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An Ace up the Sleeve: Supporting Responsible Gambling Through Persuasive Design

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Abstract

With access to new technology and increasing knowledge of human psychology, digital designers are turning to the art of persuasion to create ever more engaging, and arguably even addictive, products and services.

This master thesis investigates how persuasive design can be utilized to support responsible gambling in online environments. Specifically, design suggestions were created for the smartphone application of state-owned gambling operator in Norway, Norsk Tipping, aiming to increase the use of responsible gambling tools among players classified as "at risk" of developing problematic gambling behaviour. The design process followed a user-centred approach, where user personas and user journeys played a central role in representing a difficult-to-reach target audience.

A great number of persuasive strategies exist, but without a system or taxonomy, it can be difficult for designers to choose which strategies to select for their projects. Therefore, an analysis of persuasion theory from the authors Fogg, Cialdini and Eyal was carried out to create a *Persuasive Strategies Matrix.* The matrix brings together different persuasive strategies in a common framework, that was used to inform the design decisions.

The resulting *Persuasive Strategies Matrix* suggests that persuasive design strategies can be sorted into six opportunities for persuasion, on three levels of human interest; basic interests, social interests and ideal interests. The design suggestions demonstrate how persuasive design principles from these categories can be used in different combinations to support responsible gambling. When designing an online environment to support responsible gambling, it is argued that it might be ideal to combine design strategies from all three levels of the matrix.

Sammendrag

Med tilgang til ny teknologi og økende kunnskap om menneskelig psykologi, har digitale designere tatt i bruk overbevisningens kunst for å skape stadig mer engasjerende, kanskje til og med avhengighetsskapende, produkter og tjenester.

Denne masteroppgaven tar for seg hvordan overtalende design kan tas i bruk for å øke graden av ansvarlighet i pengespill i digitale kanaler. Nærmere bestemt ble det utviklet designforslag for smart-telefon applikasjonen for den norske, statseide pengespilloperatøren Norsk Tipping, med formål om å øke bruken av verktøy for ansvarlig spill blant spillere kategorisert som «i risikosonen» for å utvikle problematisk spilleadferd. Designprosessen fulgte en brukersentret tilnærming, hvor bruker-personaer og brukerreiser spilte en sentral rolle for å representere en lite tilgjengelig målgruppe.

Det finnes et stort antall overtalende strategier, men uten et system eller en taksonomi kan det være vanskelig for designere å velge hvilke strategier de skal bruke i sine prosjekter. Derfor ble en analyse av overtalelsesteori fra forfatterne Fogg, Cialdini og Eyal utført. Dette dannet grunnlaget for en matrise som beskriver ulike overtalende strategier *(Persuasive Strategies Matrix)*. Matrisen samler ulike overtalende strategier i et felles rammeverk, og ble brukt til å støtte utformingen av nye designforslag.

Den resulterende matrisen (*Persuasive Strategies Matrix*) viser hvordan overtalende designstrategier kan sorteres i seks muligheter for overtalelse, på tre nivåer av menneskelig interesse; grunnleggende interesser, sosiale interesser og ideelle interesser. Designforslagene demonstrer hvordan overtalende designstrategier fra disse kategoriene kan brukes i forskjellige kombinasjoner for å støtte ansvarlig pengespillaktivitet. For design som støtter ansvarlig spill i digitale kanaler, blir det argumentert for at det kan være fordelaktig å kombinere designstrategier fra alle de tre nivåene i matrisen.

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Abbreviations

NT	Norsk Tipping
RGT	Responsible gambling tool
VLT	Video lottery terminal

1 Introduction

Gambling is a popular recreational activity that offers entertainment and excitement which is increasingly taking place online. Unfortunately, some gamblers experience that their gambling activity becomes problematic. For those affected by problem gambling the consequences can be serious, harming social, work-related, material and family relationships (Hjelpelinjen, 2015). To keep problem gambling to a minimum, governments will often regulate the gambling market, and gambling providers might support responsible gambling through their services. Often described as responsible gambling tools (RGTs), these are procedures or tools that facilitate gamblers to gamble in a more responsible manner. Examples of RGTs are limit-setting tools and personalized feedback. As pointed out by Auer, Reiestad and Griffiths, some researchers believe that because of their technological infrastructure such initiatives may actually be more effective online (2018). While new technology might contribute to the prevention of problem gambling through RGTs, some researchers fear that technology could also facilitate excessive gambling. This is due to how online gambling is tied to factors like 24/7 accessibility, affordability and anonymity (Auer and Griffiths, 2018).

Gambling machines and games have a long history of utilizing persuasive techniques to keep gamblers engaged, but new developments within the digital design communities might further contribute to excessive gambling. With access to new technology and increasing knowledge of human psychology, digital designers are turning to the art of persuasion to create ever more engaging, and arguably even addictive, products and services. This development is especially visible in the design of social media, which with their addictive characteristics, interestingly, have been compared to slot machines by technology experts like former Google employee Tristan Harris (Lewis, 2017) and former Mozilla and Jawbone employee Aza Raskin (Andersson, 2018). Although not widely discussed in a gambling context, there is good reason to expect that persuasive design is also utilized in the design of online gambling services, beyond the games themselves. The association between persuasive technology and addiction seem troubling, especially in a gambling context. However, as has been pointed out by several authors within the field of persuasion, these techniques can be used in both unethical *and* ethical manners (Fogg, 2003; Eyal, 2014; Toxboe, 2015).

This master project has investigated how persuasive design can be utilized to support responsible gambling in online environments, through the promotion of responsible gambling tools. As part of this investigation, an analysis of a selection of persuasive theory was carried out, in search of a persuasive framework to support design decisions. The resulting framework was then applied in a user-centred design process to create design suggestions for the smartphone application of state-owned gambling operator in Norway, Norsk Tipping, aiming to increase the use of responsible gambling tools among players classified as "at risk" of developing problematic gambling behaviour.

1.1 Justification, Motivation and Benefits

While only a relatively small number of people will develop problematic gambling behaviour, the consequences of problem gambling can be serious for those affected. On a personal level, problem gambling will, in addition to financial difficulties, often have

negative impact on mental health and social relationships. On a societal level, there are costs related to reduced work capacity, treatment and, in some cases, prosecution. Additionally, problem gambling can affect a number of people in a problem gambler's network, such as spouses and children (see also part 2.1.1). RGTs seems to be a promising approach through which new technology can be utilized to minimise problem gambling-related harm. However, when combined with new technology, design and persuasion can be powerful tools to change human behaviour in their own right. Although already widespread in commercial products like advertising and social media, persuasive technologies are also making their way into new sectors such as healthcare (See, for example, van Hoof, Demiris and Wouters, 2017; Ham *et al.*, 2018). For these reasons, prevention of problem gambling is a topic worthy of investigation, also from a persuasive design perspective.

The existing research on how design might impact preventive measures against problem gambling is limited. By investigating how persuasive design techniques can be utilized in the promotion of RGTs in an online gambling context, the author hopes to contribute to an increased interest in this field. The initial objective is naturally to reduce gambling-related harm. Further down the line, if persuasive design can be shown to be effective in this particular situation, the insights could be transferred to preventive measures in other contexts; supporting the development of safe and empowering online services.

Persuasive strategies are generally employed in attempts to influence human behaviour, an endeavour that should be pursued with uttermost care from a design perspective. In the words of Shariat and Saucier; "as a designer, you have great power and thus great responsibilities" (2017, p. 153). Creating services that support engagement and loyalty through persuasion while avoiding unhealthy addiction can be a challenging balancing act, where ethical concerns must come into play. Problem gambling can be a sensitive subject in its own right, but the gambling industry also represents a great example of this dilemma. Ethical considerations have therefore been essential in this project, further discussed in part 4.4.

During the past decade or so, persuasion has become a popular topic among digital designers. Several persuasive design toolkits have been created and distributed online, and authors on persuasion are often referenced. However, no single taxonomy or other system of persuasive design principles has been adopted across the design community. With may persuasive strategies to choose from, it can be difficult for designers to select which ones to apply in their work. Another important part of this project has therefore been the development of a framework describing persuasive design strategies. The initial intention for such a framework was to better be able to identify which types of persuasive strategies to apply in the context of problem gambling prevention. However, such a framework can also benefit other designers working on different projects. Through the framework, persuasive strategies can be identified for different design opportunities, making it easier to realize persuasive theory in practical application. The *Persuasive Strategies Matrix* is one of the main outcomes of this master project, offered as a tool to other designers wishing to incorporate persuasive design strategies in their own designs.

