Final Group Report

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Introduction

In this elective, our group designed a tangible music controller, named Topplr (figure 1), which is designed specifically for people to perform simple interactions with their music streaming services while working behind the computer. As working behind a computer often requires much of attention (e.g. writing reports, reading papers, etc.), the intention of this interface was to interact with music without being distracted from the work-related task itself. According to the divided attention theory (Kahneman, 1973), attention can be described as a finite amount of mental resources, divided over sensorial, bodily, and/or cognitive activities. Activities that require many mental resources are often performed in the *center of attention*, while less demanding tasks can be performed in the *periphery of attention.* The aim for the design of Topplr was to design interactions that would require a minimal amount of mental resources, so they could be performed in the *periphery of attention*. Thus, keeping most mental resources available for the working task at hand to be performed in the *center of attention*.

Figure 1 skip a song with the final design

Motivation

The notion of peripheral interaction relates back to the vision of Weiser & Brown (1997), stating that ubiquitous computing "will require a new approach to fit technology to our lives", also referred to as 'calm technology'. Designing for the periphery of attention has a strong connection with this approach, which has been further explored by Bakker et al. (2010). They discuss potential directions for peripheral design for everyday life technologies, which was further developed into the interaction-attention continuum by Bakker & Niemantsverdriet (2016). Through several design explorations which are used to control a lighting system, the conclusion was made that, additional to focused and implicit interaction, peripheral interaction could be integrated in the design of interactive systems for the everyday life. While this work mainly considered interfaces for lighting systems, there has also been some work done on controlling a music player. Hausen et al. (2013) compared three peripheral input modalities (graspable, touch and freehand) to control an audio player. While, Tezcan (2017) presented Musico, a personal and tangible music player which aimed at peripheral and implicit interaction. The work of Bakker & Niemantsverdriet (2016) presents multiple considerations for interaction design that also have been applied to our design, Topplr:

Tangible gesture interaction

A key consideration to achieve attention shifts among the continuum: being tangible. Therefore, we considered the tangibility of Topplr allowing users to perceive the presence of control in everyday activities.

Contextual considerations

Another consideration is to bare contexts and placement of the interface in mind. This was also experienced in the video analysis of week 2, in which Sark mainly divided his mental resources on reviewing difficult literature and had limited attention to the surroundings, however, he was still able to grab grapes without looking at the bowl (figure 2). We thus considered the tangible interface should be easily reached out in their periphery of attention.

Coherent control

It is believed that offering various degrees of control while keeping the controls coherent could also facilitate the interaction shifts. Consequently, the interactions of different levels of skipping songs should be made coherent, which enables to shift from skipping a song to skipping a bunch of songs (or playlist).

Combining interfaces

Digital interfaces, which offer occasional detailed control, always require focused attention. In the case of music streaming services, this would be the application on the computer or phone (e.g. Spotify). To cover the full range of interaction-attention continuum, the design of Topplr could basically be an extension of this interface, and provide interactions that could be easily performed in the periphery of attention. To achieve this, we need to consider what actual functions would have to be incorporated into the design.

Design

For the design of Topplr we designed simple interactions with music streaming services that could be performed in the periphery of attention, while we also envisioned that the controls could make a shift towards focused interactions according to the interaction-attention continuum (Bakker & Niemantsverdriet, 2016). Inspired from the 'Roly-poly toy' (GIPhotoStock, 2014) (figure 3), a tumbling toy that straightens itself every time you knock it over, a first prototype was created that included the following interactions: skip a song by gently tumbling over Topplr (figure 4), adjusting the volume by twisting Topplr either clock- or counter clockwise (figure 5), and tapping the top of Topplr to play or pause the song (figure 6). These interactions were specifically designed to be performed in the periphery of attention. To illustrate how the shift towards the center of attention could be made, an additional interaction was envisioned; by tumbling down Topplr and hold it down for a few seconds, a screen activates that enables users to have more precise control over the music (i.e. changing genres, playlists, and/or albums) (figure 7). Though it is important to illustrate that there should be a coherence between the various degrees of control, we only focused on the peripheral interactions and conducted a user-evaluation to find out whether the designed interactions could actually be performed in the periphery of attention.
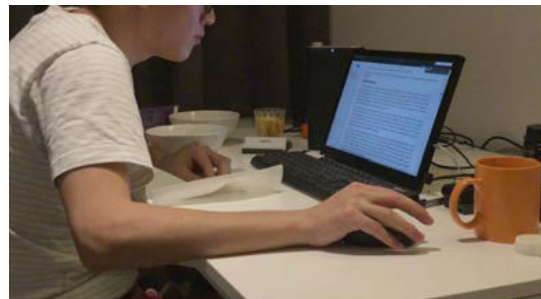

