## Gamification– A tool to enhance response quality in lean market research

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## ABSTRACT,

Attentional Deficit Disorder (ADD) and Attentional Deficit Hyperactivity Disorder (ADHD) are mental conditions in which the child suffers a lack of ability to direct concentration. Motivation is stated to play a key role in the ability of these children to concentrate. There are currently few customized products for this target group which is why this market would be an entrepreneurial opportunity for lean start-ups. However, the traditional approach of lean startups to conduct market research is inappropriate for obtaining valuable feedback from these children. A current popular way of increasing participant engagement is the application of gamification. The purpose of this research is to determine whether gamification enhances the response quality of children with ADD or ADHD in lean market research. This is done by conducting exploratory and qualitative research by means of interviewing eleven children who experience concentration and organization difficulties. The children are randomly selected to either a gamified or ungamified version of the interview. The method by which the interview is gamified is based on theories obtained through a prior study of literature. The analysis of the data is based on grounded theory. The children who received the ungamified version of the interview showed an average response quality of 14.3% whilst children who received the gamified version of the interview showed an average response quality of 28.6%. Thus by applying gamification the average response quality of children with concentration difficulties is excessively enhanced. Based on the results of this research it is concluded that gamification is an appropriate tool to conduct lean market research on children with attentional deficit disorders.

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## **1. INTRODUCTION**

From the 1990s onwards the lean concept has been a popular concept among industries. 'Lean' meaning a "shared means of thinking to drive out waste while designing improved ways of working, reducing costs, making better use of resources and finally delivering better customer value" (Wood, 2004, p.8). Firms that follow this hypothesis-driven approach to evaluating entrepreneurial opportunity are called "lean startups" (Ries, 2011). By applying the lean method, start-ups eliminate uncertainty, work more efficiently and become increasingly goal oriented (Maurya, 2013).

Identifying user needs is vital when developing a new product (Maurya, 2009). Lean start-ups collect the maximum amount of validated learning about customers with the least amount of effort by designing a minimum viable product and introducing this to the market as early as possible (Eisenmann, et al., 2012). It is important for lean start-ups to receive feedback from customers before the production process as well as during the production process in order to meet the customer's exact needs and demands (Principles of Lean, n.d.).

Hence, it is important to implement the 'Lean concept' in the market research process. A small number of marketers are showing how market research can collect valuable feedback from customers at a fraction of the cost (Lean market research, 2013). They are developing new research techniques that use new processes and tools to increase quality and decrease costs. This is called "lean" market research because it bears a lot of resemblance to the lean start-up movement. The main concept of this theory is that marketing can and should engage customers directly, as opposed to through third party research companies (Lean market research, 2013).

Attentional Deficit Disorder (ADD) and Attentional Deficit Hyperactivity Disorder (ADHD) are mental conditions that are mostly suffered by children and are growing in awareness. Children with ADD and ADHD experience deficits in behavioral inhibition, the ability to remain focused and the regulation of one's activity level to the demands of a situation (Barkley, 2001). A contributing factor to the high level of distraction is the lack of motivation. (Diamond, 2005).

Consequently, because they are easily distracted, children with AD(H)D require customized products that specifically direct and maintain their attention and concentration (Loe, 2007). Currently there are not many alternatives for these customers. This means that it is a new market opportunity suitable for lean start-ups. However, lean start-ups require continuous feedback from their customers in order to successfully introduce a new product to the market (Principles of lean, n.d.) and giving feedback to a company about a certain product requires a lot of effort to direct concentration. Implying that companies cannot gather 'high quality' feedback from this customer segment. As a result these companies require an effective and adapted method to maintain the attention of the children when gathering feedback on products.

A solution to this problem might be found in "gamification". Gamification is defined as the use of game design elements in non-gaming context (Deterding et al., 2011) and is stated to be an effective way to maintain concentration of children with ADHD (Deterding, 2012). The aim of this paper is to apply the gamification theory to market research of this customer group to determine whether or not gamification is a successful tool to enhance the response quality of children with Attention Deficit Disorder and Attention Deficit Hyperactivity Disorder to obtain consumer feedback in lean market research, giving a clue

whether lean start-ups should invest in this gamified interview practice or not.

## 2. BACKGROUND

## 2.1 Lean start-ups

Lean start-ups focus on learning what customers may be interested in and proceed to build a "minimum viable product" in order to see if there is demand for their initial product offering (Ries, 2011).

Lean Start-up Methodology is a method introduced by Eric Ries in 2008 based on lean manufacturing, in order to successfully develop start-ups (Butler, 2014, Ries, 2008). Start-ups are "companies that are in their first stage of operations" (Investopedia, n.d.) of which 75% tends to fail according to Harvard Business School professor Shikhar Ghosh (Gage D, 2012). Ries states that, in order to become more successful, that startups could reduce their product development cycles by applying a step-by-step approach of eliminating uncertainty, building a minimum viable product and validated learning (Ries, 2012). "Every time a new feature is released, a marketing campaign is run or new sales methods are tried, a new strategy is tested by applying some kind of experiment" (Maurya, September 2010).

## 2.1.1 MVP and lean market research

The Minimum Viable Product (MVP) is a key principle of the Lean Startup Methodology (Ries, n.d.). Ash Maurya defines a minimum viable product as "the smallest thing you can build that delivers customer value" (Maurya 2009). The MVP has to be launched into the market as quickly as possible in order to gather customer feedback as soon as possible (Theleanmarketeer, n.d.). By testing the MVP, it can quickly be determined whether the concept is well received by the target group and which alterations are to be made. After all, as Ash Maurya said, "why waste effort building out a product without first testing if it's worth it" (Maurya, 2009).

A key aspect of validated learning is understanding the customers and their needs and building upon these, thus conducting market research (Maurya 2009). For each additional step in developing the product, market research has to be carried out to collect valuable feedback from customers (Ries, 2012). Consequentially, it is important to implement the 'Lean concept' in the market research process, accordingly called lean market research (Lean market research, 2013). When testing the MVP, lean market research is carried out by means of gathering customer feedback and information, which is most commonly obtained by conducting market surveys, panels or interviews (Bryman & Bell, 2015, Burns & Bush, 2000). Both Ries as well as the presented cases of PHILIPS (translated from frankwatching, 2015) and Twoodo (Twoodo, 2013, 2015) highlighted the importance of start-ups to succeed by 'Getting out of the building and talk to customers', thus conducting market research (Blank & Dorf, 2012). Lean market research on the MVP includes questions that aim at obtaining customer evaluations on that given product. In market research it is important to get beyond the perfunctory surface of understanding the customer (Kvale, 1983). For this reason, interviews are a common way of conducting market research to obtain customer feedback as they allow the respondents to probe their stories in more detail and additionally include the observations of the interviewer to complement the data collection (Knox & Burkard, 2009).

# **2.2** Attentional Deficit (Hyperactivity) Disorder

Attentional Deficit Disorder (ADD) and Attentional Deficit Hyperactivity Disorder (ADHD) are mental conditions in which patients experience a lack of ability to direct their concentration (Barkley, 2001, de Vries, 2016).

## 2.2.1 Children with AD(H)D

ADD and ADHD are mostly suffered by children but often continue throughout adulthood (Goldstein, 1998). The National Survey of Children's Heatlh (2013) stated that 11 percent of school-aged children suffers from a form of attentional disorder. Children with ADD or ADHD experience deficits in behavioral inhibition, sustaining attention and resisting distraction as well as the regulation of one's activity level to the demands of a situation (Barkley & Edwards, 2001).

Children with ADD or ADHD are diagnosed to be inattentive. This includes that they often have difficulty sustaining concentration in tasks or activities, they do not seem to listen when spoken to directly, they are easily distracted by external stimuli and they are often reluctant to engage in tasks that require continued mental effort.

Another symptom of ADD and ADHD is being unorganized and unstructured. The child has difficulty organizing and prioritizing tasks and activities, keeping structure and often loses items necessary to complete tasks. Next to this, children with ADD or ADHD also experience difficulties recalling memories. They have problems with forgetfulness and remembering learned material (Barkley 2006, Nadeau, 1995, de Vries 2016).

Children with ADD or ADHD are keen to have a high level of imagination and empathy, which contributes to the reason why they are easily distracted (de Vries, 2016). In addition to this children with this disorder suffer what is called 'timeblindness'. Time-blindness can be supported by indices to know the current time, how much time is left, and how quickly the time passes (Nyberg et al., 2003, de Vries, 2016). According to de Vries, "children with ADD or ADHD struggle to use time effectively because they are not aware of the passing of time" (de Vries, 2016). A study by Farrar et al. (2001) shows that children with ADD or ADHD experience more symptoms of visual system dysfunction than children without ADD or ADHD. For this reason, they require more visual aid during explanations of some kind than other children.

The children that suffer from the hyperactive attentional disorder, suffer from impulsivity and hyperactivity in addition to the above stated symptoms. This includes blurting out answers before questions are completed, having difficulty awaiting their turn, showing continuous movement, suffering from a feeling of restlessness and having difficulty carrying out tasks and activities quietly (Barkley & Edwards, 2001, Barkley, 2006, Nadeau, 1995).

## 2.2.2 AD(H)D and motivation

According to Nadeau K. children with ADD or ADHD have a relative inability to make themselves do something (Nadeau, 1995, p 98). It is not exclusively the external environment that causes distraction but also the lack of motivation (Diamond, 2005). Motivation stimulates the direction of concentration which leads to better performance (Barkley, 2001, McInerney & Kern, 2003, de Vries 2016).

For ADD/ADHD children, motivational effects appear to be influenced by self-perceptions of performance (Carlson &Tamm, 2000). Additionally, activities that are challenging,

motivate children with ADD and ADHD. A challenge increases concentration because the child wants to succeed. Á too challenging exercise, however, may discourage a child with ADD/ADHD because they are often insecure due to their inability to complete tasks on time which is often associated with ignorance (Ozonoff et al. 1991, de Vries 2016).

In addition to this, an element which stimulates motivation is interaction. By asking questions to the child and responding to these, children remain focused. These questions should remain rather short as children with ADD/ADHD have a short concentration span (de Vries, 2016).

Another element that enhances motivation of children with ADD and ADHD is the implementation of a reward. Children with ADD/ADHD require rewards in the form of compliments or sounds as well as physical presents (Barkley, 2001, Carlson &Tamm, 2000, de Vries, 2016).

The layout of the exercise should be visually appealing to encourage motivation of children with ADD/ADHD. The visuals are the external stimuli that intrigue or averse the child from the start. And the first impression plays a key role in the motivation of the child (Fiske, & Neuberg, 1990).

## 2.3 Gamification

Gamification is the concept of "using game design elements in non-gaming contexts (Deterding et al, 2011, p 9)." Gamification has increased rapidly in popularity over the last years and has become a prominent way to improve user participation when it comes to carrying out uninteresting tasks (Aparicio et al, 2012).

## 2.3.1 Gamification in market research

Gamification can be applied to diverse contexts ranging from education (Cohen, 2011, Kapp, 2012, Nicholson, 2012) to health (Lokhorst, 2014, Pereira et al., 2014) to business contexts (Burke & Hiltbrand, 2011, Huotari & Hamari, 2012, Neeli, 2012). Advancing on the business aspect, gamification has proven to contribute to market research by earlier studies. A study by Sherman B. (2011) has shown that by including game elements, long term participation and engagement among panelists in an online market research community enhanced. Puleston J. (2014) concluded that gamification of market research by means of a social media survey increases the response rate and participant interest (Puleston, 2014). However, the majority of gamified market research has been conducted as quantitative research by means of online surveys or market panels not as qualitative research.

## 2.3.2 Gamification and motivation

Research by Ahn, and Dabbish (2008) in which the effect of gamification on intrinsic motivation was analyzed, concluded that gamification increases intrinsic motivation. In their research they concluded that gamification by means of a point system did motivate participants to generate more tags while gamification by means of a meaningful frame inspired them to perform the task more successfully.