The existing body of literature on persuasion, persuasive design and persuasive technology is tremendous. Within the scope of this project, it has only been possible to survey a small portion of the many research articles, books, online articles and blog posts on these topics. Yet, there are some authors and theories that seem to be referenced more often than others. It is based on these observations that the works of Fogg, Cialdini

and Eyal was selected as the theoretical foundation for the *Persuasive Strategies Matrix.* Cialdini is most known for his six principles of persuasion, first proposed in 1984 (Cialdini, 1993), while Fogg has been credited with founding the field of persuasive technology in the 1990s (Wendel, 2014). Of the three, the work of Eyal is perhaps the least established, but also the most recent, with Eyal's book *Hooked* being published in 2014. In the selection process, his focus on digital products and habit-shaping design was evaluated as particularly relevant to this project.

1.2 Delimitations and Assumptions

While problem gambling is a global challenge, this master thesis has mainly focused on gambling in a Norwegian context. The design process was carried out from the perspective of the largest gambling provider in Norway, state-owned Norsk Tipping (NT). Further, design suggestions have been limited to only consider NT's mobile application.

The goal of the design efforts has been to increase the use of RGTs. A large proportion of the Norwegian population participate in gambling activities offered by NT, but the design efforts have also been limited to a specific target audience. The target audience has been specified as gamblers that can be identified as *at risk* of developing problematic gambling behaviour.

These decisions are built on the following assumptions: First, it is assumed that RGTs are effective instruments to reduce problem gambling from the perspective of a gambling provider (see also part 2.1.4). Second, it is assumed that NT is able to correctly identify gamblers that are at risk of developing problematic gambling behaviour, which is currently done through the *Playscan* software. On a technical note, it is also assumed that NT would be able to tailor the content of their mobile application for this group. Finally, it is assumed that at risk-players will benefit the most from using RGTs, as problem gambling that has developed further might require professional treatment, while less involved players can be expected to have control over their gambling activity. This way, RGTs are introduced as an intervention for at-risk players, before a serious problem can develop.

It is important to note that the goal of the design efforts has not been to reduce gambling overall, by making it difficult or undesirable to gamble. First of all, this project has considered gambling as an activity that is predominantly beneficial, both as entertainment for a majority of gamblers, and to governments who can benefit from the funds collected in a regulated market. Second, the design process was carried out from the perspective of a gambling provider, who depend on their users to have a positive gambling experience.

Although the goal of the design efforts in this project has been to increase the use of RGTs in NT's mobile application, it was decided that the effect of the suggested designs would not be evaluated beyond a theoretical level. This decision was made due to both practical and ethical constraints: While it is assumed that NT can identify at-risk players through their *Playscan* software, there is currently no infrastructure in place that allows NT to conduct A/B testing of design on these users. An experiment could therefore not be carried out in a real-world setting. Problem gambling is a sensitive subject, which increases the importance of maintaining participant privacy, both in recruitment and execution of an experiment. Additionally, specific care would have to be put into not subjecting users to harm. The relevant user group is also relatively small, decreasing the chance of recruiting a representative sample. Obtaining valid results would therefore be

challenging within the limited time and resources of a master project, thus a theoretical approach was prioritised.

Having no direct access to representatives of the target audience was also a challenge for the design process, but still a user-centred approach was chosen. A user-centred design process put the needs and goals of real people as the driving force behind product development (Preece, Rogers and Sharp, 2015). This approach could be particularly relevant for highlighting both the positive and negative effects of gambling on a personal level. For the current project, user personas and scenarios were created based on existing data, supplemented by gambling theory. To learn more about problem gambling and the target audience, a number of semi-structured expert interviews were also arranged with representatives from NT, Spillavhengighet Norge, Norwegian Association on Gambling and Gaming Problems and KoRus-øst. Workshops were carried out to further shape user journeys, that finally created the foundation for the design suggestions. The methods of the information gathering process are described in more detail in part 3.2.

1.3 Research Question

The research question for this master thesis is stated below:

1. How can persuasive design strategies contribute to the prevention of problem gambling through the promotion of responsible gambling tools?
    a. How can a selection of theories relating to persuasion and design be synthesized into a common system, to aid designers in the process of selecting relevant persuasive strategies?
    b. How can the design of a digital gambling platform be altered to encourage the use of responsible gambling tools by making use of persuasive design strategies?

As the subparts of the research question illustrate, the research question is approached from both a theoretical and a practical point of view. First, theoretically, by investigating how some popular theories within the field of persuasion might be understood through a common framework. Second, practically, by looking at how this theoretical foundation can be applied in the context of designing for prevention of problem gambling.

1.4 Thesis Outline

This master thesis has been organized into five chapters. A short description of the chapters is given below:

Chapter 1 introduces the main themes of the master thesis and describes the justification, motivations and benefits of the project. This is followed by a description of delimitations and assumptions. The research questions are also presented.

Chapter 2 establishes the background and theory relevant to the project. This chapter has two main themes; gambling and responsibility and designing for behaviour change.

Chapter 3 describes the methodology of the project, sorted by theoretical foundation, information gathering and design.

Chapter 4 presents the resulting *Persuasive Strategies Matrix*, user groups, personas and user journeys, and the design suggestions created for NT's mobile

application. The results are followed by a discussion of ethical considerations, a general discussion on the project outcomes, limitations of the project and suggestions for further research.

Chapter 5 offers a summary of the themes and outcomes of the master project.

2 Background and Theory

2.1 Gambling and Responsibility

Gambling offers entertainment and excitement and has been a popular activity throughout the ages, across many cultures. Dice games are referenced in Egyptian, Roman and Norse mythology as tools of the Goods, while lotteries also date back to Roman times. The oldest known public lottery was arranged in 1420, as a fundraiser towards the improvement of the embattlement of the French town of Bourgogne, and later national lotteries gained popularity in European countries as an early form of taxation (Overå and Weihe, 2016). Despite the favourable attributes of gambling, early societies must also have noticed how gambling would sometimes lead to unwanted side-effects. As noted by Overå and Weihe, we find rules against gambling in many religions, a sign that gambling must have been both common and somewhat associated with problematic behaviour. Otherwise, such rules would not have been necessary (2016).

While we still find dice games and lotteries, gambling has evolved together with the technological advances of society. Most recently this can be seen in how gambling now increasingly takes place online, keeping up with the demands of the current generation of gamblers. Today we know more about the underlying psychology and potential negative effects of gambling, yet problem gambling is a persisting challenge. Most people will gamble at least once in their lifetime, and most gamblers will do so occasionally for fun and pleasure. Unfortunately, for some individuals, gambling still comes with a risk of personal and social harm (Meyer, Hayer and Griffiths, 2009; Calado and Griffiths, 2016).

To minimize gambling-related harm several countries have regulated the gambling market, but to varying degrees. Gambling in Norway is further considered in part 2.1.3. A different strategy to minimize gambling-related harm is through the application of responsible gambling tools (RGTs). Examples of such tools include pop-up messages, personalized feedback and tools for setting limits to money or time spent gambling. Tools facilitating responsible gambling have become increasingly popular, and are now offered by many gambling companies as they have identified the importance of social responsibility (Auer and Griffiths, 2016; Auer, Reiestad and Griffiths, 2018; Auer, Hopfgartner and Griffiths, 2018). RGTs are further considered in part 2.1.4.

2.1.1 Problem Gambling

There are many terms used in the literature of gambling to describe disruptive or damaging gambling behaviour, including "pathological", "addictive", "excessive", "dependent", "compulsive", "impulsive", "disordered", and "at-risk", but "problem gambling" is most commonly used (Meyer, Hayer and Griffiths, 2009). In terms of diagnosing problematic gambling behaviour, the term addiction has been disputed as gambling does not involve the consumption of substances like drugs and alcohol. Yet, it is known that the body can produce a morphine-like reaction to excitement, for example through gambling, and consequently lead to a feeling of discomfort, or abstinence, if the activity is reduced (Overå and Weihe, 2016). In most European countries, the prevalence of pathological gambling is around 0.5 % (Valleur *et al.*, 2015). Looking at lifetime prevalence of combined problem and pathological gambling worldwide, the numbers range from 0.7% in Denmark to 6.7% in Estonia (Calado and Griffiths, 2016). In the

Nordic countries, the prevalence of gambling-related problems is relatively low compared with international surveys (Pallesen *et al.*, 2016).

Gambling addiction is sometimes referred to as "the silent addiction" because the affected player does not display any physical symptoms and often will do what they can to hide the consequences of their gambling for others (Hjelpelinjen, 2015). However, negative consequences of problem gambling are well documented. As summarized by Shaffer and Korn (2002) there is a range of difficulties affecting individuals, families and communities that have been attributed either directly or indirectly to gambling. Examples of such negative effects include (but are not limited to) gambling disorders, domestic violence and abuse, alcohol abuse and other drug problems, depression, anxiety, suicide attempts and suicide, financial problems (bankruptcy, loss of employment and poverty), and criminal behaviour (Shaffer and Korn, 2002). A more recent literature review by Riley *et al.* (2018) also concluded that problem gambling has significant negative effects on partners, children and parents of problem gamblers. In essence, this means that problem gambling can cause both economic and psychological harm, and additionally has the potential to negatively affect a far greater number of people than those directly involved with problematic gambling activity.

