I really depend on my phone when at work to google different things."

- ***Participant 7***

"I use it to wake up, to check the time, to check the busses, I have the travel card on it - it is necessary for my everyday life."

- ***Participant 11***

"Even if I have my watch on my hand. I'm not looking at it. I'm just looking at my phone. I don't know why but it's usually like that."

- ***Participant 12***

"(...)I think the more I got used to having it and like (...) having all the features available, I think it's difficult (...)"

- ***Participant 13***

C.5.1.1 Willpower

"For work I use it and it makes me productive, but during the weekend I use it to watch different kinds of stuff and I can't start doing some other things, which are more important for example."

- ***Participant 7***

"It is exhausting (...) sometimes I am bored, sometimes it is because I am looking for something in a productive way."

- ***Participant 8***

"Because I'm... because I'm weak! I don't know.. because I'm weak!(...) When I have to, like focus on my studies or something and I'm weak and I'm not able to focus then I instantly grabbed my phone and I don't know open up Instagram or something like that. And that's completely unconscious actually, I just realized 'Okay, I was working on my special course for five minutes' and then I'm on my phone again. I was working for two minutes and then I'm on my phone again."

- ***Participant 1***

"When I study I cannot keep focus that well but where I work I can keep focus much more so during work I think there are hours when I when I don't even touch my phone."

- ***Participant 1***

"In class, I don't usually use the phone cuz I need to listen so."

- ***Participant 2***

"During group work, I am usually more focused on doing the job than on my phone. Sometimes for some messages, but for around 5 min."

- ***Participant 8***

"(...) if I know that there is something important for example, one day my nephew has had temperature and my sister was really concerned. So I had to check my phone regularly to see what is going on. So if there is a case like that something important is happening. Meanwhile, I'm checking it but usually not. I'm trying to focus on the school."

- ***Participant 12***

C.5.2 Normativity

"maybe more like my family because my family is quite successful and everybody is really determined but not my parents so that's the thing basically that so I have a really successful and yeah from a business perspective successful family but not my parents they were always the one with the normal kind of life but all my cousins, all my uncles, the husband of my sister and stuff like; they are really pushing stuff and I also wanted and still want to be liked by them."

- ***Participant 1***

"I am very aware of [my] smartphone usage (...) adjust the time to how much time I have (...) postpone usage until I have an active time"

- ***Participant 3***

"I knew that I am being tracked, but to be honest, after the first couple of days I didn't care. The first couple of days I tried to spend less time, but it didn't really work - I spend the same time. "

- ***Participant 4***

"I feel like lately I have been too much in my phone (...) If I should be productive, it should be one hour maximum"

- ***Participant 6***

"(...) every time I turn on my screen I was seeing the times saying how much time I saw spending on my phone and it sometimes made me feel pressured (...) It feels weird that I had more time after the challenge, but it was because I was looking for a new job. I guess it was depending on the situation I had. But normally, I don't spend that much time (...) I feel a bit more productive when I am spending less time. I am focusing more on human interaction."

- ***Participant 8***

"I want [to use] it less. I don't want to use it that much. I am not happy about my usage time. I am not feeling guilty. It's not even social media but I use it even when making food (...) I told myself to not go too much on my phone"

- ***Participant 11***

"Because I think my screen time was very high compared to what I would think is average (...) I wanted it to go to four hours because (...) I just think that maybe what people in my generation would, how much time they would also spend on it without it being excessive (...) that I could be satisfied with just four hours screen. I didn't need to go up to the six hours, which is why I tried to decrease it"

- ***Participant 13***

Negative connotations with high screen time

"I honestly felt better that I'm not spending that much time on messenger"

- ***Participant 1***

"So in my mind I have this perfect morning, when I wake up, drink a glass of water and then do some yoga. Maybe doing some some yoga would be nice or just stretching or something like that."

- ***Participant 1***

"(...) I was like, well, maybe now is the time to change something (...) Not to change like the apps I am using but to change the time that I'm using them (...) Because I know these are the apps I'm using the most and I don't want to change that. These are the apps that I'm using mainly for communication with my friends and family, so."

- ***Participant 12***

"Because I think my screen time was very high compared to what I would think is average (...) I wanted it to go to four hours because (...) I just think that maybe what people in my generation would, how much time they would also spend on it without it being excessive (...) that I could be satisfied with just four hours screen. I didn't need to go up to the six hours, which is why I tried to decrease it"

- ***Participant 13***

"I know where I waste my time the most. And since I do, it actually makes me feel good, since I can try to limit my time there."

- ***Participant 4***

"Maybe, I should consider spending less time on this and do more valuable things. I am not really surprised, but it makes me reflect, for sure."

- ***Participant 5***

"(...)that's why I don't have Instagram on my phone. I don't have the app because I was wasting too much time (...) lately I have not been productive so I have been watching Netflix (...) I mainly waste my time from eight till 11 (...) I know I'm wasting my time because I'm not doing anything."

- ***Participant 6***

"I am surprised because I thought that Facebook will be more. I feel good, that I spend less time on Facebook (...) This means that I have not spent my time on useless stuff. This makes me feel really good."

- ***Participant 7***

"(...) used to happen when I was using Instagram but now I deleted Instagram so I don't check the stories anymore (...) Makes me feel like I am wasting time (...) should be more productive. Do something more healthy"

- ***Participant 9***

"I think when I first saw the screen time, I was surprised and thought it was very high and kind of shocked because I didn't think it was that much and then when I send it in and saw the others that I started to feel embarrassed."

- ***Participant 13***

C.5.3 Human connection

"I would say because of the connectivity with other people but (...) again it really depends on the context because for example right now when I went to the cabin trip I was even living without my phone for three days because I didn't have any internet connection. I didn't touch my phone for three days. But I was surrounded by people 24/7 so the only context I couldn't live without my phone is if I was alone, but if I'm surrounded by people, doing a nice trip together with someone or something like that, then I would definitely be able to do it"

- ***Participant 1***

'Yeah, I feel like phone calls are definitely intimate."

- ***Participant 1***

"Can imagine living without a phone call but would have a completely different life"

- ***Participant 3***

"[Without my phone, it would be harder] for many things, mainly to call my parents and have this connection with them. This is my only connection with them, like the phone calls, so."

- ***Participant 12***

"I think calling because even if I don't have the social media, I can still call up a friend and start to conversate but if I were not able to see or follow what was happening around me and not able to contact anyone, I think it would just be.. Plus not being able to contact anyone, I think it will be even harder."

- ***Participant 13***

Acronyms

CACHET Copenhagen Center for Health Technology

CEO Chief Executive Officer

FOMO Fear Of Missing Out

GDPR General Data Protection Regulation

GPS Global Positioning System

Lo-Fi low fidelity

MNT Medical News Today

O-FAQ Offline-Friend Addiction Questionnaire

P.I.S Personal Informatics System

RICE Reach Impact Confidence Effort

SAMS Smartphone Addiction Management System

SAS Smartphone Addiction Scale

SMART Specific, Measurable, Achievable, Relevant and Time-based

URL Uniform Resource Locator

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