According to Deterding et al.(2011) the use of game elements in non-gaming contexts improve user experience and user engagement. Games trigger the mind of the user as they continuously respond to the mechanics or elements of the game. Users enjoy playing games which therefore increases the engagement of the user (Deterding et al. 2011).

## 2.3.3 Gamification and children with AD(H)D

Video games and other digital technologies are being courted as the latest approach to helping children with ADHD by Deterding S.(2012). Deterding (2012) stated gamification to be an effective way to direct the concentration of children with ADD and ADHD. This is supported by an earlier statement of Nadeau K. who declared children with ADD/ADHD to be able to sustain concentration quite well during some tasks such as playing Nintendo for hours at a time (Nadeau, 1995, p.98).

The conclusion of the research study by Deterding (2012) seems very promising. However, a similar research by Dovis et al. (2012) concluded that there was no significant difference in the level of concentration based on participation, between the control group and the treatment group. Until now there has been minimal research conducted to determine whether gamification is an appropriate and effective tool to increase concentration among children that are diagnosed with ADD or ADHD or whether it not.

Of the few researches regarding this subject only Deterding (2012) and Dovis et al. (2012) focused on the effect of gamification on the ability of children with ADD and ADHD to concentrated while others conducted research on the differences in behavior of children with ADD and ADHD compared to children with no attentional disorder when playing video games (Bioulac et al., 2008) or the increase in symptoms of attentional disorders after playing video games for long periods of time (Swing et al., 2010).

### 2.3.4 Method of applying gamification

The application of the game elements is not limited to digital media nor linked to any particular technology or any particular design practice (Deterding et al, 2011, p 9). However, the earlier mentioned researches indicate that gamification has profoundly been applied in market research in terms of online surveys, panels and other online quantitative research by means of particular technologies. When deciding upon taking a different approach to applying gamification to analyze the market, identification of the game's required characteristics is substantial.

Aparicio et al.(2012) introduced a method of analysis and application of gamification in which they identify a sequence of activities for each of the objectives that define the characteristics of the game. Despite the method being designed for technological gamification, it is an appropriate method to identify gamification characteristics by focusing on the users of the game rather than the users of the data outcome.

The first activity, called the end user analysis, is used to analyze who will use the game, and what their needs, motivations, interests and preferences are. The second activity is called identification of the main objectives, and aims to identify the main purpose of the task that needs to be gamified. This task is normally not motivating and it is desirable to improve its efficiency. The third activity is called identification of crosscutting objectives and is used to identify underlying objectives that are interesting both for the user of the game and the person interested in the obtained data. Based on these objectives game mechanics are used to create a process that promotes the development of intrinsic motivation of the user and as a result improves the interests of the person interested in the data outcome. The final activity, named implementation is the selection of game mechanics that match the objectives and support the needs of the user's motivation (autonomy, competence and relation), and their implementation in the game. This process may consist in the creation of a new system or improving an existing one.

According to Sailer et al. (2013) a successful element of a game is the addition of an Avatar as well as interacting with the user by means of questions and responses and by allowing the user to choose his or her own path in the game.

## **3. METHODOLOGY**

## 3.1 Research design

This study entitled "Gamification as a tool to enhance the response quality in lean market research" is a qualitative research that attempts to accumulate existing information on gamification, market research and characteristics of children with ADD and ADHD in order to explore if gamification is an effective way to conduct market research interviews with this target group.

For this qualitative research, semi-structured in-depth one-onone interviews are conducted, which is an appropriate qualitative method for market research (Qualitative Research Consultants Association, n.d.) and is a suggested method for gathering responses of children with an attentional deficit disorder (de Vries, 2016). The design of the interviews is based on previously stated literature theories and conducted interviews with specialists. The context of the interview questions are based on a written business plan by Feijen et al.(2015) in which a suggested product named CompaSS is designed to improve time management and organization of young adults with an attentional disorder.

To analyze whether gamification is an effective tool to enhance the response quality in lean market research of the target group, children with an attentional disorder, two interviews are carried out. The first involving the participants of the control group and the second involving participants of the treatment group. The difference lies in the interviews of both groups not the participant criteria. The control group receives an ungamified version of the interview whilst the treatment group receives a gamified version.

The effectiveness of gamification is determined by the difference in response quality between the gamified and the ungamified interview. The analysis of response quality is based on Grounded Theory, a method of qualitative enquiry in which researchers develop inductive theoretical analyses. "The purpose of grounded theory is theory construction, rather than description or application of existing theories" (Charmaz & Bryant, 2011, p292).

## 3.1.1 Participants

Eleven children, five girls and six boys, of the ages eleven and twelve, participated in the research, all of whom are officially confirmed by their parent or guardian to have a lack of directing their concentration and maintaining structure. This age is selected since it is stated to be the age at which children have considerable experience with mobile phones (Ayden, et al., 2011) but at which children with ADD and ADHD still require adequate motivation (de Vries, 2016). For the purpose of avoiding authorization violation, the children are not stated as diagnosed with ADD or ADHD and instead are stated to have a lack of directing their concentration and maintaining structure, which are characteristics of ADD and ADHD. The interviews were conducted in the preferred language by the child and later translated to English, seeing the participating children are from different nationalities.

## 3.1.2 Environment

To make the participants feel at ease and not to be distracted by new surroundings, the interviews are held in a familiar environment. For this reason, the interviews are held in a private room which offers little distraction (van Sabben, 2016).

## **3.2** Procedure of the interviews

The interviews are held informally and semi-structured so that the interviewer can adapt to the child rather that force him or her to follow a strict answering path which could influence the results. The interview is audio recorded to allow the interviewer to remain focus on the participant. (de Vries, 2016). The first impression of the participant and the observation on the responses and behavior of the participant during the interview will be written down by the interviewer as these contribute to the analysis of the interviews.

The first procedure is obtaining written permission from the parents after they have been informed about the purpose of the research, the questions that will be asked and the procedure that will be carried out. When this permission is obtained, the child will first be given a seat in a neutral (class)room.

Before the interview takes place the participating child is introduced to the researcher and is told that the interview will take place as part of a research project. Then the participating child is made aware of his or her rights to stop the interview at any time or to ask questions if anything is unclear and is asked for permission to audio record the interview. If this consent is granted the participant is informed that he or she will remain anonymously except for his/her gender and age. Thereafter the participant is introduced to one of the two versions of the interview, either the ungamified version or the gamified version. This selection proceeds randomly.

As previously mentioned the product design of CompaSS by Feijen et al. (2015) is used for this experiment. This is a common way to conduct market research as the experiments that Eric Ries and his followers usually involve incomplete product versions (Mauya, 2013). The participant is introduced to a low-fi prototype of this application and receives detailed information of its functions. Taking into consideration the advice of psychologist Herie de Vries (2016), both interviews consist of seven questions that form the foundation of the interview.

During both the ungamified and the gamified interview it is pointed out to the participant that no answer to the interview questions is wrong or right.

The interview is semi-structured to allow the researcher to interact with the child and respond to their answers in a casual manner without making statements that might influence the further answers of the participant. After answering al the interview questions, the participant is requested to evaluate the interview on how motivating her or she perceived the interview to be to give thorough answers by selecting one out of four options: 'very motivating', 'quite motivating', 'not really motivating' and 'not motivating at all'. Based on these evaluations in combination with the observations and the responses, conclusions are drawn.

After finishing the interview the participant receives a small token of appreciation for participating in the research. The reason for this is that children with AD(H)D require rewards and for this not to create a bias on any interview the and to not influence the difference in results, children participating in either version of the interview receive this token. However, in both versions of the interview the participant is not made aware of the details of the reward and is simply informed about its existence and receiving it after successfully finishing the interview.

## **3.3** Method of analyzing the responses

The first step when analyzing qualitative data is to get an overall interpretation of the acquired data by quickly browsing through all the transcripts and describing the first impression (Silverman, 2014).

The next step is to analyze the data in greater depth by performing content analysis and to construct a system of coding the responses which is based on the variable that is to be measured: the quality of the response (Silverman, 2014). For this research, the quality of the response is defined as 'relevant and useful feedback on constrained use of the application'. Lean market researchers are interested in customer feedback that allows them to develop and alter the product to suit the customers' demands. Therefore, the responses need to be well elaborated and contain useful information.

In order to conclude whether there is a difference in response quality between the ungamified and the gamified interview, a value is given to each response by means of a point-system. Based on the analysis of the results of coding the data and the literature study, conclusions are drawn and theories are constructed.

## 4. GAMIFYING THE INTERVIEW

## 4.1 Gamifying the interview based on Aparicio et al.(2012)

In order to fulfil the needs of the target group by gamification, game mechanics are to be constructed. This is done by identifying the characteristics according to the previously described method of analysis and application of gamification by Aparicio et al.

#### 4.1.1 User analysis

The users of the game are children that suffer ADD or ADHD. To make children feel more at ease, the setting should be casual rather than formal and the interviewer should act friendly towards the children (van Sabben, 2016). A specific condition of the game regarding children with ADD/ADHD is that it encourages motivation (Diamond, 2005).

According to psychologist J. van Sabben, supported by the theory of mind, children, especially those with a disorder, often find it hard to reflect on themselves. For this reason, it is suggested to let them reflect on a third person or character with whom they can identify themselves (Ozonoff et al. 1991, van Sabben, 2016). They should be able to relate to this third person, but it may not be a direct representation of themselves.

Additionally, children with ADD/ADHD require visual aid (Farrar, 2001) as well as indications of the passing of time (de Vries,2016). This allows the participant to see the progress he or she makes and how many tasks are still to be completed. Another element that children with ADD/ADHD require is interaction. This helps the child to stay focused on the activity. A final requirement when interviewing children with ADD or ADHD is that they need a clear goal and clear instructions (de Vries, 2016).

## 4.1.2 Identification of the main objectives

The main objective of the game is to obtain a customer review on the product. The aim is to identify the needs and demands of the customer group. For the given product it is important to get to know what the customers like and dislike about the product and why they find something useful or not and whether they would suggest the product to their peers or not. The most important objective is to identify and what they would like to change or add to the product (Weis, 1998).

## 4.1.3 Identification of cross-cutting objectives

The objective of the user group is to reach the finish line and receive some form of a reward. For those that are interested in the responses it is important that the answers are given thoroughly.

#### 4.1.4 Implementation

To successfully suit children with AD(H)D the game mechanics should incorporate: visibility, relatability, neutrality, a clear goal, rewards, interaction and a challenge.

Visibility of the progress of the child as well as the requirement of visibility of the game itself can be implemented in the game by means of a board on which the game is based. Another criterion of the game is the addition of a third character on which the questions are based and the child can relate to. This can be done by means of an avatar (Sailer et al.,2013). When interviewing children, this avatar needs to be a rather neutral character to which children can relate (Van Sabben, 2016), neutral in the sense that they do not spur on a certain bias from the children.

Children with ADD/ADHD require a relatable character rather than a personification of themselves since they find it hard to reflect on themselves. (van Sabben, 2016). Additionally, children tend to relate better to a same-gender character (van Sabben, 2016).

Children with ADD/ADHD require a clear goal which is stated from the beginning as well as a rewarding goal. There should be a benefit to reaching the goal. In a game, the goal is to successfully reach the finish line. Hereby the interest of both parties can be combines. The interest of the user is to receive a reward when the game is successfully finished. The party interested in the response gains when the only way to reach that finish line successfully is for the user to give thorough answers on the questions. This reward and the clear goal intrinsically motivate the user to give thorough answers This can be done in terms of points or physical rewards when a goal is reached. However, the children should not know what the reward is as this can have the opposite affect (Barkley, 2001, de Vries, 2016).

A further condition is that the game needs to be interactive. In order for ADHD children to remain focused and time efficient, the game needs to be interactive between player and narrator. A way for this is to incorporate the interview questions within the game and to respond to the answers of the participant in a neutral manner.