Figure 2 Roly-Poly toy

Figure 3 Sark eating grapes while reviewing literature

Figure 4 skipping a song with the initial prototype of Topplr

Figure 5 adjusting the volume with the initial prototype of Topplr

Figure 6 play/pause a song with the initial prototype of Topplr

Figure 7 hold down Topplr to activate screen and enable focused interactions like changing genre

Insights of user evaluation

To evaluate whether the designed interactions could be performed in the periphery of attention, a user study was conducted (Appendix A). Both qualitative and quantitative results were gathered on the peripheral qualities of our design. Our quantitative data showed that regarding Topplr, skipping a song was considered to require the least mental effort (μ = 21.0; σ = 13.4). This action required almost the same mental effort as flipping the paper (μ = 20.2; σ = 19.7). The participants also expressed that pressing the top button required most of their mental effort, with respect to Topplr (play music: μ = 35.3; σ = 24.9, pause music: μ = 30.0; σ = 17.6). As we interpreted from the video recordings and interviews, it was hard for some participants to locate the small button of our initial design in the periphery. Participants could easily locate the interface in their periphery of attention: "You know where the interface is located roughly, not exactly, so you simply feel where it is and perform the action." More results are shown in Appendix F.

Improvements

Analyzing the results of the user study, adjustments were made to the design. We changed the interaction of pressing the top button of the design into squeezing the design as a whole. We consider this action can be better performed in the user's periphery of attention, as long as the user manages to locate the Topplr (figure 8).

Figure 8 final design of Topplr, with the entire top made squeezable to play/pause the song

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Appendix A: User Evaluation Setup

To evaluate Topplr, a user study was set up, see figure 1. The goal of this study was to evaluate whether the designed interactions could be performed in the periphery of attention and was conducted following an user-evaluation script (Appendix B). All participants provided consent to conduct this study (Appendix G). After a pilot test (n=1), our setup was improved to conduct the study. Participants (n=6) (Appendix C) were first familiarized with Topplr by interaction with the design as they desired. The Wizard of Oz method (Kelley,

1983) was applied to experience the interaction with Topplr. Then, the participants were asked to read an English text (Cohen, 2013; Appendix D) which was adapted to include several action cues indicating that they should perform an interaction with the design. These interactions included playing/pausing the music, changing the volume up/down and skipping the currently playing song. Participants were told that they would receive questions regarding the text after they had finished reading it, in order to make sure that reading the text would be their main activity. The researchers provided each participant with a marker so they could highlight important words or phrases in the text. However, after they read the text, they were not given questions on the text, but a sheet on which they fill in their perceived mental effort using the Rating Scale Mental Effort (RSME) (Zijlstra & Van Doorn, 1985; Zijlstra, 1993) (Appendix E). Then, participants were interviewed using the video material gathered during the test (Dempsey, 2010). Additionally, questions were asked on their experiences with the design (Appendix D). Participants were thanked in the form of a treat.

Figure 1: setup of the user evaluation

User Evaluation Script

Researcher 1 (Sark): controls and narrates the user evaluation
Researcher 2 (Yizhou): fills in 'participant information form' and takes keyframes during test
Researcher 3 (Ferdi): controls the Spotify applications and focuses on the interactions with Topplr
Researcher 4 (Ward): starts the video recording, takes keyframes, ends it, imports it, and prepares video 'stimulated recall interview'

The participant is taken into a meeting room where the setup is already prepared for the actual test; a laptop showing a newspaper article, and to the right the Topplr interface. The participant is asked to sit down behind the laptop so s/he can be introduced to the evaluation session.

[TOP 50 NEDERLAND PLAYLIST ON SPOTIFY]

Introduction

Duration: 3 minutes

Researcher 1:
"Hi, _____. My name is _____, and welcome to this user evaluation study. For an elective, we created this interface that is able to interact with a music player. So you can simply interact with your music without grabbing your phone, or the use of for example the Spotify application on your laptop."

Action by researcher 1: press the button on top of Topplr in order to start the first song. Then press it again to pause it.

"First we would like to ask you some initial questions: How old are you? Gender? Do you listen to music when you are working on school work? What devices/music services do you use for that?"

Action by researcher 2: writes down everything the participant answers in the dedicated form.

Researcher 1:
"Thank you for that. Right now, I will tell you a little bit about the interface and what you can do with it. After that is all clear, I will ask you to read a certain text, containing interaction ques, and answer some questions for us afterwards."

"So, what can you actually control with this interface? Like I showed you before you can play and pause the music"

Action by researcher 1: press the button on top of Topplr in order to start the first song.
Action by researcher 3: start the first song through Spotify

Researcher 1:
"Furthermore, you can also skip a song in case you don't like it by tumbling the interface to the side."