There are many factors that contribute to problem gambling (Overå and Weihe, 2016; The Lancet, 2017). However, it has been suggested that some people are more vulnerable than others to addictions, which partly might explain the relative stability of problem gambling prevalence (Valleur *et al.*, 2015). To further understand problem gambling, Blaszczynski and Nower's three pathways model and Binde's five motivational dimensions model offers deeper insights. The three pathways model of pathological gambling suggests that pathological gamblers can be divided into three groups, relating to the pathways that have led to the condition. Combining Blaszczynski and Nower's model with the findings of Valleur *et al.,* the following description of the three groups can be made (Blaszczynski and Nower, 2002; Valleur *et al.*, 2015):

- **Behaviourally conditioned problem gamblers** (group 1). This group gamble for social or cultural reasons, and as a result of their own gambling history. As behavioural conditioning is common to all problem gamblers, this group can be described as "pure" gamblers. On a scale of what people are looking for in gambling according to their impulsivity/neuroticism, this group would fit between the two other groups.
- **Emotionally vulnerable problem gamblers** (group 2). This group will in addition to being subject to behavioural conditioning have added emotional vulnerabilities. They use gambling as an escape, for avoidance and self-medication. Gamblers in this group typically prefer games of chance, like scratch cards and one-armed bandits.
- **Antisocial, impulsivist problem gamblers** (group 3). This group will in addition to being subject to behavioural conditioning be more impulsive than the others, sometimes in an antisocial nature. They use gambling as a stimulant, seeking risk-taking and excitement. Gamblers in this group typically prefer games that incorporate elements of skill, like horse racing and sports betting.

While the above classification explains possible pathways into problem gambling, Binde's model presents five motives for gambling activity. He describes one core motivation as the underlying motive for participation in all gambling, namely *The chance of winning*, and four optional motives: *The dream of hitting the jackpot*, *Social rewards*, *Intellectual*

challenge, and *Mood change.* Binde argues that the core principle is essential to gambling, and therefore always present, while the importance of the four optional motives will vary depending on the type of game as well as personal dispositions and preferences of the gambler (Binde, 2013).

The factors that make people gamble can be separated into two groups; situational and structural. Situational factors are those who lead a person to gamble in the first place. These are often features of the surrounding environment, such as advertisements, social norms, where gambling can be accessed and how many options for gambling that are available. Structural factors are those who keep a gambler engaged within the game. These include event frequency, payout interval, payback percentage, frequency of "near-wins", and light, colour and sound effects (Overå and Weihe, 2016; Griffiths *et al.*, 2006). How addictive a game is will be determined by its structural characteristics. As illustrated by an example given by Tanja Sveen, responsible gambling advisor in NT, lottery games, which are considered low-risk, will have considerably longer game intervals and lower reward frequency than typical high-risk casino games (T Sveen 2019, personal communication, 25 February). Many of the situational and structural factors we see in gambling can also be found in online gaming, strategy and entertainment games. What separates gambling from other types of games, is the potentially dramatic economic consequences (Overå and Weihe, 2016).

2.1.2 Online Gambling

Throughout history, technological innovation has played a role in the development of gambling practices. Often providing the market with new opportunities, this development is expected to continue as new technology is being developed (Griffiths *et al.*, 2006). With the introduction of the internet, gambling services also got established online, and today online gambling can easily be accessed from web browsers or smart device applications.

It has been argued that the risk of developing a gambling problem might be higher in an online gambling environment, due to a combination of structural and situational factors, such as increased accessibility, affordability and anonymity (Auer and Griffiths, 2016). In a world-wide literature review on problem gambling, Calado and Griffith reported that aside from slot machines, internet gambling games were the most popular gambling activity among problem gamblers (2016).

To keep problem gambling at a minimum in online channels, it is therefore important that vulnerable groups are protected, and players are educated about how to gamble responsibly (Auer and Griffiths, 2016). There are many ways to approach this goal, but with new technology, it has also become possible to incorporate such features directly into the gambling experience through RGTs. As reported by Auer, Reiestad and Griffiths, some researchers believe that because of their technological infrastructure, such initiatives might be particularly effective online (2018).

New technology can as such be seen as both a negative and positive force with regard to problem gambling: As stated by Norwegian Minister of Culture and Equality, Trine Skei Grande, technological development does not only give new possibilities for gambling providers, but also offers great possibilities for health support, research, problem gambling communities and others working with prevention and treatment of problem gambling (Kulturdepartementet, 2018).

2.1.3 Gambling in Norway

Gambling in Norway is administered by the Norwegian Ministry of Culture. The gambling market is organized within a monopoly model, which means gambling providers need explicit permission to operate. Through this model state-owned NT have been given monopoly rights to offer a number of games and is as a result the largest gambling provider in Norway. In 2015, NT covered about 70 % of the regulated gambling market (Meld. St. 12 (2016-2017)). Over a one-year period, about half the Norwegian population will participate in gambling. In a national survey conducted in 2015, 57.9 percent of respondents reported to have participated in gambling activities during the past twelve months, and among them, 29.2 percent reported to have done so via the Internet (Pallesen *et al.*, 2016). Over the past few years considerable technological developments have been seen in the Norwegian gambling market, mainly through increased distribution of gambling services online (Meld. St. 12 (2016-2017)). Since 2016, NT reports to have seen a 21 % growth of traditional games in digital channels, stating that continued development of services and responsibility initiatives online are becoming an increasingly important priority for the organization (Norsk Tipping, 2019).

Using the Canadian Problem Gambling Index, 2.3 % of the adult population in Norway could be categorized as moderate risk gamblers and 0.9 % as problem gamblers (Pallesen *et al.*, 2016). This corresponds to an estimated 34 000 people, and the risk of problem gambling is highest among men, people with low levels of education, people receiving some form of public benefits and people born outside Norway (Pallesen *et al.*, 2016; Helsedirektoratet, 2017). An important side note is that although these are statistical tendencies, problem gambling affects people from all tiers of society with all kinds of backgrounds, as confirmed in conversations with Lill Tove Bergmo from Spillavhengighet Norge, Tanja Sveen, Kristin Edvardsen Måsø and Trine Vannzell from NT and Øystein Olsen from KoRus-Øst (L T Bergmo 2019, personal communication, 20 February; T Sveen 2019, personal communication, 25 February; K E Måsø and T Vannzell 2019, personal communication, 28 February; Ø Olsen 2019, personal communication, 28 February). The number of people receiving treatment for problem gambling in Norway is increasing, and numbers from Hjelpelinjen, a service providing anonymous support to people experiencing difficulties with gambling, also show an increase in the number of received calls related to problem gambling (Kulturdepartementet, 2018). The Ministry of Culture has explicitly stated that one of their goals is to ensure that the number of problem gamblers should be as low as possible (Meld. St. 12 (2016-2017)). This is reflected by NT's social mission, which states that NT should provide responsible and attractive gambling services, where profits go back to society (Norsk Tipping, 2019). The social mission is written so that its components are put in prioritised order, which means that responsibility should be prioritised before attractiveness and generating profits.

Only government-approved gambling operators are permitted to advertise and sell gambling services in Norway, but foreign gambling operators are challenging the Norwegian monopoly model. By offering their services online and advertising their services through social media and TV-stations broadcasting to Norwegian audiences from abroad, they are able to bypass Norwegian law. Measured in money spent on advertising, foreign gambling operators were responsible for 79 % of all gambling advertisements on TV channels targeting Norwegian audiences in the 2015–2016 period (Meld. St. 12 (2016-2017)). In 2018, NT's estimated share of the total gambling market was 64 %, while the unregulated market was estimated to hold about 16 % (Norsk Tipping, 2019).

It has been stated by the Ministry of Culture that a prerequisite for a responsible gambling strategy is having a regulated gambling market that can offer appealing games that will attract gamblers, consequently reducing gambling in the unregulated market where responsible frameworks are less developed (Meld. St. 12 (2016-2017)). This approach is called channelling, and leaves NT in a situation where they are forced to position themselves as an attractive alternative to unregulated gambling providers while they are also obliged to offer their services in a responsible manner. Norwegian Association for Gambling Problems (Norsk Forening for Spillproblematikk) does not support the argument for channelling. They argue that reprehensible practice by foreign gambling providers should not legitimate a liberalization of the regulated Norwegian market (NFSP, 2018). The difficult balance between the need to develop attractive games for those who wish to play, and the need to protect those who experience difficulties with gambling has also been addressed by the Norwegian Minister of Culture and Equality. However, she does emphasise that responsibility must be prioritised (Kulturdepartementet, 2018).