And a final criterion is that the game is somewhat challenging. Meaning that the child needs to put in some effort to reach the goal. This is done by means of a moderately complex looking board game as well as putting conditions for successfully completing the game.

## 4.2 the Gamified interview

The introduction of the gamified interview is given in a narrating manner in which the product that is reviewed, in this case the application, is portrayed as a character of the story. The story is told in third person and the interview questions are not stated regarding the participant but rather regarding a character he or she can relate to. This relatability is generated by assigning common symptoms of ADD and ADHD to the character as well as representing the character according to the gender of the participant. This character is represented by an avatar that is gender specific. For the male participants this character is called Marie. Prior to each interview question, a story about the character is told to add to the gamification of the interview.

The interview is supported by a board game (Figure 1) that is structured with a clear beginning and a clear end. Each position on the board game corresponds to an interview question. Moving upwards the game, the avatar will move left or right depending on the answer that the participant gives. When the participant gives a positive statement, the participant is allowed to move the avatar upwards to the left. When the answer is stated negatively, the participant moves the avatar upwards to the right. The questions remain the same for either direction that the pawn moves. The participant is unaware of this, making the game more interesting for them. The roads on the board game exhibit vibrant colours with a neutral background to make the game visually more appealing as was suggested by A. Schoenmakers, master student Industrial Design at the University of Twente. The board game however is kept very neutral in the sense that the design and function are not product related other than a small icon in the right hand corner, which is a personification of the application CompaSS. This allows the game to be used for other market research.

The participants are told at the beginning of the story that a rewards awaits them as this is a necessary condition for children with ADD and ADHD (de Vries, 2016). However, they are not told what kind of reward it is, seeing this can take away the effect of the reward as well as cause a bias on the answers if the child does or does not like the rewards.

After the pawn has reached the finish line, the child is told that the game has ended and is questioned about his or her opinion of the game. After the interview is concluded, the child may choose a small toy.



Figure 1. The gamified interview

## 5. RESEARCH ANALYSIS 5.1 Global analysis

What stands out is the difference in structure between the two versions of the interview. On the one hand, the ungamified interviews are shorter and are constant in length, whereas the lengths of the interviews of the gamified version are longer and show greater variation in length among the responses of different participants. On the other hand, there seems to be a greater variation in length per response of the participants of the gamified interview than in those of the participants of the ungamified interview. A possible reason for this variation in response length is the time-blindness of children with AD(H)D. The board game allows the participant to keep track of his or her progress while the ungamified interview leaves the child with no visual aid to do so.

## 5.2 Operationalization

After analyzing the responses in greater depth, four different themes can be identified. The responses of both interviews are coded into one out of four categories, which are then linked to a four-point system.

The first category consists of responses, that are not elaborated or supported by an argument. For example the answers "Yes, the agenda" (Participant 4, Q5) or "I do not know" (Participant 2, Q6). The second category consists of answers that are supported by an argument which is primarily based on information that was given during the introduction of the ungamified interview or during the story of the game. Examples of such responses are "Yeah. Because it can, like, move your other stuff while it first puts the priority and then he can put the other stuff later" (Participant 9, Q4). and "I do think that. It reminds you that you have to do your homework or that you should go somewhere so you won't forget" (Participant 8, Q5). The third category consists of answers based on personal experience or answers which are individually conceived (meaning that the arguments were not stated in the introduction) but which are not useful to the producers of the application. Examples of this are "Because, sometimes I do my homework really late in the evening and then I have to sleep really late" (Participant 8, Q1). and "Yes, actually I find a standard agenda that my grandma has just as useful" (Participant 11, Q4). The final category consists of answers that are supported by an argument, individually conceived and useful to the producers of the product. This includes suggestions of additional features or elaborated criticism on current features. Examples of this are "to give you instead of a sound a vibration in your pocket" (Participant 10, Q6). or "I still think that she can do it the same way with a watch[..]. They can even call someone" (Participant 11, O3).

In order to determine the difference in response quality between the two interview versions, a value is linked to each response by constructing a point system. Each category corresponds to a set value. Responses belonging to the first category are given the value '1'. These are answers that score negatively on 'response quality' because they do not give the interested party useful and elaborated data. The responses of the second category are given the value '2'. These are responses that score moderately on 'response quality' because they show that the participant paid attention but do not give new and useful information. The responses in the third category are given the value '3'. These responses score rather high on 'response quality' as the consist of new information and reasoning which is relevant to the company but not necessarily useful. And finally a response of the fourth category is given the value '4'. This is the highest score on 'response quality' as these responses provide new and useful information for the company.

After this, the total number of valuable score on response quality per participant is given as well as the number of valuable responses, meaning those that scored '4' points.

For future purposes the responses belonging to one of the first three categories are also given a value. This also allows the calculation of the total score of the responses per participant which is relevant for drawing conclusions. However, for this research the quality of the response is defined as relevant and useful feedback on constrained use of the application. Meaning elaborated responses with useful information on the product, thus responses of the fourth category.

## 5.3 Results

The coded interview responses are shown in Table 1.

The coded data in combination with the observations of the interviewer as well as the evaluation of the interview by the participant are given in Table 2.

Tabel 1. Coded interview responses

Partipant	Q 1.	Q 2.	Q 3.	Q 4.	Q 5.	Q 6.	Q 7.	Total score	Number of valuable responses
1	3	3	2	2	2	4	1	17	1
4	1	4	3	1	1	4	3	17	2
5	1	1	1	1	1	1	1	7	0
6	1	4	1	2	2	1	1	12	1
8	3	4	1	3	2	1	2	16	1
2	1	4	4	2	3	1	3	18	2
3	3	4	2	2	2	4	4	21	3
7	1	4	1	3	1	4	4	18	3
9	1	3	2	2	3	4	1	16	1
10	2	1	1	2	3	4	3	16	1
11	3	1	4	3	1	4	3	19	2

Tabel 2. Analysis of ungamified and gamified interviews

Partipant	Observation Observation during before the the interview		Evaluation by	Total score	Number of valuable
1	very spontaneous	very enthausiastic,but easily distracted. Asks many questions.		17	1
4	Spontaneous Entausiastic So.			17	2
5	Shy Pays a lot of attention to the interview but holds back when giving answers			7	0
6	Confident spontaneous	onfident pontaneous Remains calm during interview but is benevolent to answer.		12	1
8	Calm	Gives elaborated answers but seems to loose focus as the interview proceeds	$\odot$	16	1
2	Shy	Started off shyly but loosened up during the interview and answered more eleborately.	:	18	2
3	Calm	Really sympthasizes with the character. Gives greatly elaborated answers		21	3
7	Very active Enthausiac	Very excited by the game but often distracted by the board of the game. Very eager to answer.	٢	18	3
9	Very calm Reserved	Holds back at the beginning but seemes to loosen up a bit as the interview proceeds.	$\odot$	16	1
10	Enthausiasic	Is very occupied with reaching the finishline and pays less attention to answering thoroughly	Ö	16	1
11	Spontaneous Bored Distracted	Seemed uninterested at first but graduatly enjoys the interview and wants to explain herself well.		19	2
		Ungamified	interview	Gamifi	ed interview

Participant 1 was introduced to the ungamified version of the interview. This participant was very enthusiastic throughout the interview, which corresponds to the first impression he gave (see table 2). He was very interested in the product and found the interview to be highly motivating. However, he was easily

distracted. He seemed very forgetful of previously made statements and asked questions throughout the interview about the operations of the product that were explained during the introduction. Such as "this is your agenda?" (Participant 1, Q4). and "So you can write your homework here as well?" (Participant 1, Q4). This is a standard symptom of children with the disorder ADD and ADHD as children with this disorder have difficulties recalling memories and information (Barkley 2006, Nadeau, 1995, de Vries 2016). The participant did answer all the questions to a high extend but as can be concluded from table 1, he did not give many valuable answers.

Participant 2 was introduced to the gamified version of the interview. The first impression of the participant was that he was very shy. He scanned the room before seating down and waited for the interview to commence. After being introduced to the game he seemed gradually loosen up and as the interview proceeded he started to elaborate more on his answers. He obtained a rather high score on the total number of his responses (18) and gave two valuable answers (See table 1). His evaluation on the interview shows that he found the interview quite motivating to give thorough answers.

Participant 3 was also introduced to the gamified version of the interview. The first impression of this participant was that she was very calm. She remained quite calm during the interview and showed considerable sympathy for the character which was reflected in her answers, for example "Because, maybe, she can remember some things but when she for example is very tired or is not very happy, she can forget quite a lot. And sometimes she can, yes well, when she is very happy, she can maybe remember things because she is in a good mood." (Participant 3, Q1). In addition to this she gave detailed answers, of which three are valuable for product development. Participant 3 evaluated the interview as very motivating to give thorough answers.

Participant 4 was introduced to the ungamified version of the interview. At first hand the participant seemed to be very spontaneous and enthusiastic. He introduced himself as soon as he walked in and immediately asked about the nature of the interview. However, as the interview proceeded, he remained very calm and only elaborated on answers when being asked a follow up question. An example of this is illustrated in the answer to question four. Interviewer: "Yes?" Participant 4: "I always wear it with me so it seems useful". Nevertheless, he gave two high quality answers and scored a total of 17 points on his answers. Remarkably he evaluated the interview as 'quite motivating' to give thorough answers.

Participant 5 was likewise introduced to the ungamified version of the interview. The first impression of this participant wat that she was rather shy. She quietly took place at the desk and waited for the interview to commence. During the interview she remained focused but seemed to be holding back when answering the questions. Even when she received a question upon her response she did not give a reason for her answers. She received the minimum total score on her answers and gave no valuable response. The evaluated the interview as 'not really motivating'.

Participant 6 was introduced to the ungamified version of the interview as well. The first impression of this participants was that she was very confident and spontaneous. However, during the interview she remained calm and gave concrete answers. For each question she stated her opinion directly. An example of this is "I do think so because I do not have an IPad or something similar, and on a computer it does not seem handy to me" (Participant 6, Q2). However, she did not seem to be

engaged with the interview. She was benevolent to answer but did not support her answers with a reason. She obtained a rather low total score on her answers but did find the interview quite motivating to give elaborated answers.

Participant 7 was introduced to the gamified version of the interview. The first impression of him was very active and enthusiast. During the interview he could barely remain seated and was very occupied with the avatar on the board. He was very impatient and answered before the questions were fully stated. However he did not ask questions that were previously answered in the introduction. Even though he was very active, he scored very high on valuable responses. He was really excited by the game and found it to be very motivating to give thorough answers. What is noticeable is that when he was distracted by the board game, he next answer was without any further elaboration: "Yes, then I should go this way?" (Participant 7, Q3).

Participant 8 was introduced to the ungamified version of the interview. She appeared to be calm but assured from the first moment on. As the interview proceeded, she seemed to gradually lose focus on the interview. She took her time before answering the questions. However, instead of appearing to think about possible answers, it seemed as if she had her mind somewhere else and did not find the interview exciting enough. Although her average score was rather high, the answers ranged from fully elaborated to simple restatement of facts from the introduction, and by the end she had only given one valuable answer. Even though she did not seem to remain focus on the interview, she evaluated the interview to be quite motivating to give thorough answers.

Participant 9 was introduced to the gamified version of the interview. This participant gave the first impression of being very calm and reserved, which changed a throughout the interview. At first he sat very stiff in his chair and later showed a much more relaxing position. At the beginning of the interview he was very reserved when answering the questions but as the interview continued he seemed to loosen up and elaborated more. The first answer participant 9 gave was simply by nodding yes but as the interview continued he elaborated more and supported his answers with reasons. He found the game quite motivating to give thorough answers.

Participant 10 was introduced to the gamified interview as well. This participant seemed quite enthusiastic before as well as during the game. However, he was quite occupied with the board game at the beginning of the interview and paid less attention to the introduction. He gradually started to regain his attention after which he showed to elaborated rather well on the final questions. He only gave one valuable answer but evaluated the game to be very motivating to give thorough answers.