Action by researcher 1: gently tumble the interface in order to skip towards the next song.
Action by researcher 3: skip to the next song through Spotify.

Researcher 1:
"The last interaction that you can perform, is controlling the music volume, by twisting the interface in either the right direction to turn the volume up, or twisting the interface in the left direction to turn the volume down."

Action by researcher 1: first turn the interface clockwise to turn the volume up, and then counter-clockwise to turn the volume down.
Action by researcher 3: turn the volume up and down through Spotify.

Researcher 1:
"So you can either play/pause the music, skip songs, and adjust the volume. Do you have any questions at this moment about the interface? _____"

Familiarization

Duration: 1-2 minutes

Researcher 1:
"If you would like, you can try some of the different interactions that we suggested in order to get a better feeling of how it would be."

Action by participant: participant interacts with the interface in an unforeseen order. In this stage it is important that the aspect of "magic" is established and the interface works properly according to the participants expectations.
Action by researcher 3: interacts through Spotify according to the actions performed by the participant.

Researcher 1:
"Now you are a bit familiarized with the interface, we will shortly begin with the test. I want you to know that we're testing the interface itself, not you. You can not do anything wrong here. So if you make mistakes it won't be a problem."

"Before we begin I would like to let you know that we want to video record the test, so we can analyse that to see how you interact with the interface. Therefore, we prepared a small consent form that we need you to read and if you agree sign before we can actually start."

Action by researcher 1: hand over the consent form. The participant carefully reads this and either agrees or not.

Testing

[LOW-FI BEATS PLAYLIST ON SPOTIFY]
Action by researcher 3: prepares Spotify playlist

Researcher 1:
"Now we are going to start with the actual text, so we will also start the video recording. In a moment you will get an English text before you that we want you to carefully read. After you have read the text you will be handed some questions about the text that we would like you to answer. That is why you can use this marker in order to highlight important parts in the text. While you are reading the text you will notice that it sometimes says for example *skip the song,* at that moment we would like you to perform that specific action with the interface while you try to continue reading the text."

Action by researcher 1: grabs the English text and puts it in front of the participant. The researcher will keep the questions to the side, however, make it visible to the participant so s/he knows what to expect of the questions. Then the researcher starts the music by pressing the top of Topplr.
Action by researcher 2: start stopwatch simultaneously with the beginning of the video
Action by researcher 3: starts playlist through Spotify
Action by researcher 4: start video recording simultaneously with the stopwatch

Researcher 1:
"Do you have any questions at this moment for me? Remember that you can't do anything wrong, just focus on the text and try to perform the actions with the interface that you encounter in text itself. You may now play the music and start reading the text."

Action by researcher 2 and 4: carefully observe the actions of the participant, note down timeframes of interesting actions, and note down what happened. What question can we ask?
Action by researcher 3: carefully observe the actions of the participant according, and mirror the interactions through the Spotify app.

Evaluation Phase

Researcher 1:

"Alright, if you have finished reading the text, you can pause the music and I will hand you over the questions."

Action by researcher 1: instead of grabbing the questions about the text, grab the RSME scales and put them in front of the participant.

Researcher 1:
"Instead of asking you some questions about the text, we want to gather some information about your interactions with the interface. In front you have got several scales, that are each dedicated to the different interactions that you conducted. We would like you to indicate for each and every activity, how much effort it took from you and indicate that with a cross on the line."

Action by researcher 2 and 4: based on the notes that they made, prepare questions and gather the right segments of video alongside these questions to show.

Researcher 1:
"Thank you for filling those in, right now we will also ask you some questions about the design itself, we are also curious about some different aspects that happened while you interacted with the music."

Action by researcher 2 and 4: conduct the stimulated recall interview and audio record it with through a mobile phone application.

Researcher 1:
"Well this was the test, thank you very much for participating and here you've got a little treat from us for your time. Thanks."

_____

Stimulated recall Interview:
Optional questions to ask:

- How did you find the overall experience of interacting with your music through this interface?

- Differentiate ways of performing interaction
    - How do you usually perform these actions (changing volume, skip a song, play n' pause) (on your laptop)?
    - What is the difference between the two?
    - Which one do you prefer?

- Attentional resources
    - How do you feel about the interactions with *Topplr*, either simple or more towards complex?

- Would you consider the use of this interface to be in your everyday working routine?

- We saw that you tended to hesitate sometimes while performing a specific action, where there any reasons for this?