2.1.4 Responsible Gambling Tools and Norsk Tipping

RGT is a term used to describe an instrument or procedure that encourage and facilitate players to gamble in a more responsible manner. Gambling operators will often offer responsible gambling tools, such as limit-setting tools, pop-up messages, and personalized feedback that support users to gamble more responsibly. For NT, social responsibility is their number one priority, ranking above offering attractive services and generating profits (Norsk Tipping, 2019). RGTs supports this priority and are therefore important features of NT's online services.

NT offers four types of RGTs through their online platforms; limit-setting tools, gambling breaks and blocking tools, an account of recent gambling wins and losses, and Playscan. NT's limit-setting tools allow users to set spending limits globally or per game type. For some high-risk games, limit-setting is mandatory. If a user exceeds 80 % of their monthly spending limit, they will be presented with a message informing them about this. Similarly, users receive a message when their spending limit is reached, or there is not enough left to continue gambling. If a user has not set a personal spending limit, they will still be subject to a default maximum spending limit defined by NT, that no users can exceed. Currently, this limit is set to 20 000 NOK per month. Gambling breaks allows players to voluntary block access to some or all games for a specified amount of time. Users can also choose to permanently block access to some or all games. NT's account of recent gambling wins and losses is called Spillregnskap, where the user can see their net win/loss of the current day, week and month. A graph also offers a visualization of the combined net wins/losses over the past eight-week period. Finally, Playscan is a behavioural tracking system that evaluates the risk-level of a player's activity. The software uses a traffic-light scale to indicate risk-level (from green, low risk, to red, high risk). If Playscan detects changes in user behaviour that indicates the user has moved to a higher risk level, a message will be sent to the user's inbox to notify them. Several self-assessment tests are also available for users to evaluate their gambling behaviour (Norsk Tipping, 2018; Norsk Tipping AS, 2019). An interesting dimension to NT's RGTs is that all user accounts are linked with the user's national identification number, making it difficult for players to create multiple accounts. With the exception of physical scratch cards, an account is needed to participate in all NT's games, both online and in traditional channels. This means that very close to all gambling

activity can be recorded and linked to individual users by NT, giving them a solid data foundation for software like Playscan.

In recent years, a number of studies have been made on responsible gambling tools using participants drawn from a population of Norsk Tipping gamblers. First, some evidence suggests that providing players with information can lead to significant reductions in their gambling behaviour, as measured by theoretical loss, amount of money wagered, and total win/loss. The study in question compared information of three different types (normative, personalized and a recommendation), however, normative feedback did not appear to be more efficient than personalized feedback (Auer and Griffiths, 2016). Second, a study investigating the effect of providing players personalized feedback when they exceeded 80 % of their individually specified spending limit, showed a significant reduction in the amount of money gambled compared to players who did not receive a similar reminder (Auer, Hopfgartner and Griffiths, 2018). Third, a study based on self-reported behaviour showed that a very low number of players migrated to other gambling operators after reaching their spending limits, and concluded that Norsk Tipping's introduction of a global loss limit has been largely positive for users of Norsk Tipping's gambling services (Auer, Reiestad and Griffiths, 2018). Additionally, it has been observed that players with higher losses estimate their expenses less accurately than players with lower losses (Auer and Griffiths, 2017) and that frequent players reporting to experience cognitive dissonance when learning about their gambling losses are likely to reduce their gambling expenditure (Auer and Griffiths, 2018). Another study by Jonsson, Hodgins, Munck and Carlbring, currently in review, has investigated the effect of contacting at-risk players and informing them about gambling losses and available responsible gambling tools. Using a matched subject design with one control group, the study compared the effect of sending the players a letter and having a conversation with players. Both methods significantly reduced theoretical loss compared with the control group, with conversations being the most effective (Sveen, 2018). Overall, these studies indicate that gamblers are not always aware of their losses, and that providing gamblers with this information can help to reduce losses, particularly for at-risk gamblers.

While RGTs can contribute to reducing problem gambling, one should be careful not to think of them as a means by which problem gambling can be eliminated. As noted by The Lancet, "Factors that contribute to problem gambling and solutions for people at risk will be multifactorial and likely require a holistic approach that goes beyond any one type of wager or stake limit" (The Lancet, 2017, p. 913). However, RGTs have shown to have a significant effect, and further research on the subject may contribute to further increase their efficiency. Additionally, for gambling providers like NT, the most realistic way to prevent problem gambling is actually through their services. In this context RGTs seem to be well suited, building on user data to provide informed player choice.

2.2 Designing for Behavioural Change

Persuasion can be described as the pursuit of influencing others, to change the way they think or behave. Originating in the fields of rhetoric, obedience and one-on-one sales (Andrews, van Leeuwen and van Baaren, 2013) persuasion have often been associated with people in certain professions, such as advertises, salespeople, therapists, coaches and teachers (Strum, 2017). This type of social influence has been dubbed "the world's (truly) oldest profession" (Sundie *et al.*, 2012), but the roles as persuaders are no longer

reserved for humans. With advances in technology and the internet, we have entered an era of *persuasive technology*, where computers too have become agents of persuasion.

Fogg has defined *persuasive technology* as "any interactive computing system designed to change people's attitudes or behaviours" (Fogg, 2003, p. 1). To create such products, designers have become increasingly invested in understanding the workings of the human mind and how decisions are made. As observed by Wendel (2014), research in behavioural economics, psychology and persuasive technology has thrived over the past decade, and the lessons from this research are being applied in product design and development.

In everyday life, people are surrounded by smart devices, computers and gadgets. These technologies offer wonderful opportunities for persuasion, whether it is to encourage healthy behaviour (Strum, 2017) "help people do things that they want to do but have struggled with in the past" (Wendel, 2014, p. xv), or to make companies "win the loyalty of their users and create a product that is regularly used" (Eyal, 2014, p. 2). These examples illustrate a positive attitude toward persuasive technology, but more critical voices can also be found. As noted by some authors, persuasive design can be practised in both unethical *and* ethical ways, and should as such be exercised with care to avoid potential pitfalls (Fogg, 2003; Eyal, 2014; Toxboe, 2015).

Persuasive strategies exist in many forms and can be applied in many contexts to influence behaviour. In the remaining part of this chapter, the concepts of behaviour and persuasive design techniques are further described, as well as how technology and interactivity and habit-forming strategies interact with these. Finally, research on design for responsible gambling is presented.

2.2.1 Factors Determining Behaviour

To understand how designers can change behaviour, it is key to first understand behaviour. As presented by Strum, most theories about behaviour agree that there are three factors that determine whether or not a behaviour takes place; motivation, ability and opportunity (2017). In this model, motivation can be described as how much a person wants to do something, as a result of either a physiological, social or psychological need. Ability, whether a person is able to perform an action, and opportunity, having the right environmental conditions and sufficient resources and relationships while an opportune moment occurs, then serve as moderating factors on how motivation leads to a behaviour (Strum, 2017).

A similar model of behaviour has been proposed by Fogg, in which it is described that the three elements ability, motivation and a prompt must converge at the same moment for a behaviour to occur (Fogg, 2018a). Often shortened to B=MAP, *Fogg's Behaviour Model* also share the idea that motivation can be split into three categories; sensation (pleasure/pain), anticipation (hope/fear) and belonging (social acceptance/rejection), and that a number of factors; like time, money, physical effort, brain cycles, social deviance and non-routineness, contribute to a person's ability to perform an action. While a prompt (previously called trigger in Fogg's model) can be understood as a synonym for opportunity, Fogg argues that ability and motivation have a compensatory relationship, where a certain threshold (called the action line) must be exceeded before a prompt will lead to a behaviour (see figure 2.1).
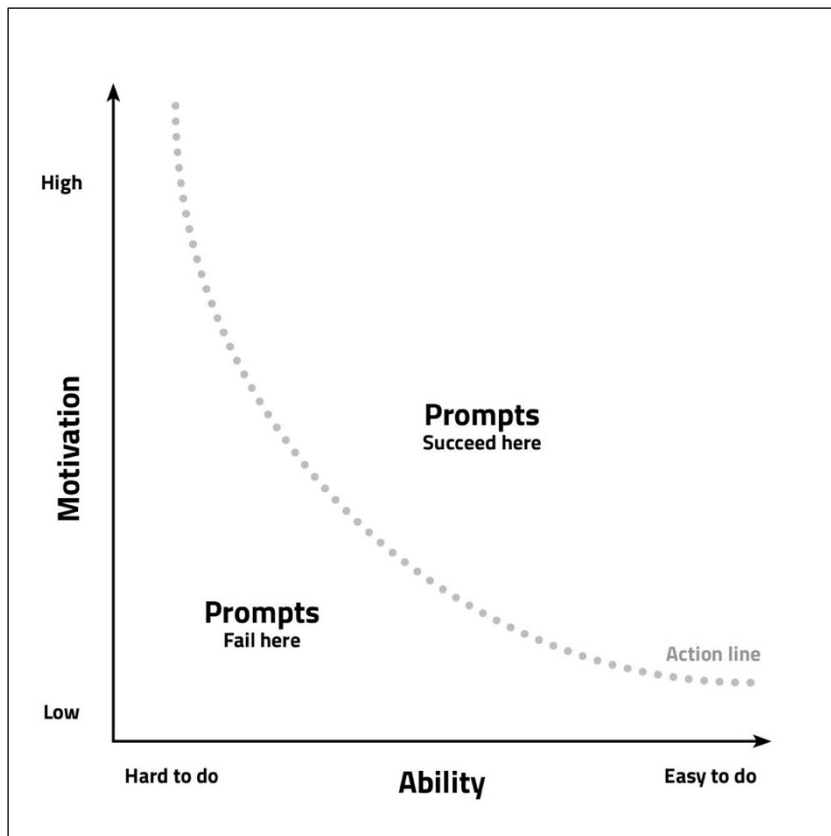
Figure 2.1: The B=MAP model (Fogg, 2018a)