Participant 11 was introduced to the gamified version of the game. She came off as bored and reluctant to participate in the interview. However, as she sat down, the board game caught her attention. She elaborated in great length on her answers, yet, she stuck to one argument; that the product was useless to her. Nevertheless, she gave a number of good reasons for her answers and scored quite high on the total score, of which 2 answers were proven to be useful. This participant evaluated the game to be quite motivating. She did however get distracted by the board game and mainly the avatar from time to time, after which her response decreased in quality: Participant 11: "Yes." [meanwhile fuddles with the avatar on the board game.] Interviewer: "But do you then think it is most suitable for Marie to have it on her phone?" Participant 11: "Yes." (Participant 11, Q2)

Tabel 3. Average results of the interview

	Average evaluation of the interview on motivation	Average total score	Average number of valuable responses
Ungamified interview	'quite motivating'	13.8	1
Gamified interview	'very motivating' 'quite motivating	18	2

Table 3 indicates that on average, the participants of the gamified version found the interview to be more motivating to give thorough answers than the participants of the ungamified interview. In addition to this, the average total score of the gamified interview seems to be significantly higher than the average total score of the ungamified version and a similar observation can be made on the average number of valuable responses.

Since this research aims at determining whether gamification is an effective tool for lean market research of children with an attentional disorder, the effectiveness is determined by the increase in the average number of answers that are valuable, and thus of 'high quality' to lean start-ups, per interview version. The average percentage of response quality is given by the sum of the number of useful and valuable answers (answers coded into category 4) of all participant of one version of the interview, divided by the total number of possible useful and valuable answers in that version of the interview (\*times 100).

For the ungamified version that means: (1+2+0+1+1=5) / (7\*5=35) = 0.1428571

0.1428571 \*100= 14.3%

In the ungamified interview the average level of response quality, measured by useful and valuable responses in product feedback, is 14.3 percent.

The calculations to determine the average level of response quality of the gamified interview are the following: (2+3+3+1+1+2 = 12) / (7\*6) = 0.285714280.28571428 \*100 = 28.6%

This means that the average level of response quality, measured by useful and valuable responses in product feedback, of the gamified interviews is 28.6 percent.

The calculated results show that on average, the response quality of children participating in the gamified version of the interview is twice as high as the response quality of children participating in the ungamified version of the interview.

In addition to the increase in response quality, participants of the gamified interview showed to be more excited to play the interview 'game' as well as the results showed them to be more motivated by the interview to give thorough answers than the participants of the ungamified interview. This is in line with previously stated theories by Deterding (2012) and Ahn and Dabbish (2008), which suggest that gamification increases the motivation of participants. Based on these findings in combination with the increase in response quality a further theory can be constructed. Gamification stimulates motivation which in turn stimulates a child with concentration difficulties to give valuable responses in lean market research.

The observations of the participants showed that the children who participated in the gamified version of the interview and who were reserved and held back at the beginning of the interview, gradually loosened up as the interview proceeded opposed to children with similar characteristics who participated in the ungamified interview and instead maintained this attitude throughout the interview. This may have a significant influence on the extent to which children gave valuable and elaborated answers. Based on these results another theory can be constructed which states that gamification of interviews allows children with ADD/ADHD to feel more at ease and therefore stimulates the response quality of these children.

Another observation of the difference in answers among the two versions of interview is that children who received the ungamified interview seemed to state their opinion directly with little refection. Children who received the gamified version of the interview seemed to reflect upon possible answers regarding the character of the game, before stating their final opinion. The latest resulted in more elaborated and valuable answers. A reason for this might be that children with ADHD reflect better upon a third person rather than themselves, and therefore elaborate more on answers.

Further observations of the participants showed that children who received the ungamified interview more often lost focus as the interview proceeded than children who received the gamified version of the interview. However, although the children who received the gamified version of the interview showed to be more engaged with the interview, they were easily distracted by the board game itself. These children were often occupied with reaching the finish line or with the avatar of the game after which they gave an unelaborated answer to the question that followed.

A final observation is that the results show that children with concentration difficulties are able to give valuable responses to lean market research. Children with ADD or ADHD are sometimes considered to be ignorant, but being able to envision, elaborate and come up with suggestions on a low-fi prototype, often used by lean start-ups, signifies that these children are rather intelligent and simply require an effective way of being interviewed.

# 6. LIMITATIONS AND FUTURE DIRECTIONS

Gamification can be applied in various ways and this study only focusses on the applying elements of gamification that correspond to the requirements of children with ADD and ADHD, retrieved from theories on these disorders. This might have led to the exclusion of theories on gamification that could have contradicted the concluded theory that states that gamification enhances response quality of children with attentional deficit disorders in lean market research.

Regarding the study design, the sampling of participants of this research relies on specific criteria. This means that the availability of participants is very limited, and thereby the sample size is small. Determining the significance of the relationship between variables in a small sample group can lead to biased results. For this reason no quantitative analysis is implemented in the analysis of the results of this research.

It would, however, be interesting for future research to determine the significance of each variable and which variable exerts the greatest influence on the effectiveness of gamification to enhance the response quality of the participants. However, to apply the appropriate test to analyze the significance of the difference in response quality between the two interview versions and to test the strength and significance of the relationship between the response quality and each variable, the expected count per cell should be at least 5 and the sample size should be larger, thus, this research should be conducted on a much greater scale. Next to this, it would be interesting if this research was conducted on different age groups. Based on that it could be determined for which age group this method of gamification in lean market research of children with ADD or ADHD is most appropriate and what should be altered to enhances the response quality in lean market research of other age groups.

The aim of this research was to conclude whether gamification is an effective tool to enhance the response quality of children with ADD or ADHD in lean market research. However, to confirm such diagnosis of a participant, the researcher is required to be a specialist of this field, which is not the case for this analysis. For this reason, only children who are stated by their parents to suffer symptoms of this disorder were used as participants. However, this influences the validity of this research. It might be the case that one of the participants of this research does not suffer the disorder and since the research is conducted on such a small sample group, it has a significant effect on the outcome. A remark for future research is that it is to be conducted on children who are officially stated by a specialist to suffer from Attentional Deficit (Hyperactivity) Disorder.

This research is based on grounded theory, the value of which lies in the fact that it avoids making prior assumptions and instead adopts a more neutral view of human action in a social context. This includes that the coding system with which the data has been analyzed, and the interpretation of the data are subjective to the researcher which might have influenced the outcome.

Furthermore, the data was collected in conversational interviews, which could mean that the responses of the participants were biased by the interviewer or that the observations of the interviewer was too subjective.

A final limitation is that the interviews have been conducted by the researcher without prior experience on interviewing children. This might have had a slight influence on the results. Therefore, it is suggested that interviews in future research are conducted by an experienced interviewer.

## 7. CONCLUSION

This exploratory, qualitative research has been conducted to determine whether gamification can be used as an effective tool to enhance the response quality of children with an attentional disorder in lean market research.

The literature review has shown that it is important for lean start-ups to conduct continuous market research to receive customer feedback based on which products are developed and enhanced. This feedback needs to be fully elaborated and provide the producers with relevant and useful information in order to allow the product to be developed to fully satisfy the needs and demands of its users. In addition to this, the literature review concludes that children with Attentional Deficit Disorder or Attentional Deficit Hyperactivity Disorder experience a lack in ability to direct their concentration. A key stimulus to directing concentration is stated to be the level of motivation experienced by the child. This motivation is suggested to increase when gamification is applied. Based on this literature review it can be suggested that gamification increases the motivation of children with ADD and ADHD which in turn increases the ability to direct concentration. However, this does not conclude whether this enhances the response quality of the children in lean market research.

The question whether gamification is an appropriate tool to enhance response quality of children with attentional deficit disorders in lean market research was answered by conducting gamified and ungamified interviews with eleven children who experienced concentration difficulties.

The results of this research show that on average, the response quality of participants of the gamified interview was significantly higher than the response quality of participants of the ungamified interview. The children who received the ungamified version of the interview showed an average response quality of 14.3% whilst children who received the gamified version of the interview showed an average response quality of 28.6%. Based on these findings the following theory is concluded: 'gamification enhances the response quality of children with attentional disorders in lean market research'.

In addition to the increase in response quality, participants of the gamified interview showed to be more motivated by the interview to give thorough answers than the participants of the ungamified interview. This confirms prior stated theories on the effect of gamification on motivation.

Based on the observations of the research, it can also be concluded that implementing gamification in lean market research allows children of whom the start-up desires feedback to be more at ease during the interview which may lead to higher quality responses.

A further conclusion can be drawn upon the results that children who received the gamified version of the interview seemed to reflect upon possible answers before stating their final opinion. The latest resulted in more elaborated and valuable answers.

However, apart from the fact that gamification does encourage concentration, gamification also offers distraction from itself. Most of the participants of the gamified interview were distracted by the board or the avatar of the game at least once during the interview. This had an immediate consequence on the following answer which then was not wholly elaborated. It can be concluded, then, that gamification enhances the response quality in lean market research of children with an Attentional Deficit (Hyperactivity) Disorder, as long as the game itself does not notably distract the child by its appearance.

This research concludes that lean start-ups, which require continuous feedback from their customers, should implement gamification in their lean market research approach when seizing the opportunity to enter the customer market; children with Attentional Deficit (Hyperactivity) Disorder. Gamification enhances the response quality of these children, allowing lean start-ups to gather more useful and relevant feedback to adapt their product to, to suit the need and demand of these customers.

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## **10. APPENDIX**

## 10.1 Appendix 1

The gamified interview with avatars



## 10.2 Appendix

Tool to evaluate of the interview by the participant after the interview has taken place.

What is your evaluation on the interview: How motivating did you find the interview to give thorough answers?

quite motivating







Very motivating

not really motivating

not motivating at all

Coded interview with Participant 1

#### 1. UNGAMIFIED (Boy, 12yrs)

#### Q1.

Interviewer: "Do you think this application would help you?" Participant I: "Eh, yes I think so, maybe. Lam able to keep order but I do have sports after school and sometime I do not really have time to make something and then I have to make my homework really late. But I think that it is clever. Just everything. It is cleverly invented. The most important, such as tests, but often I write it in my agenda, but in case you forget. Does it give you a notification?" Interviewer: "Yes it does" Participant I: "Then you know when you look at your phone, so then I think that it will be good".

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 1: "Uhm, how do you mean? Interviewer: "well maybe you think that something else is more appropriate, for example to have it on a computer". Participant 1: "A phone you can turn on quickly and a computer is well, it takes more time."

#### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 1: "Yes. Can you also do your normal homework here?" Participant 1: "Yes" Participant 1: "So then 1 think, if you forget, then you always have a notification. That's useful."

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with timemanagement problems?"

Participant 1: "I think that it is useful for.. Uh.. just, if you maybe with some people. So here you have, this is your agenda?" Interviewer: "Yes"

Participant 1: "So you can write your homework here as well? O, so that is.." Interviewer: "How do you mean? That you really make your homework?"
Participant 1: "Well for example then you have exercise 15 until 20, Can you write it
down here? Interviewer: "That is not yet incorporated but it sounds like a good idea. Or how do you mean. That you make the exercise itself in there or that you simply write the task?"

Participant I: "No, that you write them like exercise 15 until 20." Interviewer: "True that you can do in there" Participant I: "That is useful".

## Q5.

Interviewer: "What do you like best about this application?" Participant 1: "The entire schedule and that when you have another appointment and how it arranges in a day."

made in the introduction

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 1: "Maybe someone who has difficulties with reading for example dyslexia. That he can also use it then." Interviewer: "Maybe that it should be spoken?" Participant 1: "Yes could be. That would be useful, that you can record it. But maybe that is not so..." Interviewer: "A little impractical when you're in class perhaps?" Participant 1: "Yes"

Interviewer: "That is a good one though"

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 1: "Yes, when someone is not structured, then I would, CompaSS was the name right? That they should install and use CompaSS."