Appendix C: User Demographics

Participant	Gender	Age	Occupation	Used music streaming service(s)
P1 (pilot)	Male	26	Student Industrial Design (MSc)	Spotify
P2	Male	20	Student International Business (BSc)	Spotify
P3	Male	22	Student Industrial Design (MSc)	Spotify
P4	Female	23	Student Finance & Control (BSc)	Apple music/Youtube
P5	Female	22	Student Industrial Design (MSc)	Spotify
P6	Male	23	Student Industrial Design (MSc)	Spotify
P7	Female	21	Student Automotive (MSc)	Spotify
P2	Male	20	Student International Business (BSc)	Spotify
P3	Male	22	Student Industrial Design (MSc)	Spotify
P4	Female	23	Student Finance & Control (BSc)	Apple music/Youtube
P5	Female	22	Student Industrial Design (MSc)	Spotify
P6	Male	23	Student Industrial Design (MSc)	Spotify
P7	Female	21	Student Automotive (MSc)	Spotify
	M/F ratio	**Average**		
	50/50	21,83333333		

Britain's Brussels Syndrome

ROGER COHEN

1 **LONDON** The basic tenet of *The Daily Mail* is that Britain is not what it was (true enough, it isn't) and that it would go a long way toward recovering its gritty greatness without wind farms, safety obsessions, green lunacy, overregulation and — above all — the European Union with its meddling bureaucrats.

2 The formula works. *The Daily Mail* is the best bad newspaper in the world. It hits every chauvinistic British button with eerie precision. Its mix of sex, celebrities *volume up*, scandal and Brussels-baiting has something of the yucky addictiveness of the Kardashians. The paper boasts a weekday circulation of almost 1.6 million, rising to close to 2.5 million on Saturdays. It also has a wildly successful *pause the music* Web site, Mail Online — but that's another story.

3 My concern here is not with *The Mail*'s journalistic brilliance — no paper is more maddeningly readable — but with what its obsessions say about *play the music* where Britain is headed with its acute Brussels Syndrome. *The Mail* wants Britain out of the 28-nation European Union. So does the only daily that outsells it, *The Sun*. For both papers, Europe is a sort of Soviet Union-lite with plans to regulate everything *next song* from female quotas in boardrooms to your doctor's hours. This is a nation where the agenda of the mass circulation tabloids weighs heavy.

4   **17**   , the E.U. is a tough sell these days. It is dominated by Germany, a nation uneasy about dominance. It includes France, a nation that has turned malaise *volume down* into a fetish. Its southern littoral is an economic horror show. Its more than 500 million citizens feel underconsulted and overpatronized.

5 It is a divided club, with 17 members in the euro zone and 11 members outside. Inside the euro zone, the agony of the euro has demanded a federalizing push — the currency's salvation but also the direction many non-euro-zone countries (chiefly Britain) do not want to go. As for the *next song* Union's great achievements, like say, peace on a borderless continent, they are oh-so 20th-century.

6 Yet none of this quite explains the revulsion served up by *The Mail*. The other day there was this *volume up* headline: "I was born a British citizen, and want to die as one. But unless our gutless leaders stand up to Brussels, I won't be able to."

7 The article was about a possible plan — the verb "may" is a favorite when it comes to sinister E.U. aims that seldom materialize — to stamp the Union flag on British birth certificates. It was signed Stephen Glover. Glover! I worked with him

in the 20th century at Oxford on the university magazine, *Isis*. He seemed a reasonable, affable chap. Well, I thought, if Glover now lives in fear of being gouged of his inner *next song* Briton by Brussels apparatchiks[1], perhaps the danger is real.

8   Visions of that blue-and-gold E.U. flag smothering this sceptered isle and its vestigial grit loomed before dissipating: It's all complete nonsense, of course. Britain, a member for *volume down* 40 years now, needs the E.U. and vice versa. About half of British exports go to the Union. Millions of jobs are tied to it. Foreign investors choose Britain because of its access to the single European market. Parts of Britain's growing auto industry would leave if Britain exited. The United States would be very grumpy. Banks that have made the City Europe's financial hub would find a Britain outside the E.U. "much less attractive" and migrate over time, as the co-C.E.O.'s of Goldman Sachs International put it in *The Times of London*.

9   And what of all the Britons who take for *next song* granted their right to retire in the Dordogne, or the more than 2.3 million people from the E.U. making the British economy tick from city to farm? Dame Helen Alexander, the chancellor of Southampton University, said: "Anyone who comes here knows we need to be part of something powerful in the world, not some *volume up* tiny little country in the corner."

10   Not so, insists Nigel Farage, the leader of the thriving U.K. Independence Party (UKIP), who tells me *The Mail* underestimates the ghastly truth ("75 percent of our life is governed from the E.U."), compares a *volume down* supranational Europe to Yugoslavia, mocks Prime Minister David Cameron's Conservative Party ("They used to talk enterprise and success, now they talk gay marriage and wind farms"), and declares Britain in Europe "a square peg in a round hole."

11   "Nobody wants it," he declares.