The decision to carry out a behaviour happens in the mind. The mind can be understood as operating on two different levels, one being unconscious and intuitive and the other conscious and rational, often referred to as *system one* and *system two* respectively*.* System one operates fast, is highly parallel, irrational, emotional, approximate and automatic, and controls most of human perception and behaviour. System two has by comparison limited capacity and operates slowly, being controlled, monitored, single-process and precise (Wendel, 2014; Johnson, 2014; Kahneman, 2011). System one is biased and easily fooled, often resulting in faulty judgements. In such cases, the role of system two is to override these decisions, but "system two is lazy, and does that only when necessary" (Johnson, 2014, p. 169). Based on this insight, the human decision-making process that leads to behaviour can be approached with different tactics for those who wish to produce a specific outcome.

From a digital design perspective, designers might choose to help their users engage system two, by supporting rational decision making. Computers can be great tools for this, as they can aid with memory, calculation, searching and more, helping people in the process of finding all options available for them, evaluating them rationally and fairly, before making an unbiased decision (Johnson, 2014). Wendel calls this strategy *support conscious action*, but acknowledges that it can be challenging to implement often because it requires extra effort by the user (2014). When using this strategy, system two must override system one, slowing down the decision-making process.

A different strategy is habit-formation. When a habit is formed, the work involved in a conscious decision-making process is automated, moving the workload from system two

to system one. When a person is required to perform an action multiple times, designers can use habits as a tool to over time overcome the work involved of engaging system two, increasing the chance of the behaviour being repeated (Wendel, 2014). Through conditioning, complex behaviour can be shaped, or existing behaviours can be transformed into habits (Fogg, 2003). Nir Eyal has recognised that companies that are able to form strong user habits enjoy multiple benefits (Eyal, 2014), and have dedicated much of his work to the creation of habit-forming products. Habits are further considered in part 2.2.4.

A third strategy is to bypass system two entirely and appeal to system one. If digital designers wish to convince or persuade users to respond in a certain way, the characteristics of system one can be manipulated in favour of the desired outcome. Utilizing technology in this manner can have powerful impact on users: as described by Johnson, *"how* an interactive system presents information influences the decisions and behaviour of users *at least* as strongly as *what* information it presents" (2014, p. 181). Computer technologies have a great capacity as persuasive agents; a quality that has given rise to persuasive technology. This is further examined in part 2.2.3.

2.2.2 Persuasive Strategies

Persuasion is always intentional, applied to achieve a specific outcome. For the purpose of this project, a persuasive strategy has been defined as *a method that can be applied to influence behaviour*. Using the B=MAP model, behaviour is the product of sufficient motivation and ability, when a prompt is present. Therefore, methods for intentionally increasing ability, increasing motivation or introducing a prompt can all be considered persuasive strategies. The definition of persuasive strategies is built on Fogg's definition of persuasion, which he describes as "an attempt to change attitudes or behaviours or both" (2003, p. 15). Fogg further specifies that persuasion does not cover coercion and deception, which also applies to the definition of persuasive strategies. Persuasion is also different from conviction: While conviction can be obtained through logical proof and reason, persuasion primarily relies on emotional responses (Strum, 2017). As such, persuasive strategies target the mind's system one, which heavily relies on learned patterns (habits), evaluations based on past experiences ("gut feeling"), and cognitive shortcuts and heuristics (rules of thumb) (Wendel, 2014).

A great number of heuristics and cognitive shortcuts (or biases) have been described. According to Wendel, researchers have discovered literally hundreds of such mechanisms that can affect behaviour (Wendel, 2014). Heuristics are mental shortcuts that people take to make decisions and form opinions, and they can be used to boost motivation or to increase ability (Eyal, 2015).

From a persuader's perspective, there is according to Cialdini thousands of different tactics that can be employed in order to influence people. However, he also states that most of these tactics fall within six categories; commitment and consistency, reciprocation, social proof, authority, liking and scarcity, which he calls persuasive principles (Cialdini, 1993). A short description of the principles is given below:

- **Commitment and consistency:** People tend to commit to previous decisions and standpoints as much as possible, as to maintain consistency. When committing to a goal themselves, people are more likely to follow them through and try to reach them. If the goals require high effort and are made public, the effect will be even larger.

- **Reciprocation:** When people experience that someone (or something) does something for them, they will feel obliged to return the favour. Whether receiving a gift, favour or service, people are inclined to repay, in kind, what they received first. Reciprocity can be hard to resist, making it a powerful principle.
- **Social proof:** People are influenced by what others consider to be correct behaviour when determining what would be the correct behaviour for themselves. People are more likely to follow the behaviour of people that are similar to themselves, or other people that they like or admire.
- **Authority:** People tend to follow the lead of credible, knowledgeable experts, or other figures of authority. Authority may be presented through a person or role, or through labels of quality or standards.
- **Liking:** People are more likely to follow the requests of someone they like or know. How much people will like something can be based on physical attractiveness, similarity to themselves, compliments, familiarity and cooperation.
- **Scarcity:** When availability is limited, people tend to value their opportunities higher. In other words, people want more of what they can have less of. The notion of competition (for some scarce good) can serve as a powerful motivator. (Cialdini, 1993; Strum, 2017; Influence at work, 2018)

A large number of books, lists and toolkits describing persuasive strategies and explaining design for influencing behaviour exists. For example, in *Hidden Persuasion* Andrews, van Leeuwen and van Baaren (2013) describes "33 Psychological Influences Techniques in Advertising", using Maslow's hierarchy of needs to describe how different techniques appeal to human psychology. Similarly, the *Persuasive Patterns card deck* describes "60 design patterns driven by psychology, presented in a manner easily referenced and used as a brainstorming tool" (Toxboe, 2018). A third example is Dan Lockton's *Design with Intent* toolkit, which was originally created as a tool for brainstorming and idea generation as part of his PhD work. In addition to describing 101 patterns that can be applied in order to influence behaviour through design, Lockton presents eight "lenses" through which persuasion can be applied. These are only a few selected examples among many others, but illustrates the sheer amount of different persuasive strategies and the popularity they have gained in the design community.

2.2.3 Advantages of Technology and Interactivity
Social influence techniques, or persuasive strategies, have since long been utilised in advertising, persuading consumers to "feel, believe, act, buy and change ourselves" (Andrews, van Leeuwen and van Baaren, 2013, p. 8). In traditional media such as magazines, newspapers, pamphlets, radio and TV, persuasion has been applied to a great extent; whether the goal has been to persuade people to join a good cause, give up a bad habit, donate to a charity, form a certain political opinion, or, of course, buy a product (Preece, Rogers and Sharp, 2015; Johnson, 2014). Persuasive technology is the result of combining new technology with influence strategies from human persuasion and traditional media (Strum, 2017). When persuasion is used in new digital channels, many of the same techniques can be employed as in traditional media. However, as argued by Fogg, computers have one great advantage over traditional media; namely capacity for interactivity. Persuasion techniques are as a general rule the most effective when they are interactive and tailored to the situation. Through interactivity, computers can apply techniques from traditional human persuasion: Just like skilled salespeople might adjust their tactics based on feedback from the prospect, computers can adjust based on user input. (Fogg, 2003).

Yet, interactivity is not the only advantage computers have when it comes to persuasion. Fogg further argues that persuasive technologies also have six distinct advantages over *human* persuaders: They can be more persistent than human beings, and because they never get tired or discouraged, technologies can either work at all times or wait for the right moment to intervene. They also offer greater anonymity, which can be important with regard to sensitive topics or overcoming social restraints. Additionally, technology can manage huge volumes of data, use many modalities to influence and scale easily. Finally, technology can go where humans cannot go or may not be welcome. Through the ubiquity of computing systems embedded in everyday objects and environments, persuasion can be exerted at almost any time and place (Fogg, 2003).