L' question ; did not pay attention no reason given for

#### 2. GAMIFIED (Boy, 11yrs)

#### Q1.

Interviewer: "Do you think Peter could use compass?" Participant 2: "Yes so I should go there." > Dusy with game no reason qu

#### 02.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use Compass?"

Participant 2: "Yes because then he can organise himself better."

Interviewer: "But do you think that a phone is the most appropriate device instead of for example a computer?"

Participant 2: "Hhm, I actually do think so because you can take it everywhere with useful, own reason given you." answer

Interviewer: "That's true."

Participant 2: "So then I [picks up the pawn] should go there." > busy with playing Interviewer: "Yes this way."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school.

Do you think that Compass can help Peter to finish his homework on time?" Participant 2: "Yes. In my opinion it does because CompaSS makes a sound or so and then he remembers that he has to do his homework. reason given that was not stated in the introduction

Interviewer: "True, Now Peter enters the roundabout, and now it is to you to choose the exit among these." Participant 2: "This one"

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. Compass would like to help Peter.

Do you think that Compass is the proper solution for Peter?"

is the correct help or would something else be hetter?"

Participant 2: "Ehm, I do not remember the question that well." -> lost focus Interviewer: "Do you think that CompaSS is the right help for Poter because he is so busy with doing things, and every day he has some activity. SO do you think Compass Participant 2: "I think that CompaSS is better because it does the important things first and the less important things later."

#### Q5.

## statements Made in the

Interviewer: "After spending some time with Compass, Peter allowed Compass to help him. Now he is filling his daily activities and tries to keep his agenda up to date. What do you think Peter likes best about Compass?"

Participant 2: "Maybe that he submits his homework on time"

## Q6.

Interviewer: "Like every other person, Compass is not perfect. What do you think Peter would like to change, add or leave out of Compass?" Participant 2: "I do not know" Interviewer: "No? Does he think he is good enough this way?" Participant 2: "Yes"

#### Q7.

Interviewer: "Peter has a friend named Tom. Tom is a very easily distracted child. He seems to be very chaotic and unfocussed and has to do a lot of classwork at home as a result.

Do you think Peter would suggest Compass to his friend?

Participant 2: "Yes because then they are all well organised and then they can play better together, play more together, have more time to play together."

own thought of reason

#### 3. GAMIFIED (Girl, Hyrs)

#### Q1.

Interviewer: "Do you think Marie could use Compass?" Participant 3: "Maybe she can. Maybe. Sometimes she can use him well, hut sometimes not. Because, maybe, she can remember some things but when she for example is very tired or is not very happy, she can forget quite a lot. And sometimes she can, yes well, when she is very happy, she can maybe remember things because she is in a good mood."

#### Q2.

Interviewer: "Marie already has a phone for a couple of years but she uses it mostly to call or play some games and doesn't all her time on it. Do you think her phone is the most suitable device for Marie to use Compass?"

Participant 3: "I think it is handy, because else she has to because she can't take the computer with her. And when she for example has forgotten something she can look it up and picks up her phone and then she looks on her agenda.

Suggestion why not to

#### Q3.

Interviewer: "At school Marie was not able to finish her classwork on time, like most fellow classmates were. Therefore the teacher gave her the exercises to do as homework for the next day. Marie is not happy about this because he actually wanted to meet with her friends after school. Do you think that Compass can help Peter to finish his homework on time?"

Participant 3: "Yes it can because then CompaSS says certain minutes, len or a quarter of an hour, and then she will respect those minutes. And when she is ready, she can go shopping with her friends."

#### Q4.

Interviewer: "Marie is a very sporty fellow. Every Tuesday and Thursday she plays sports and has music lessons on Wednesday. As you can see, Marie has a busy schedule. However, she likes to play with her friends as well. Compass would like to help Marie.

Do you think that Compass is the proper solution for Marie?"

Participant 3: "He can help her by saying what she has, music lessons and everything. But then she can, uh I don't know if she can, but maybe she can just think: now I have music lessons when she looks on CompaSS, and then I can go to my. But not earlier, I may not miss my music lessons.

Interviewer: "But do you think that Compass is a good solution for her? Or perhaps an agenda instead of a phone?"

Participant 3: "Maybe she can have both but I think that this is a bit better."

#### Q5.

Interviewer: "After spending some time with Compass, Marie allowed Compass to help her. Now she is filling in her daily activities and tries to keep her agenda up-todate.

What do you think Marie likes best or find the most useful about Compass?"

Participant 3: "That he says when she has to do stuff, so she doesn't forget. And that she says, chm well at this hour you have class and at that hour you also have class."

## Q6.

Interviewer: "Like every other person, Compass is not perfect. What do you think Marie would like to change, add or leave out of Compass?"

Participant 3: "Maybe it would be possible that in case you forget something a small light shines on your phone."

Interviewer: "So somewhat of a reminder" Participant 3: "Yes"

## Suggestion

#### Q7.

Interviewer: "Marie has a friend named Sophie. Sophie is a very easily distracted child. She seems to be very chaotic and unfocussed and has to do a lots of classwork at home as a result. Do you think Marie would suggest Compass to Sophie?" Participant 3: "Well, I don't think that she would give her CompaSS but instead would explain how she can have that too. So how she can have the app too." Interviewer: "So you think that Marie will think, okay this is good for her too? Participant 3: "Yes because she also has the problem just like her. So it would be quite nice if he does that"

suggestion; how to suggest Compass to friends

4. UNGAMIFIED (Boy, 12yrs)

#### Q1.

Interviewer: "Do you think this application would help you?" Participant 4: "Yes." Interviewer: "Yes?" Participant 4: "Yes, seems useful"

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 4: "Yes?" Participant 4: "I always wear it with me so it seems useful" useful reason given.

#### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 4: "Yes, I always leave it alone until the last moment, so I think so

Participant 4: "Yes, I always leave it alone until the last moment, so I think so.

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with timemanagement problems?"

Participant 4: "Yes in most cases I think so."

#### Q5.

Interviewer: "What do you like best about this application?" Participant 4: "Yes, the agenda"

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 4: "If it is for children I maybe would... the coffee" Interviewer: leave out the coffee?

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 4: "Yes, once I started using it and I really find it useful, which it seems to me, then I would suggest it yes."

own reason

## 5. UNGAMIFIED (Girl, 12yrs)

#### Q1.

Interviewer: " Do you think this application would help you?" Participant 5: "Yes" Interviewer: "Yes?" Participant 5: [nods yes]

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 5: "Yes" Interviewer: "So not a computer for example?" Participant 5: "No"

#### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 5: "Yes, I think so"

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with timemanagement problems?" Participant 5: "Yes" no reason given

Interviewer: "Yes?" Participant 5: [nods yes]

Q5.

Interviewer: "What do you like best about this application?" Participant 5: "That it says the most important thing on the agenda"

#### Q6.

no reason given

Interviewer: "What would you add, remove or change to this application?" Participant 5: "I don't have a clue" Interviewer: "No? Participant 5: [shakes head] Interviewer: "You don't have to. Don't feel forced"

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 5: "Yes" no reason given Interview with Participant 6

Interviewer: "Yes" Participant 5: [nods yes]

## 6. UNGAMIFIED (Girl, 11yrs)

Q1.

Interviewer: "Do you think this application would help you?"
Participant 6: "Yes"
Participant 6: "Yes"
Participant 6: "Yes"

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 6: "I do think so because I do not have an Ipad or something similar, and

Suggestion; why not to use computer or loool

repetiting introdu

on a computer it does not seem handy to me"

### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?"
Participant 6:"Yes"

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with timemanagement problems?" Participant 6: "Yes, I believe so." Interviewer: "Maybe, I don't know, something else instead?"

Participant 6: "Nah, this seems to me to be the handiest because it is on your phone and it can actually do all kinds of things."

## Q5.

Interviewer: "What do you like best about this application?" Participant 6:"I do not know, because there are just a lot of things that are very handy. But I think that tasklist, that is always replaces everything, at how much you want to do and what you want to do with the time that you have."

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 6:"Not when I think about it like this. Then I can't come up with something."

#### Q7.

Interviewer: "Would you suggest this application to you friends?"

Interview with Participant 7

Participant 6: "Yes" Interviewer: "Yes?" Participant 6: "Yes"



#### 7. GAMIFIED (Boy, 12yrs)

Contraction of the start After the introduction to the game and a description of CompaSS \_\_\_\_ Participant 7: "I have a question. Do you need internet for this? Because else I should, on my phone, and then I look at it and it says: retry, no internet connection."

#### Q1.

Interviewer: "Do you think Peter could use Compass?" Participant 7: "Yes"

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use Compass?"

Participant 7: "hmm, I believe so, because you won't take your IPad easily with you." suggestion; not use it for Ipod. Interviewer: "Okay" Participant 7: "And then and then.. But it actually depends on it, does he have a

Samsung or an IPhone? Because for which thing is it available?" Interviewer: "That is a good one, but the intention is that it is available for both." Suggestion; availability Participant 7: "Then I would generally say yes."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school.

Do you think that Compass can help Peter to finish his homework on time?" Participant 7: "Yes. And then I should go this way?" > very busy with game

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. Compass would like to help Peter.

Do you think that Compass is the proper solution for Peter?"

Participant 7: "I do not think so, because three times a week sports plus music lessons plus playing with friends, I think is rather too much" own thought Interviewer: "So even an app cant help with that?"

#### Participant 7: "No"

## Q5.

Interviewer: "After spending some time with Compass, Peter allowed Compass to help him. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes best about Compass?"

Participant 7: "His sloppiness and his business, that he doesn't have it finished on own thought, but not really answering the time. Interviewer: "Is that the most important thing for himself?" Participant 7: "I think so." Interviewer: "And what does he think is most important specifically from the app? Participant 7: "I think, I don't "really know," no one wee Interviewer: "Just what he thinks, but don't feel forced." Participant 7: "I think his organisation"

#### Q6.

Interviewer: "Like every other person, Compass is not perfect. What do you think Peter would like to change, add or leave out of Compass?" Participant 7: "uhhh." Interviewer: "Here you can for example name the points you mentioned earlier, what 1> easily distracted and forgetful you think should be added." Participant 7: "I have already forgotten. I am like, okay I know it. And then I don't know it anymore. -> AD(H)D Symptom Interviewer: "You mentioned the internet and using it for both phones" Participant 7: "Yes, because maybe it is just for Ipad or for Iphone Apple and not for Samsung. So then it could maybe be for Samsung and maybe Argos [Whilst taking his mobile phone out of his pocket]. Because with this you can download almost no apps Suggestion; availability for all phones or games. Not even Whatsapp I think."

#### Q7.

Interviewer: "So peter has a friend" [moves the cone to the left] Participant 7: "Is having a friend negative? Interviewer. No that was from before, when you did not really know what you had to

Participant 7: [nods yes]

answer, right?"

Interviewer: "So Peter has a friend named Tom. And Tom is almost even more chaotic than Peter. He has trouble with organising and concentrating and he struggles with this."

Interviewer: "You think so?" Participant 7: "Yes I think so, because he is also very chaotic. And I think that Peter-Diegolookalike will feel more organised." own thought /ieason

#### 8. UNGAMIFIED (Girl, 11yrs)

#### Q1.

Interviewer: " Do you think this application would help you?" Participant 8: "Yes, for making homework. Because sometimes I do my homework really late in the evening and then I have to sleep really late."

reason based on personal experience

### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?"

Participant 8: "Yes, because I have it with me most of the times. Even when I am at school or when I go climbing."

#### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 8: "Yes"

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with timemanagement problems?"

Participant 8: "Yes because then they know, O no, I only have 30 minutes left to finish my homework. Because otherwise I can't go to that sport or do something else. So then they might concentrate better on what they have to do." own thought.