12   We will see. Cameron has called for an in-or-out referendum, likely in 2017, in part as a tactic to head off UKIP.

13   __21__, as *The Mail* rails on, Union Jacks multiply over Britain, with its royal baby, Olympic triumphs and the rest. They fly over *next song* a nation that has never looked so European. Malaise-weary French people find work. So do Poles and Italians.

14   What *The Mail* hates is not Brussels, but this Britain. Nations have shot themselves in the foot before out of some vague anger. It could well happen here. Britain will exit Europe sans return ticket — in which case I plan to exit Britain on the same terms.

     adapted from *International Herald Tribune, 2013*

noot 1 apparatchik: an official or bureaucrat of the Russian Communist Party or Russian government

Tekst 5 Britain's Brussels Syndrome

1p **15** Which of the following about *The Daily Mail* is in line with paragraphs 1 and 2?
- **A** It has lost its impartiality and accuracy.
- **B** It no longer publishes articles on Britain's political role in the EU.
- **C** It successfully targets readers of the lower classes.
- **D** It thrives on nostalgia and shallowness.

1p **16** What is the main idea discussed in paragraph 3?
- **A** the disproportionate British preoccupation with European interference
- **B** the populist sentiment that is becoming mainstream in British politics
- **C** the sickening influence of the European Union on life in Britain
- **D** *The Sun* and *The Daily Mail* spreading communist-type propaganda

1p **17** Which of the following fits the gap in paragraph 4?
- **A** Consequently
- **B** Incomprehensibly
- **C** Nevertheless
- **D** True
- **E** Ultimately

1p **18** Which of the following applies to Britain, according to paragraphs 4 and 5?
- **A** It opposes financial programmes designed to help the economically weaker member states.
- **B** It rejects a strategy of doing justice to both euro-zone and non-euro-zone countries.
- **C** It resists a centralised Europe that frustrates the national policies of individual members.
- **D** It threatens to leave the European Union if forced to replace its own currency.

1p **19** What is the author's intention in paragraphs 6 and 7?
- **A** to challenge the idea of further integration of Britain in a single European state
- **B** to demonstrate that innovative ideas are smothered by red tape and bureaucracy
- **C** to expose a former fellow student as a reporter fuelling anti-EU sentiments
- **D** to substantiate his view that *The Daily Mail* is exaggerating the role of the EU

1p **20** Citeer een zin uit alinea 8 of 9 die beschouwd kan worden als de kern van deze twee alinea's.
Citeer de eerste twee woorden van deze zin.

21 Which of the following fits the gap in paragraph 13?
  A Furthermore
  B Indeed
  C Meanwhile
  D Nevertheless
  E Thus

"What *The Mail* hates is not Brussels, but this Britain." (alinea 14)