Persuasive technologies may take on three different roles: When making certain behaviour easier, more efficient or feasible to carry out technology is used as a persuasive *tool.* Through simulations and interactive experiences technology can present persuasive messages that increase motivation, working as a persuasive *medium.* Finally, technology can communicate, giving compliments or motivational feedback, provide reminders and suggestions, working as a *social actor.* As social actors, technology may simply follow social rules (like politeness and turn-taking), it can "play" a role (like a coach or helper) or even have an animate appearance (Fogg, 2003; Strum, 2017). In *Persuasive Technology*, Fogg (2003) lists 42 principles of persuasive technologies. These are grouped after each of the three roles persuasive technologies may take (tools, media and social actors), credibility as related to computers and the internet, and how mobility and connectivity can contribute to increased persuasive powers.

2.2.4 Habit-Forming Design

Habits are learned patterns of behaviour, that are carried out with little or no conscious thought as a response to a trigger. Habits form when an action is carried out frequently enough, and with a high enough level of perceived utility (Eyal, 2014).

Nir Eyal's hook model describes "an experience designed to connect the user's problem to a solution frequently enough to form a habit" (2014, p. 14). The hook model is composed of four stages; trigger, action, variable reward and investment (see figure 2.2). Eyal is a former student of B. J. Fogg, and it is evident that the Hook Model is heavily influenced by Fogg's work. A description of the four stages in Eyal's Hook model is given below:

- **Trigger:** Triggers come in two varieties; *external* and *internal.* External triggers are information placed within the user's environment telling them what to do next. These take the form of paid triggers (advertising, search engine marketing), earned triggers (PR, viral media), relationship triggers (word of mouth, personal referral), and owned triggers (e-mail newsletters, app icon on phone screens). Internal triggers tell users what to do based on associations stored within their memory, often in the form of negative emotions. By cycling through the Hook model multiple times, users form learned associations between the product and satisfying their needs, over time replacing external triggers with internal triggers.
- **Action:** Action can be described as the simplest behaviour in anticipation of a reward. Through usability design, the ease of completing an action combined with psychological motivation is used to increase the likelihood of an action occurring. Eyal uses Fogg's B=MAP (B=MAT) model to explain behaviour, but adds that mental shortcuts, heuristics, can be utilized to boost user's motivation and increase ability.

- **Variable reward:** Rewards reinforce user motivation by satisfying user needs, while variability both increase the user's anticipation of said rewards and contribute to maintaining user interest over time. There are three types of rewards; rewards of the tribe, which come in the form of gratification from others, rewards of the hunt, which come in the form of material resources, money or information, and rewards of the self, which come in the form of mastery, completion and competence. Rewards should satisfy user needs, but not completely—thus leaving users wanting to reengage with the product. To avoid reactance while ensuring repeated engagement, users should still maintain a sense of autonomy.
- **Investment:** The investment phase is built upon the user's anticipation of future rewards. An investment requires some work from the user, but after a variable reward users are primed to reciprocate. Because humans have a tendency of overvaluing own work and are biased toward being consistent with previous behaviour and to avoid cognitive dissonance, investments in a product create preference. Through stored value, such as content, data, followers, reputation and skill, the service is improved the more it is used, increasing the likelihood of users returning to it. An investment may also load the next trigger for the user, for example through reminders or notifications (Eyal, 2014).
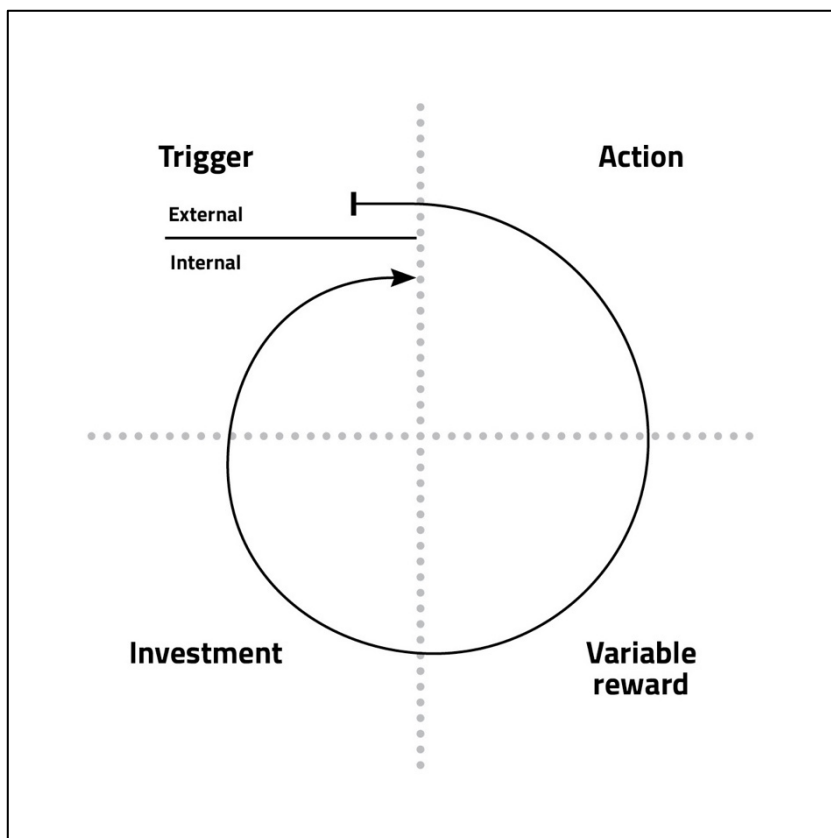

Figure 2.2: The Hook Model (Eyal, 2014)

After users have cycled through the Hook Model enough times, they become conditioned to return to the service even when an external trigger is not present. This means that companies that are able to successfully create habit-forming products will not have to

depend on expensive advertising or aggressive messaging. In addition, strong user habits can contribute to higher customer lifetime value, pricing flexibility, business growth and increasing competitive edge (Eyal, 2014). Yet, while habit-forming products can be beneficial to their creators, the addictive qualities of some products and services have sparked some controversy. As reported by Paul Lewis, a number of tech workers who once contributed to create addictive services like Google, Twitter and Facebook have turned their backs to their creations, alarmed by their negative effects (2017). In a competition for human attention fuelled by the attention economy, digital products have been forced to rely on persuasion and habit formation to generate loyal users, resulting in addicted users. Eyal states this himself: "Face it, we're hooked. The technologies we use have turned into compulsions, if not full-fledged addiction" (2014, p. 1).

Comparisons to addictive substances have been used to describe social media, like former Facebook employee Justin Rosenstein comparing Snapchat to Heroin (Lewis, 2017), but researchers have also found behavioural similarities between excessive use of social networking sites and substance use and behavioural addictive disorder (Meshi *et al.*, 2019). Defined by their utilization of variable rewards, addictive digital products have also been compared to slot machines, by the likes of Nir Eyal (2015), former Mozilla and Jawbone employee Aza Raskin (Andersson, 2018) and, perhaps most prominently, by former Google employee Tristan Harris (Center for Humane Technology, 2019c; Lewis, 2017; Harris, 2017). Harris is like Eyal a former student B. J. Fogg, but after leaving Google he has become one of the most vocal opponents against addictive technology. At Center for Humane Technology (2019a), which both Harris and Raskin took part in founding, it is argued that a monetization of our thoughts, emotions and actions is tied to a number of negative side effects, including digital addiction, shorter attention spans, polarization and manipulation of political discourse, and negative effects on mental health:

> The companies that created social media and mobile tech have benefited our lives enormously. But even with the best intentions, they are under intense pressure to compete for attention, creating invisible harms for society (Center for Humane Technology, 2019a).

As argued by Jaron Lanier, digital media have come to rely on an unhealthy economic model that incentivizes calculated behaviourist manipulation; influencing the behaviour of people in ways that they do not understand (Harris, 2018). Recognising that designing habit-forming products is a form of manipulation, Eyal urge designers to make sure they are contributing to users building healthy habits, and not unhealthy addictions (Eyal, 2014). Yet, habits and persuasion are powerful instruments that should be employed with uttermost care. As stated by Shariat and Saucier (2017), designers are the gatekeepers of technology, which without mindful design can quickly turn from a help to a harm.

2.2.5 Design for Responsible Gambling

RGTs can in essence be described as tools that enable behavioural change. It has also been pointed out such tools may be especially effective in online environments (Griffiths and Auer, 2018). However, as observed by Auer and Griffiths with regards to gambling pre-commitment tools, the use of human-computer interaction and persuasive system design principles in the design of such systems is relatively new (Auer and Griffiths, 2016).