#### Q.5.

Interviewer: "What do you like best about this application?" Participant 8: "I do think that it reminds you that you have to do your homework or that you should go somewhere so you won't forget." repetition of introduction Interviewer: "So the reminder of it?" Participant 8: "Yes"

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 8: "I think nothing. I think it is good as it is." no measure

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 8: "I do think so. Because sometimes they don't have their homework finished and then they can make it or when they forgot it. reason; personal experience

9. GAMIFIED (Boy, 12yrs)

Q1.

Interviewer: "Do you think Peter could use Compass?" Participant 9: [nods yes]

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use Compass?"

Participant 9: "Well, if he doesn't use it so much then He probably wouldn't get it. But if he wanted to start using it then yeah."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school.

Do you think that Compass can help Peter to finish his homework on time?" Participant 9: "Yes, prohably, because of the reminders, so."

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. Compass would like to help Peter.

Do you think that Compass is the proper solution for Peter?"

Participant 9: "Ehm, yeah. Because it can, like, move you other stuff while first put the priority and then he can put the other stuff later."

Interviewer: "So peter is in the roundabout right now. It's on the positive side. Which way do you think Peter should choose? You can choose which way he wants to go. This way or that way?"

Participant 9: "that way".

Interviewer: "okay, then we move him up here."

#### Q5.

Interviewer: "After spending some time with Compass, Peter allowed Compass to help him. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes hest about Compass?"

Participant 9: "Maybe he likes heing more organised and seeing his friends more."

phinaduan news

Interviewer: [counts the steps the participant moves the cone] "so he is happy." [Participant 9 nods yes]

#### Q6.

Interviewer: "Like every other person, Compass is not perfect. What do you think Peter would like to change, add or leave out of Compass?" Participant 9: "Maybe a game. If he wants to enjoy himself or like a social media to speak to his friends." Suggestion

Interviewer: "that's a good one. I hadn't thought of that. To stay in contact with his each other?"

Participant 9: [nods yes ]

#### Q7.

Interviewer: "Peter has a friend named Tom. Tom is a very easily distracted child. He seems to be very chaotic and unfocussed and has to do a lot of classwork at home as a

result. Do you think Peter would suggest Compass to Tom?" Participant 9: "Yes."

Interviewer: "Then we have reached the finish line."

10. GAMIFIED (Boy, 11yrs)

## Q1.

Interviewer: "Do you think Peter could use Compass?" Participant 10: "Compass?" Interviewer: "Yes the app." Participant 10: "Yes, because Peter has a lack of concentration or a lack of directing his concentration. And he's quite chaotic because of that." introductio Interviewer: "Yes, you think so?" Participant 10: "Yes" Interviewer : "That was the first question so now we officially start [placing the avatar on start]"

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think it is most suitable for Peter to have this app, Compass on his phone?" Participant 10: "Yeah, I mean it's hetter than nothing." interviewer: "Yeah?" Participant 10: "Yes I think so."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school.

Do you think that Compass can help Peter to finish his homework on time?" Participant 10: "Yeah."

Participant 10: "[keeping his eyes on the hoard game] May I ask what is that:"

#### Q4.

Interviewer: "Peter is a very sporty. Every Tuesday and Thursday he plays sports and he actually has music lessons on Wednesday. And he has to do his homework too. However, he would still like to play with his friends as well. Compass would like to help Peter. Do you think that Compass is the proper solution for Peter?" Participant 10: "[thinking deeply] Yes." Interviewer: "Yes?"

Interviewer: "Now Peter is at the roundabout, because it was a positive answer you

Participant 10: "Uh-hem [nods yes]. It would help to be structured"

can choose this way or that way." Participant 10: " This way."

## Q5.

Interviewer: "After spending some time with Compass, Peter chose to use Compass every day. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes hest about Compass?" Participant 10: "That he can find time to play with his friends or go to football or have fun in general or maybe that he can complete the tasks" Participant 10: [moving the pawn to the next figure on which a smiley face is depicted] "So he is happy."

#### Q6.

Interviewer: "Like every other person, Compass is not perfect, yet." Participant 10: "Not yet." Interviewer: "No." Participant 10: "He will be." Interviewer: "What do you think Peter would like to change, add or leave out of Compass?" Participant 10: [After thinking for a long time:] "I can't think of anything to change." Interviewer: "Didn't you say something about social, way at the beginning?" Participant 10: " About when you're in class and the sound it makes. What if you have your phone accidentally on silent." preast ano Interviewer: "you meant a button?" Participant 10: " To give you really instead of a sound, just a vibration you can feel in your pocket." Suggestion Interviewer: "That is a really good idea."

## Q7.

Interviewer: "Peter has a friend called Tom. Tom is also very unorganised and unfocused and has a hard time trying to concentrate. Do you think Peter would suggest Compass to his friend?" Participant 10: "Yes." Interviewer: "Yes?" Participant 10: "If they are proper friends then yes. If they weren't he wouldn't have said much but if they were they would help eachother."

awa reason :

## **10.13** Appendix 13

Interview with Participant 11

#### 11. Gamified (Girl, 12yrs)

#### Q1.

Interviewer: "Do you think Marie could use Compass?" Participant 11: "Hmm, actually not." Interviewer: "No?" Participant 11: "Yes because she can, she can write down almost everything the old

fashioned way. She has a clock, she has a watch, she has a folder with paper and a pen. So she can simply write it down. And she probably has an alarm clock too.' Interviewer: "Oke so your opinion is that she can do it at least as well with an alarm clock as with the app?" princeson reasoning Participant 11: "

#### 02.

Interviewer: "Marie already has a phone for a couple of years but she uses it mostly to call or play some games and doesn't all her time on it. Do you think her phone is the most suitable device for Marie to use Compass?"

Participant 11: "Where else could anyone use an app other than a mobile phone? A computer?"

Interviewer: "Well yes. But indeed, maybe it would then not he so much of an app but

Participant 11: "Yes." [meanwhile fuddles with the avatar on the board game."  $\rightarrow busy with the interviewer "Burds was then this is in$ Interviewer: "But do you then think it is most suitable for Marie to have it on her phone?"

Participant 11: "Yes."

Interviewer: "Okay then you can move Marie this way."

#### Q3.

Interviewer: "At school Marie was not able to finish her classwork on time, like most fellow classmates were. Therefore the teacher gave her the exercises to do as homework for the next day. Marie is not happy about this because she actually wanted to go to the movie theatre."

watches.

Participant 11: "Uhm, no. I still stink that she can do the same with a watch and it allows her to do the exact same fast as when she uses Compass." Buggestion/ Advice ; to destinguish from

Interviewer: " Okay, but watches do not have these features right." Participant 11: "Well, such watches do exist [that give you a reminder]." Interviewer: "Yes?"

Parteipant 11: "Yes. They can even call someone."

Interviewer: "Are you talking about Iwatches?" Participant 11: "Yes."

Interviewer: "Okay then we move this way [moving the pawn]"

#### O4

Interviewer: "Marie is a very sporty fellow. Every Tuesday she plays Hockey and Wednesdays she goes horseriding and has music lessons on Wednesday. As you can see, Marie has a busy schedule. However, she likes to do activities with her friends on weekend. Compass would like to help Marie. Do you think that Compass is the proper solution for Marie?" Participant 11: "Hmm, [deeply thinking]."

Interviewer: "As of so far it is a little, I mean for her agenda and al." Participant 11: "Yes, actualy a standard agenda like Borni (luxembourgish word for grandmother) has is just as handy." Interviewer: "Yes?" Participant 11: [nods yes]

#### Q5.

Interviewer: "After spending some time with Compass. Marie allowed Compass to help her. Now she is filling in her daily activities and tries to keep her agenda up to date. What do you think Marie likes best or find the most useful about Compass?" Participant 11: "Uhm I don't know." [Participant 11 Points out to the question mark button of the prototype] Interviewer: "The ability to asks questions?" Participant 11: "No, I mean the school button." Interviewer: "Adding tasks and so on?" Participant 11: "Hmm [nodding yes]." Interviewer: "And why is that?"

#### Q6

Interviewer: "Like every other person, Compass is not perfect. There can be made certain changes. So now I ask you, What do you think Marie would like to change, add or leave out of Compass? Because as you said, she doesn't find it extremely useful" Participant 11: "The app should have a normal alarm clock. So that one can actually wake up." Interviewer: "That is a very good one."

Participant 11: "Because there is an alarm for medicines, a time table and other things but there is no normal alarm clock to wake a person up." Interviewer: "I find that a very useful remark of you."

#### Q7.

Interviewer: "Marie has a friend named Sophie. Sophie is a very easily distracted child. She seems to be very chaotic and unfocussed and has to do a lots of classwork at home as a result. Do you think Marie would suggest Compass to Sophie?" Participant 11: "Yes. Sophie has., If Sophie has more trouble than Marie, then it is better for her. However, I would not use it because I know exactly how much time I have and what I have to do."

## 10.14 Appendix 14

Interview with Psychologist Herie de Vries (16.05.2016)

Interviewer: "What are characteristics of a child with ADD or ADHD?"

H. de Vries: "It is often stated that the child with ADD or ADHD has a lack of concentration, however, the child does not have a lack of ability to concentrate but lacks the ability to direct his or her concentration. Children with ADD and ADHD are easily distracted, have their heads filled with many thoughts at once and are keen to have a high level of imagination and ability to relate to. Which is why when you say one thing, their mind jumps ten pages ahead and is rapidly filled with other thoughts and they appear to be forgetful or inattentive. Children with an Attentional Deficit Disorder come on as unorganised and unstructured but pay a great deal of attention to details. Teachers and parents are often unaware of the disorder and frequently label the child as stupid, while in fact, the child is very smart but simply requires more time and has a different way of formulating answers. Children with this disorder suffer from what is called "time-blindness". In order to plan ahead behavior, an individual needs to link executive functions to the motoric system. This link is not fully developed, hence any future-oriented action is impaired. Interesting is that a stimulant, rather than a tranquiliser, than helps hyperactive children to establish this link in the brain. Children with ADD or ADHD struggle to use time effectively because they are not aware of the passing of time."

Interviewer: "How can one trigger and maintain the attention of a child with ADD or ADHD?"

"H. de Vries: "In order for a child with ADD or ADHD to remain focussed, the child needs to be motivated. Children with ADD or ADHD require rewards. It is often best to not say what the exact reward is, so that the child remains intrigued. Another way to keep the child focussed in by continuous interaction"

Interviewer: "What are important criteria when constructing an interview for children with ADD and ADHD?"

H. de Vries: "In order to stay focused, an interview with children suffering from ADD and ADHD should remain under a fifteen minute time-frame. Next to this the interview structure should be flexible and interactive. The environment should be neutral, meaning that it offers little distraction. These children also require to know how much time, or for example exercises, they have left or at least given the indication at the start. Children with ADD or ADHD need to be visually supported and require a clear goal that should be stated from the start as well as clear instructions to reach that goal."

## 10.15 Appendix 15

Interview with Psychologist Johanna Van Sabben (20.05.2016)

Interviewer: "In what way, with what tools do children reflect best on themselves?"

J. Van Sabben: "Children, especially those with a disorder, often find it hard to reflect on themselves. For this reason it is suggested to let them reflect on a third person or character with whom they can identify themselves. This person or character should remain neutral, not a direct representation of the child. The child should be able to relate to the character but it should not be too personal. One way to do so is by showing an character with an open expression."

Interviewer: "What are important criteria when constructing an interview for children with ADD and ADHD?"

J. Van Sabben: "Conducting the interview in a familiar environment for the child. One that offers little distraction, meaning no decorations or moving objects. Children in general require a slower way of asking questions as well as the use of basic words instead of advanced and complicated words and sentence structures. For the interviewer it is important to be friendly. Letting the child feel at ease. This means that the interviewer should firstly introduce him or herself and inform the child about the motive of the research. The interviewer should also tell the child not to worry about right or wrong answers. And finally, the interviewer should maintain an open, friendly expression."