22 Welke zinsnede in alinea 10-14 illustreert de betekenis van het woord "this"?

23 Which of the following is meant ironically in the article?
  A "*The Daily Mail* is the best bad newspaper in the world." (paragraph 2)
  B "regulate everything from female quotas in boardrooms to your doctor's hours" (paragraph 3)
  C "Its southern littoral is an economic horror show." (paragraph 4)
  D "As for the Union's great achievements, like say, peace on a borderless continent, they are oh-so 20th-century." (paragraph 5)
  E "and declares Britain in Europe 'a square peg in a round hole'" (paragraph 10)
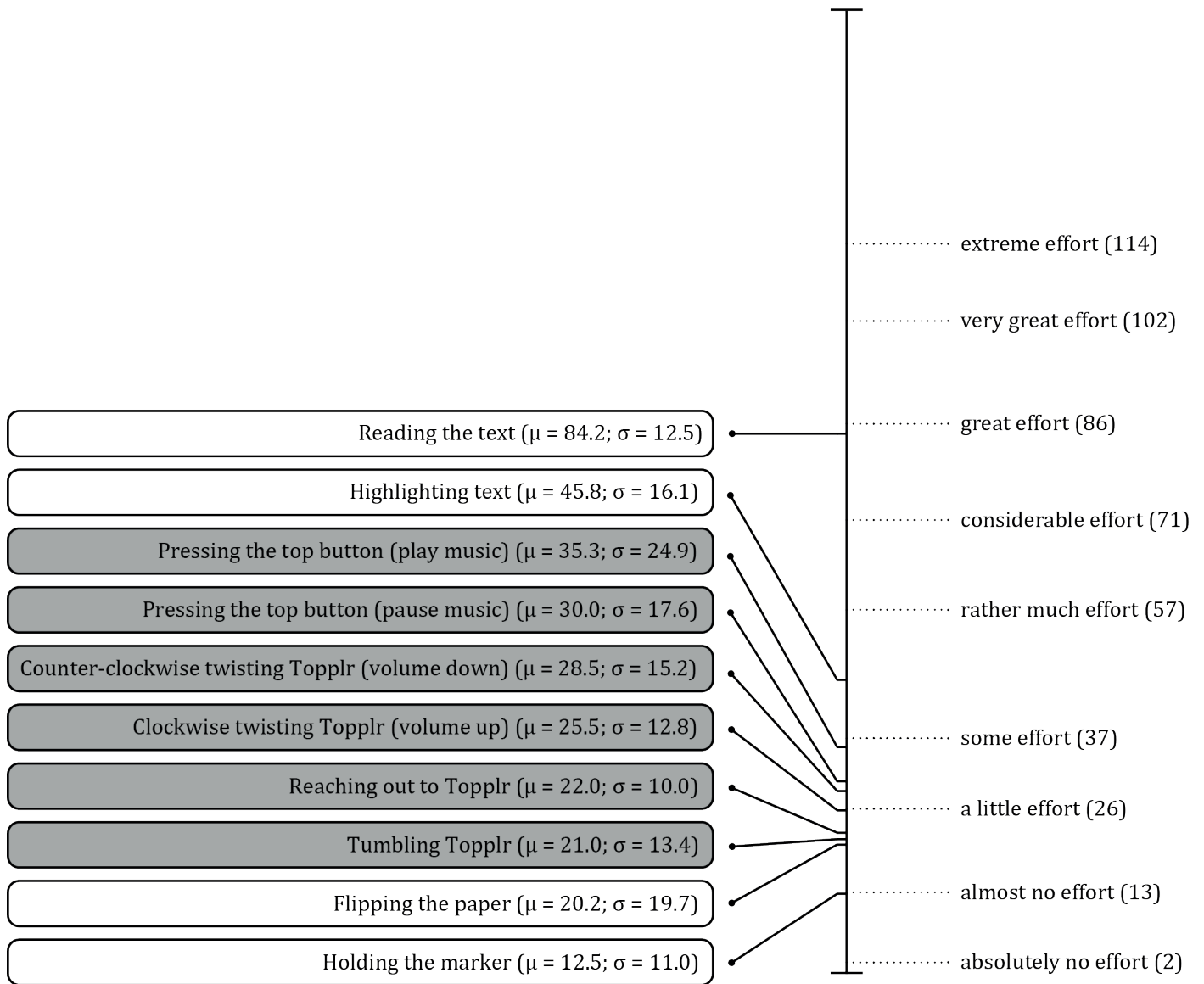
Tekst 6 The nanny state

24 How does the writer introduce the topic of this text in paragraph 1?
  A by demonstrating the many tasks involved in parenting nowadays
  B by describing how the authorities try to aid troubled families
  C by giving examples of hostile situations welfare workers encounter
  D by implying that the interference of social workers is frowned upon

25 Why does the writer refer to Charlie Chaplin?
  A to demonstrate the longstanding bad reputation of social services in Britain
  B to emphasise that children are still separated from their parents in family crises
  C to illustrate the role the British government has played in the history of social care
  D to prove that having been in the care system is not an obstacle to success

"the new scheme" (eerste regel alinea 3)

26 Wat is het doel van de nieuwe aanpak?
Leg uit in je eigen woorden.

Appendix E: Rating Scale Mental Effort (RSME)

Please place a cross **"X"** on the line to indicate how much **mental effort** is required for you to perform the action. The cross can be anywhere on the line, not only next to the words.

Holding the marker	Pressing the top button (Pause music)	Flipping the paper	Counter-clockwise twisting Topplr (Volume down)	Reading the text
extreme effort	extreme effort	extreme effort	extreme effort	extreme effort
very great effort	very great effort	very great effort	very great effort	very great effort
great effort	great effort	great effort	great effort	great effort
considerable effort	considerable effort	considerable effort	considerable effort	considerable effort
rather much effort	rather much effort	rather much effort	rather much effort	rather much effort
some effort	some effort	some effort	some effort	some effort
a little effort	a little effort	a little effort	a little effort	a little effort
almost no effort	almost no effort	almost no effort	almost no effort	almost no effort
absolutely no effort	absolutely no effort	absolutely no effort	absolutely no effort	absolutely no effort

Tumbling Topplr (Skip a song)	Clockwise twisting Topplr (Volume up)	Reaching out Topplr	Pressing the top button (Play music)	Highlighting texts
extreme effort	extreme effort	extreme effort	extreme effort	extreme effort
very great effort	very great effort	very great effort	very great effort	very great effort
great effort	great effort	great effort	great effort	great effort
considerable effort	considerable effort	considerable effort	considerable effort	considerable effort
rather much effort	rather much effort	rather much effort	rather much effort	rather much effort
some effort	some effort	some effort	some effort	some effort
a little effort	a little effort	a little effort	a little effort	a little effort
almost no effort	almost no effort	almost no effort	almost no effort	almost no effort
absolutely no effort	absolutely no effort	absolutely no effort	absolutely no effort	absolutely no effort