Some studies have investigated how responsible gambling can be supported using graphical elements. For example, some evidence indicates that showing an educational animation film to slot machine players can help correct erroneous beliefs about electronic gaming machine (EGM) odds and reduce the risk of players exceeding their loss-limits (Wohl *et al.*, 2010; Wohl *et al.*, 2013). Yet, a simple pop-up reminder seemed to be as effective as the film with regards to staying within pre-set gambling-limits in a virtual reality gambling environment (Wohl *et al.*, 2013). Another study, investigating attitudes of video lottery terminal (VLT) players, concluded that warning messages can be enhanced by being accompanied by a graphic (Muñoz, Chebat and Borges, 2013). To the author's knowledge, only one study has investigated how principles of human-computer interaction and persuasive system design can be applied to responsible gambling tools for improvement. In this study, which also focused on VLTs, it was shown that a monetary limit setting tool that was created based on human-computer interaction and persuasive system design principles were much more effective than a basic limit setting tool not incorporating such principles (Wohl *et al.*, 2004).

The key component of many RGTs is feedback to the user based on gambling activity, and design could be the determining factor for how successful feedback systems for responsible gambling will be: As Auer and Griffiths see it, human-computer interaction and persuasive system design principles should be core components in the design of such tools (2016).

3 Methods

3.1 Theoretical Foundation

The *Persuasive Strategies Matrix* was created through an iterative process of comparing and synthesizing theoretical work by Fogg, Cialdini and Eyal. The process was carried out alternating between closed and open coding of the source material. Starting out with Fogg's 42 principles presented in *Persuasive Technology* (2003), a table was used to group these into categories based on Cialdini's six principles presented in *Influence* (Cialdini, 1993). Where no clear match was found, additional categories were added.

The Fogg/Cialdini table was then organised to match the steps of Eyal's *Hook model*, presented in *Hooked* (2014), including sub-steps and descriptions within each of the four main steps. The new table was then analysed for emerging patterns, from which the matrix's three *levels of persuasion* (basic, social, ideal) were identified. It also appeared that a large portion of both Fogg's and Cialdini's principles would fall within one of Eyal's main steps (action). To reflect this, Eyal's three remaining main steps were kept (trigger, reward and investment), while Action was further split into Ability, Motivation and Heuristics. This axis was named *opportunities for persuasion.*

The final *Persuasive Strategies Matrix* was then drawn placing the three *levels of persuasion* on one axis (basic, social and ideal), and the six *opportunities for persuasion* on the other. The resulting table is presented in part 4.1. A version of the matrix containing Fogg and Cialdini's principles and ideas from Eyal's Hook Model is also included in Appendix 2.

3.2 Information Gathering

In this section, the methods used in the information gathering stage of the project is described. The design project was carried out with a user-centred approach, with gamblers that can be identified as *at risk* of developing problematic gambling behaviour as the intended target audience. For information gathering purposes, this target audience offered some particular challenges.

First, the target audience is relatively small, and only makes up a small percentage of the full population of gamblers. Second, problem gambling is a sensitive subject. Due to privacy considerations, approaching members of the target audience based on existing records would not only be ethically questionable, but also near impossible. Although it is assumed that gamblers that are in this category might be identified using either software that analyses gambling activity, or established survey instruments, using such methods would also require substantial resources. Additionally, if representatives from the user group were recruited for information gathering purposes, these individuals might not identify themselves as being at risk of developing a gambling problem, or otherwise not feel comfortable with this description. If the purpose of their participation were to be transparent, this could potentially be a source of reactance during the design process.

For these reasons, it was decided that user data would be sourced from a combination of existing research and a number of semi-structured expert interviews.

Interviews and workshops were carried out with participants having Norwegian as their first language. The interviews were therefore conducted in Norwegian, and user personas, scenarios and user journeys were also created in Norwegian.

3.2.1 User Groups

To identify relevant user groups, existing data was sourced from a study conducted by Auer and Griffiths (2018), which investigated the effect of cognitive dissonance as a result of personalized feedback on online gambling behaviour. Their participant sample was drawn from a population of NT users, who during the past month (April 2015) had gambled at least once on NT's online platform *Instaspill* and had a net loss across all games. There was also an oversampling of high-intensity gamblers. Based on these selection criteria, the participant sample was also considered relevant for this master thesis.

In Auer and Griffiths' study, 11,829 players were randomly selected among the players who matched the selection criteria and sent an email. Of these, 4,045 players participated. After excluding a small number of participants who reported to have lost less than they expected (N=262), a machine learning algorithm was applied to identify groups among the remaining participants, based on whether they reported to have lost more than or about as much as expected over the past month. This process identified six groups with unique gambling patterns. A selection of this information was used to create the user groups for this master project. The resulting user groups are presented in part 4.2.1.

3.2.2 User Personas and Scenarios

One persona was created for each of the four user groups. Only age, gender and gambling pattern were described in the user groups. In order to create believable and realistic, human user personas, additional information was added based on risk factors for problem gambling identified in the national survey concerning gambling problems in the general Norwegian population by Pallesen *et al.* (2016). Additionally, a number of semi-structured expert interviews were arranged with representatives from the gambling industry, health sector, and problem gambling volunteer organizations, further informing the design of the user personas.

The interviews were carried out in order to learn more about problem gambling, who might become problem gamblers, how problem gambling begins, risk factors related to problem gambling and how problem gambling might be prevented. The experts invited to participate in the interviews were Tanja Sveen, responsible gambling adviser in NT, Kristin Edvardsen Måsø and Trine Vannzell, responsible gambling customer consultants in NT, Øystein Olsen, deputy head of KoRus-Øst, Lill-Tove Bergmo, CEO of Spillavhengighet Norge and Ingjerd Meen Lorvik, chairman in Norwegian Association on Gambling and gaming Problems. The interviews were either carried out face-to-face or as telephone interviews. The interview guide is included in Appendix 1.

Two scenarios were written for each persona. Each pair of scenarios were constructed so that they had similar starting points, with the persona deciding to gamble using NT's mobile application. In the first scenario, each persona would go through the gambling experience as they normally would. In the second scenario, they would experience an (undefined) intervention through the interface, leading them to an RGT.

Figure 3.1: Example of simplified persona profile

The illustrations used for the personas were generated using *Hexatar*, a free JavaScript and PHP based website application for creating vector-based avatars (Fleamedia, 2015). The persona profiles were put together using Adobe InDesign.

3.2.3 User Journey Workshops

Two workshops were carried out at NT's premises, each with three NT employees. In a warm-up exercise, workshop participants were challenged to come up with some reasons that people, themselves or others, might have to gamble. It was specified that these could be both "good" and "bad" reasons. In the second workshop, participants were also asked to come up with reasons not to gamble. Using sticky-notes, participants wrote down their reasons individually, before they were presented for the group. This exercise was based on the *Post-Up* game described by Gray, Brown and Macanufo (2010). Quotes from the exercise were later matched to Binde's five motivational dimensions-model (Binde, 2013) and incorporated into the persona profiles.

The goal of the first workshop was to map user journeys based on the first scenario for each persona. The workshop participants were first introduced to a simplified version of the persona profiles (see figure 3.1), before each of the scenarios were acted out on NT's mobile application by one of the workshop participants. The screen image was

simultaneously displayed at a large scale in the room, so that everyone could follow the actions happening on the mobile phone. A test account was provided by NT, allowing a realistic gambling experience without entering "practice mode". Using a whiteboard, a grid was drawn up with the three categories *action*, *thoughts* and *feelings* placed to the left on the vertical axis, with stages of the user journey to be placed along the horizontal axis. As the user journeys were acted out, the workshop participants were encouraged to discuss what actions the persona might take, as well as their thoughts and feelings for each stage of the user journey. Thoughts and actions were written into the grid, while emotions were drawn as "smileys" on sticky notes and placed on the whiteboard.

The goal of the second workshop was to identify where and when an RGT could be presented to the personas. This would be identified through a second user journey, based on the second scenario for each persona. Again, workshop participants were first introduced to the personas, but this time the full persona profiles were presented. They were also informed that the personas were all categorised as "at risk" of developing gambling problems, and about the goal of the workshop. In this workshop, participants were encouraged to discuss at what stage of the user journeys an RGT could be introduced, and how the personas might react. Participants were asked to draw emotions on sticky-notes, which were then placed on a whiteboard and discussed. Screenshots from NTs mobile application (Norsk Tipping AS, 2019) was coupled with each of the stages of the second set of user journeys. The results from both workshops were documented with photographs and redrawn in Adobe InDesign.

3.3 Design

Design suggestions were created based on the current design of NT's mobile application, *Norsk Tipping* for iOS (Norsk Tipping AS, 2019). The *Persuasive Strategies Matrix* was used to identify possible persuasive strategies (see part 4.1.2). Initial ideas were first sketched out on paper, before high-fidelity designs were created in prototyping software *Sketch* (Bohemian B.V., 2019). As NT's mobile application use Norwegian language, it was decided to do the same for the design suggestions. NT's design elements were made available using *Sketch* design libraries, accessed through design workflow software *Abstract* (Elastic Projects, 2019).