## **10.16** Appendix 16

Clearer versions of the interviews

#### 1. UNGAMIFIED (Boy, 12yrs)

#### Q1.

Interviewer: "Do you think this application would help you?"

Participant 1: "Eh, yes I think so, maybe. I am able to keep order but I do have sports after school and sometime I do not really have time to make something and then I have to make my homework really late. But I think that it is clever. Just everything. It is cleverly invented. The most important, such as tests, but often I write it in my agenda, but in case you forget.

Does it give you a notification?"

Interviewer: "Yes it does"

Participant 1: "Then you know when you look at your phone, so then I think that it will be good".

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?"

Participant 1: "Uhm, how do you mean?

Interviewer: "well maybe you think that something else is more appropriate, for example to have it on a computer".

Participant 1: "A phone you can turn on quickly and a computer is well, it takes more time."

## Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 1: "Yes. Can you also do your normal homework here?" Interviewer: "Yes"

Participant 1: "So then I think, if you forget, then you always have a notification. That's useful."

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with time-management problems?"

Participant 1: "I think that is.. But for how old is it actually?"

Interviewer: "Initially it was meant for adolescents so between the ages 18 and 25. However, it is now the intention to design this for children."

Participant 1: "I think that it is useful for.. Uh..just, if you maybe with some people. So here you have, this is your agenda?"

Interviewer: "Yes"

Participant 1: "So you can write your homework here as well? O, so that is.."

Interviewer: "How do you mean? That you really make your homework?"

Participant 1: "Well for example then you have exercise 15 until 20, Can you write it down here?

Interviewer: "That is not yet incorporated but it sounds like a good idea. Or how do you mean. That you make the exercise itself in there or that you simply write the task?"

Participant 1: "No, that you write them like exercise 15 until 20."

Interviewer: "True that you can do in there"

Participant1: "That is useful".

## Q5.

Interviewer: "What do you like best about this application?"

Participant 1: "The entire schedule and that when you have another appointment and how it arranges in a day."

#### Q6.

Interviewer: "What would you add, remove or change to this application?"

Participant 1: "Maybe someone who has difficulties with reading for example dyslexia. That he can also use it then."

Interviewer: "Maybe that it should be spoken?"

Participant 1: "Yes could be. That would be useful, that you can record it. But maybe that is not so..."

Interviewer: "A little impractical when you're in class perhaps?" Participant 1: "Yes" Interviewer: "That is a good one though"

## Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 1: "Yes, when someone is not structured, then I would, CompaSS was the name right? That they should install and use CompaSS."

#### 2. GAMIFIED (Boy, 11yrs)

### Q1.

Interviewer: "Do you think Peter could use CompaSS?" Participant 2: "Yes so I should go there."

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use Compass?"

Participant 2: "Yes because then he can organise himself better."

Interviewer: "But do you think that a phone is the most appropriate device instead of for example a computer?"

Participant 2: "Hhm, I actually do think so because you can take it everywhere with you." Interviewer: "That's true."

Participant 2: "So then I [picks up the pawn] should go there."

Interviewer: "Yes this way."

## Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore, the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school. Do you think that CompaSS can help Peter to finish his homework on time?" Participant 2: "Yes. In my opinion it does because CompaSS makes a sound or so and then he remembers that he has to do his homework.

Interviewer: "True. Now Peter enters the roundabout, and now it is to you to choose the exit among these."

Participant 2: "This one"

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. CompaSS would like to help Peter.

Do you think that CompaSS is the proper solution for Peter?"

Participant 2: "Ehm, I do not remember the question that well."

Interviewer: "Do you think that CompaSS is the right help for Peter because he is so busy with doing things, and every day he has some activity. SO do you think CompaSS is the correct help or would something else be better?"

Participant 2: "I think that CompaSS is better because it does the important things first and the less important things later."

#### Q5.

Interviewer: "After spending some time with CompaSS, Peter allowed CompaSS to help him. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes best about CompaSS?"

Participant 2: "Maybe that he submits his homework on time"

## Q6.

Interviewer: "Like every other person, CompaSS is not perfect. What do you think Peter would like to change, add or leave out of CompaSS?" Participant 2:"I do not know" Interviewer: "No? Does he think he is good enough this way?" Participant 2: "Yes"

## Q7.

Interviewer: "Peter has a friend named Tom. Tom is a very easily distracted child. He seems to be very chaotic and unfocussed and has to do a lot of classwork at home as a result.

Do you think Peter would suggest CompaSS to his friend?

Participant 2: "Yes because then they are all well organised and then they can play better together, play more together, have more time to play together."

#### 3. GAMIFIED (Girl, 11yrs)

Q1.

Interviewer: "Do you think Marie could use CompaSS?"

Participant 3: "Maybe she can. Maybe. Sometimes she can use him well, but sometimes not. Because, maybe, she can remember some things but when she for example is very tired or is not very happy, she can forget quite a lot. And sometimes she can, yes well, when she is very happy, she can maybe remember things because she is in a good mood."

#### Q2.

Interviewer: "Marie already has a phone for a couple of years but she uses it mostly to call or play some games and doesn't all her time on it. Do you think her phone is the most suitable device for Marie to use CompaSS?"

Participant 3: "I think it is handy, because else she has to because she can't take the computer with her. And when she for example has forgotten something she can look it up and picks up her phone and then she looks on her agenda.

#### Q3.

Interviewer: "At school Marie was not able to finish her classwork on time, like most fellow classmates were. Therefore, the teacher gave her the exercises to do as homework for the next day. Marie is not happy about this because he actually wanted to meet with her friends after school. Do you think that CompaSS can help Peter to finish his homework on time?"

Participant 3: "Yes it can because then CompaSS says certain minutes, ten or a quarter of an hour, and then she will respect those minutes. And when she is ready, she can go shopping with her friends."

#### Q4.

Interviewer: "Marie is a very sporty fellow. Every Tuesday and Thursday she plays sports and has music lessons on Wednesday. As you can see, Marie has a busy schedule. However, she likes to play with her friends as well. CompaSS would like to help Marie.

Do you think that CompaSS is the proper solution for Marie?"

Participant 3: "He can help her by saying what she has, music lessons and everything. But then she can, uh I don't know if she can, but maybe she can just think: now I have music lessons when she looks on CompaSS, and then I can go to my . But not earlier, I may not miss my music lessons.

Interviewer: "But do you think that CompaSS is a good solution for her? Or perhaps an agenda instead of a phone?"

Participant 3: "Maybe she can have both but I think that this is a bit better."

#### O5.

Interviewer: "After spending some time with CompaSS, Marie allowed CompaSS to help her. Now she is filling in her daily activities and tries to keep her agenda up-to-date.

What do you think Marie likes best or find the most useful about CompaSS?"

Participant 3: "That he says when she has to do stuff, so she doesn't forget. And that she says, ehm well at this hour you have class and at that hour you also have class."

#### 06.

Interviewer: "Like every other person, CompaSS is not perfect. What do you think Marie would like to change, add or leave out of CompaSS?"

Participant 3: "Maybe it would be possible that in case you forget something a small light shines on your phone "

Interviewer: "So somewhat of a reminder"

Participant 3: "Yes"

#### O7.

Interviewer: "Marie has a friend named Sophie. Sophie is a very easily distracted child. She seems to be very chaotic and unfocussed and has to do a lots of classwork at home as a result. Do you think Marie

would suggest CompaSS to Sophie?"

Participant 3: "Well, I don't think that she would give her CompaSS but instead would explain how she can have that too. So how she can have the app too."

Interviewer: "So you think that Marie will think, okay this is good for her too?

Participant 3: "Yes because she also has the problem just like her. So it would be quite nice if he does that"

## 4. UNGAMIFIED (Boy, 12yrs)

#### Q1.

Interviewer: "Do you think this application would help you?" Participant 4: "Yes." Interviewer: "Yes?" Participant 4: "Yes, seems useful"

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 4: "Yes Interviewer: "Yes?" Participant 4: "I always wear it with me so it seems useful"

### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 4: "Yes, I always leave it alone until the last moment, so I think so.

## Q4.

Interviewer: "Do you think this application is a proper solution for children with time-management problems?"

Participant 4: "Yes in most cases I think so."

### Q5.

Interviewer: "What do you like best about this application?" Participant 4: "Yes, the agenda"

## Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 4: "If it is for children I maybe would... the coffee" Interviewer: leave out the coffee? Participant 4: "Yes"

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 4: "Yes, once I started using it and I really find it useful, which it seems to me, then I would suggest it yes."

#### 5. UNGAMIFIED (Girl, 12yrs)

Q1.

Interviewer: "Do you think this application would help you?" Participant 5: "Yes" Interviewer: "Yes?" Participant 5: [nods yes]

#### Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?" Participant 5: "Yes" Interviewer: "So not a computer for example?" Participant 5: "No"

## Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 5: "Yes, I think so"

## Q4.

Interviewer: "Do you think this application is a proper solution for children with time-management problems?" Participant 5: "Yes" Interviewer: "Yes?" Participant 5: [nods yes]

## Q5.

Interviewer: "What do you like best about this application?" Participant 5: "That it says the most important thing on the agenda"

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 5: "I don't have a clue" Interviewer: "No? Participant 5: [shakes head] Interviewer: "You don't have to. Don't feel forced"

### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 5: "Yes" Interviewer: "Yes" Participant 5: [nods yes]

#### 6. UNGAMIFIED (Girl, 11yrs)

Q1.

Interviewer: "Do you think this application would help you?" Participant 6: "Yes" Interviewer: "Yes" Participant 6: "Yes"

## Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?"

Participant 6: "I do think so because I do not have an Ipad or something similar, and on a computer it does not seem handy to me"

### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 6:"Yes"

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with time-management problems?"

Participant 6:"Yes. I believe so."

Interviewer: "Maybe, I don't know, something else instead?"

Participant 6:"Nah, this seems to me to be the handiest because it is on your phone and it can actually do all kinds of things."

#### Q5.

Interviewer: "What do you like best about this application?"

Participant 6:"I do not know, because there are just a lot of things that are very handy. But I think that tasklist, that is always replaces everything, at how much you want to do and what you want to do with the time that you have."

## Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 6:"Not when I think about it like this. Then I can't come up with something."

#### Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 6:"Yes" Interviewer: "Yes?" Participant 6: "Yes"

#### 7. GAMIFIED (Boy, 12yrs)

After the introduction to the game and a description of CompaSS Participant 7: "I have a question. Do you need internet for this? Because else I should, on my phone, and then I look at it and it says: retry, no internet connection."

#### Q1.

Interviewer: "Do you think Peter could use CompaSS?" Participant 7: "Yes"

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use CompaSS?"

Participant 7: "hmm, I believe so, because you won't take your IPad easily with you." Interviewer: "Okay"

Participant 7: "And then and then.. But it actually depends on it, does he have a Samsung or an IPhone? Because for which thing is it available?"

Interviewer: "That is a good one, but the intention is that it is available for both." Participant 7: "Then I would generally say yes."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school. Do you think that CompaSS can help Peter to finish his homework on time?"

Participant 7: "Yes. And then I should go this way?"

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. CompaSS would like to help Peter.

Do you think that CompaSS is the proper solution for Peter?"

Participant 7: "I do not think so, because three times a week sports plus music lessons plus playing with friends, I think is rather too much"

Interviewer: "So even an app cant help with that?" Participant 7: "No"

#### Q5.

Interviewer: "After spending some time with CompaSS, Peter allowed CompaSS to help him. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes best about CompaSS?" Participant 7: "His sloppiness and his business, that he doesn't have it finished on time. Interviewer: "Is that the most important thing for himself?" Participant 7: "I think so." Interviewer: "And what does he think is most important specifically from the app? Participant 7: "I think, I don't "really know." Interviewer: "Just what he thinks, but don't feel forced." Participant 7: "I think his organisation"

#### Q6.

Interviewer: "Like every other person, CompaSS is not perfect. What do you think Peter would like to change, add or leave out of CompaSS?" Participant 7: "uhhh." Interviewer: "Here you can for example name the points you mentioned earlier, what you think should be added." Participant 7: "I have already forgotten. I am like, okay I know it. And then I don't know it anymore. Interviewer: "You mentioned the internet and using it for both phones"

Participant 7: "Yes, because maybe it is just for Ipad or for Iphone Apple and not for Samsung. So then it could maybe be for Samsung and maybe Argos [Whilst taking his mobile phone out of his pocket]. Because with this you can download almost no apps or games. Not even Whatsapp I think."