Reading the text (μ = 84.2; σ = 12.5)

Highlighting text (μ = 45.8; σ = 16.1)

Pressing the top button (play music) (μ = 35.3; σ = 24.9)

Pressing the top button (pause music) (μ = 30.0; σ = 17.6)

Counter-clockwise twisting Topplr (volume down) (μ = 28.5; σ = 15.2)

Clockwise twisting Topplr (volume up) (μ = 25.5; σ = 12.8)

Reaching out to Topplr (μ = 22.0; σ = 10.0)

Tumbling Topplr (μ = 21.0; σ = 13.4)

Flipping the paper (μ = 20.2; σ = 19.7)

Holding the marker (μ = 12.5; σ = 11.0)

extreme effort (114)

very great effort (102)

great effort (86)

considerable effort (71)

rather much effort (57)

some effort (37)

a little effort (26)

almost no effort (13)

absolutely no effort (2)

Appendix F: Stimulated Recall Interview - Quotes

Design features

"My computer mouse has the function for volume up and down, so I would prefer to use that."

"If I would like to choose a specific song, I would rather use the actual application on my phone or computer."

"Sometimes you want to go to the previous song, and that was not possible."

"I won't spend a lot of money for this interface just for myself, but I would see myself using this on a gathering with my friends for example."

"Missing features? Want something switch my playlist, that's not really possible now"

"[...] Make it squeezable [...]"
"I didn't change the location that much, so that was easy. But especially for the this (the top button)"

(Undo function)
"pick it up, and shake it. but I am not sure if I need to. It's not precise control anyhow. "

"It probably disrupt the other functions."

"For changing the volume I did not have to look at the interface because the object is quite big, so I could just reach for it and twist the entire thing."

"Especially when I am studying I would prefer this interface over my phone or laptop because it does not take me out of my concentration."

"When you are using it while you are studying, an additional screen would only distract you. But maybe an additional screen that enables me to choose specific songs would make this interface also useful for other purposes."

"I would like to have a "previous" function, maybe by pulling the interface towards you. But the interaction should be inherent to the "skipping" function, although it could be a more focused interaction."

"Maybe I would also like to have a "favourites/like" function that lets me simply indicate that I want to add this song to my favourite playlist."

"Using the keyboard to control, having buttons to press next song;"

"If it's for working, he didn't think it's needed to have a function of "previous song", because it will only happen when he is really listening to the song;"

"the Topplr can stimulate the action, which make her like it more than normal earpods"

"Missed functions: Play the previous song; Loop one song"

"What if I need to skip lots of songs, then the skip function is not what I want"

"Go to the previous song: when playing the English listening test"

Placement

"Not sure if Topplr will always in the same place, and it requires some attention / some preparation to set up, and take some space;"

"I didn't change the location that much, so that was easy. But especially for the this (the top button)"

"I can just work around just get some tea, I wouldn't be able to control"

"I am a fan of tangible stuff but I will lose it, that's why I bought this magnet headset."

"I would only use this interface at home, not in the bus."

Affordance
"I can do it with my elbow"

"For changing the volume I did not have to look at the interface because the object is quite big, so I could just reach for it and twist the entire thing."

"the Topplr can stimulate the action, which make her like it more than normal earpods"

"The direction can mean something;"

"When I have to play or pause the music, the button is smaller, so I have to look for it to perform the action."

"You know where the interface is located roughly, not exactly, so you simply feel where it is and perform the action."

"Sometimes I glanced beforehand to locate the interface, after which I performed the interaction itself."

Everyday use
"Focusing on the text while doing the interaction, it interrupted her reading, almost every time she did the action, she needed to look back to the sentence she just read again."

"Especially when I am studying I would prefer this interface over my phone or laptop because it does not take me out of my concentration."

"Compared to changing the music on the phone, changing the song with this [interface] did not take me out of my concentration."

"When I am studying, I would prefer this interface because I don't have to open my Spotify application on my computer."

"I am not used to this interaction, so it is hard for me to picture how this interface would fit my everyday routine. So I find it hard to answer if I would actually use it."