Q7.

Interviewer: "So peter has a friend" [moves the cone to the left]

Participant 7: "Is having a friend negative?

Interviewer, No that was from before, when you did not really know what you had to answer, right?" Participant 7: [nods yes]

Interviewer: "So Peter has a friend named Tom. And Tom is almost even more chaotic than Peter. He has trouble with organising and concentrating and he struggles with this."

Participant 7: "Then Peter would suggest CompaSS to Tom"

Interviewer: "You think so?"

Participant 7: "Yes I think so, because he is also very chaotic. And I think that Peter-Diegolookalike will feel more organised."

## 8. UNGAMIFIED (Girl, 11yrs)

#### Q1.

Interviewer: "Do you think this application would help you?" Participant 8: "Yes, for making homework. Because sometimes I do my homework really late in the evening and then I have to sleep really late."

## Q2.

Interviewer: "Do you think that your mobile phone is the most suitable device for using this application?"

Participant 8: "Yes, because I have it with me most of the times. Even when I am at school or when I go climbing."

#### Q3.

Interviewer: "Do you think this application will help you to finish tasks such as homework on time?" Participant 8: "Yes"

#### Q4.

Interviewer: "Do you think this application is a proper solution for children with time-management problems?"

Participant 8: "Yes because then they know, O no, I only have 30 minutes left to finish my homework. Because otherwise I can't go to that sport or do something else. So then they might concentrate better on what they have to do."

## Q5.

Interviewer: "What do you like best about this application?" Participant 8: "I do think that it reminds you that you have to do your homework or that you should go somewhere so you won't forget." Interviewer: "So the reminder of it?" Participant 8: "Yes"

#### Q6.

Interviewer: "What would you add, remove or change to this application?" Participant 8: "I think nothing. I think it is good as it is."

## Q7.

Interviewer: "Would you suggest this application to you friends?" Participant 8: "I do think so. Because sometimes they don't have their homework finished and then they can make it or when they forgot it.

#### 9. GAMIFIED (Boy, 12yrs)

#### Q1.

Interviewer: "Do you think Peter could use CompaSS?" Participant 9: [nods yes]

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think his phone is the most suitable device for Peter to use CompaSS?"

Participant 9: "Well, if he doesn't use it so much then He probably wouldn't get it. But if he wanted to start using it then yeah."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school. Do you think that CompaSS can help Peter to finish his homework on time?" Participant 9: "Yes, probably, because of the reminders, so."

#### Q4.

Interviewer: "Peter is a very sporty fellow. Every Tuesday and Thursday he plays sports and has music lessons on Wednesday. As you can see, Peter has a busy schedule. However, he like to play with his friends as well. CompaSS would like to help Peter.

Do you think that CompaSS is the proper solution for Peter?"

Participant 9: "Ehm, yeah. Because it can, like, move you other stuff while first put the priority and then he can put the other stuff later."

Interviewer: "So peter is in the roundabout right now. It's on the positive side. Which way do you think Peter should choose? You can choose which way he wants to go. This way or that way?" Participant 9: "that way".

Interviewer: "okay, then we move him up here."

### Q5.

Interviewer: "After spending some time with CompaSS, Peter allowed CompaSS to help him. Now he is filling his daily activities and tries to keep his agenda up-to-date. What do you think Peter likes best about CompaSS?" Participant 9: "Maybe he likes being more organised and seeing his friends more."

Interviewer: [counts the steps the participant moves the cone] "so he is happy." [Participant 9 nods yes]

#### Q6.

Interviewer: "Like every other person, CompaSS is not perfect. What do you think Peter would like to change, add or leave out of CompaSS?" Participant 9: "Maybe a game. If he wants to enjoy himself or like a social media to speak to his friends."

Interviewer: "that's a good one. I hadn't thought of that. To stay in contact with his each other?" Participant 9: [nods yes ]

#### Q7.

Interviewer: "Peter has a friend named Tom. Tom is a very easily distracted child. He seems to be very chaotic and unfocussed and has to do a lot of classwork at home as a result. Do you think Peter would suggest CompaSS to Tom?" Participant 9: "Yes." Interviewer: "Then we have reached the finish line."

#### 10. GAMIFIED (Boy, 11yrs)

#### Q1.

Interviewer: "Do you think Peter could use CompaSS?" Participant 10: "CompaSS?" Interviewer: "Yes the app." Participant 10: "Yes, because Peter has a lack of concentration or a lack of directing his concentration. And he's quite chaotic because of that." Interviewer: "Yes, you think so?" Participant 10: "Yes" Interviewer : "That was the first question so now we officially start [placing the avatar on start]"

#### Q2.

Interviewer: "Peter already has a phone for a couple of years but he uses it mostly to call or play some games and doesn't all his time on it. Do you think it is most suitable for Peter to have this app, CompaSS on his phone?"

Participant 10: "Yeah, I mean it's better than nothing." interviewer: "Yeah?" Participant 10: "Yes I think so."

#### Q3.

Interviewer: "At school Peter was not able to finish his classwork on time, like most fellow classmates were. Therefore the teacher gave him the exercises to do as homework for the next day. Peter is not happy about this because he actually wanted to meet with his friends after school. Do you think that CompaSS can help Peter to finish his homework on time?" Participant 10: "Yeah."

Participant 10: "[keeping his eyes on the board game] May I ask what is that:" Interviewer: "That is the roundabout, but I'll tell you when we get there."

#### Q4.

Interviewer: "Peter is a very sporty. Every Tuesday and Thursday he plays sports and he actually has music lessons on Wednesday. And he has to do his homework too. However, he would still like to play with his friends as well. CompaSS would like to help Peter. Do you think that CompaSS is the proper solution for Peter?"

Participant 10: "[thinking deeply] Yes." Interviewer: "Yes?" Participant 10: "Uh-hem [nods yes]. It would help to be structured"

Interviewer: "Now Peter is at the roundabout, because it was a positive answer you can choose this way or that way."

Participant 10: "This way."

#### Q5.

Interviewer: "After spending some time with CompaSS, Peter chose to use CompaSS every day. Now he is filling his daily activities and tries to keep his agenda up-to-date.

What do you think Peter likes best about CompaSS?"

Participant 10: "That he can find time to play with his friends or go to football or have fun in general or maybe that he can complete the tasks"

Participant 10: [moving the pawn to the next figure on which a smiley face is depicted] "So he is happy."

#### Q6.

Interviewer: "Like every other person, CompaSS is not perfect, yet." Participant 10: "Not yet." Interviewer: "No." Participant 10: "He will be." Interviewer: "What do you think Peter would like to change, add or leave out of CompaSS?" Participant 10: [After thinking for a long time:] "I can't think of anything to change." Interviewer: "Didn't you say something about social, way at the beginning?" Participant 10: "About when you're in class and the sound it makes. What if you have your phone

accidentally on silent."

Interviewer: "you meant a button?"

Participant 10: "To give you really instead of a sound, just a vibration you can feel in your pocket." Interviewer: "That is a really good idea."

## Q7.

Interviewer: "Peter has a friend called Tom. Tom is also very unorganised and unfocused and has a hard time trying to concentrate.

Do you think Peter would suggest CompaSS to his friend?"

Participant 10: "Yes."

Interviewer: "Yes?"

Participant 10: "If they are proper friends then yes. If they weren't he wouldn't have said much but if they were they would help each other."

#### 11. Gamified (Girl, 12yrs)

#### Q1.

Interviewer: "Do you think Marie could use CompaSS?" Participant 11: "Hmm, actually not."

Interviewer: "No?"

Participant 11: "Yes because she can, she can write down almost everything the old fashioned way, She has a clock, she has a watch, she has a folder with paper and a pen. So she can simply write it down. And she probably has an alarm clock too."

Interviewer: "Oke so your opinion is that she can do it at least as well with an alarm clock as with the app?"

Participant 11: "

#### Q2.

Interviewer: "Marie already has a phone for a couple of years but she uses it mostly to call or play some games and doesn't all her time on it. Do you think her phone is the most suitable device for Marie to use CompaSS?"

Participant 11: "Where else could anyone use an app other than a mobile phone? A computer?" Interviewer: "Well yes. But indeed, maybe it would then not be so much of an app but more something else?"

Participant 11: "Yes." [meanwhile fuddles with the avatar on the board game."

Interviewer: "But do you then think it is most suitable for Marie to have it on her phone?"

Participant 11: "Yes."

Interviewer: "Okay then you can move Marie this way."

#### Q3.

Interviewer: "At school Marie was not able to finish her classwork on time, like most fellow classmates were. Therefore the teacher gave her the exercises to do as homework for the next day. Marie is not happy about this because she actually wanted to go to the movie theatre."

Participant 11: "Uhm, no. I still stink that she can do the same with a watch and it allows her to do the exact same fast as when she uses CompaSS."

Interviewer: "Okay, but watches do not have these features right."

Participant 11: "Well, such watches do exist [that give you a reminder]."

Interviewer: "Yes?"

Partcipant 11: "Yes. They can even call someone."

Interviewer: "Are you talking about Iwatches?"

Participant 11: "Yes."

Interviewer: "Okay then we move this way [moving the pawn]"

#### O4.

Interviewer: "Marie is a very sporty fellow. Every Tuesday she plays Hockey and Wednesdays she goes horseriding and has music lessons on Wednesday. As you can see, Marie has a busy schedule. However, she likes to do activities with her friends on weekend. CompaSS would like to help Marie. Do you think that CompaSS is the proper solution for Marie?"

Participant 11: "Hmm, [deeply thinking]."

Interviewer: "As of so far it is a little, I mean for her agenda and al."

Participant 11: "Yes, actualy a standard agenda like Bomi (luxembourgish word for grandmother) has is just as handy."

Interviewer: "Yes?"

Participant 11: [nods yes]

#### Q5.

Interviewer: "After spending some time with CompaSS, Marie allowed CompaSS to help her. Now she is filling in her daily activities and tries to keep her agenda up-to-date. What do you think Marie likes best or find the most useful about CompaSS?" Participant 11: "Uhm I don't know."

[Participant 11 Points out to the question mark button of the prototype]

Interviewer: "The ability to asks questions?"

Participant 11: "No, I mean the school button."

Interviewer: "Adding tasks and so on?"

Participant 11: "Hmm [nodding yes]."

Interviewer: "And why is that?"

Participant 11: "I don't know."

#### Q6

Interviewer: "Like every other person, CompaSS is not perfect. There can be made certain changes. So

now I ask you, What do you think Marie would like to change, add or leave out of CompaSS? Because as you said, she doesn't find it extremely useful"

Participant 11: "The app should have a normal alarm clock. So that one can actually wake up." Interviewer: "That is a very good one."

Participant 11: "Because there is an alarm for medicines, a time table and other things but there is no normal alarm clock to wake a person up."

Interviewer: "I find that a very useful remark of you."

Q7.

Interviewer: "Marie has a friend named Sophie. Sophie is a very easily distracted child. She seems to be very chaotic and unfocussed and has to do a lots of classwork at home as a result. Do you think Marie would suggest CompaSS to Sophie?"

Participant 11: "Yes. Sophie has., If Sophie has more trouble than Marie, then it is better for her. However, I would not use it because I know exactly how much time I have and what I have to do."

**10.17 Appendix 17** Low-fi prototype of the time management app start-screen shown to the participants (Feijen et al.2015)



**10.18 Appendix 18** Low-fi prototype of the Agenda of Feijen et al. (2015) shown to the participants