Mental resources
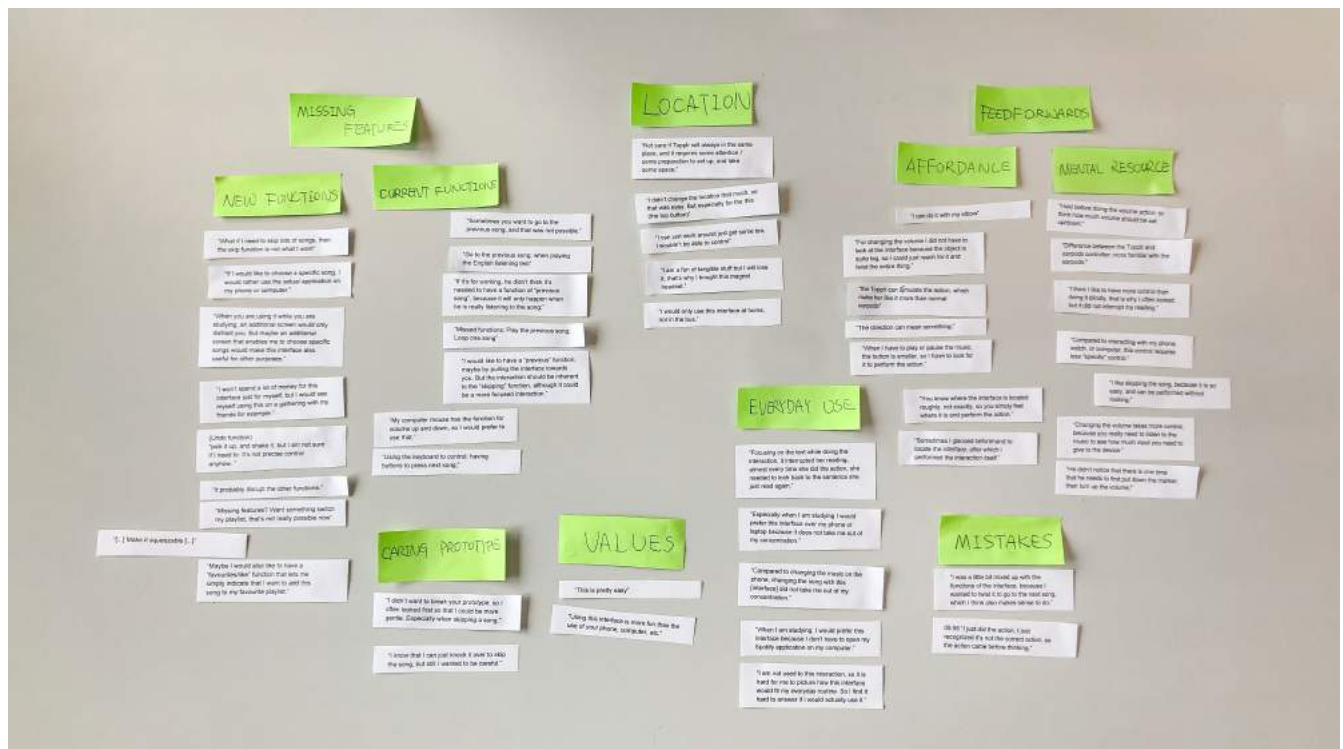"Hold before doing the volume action: to think how much volume should be set up/down;"

"Difference between the Topplr and earpods controller: more familiar with the earpods;"

"I think I like to have more control than doing it blindly, that is why I often looked, but it did not interrupt my reading."

"Compared to interacting with my phone, watch, or computer, this control requires less "specific" control."

"I like skipping the song, because it is so easy, and can be performed without looking."

"Changing the volume takes more control, because you really need to listen to the music to see how much input you need to give to the device."

"He didn't notice that there is one time that he needs to first put down the marker, then turn up the volume;"

Mistakes

"I was a little bit mixed up with the functions of the interface, because I wanted to twist it to go to the next song, which I think also makes sense to do."

05:55 "I just did the action, I just recognized it's not the correct action, so the action came before thinking."

Values

"This is pretty easy"

"Using this interface is more fun than the use of your phone, computer, etc."

Miscellaneous

"I didn't want to break your prototype, so I often looked first so that I could be more gentle. Especially when skipping a song."

"I know that I can just knock it over to skip the song, but still I wanted to be careful."

Researchers:
Ferdi Zwaan, Ward de Groot, Sark Xing, Yizhou Liu

Course:
DDM120 – Design for Focused and Peripheral Interaction

Lecturer:
Saskia Bakker, Berry Eggen

Description of the research
You are invited to participate in a research within the course Design for Focused and Peripheral Interaction at TU/e. In this study, we are going to test the interactions of an interface designed for Spotify. The results will be presented during lecture time and recorded as group report which will be a property of TU/e.

Procedure
We will show you an interface which is used to control music. We will explain the possible interactions and let you read a text afterwards. During this read, you will be prompted to interact with the interface a couple of times. After reading the text, you will get questions about the text, as well as questions about your actions during the test. Please feel free anytime during the test whenever you encounter any problems.

The whole experiment will be video recorded for analysis. In all cases, if materials are used in presentations, papers or reports, the content will be anonymized. By signing this form you consent to using the recorded material during this study. The content will be only used for research and educational purposes.

Full Name

_____

Signature

_____

Date