4 Results and Discussion

In this chapter, the results of the master project are presented. This is followed by a review of ethical considerations and a general discussion. Further, the limitations of the project are considered, and finally, suggestions for further research are presented.

4.1 Persuasive Strategies Matrix

Based on an analysis of theories by Cialdini (1993), Fogg (2003), and Eyal (2014), the *Persuasive strategies matrix* was created. The matrix (table 4.1) is composed of six *opportunities for persuasion*, each with three *levels of persuasion*. As a result, the matrix describes eighteen categories of persuasive strategies, presented in table 4.1 with descriptions. For convenience, each of the categories can also be described with two-letter codes, using the initial letters of the corresponding level and opportunity. With this system, *basic trigger* gets the code BT, *resources and effort* the code BA, and so forth (see Appendix 2). From here, codes are used to describe the categories.

When a desired behaviour has been defined, each of the eighteen categories in the matrix represents a tactical approach to promote said behaviour.

		Opportunities for persuasion					
		Trigger	**Ability**	**Motivation**	**Heuristics**	**Reward**	**Investment**
Levels of persuasion	**Ideal**	Ideal trigger	Confidence and fit	Liking	Ideal shortcuts	Progress	Self-investment
	Social	Social trigger	Social deviance	Consensus	Social shortcuts	Community	Social investment
	Basic	Basic trigger	Resources and effort	Credibility	Basic shortcuts	Commodity	Basic investment

Table 4.1: Persuasive Strategies Matrix

Each of the eighteen categories in the *Persuasive Strategies Matrix* covers several different persuasive strategies. Triggers, ability, motivation, rewards and investments all come in different varieties, and as described in part 2.2.2, there are a great number of known cognitive biases and heuristics, each with corresponding persuasive strategies. While the matrix does not describe *specific* persuasive strategies, it can be used to inform which *type* of persuasive strategy to employ.

4.1.1 Categories of Persuasive Strategies

The six opportunities of persuasion are trigger, ability, motivation, heuristics, reward, and investment, referring to different opportunities for implementation of persuasive strategies. The six categories reflect a combination of Eyal's four-step hook-model (Eyal, 2014) and Fogg's behaviour model (Fogg, 2018a), with heuristics added as a new category. The three levels of persuasion are basic, social and ideal, referring to three

different areas of human interest that can be addressed through persuasion. On the basic level, human interest for resources, information, and safety is addressed. On the social level, human interest for belonging and social relationships is addressed. Social strategies may be social by nature, involving communication with others, but not necessarily; a strategy is social as long as it relates to human belonging and relationships. On the ideal level, human interest in personal fulfilment, self-expression and preference is addressed. Ideal strategies will as a result depend on tailoring to fit individual differences and specific contexts more often than strategies on the two other levels.

Using triggers for a pizza delivery service as an example, a BT might be a tempting picture of a pizza, reminding the user they are hungry, an ST might show a group of happy people enjoying pizza together, reminding the user how nice it is to enjoy food in the company of friends, and an IT could show pizza being delivered to a mansion (or a wholesome family, or a hip camper van with surfboards on the roof), reminding the user how they want to achieve a similar lifestyle.

Which level and opportunity to address in a design project depends on the product or service being designed. For a well-defined target audience in a specific context, a single category of persuasive strategies may be identified as the most critical to address in order to influence the desired behaviour. Smaller projects looking to improve a specific part of a product may only focus on one opportunity on one level. In larger design projects that consider a whole product, it can be beneficial to consider several or all of the categories. The *Persuasive Strategies Matrix* should not be understood as a system where the basic level will have to be addressed before the social or ideal level. Instead, the different levels can be understood as strategic areas, where designers can choose to focus on one of the levels to fully utilize its potential, or to combine two or all to cover a broader spectre of human interest.

4.1.2 Selecting Persuasive Strategies for Responsible Gambling
In order to select the types of persuasive strategies to apply in the design suggestions for NT's mobile application, the *Persuasive Strategies Matrix* was put to practical use. The desired behaviour of the target audience was defined as them choosing to use an RGT.

First, to persuade users to use an RGT, a trigger must be present. Applying a trigger on the ideal level would have been possible (for example, a progress bar indicating RGT experience), but as the services already incorporate a basic element it was decided to focus on that; namely providing information (BT). NTs mobile application does not facilitate social interaction between users, making it difficult to introduce a social trigger within it. Moving on to ability, lack of social interaction again eliminated the social level, leaving IA and BA strategies. Because motivation is complex, and is the most difficult and time-consuming to achieve of the three first opportunities, increasing users' ability to use an RGT would be key in the design suggestions. For the same reason, it was decided to focus on heuristics before motivation, using different combinations of IH, SH and BH strategies in the design suggestions.

Because the scenarios described players being introduced to an RGT on a one-time basis during engagement with the application, the opportunities for persuasion *reward* and *investment* were dismissed. Increasing use of RGTs through regular engagement is a possibility that would be interesting to investigate in a more comprehensive design

project. In that case, persuasive strategies falling within the *reward* and *investment* opportunities would be critical to involve.

4.1.3 Multiple Dimensions

Within each of the eighteen categories, several persuasive strategies exist. Further, these can all be applied in different manners. This leaves much room for interpretation within each category, but it is possible to think of persuasive strategies as influencing behaviour along multiple dimensions. Two dimensions that will be presented here in more detail are internal versus external, and encouragement versus constraint.

As described by Eyal, triggers are either internal or external. A similar classification of motivation has also been described, where intrinsic motivation entails doing something because it is inherently enjoyable or interesting, and extrinsic motivation is doing something because it has instrumental value (Strum, 2017). It is speculated by the author that other opportunities for persuasion also can be understood as being internal or external. For example, Fogg suggests there are three ways to increase people's ability; training them, providing them with tools, or making the target behaviour easy to do (Fogg, 2018b). These could all be described as providing external ability. Yet, people will also come to a product with a pre-existing set of (dis)abilities and skills; including how well they can see or hear, how familiar they are with user interface conventions, how well they understand the language used (either in terms of specialist terminology or language proficiency), and whether they have received training relevant to the product prior to the engagement. These could be described as internal abilities.

Designers are often controlling external aspects of a user's environment, for example by introducing external triggers (like a mobile notification) or increasing external ability (like enhancing the prominence of a button on a website). However, as described by Eyal, an external trigger can over time be replaced by an internal trigger, aided by design. If a user is trained, as Fogg suggests, design can contribute to the user acquiring a new internal skill. In other words, external persuasion can be understood as happening in the environment, while internal persuasion has been cemented in the user's mind. Internalising persuasion (internal triggers, training, intrinsic motivation) might be more challenging to achieve through design than promoting their external counterparts, but when in place they could potentially be far more powerful.

Persuasion can also be understood along a dimension of either encouraging or constraining behaviour. For the most part, this master thesis has described persuasion as *encouraging* behaviour; by having a user *notice* a trigger, increase ability by making an action *easy*, increase motivation by *attracting* users, using heuristics to *confirm* user biases, conditioning users through *rewards* and having them invest in a product in the anticipation of a *potential gain* in the future. However, each of the opportunities has constraining counterparts. A trigger can be *ignored,* an action can be made *difficult*, motivation can be decreased by *repelling* users and so forth, in order to prevent, or *constrain,* a behaviour from being carried out (see table 4.2).

Neither encouragement nor constraint is inherently *good* or *bad*. Just as influencing a user to carry out a certain behaviour may or may not align with the user's own goals, the same is true influencing a user *not* to carry out a behaviour. Using a positive example, both encouragement and constraint can be utilized to support users in adopting a healthy diet; encouraging users to choose healthy meal options, while using constraint to help them avoid unhealthy ones. In a cafeteria setting, bottled water can be introduced and

placed in a prominent spot in the drinks section, encouraging users (or in this case, customers) to choose water before soda. The cafeteria can also reduce the selection of unhealthy drinks or remove them completely, thus using constraint to support healthy drink selection. If both bottled water and soda are already available in the cafeteria, but the soda is placed in a more prominent spot than the water, simply swapping the placement of the two will both encourage people to choose water and constrain them from choosing soda.

	Opportunities for persuasion					
Encourage	Notice	Easy	Attract	Confirm	Reward	Potential gain
	Trigger	**Ability**	**Motivation**	**Heuristics**	**Reward**	**Investment**
Constrain	Ignore	Difficult	Repel	Dispute	Punishment	Potential loss

Table 4.2: Opportunities for persuasion through encouragement or constrain

Constraining behaviour can be useful in error-proofing contexts, for example by making a destructive action more difficult to perform, to reduce the chance of it being carried out by accident. However, when users initiate undesirable behaviour, persuasive constraint can be utilized in an attempt to make them change their mind. For example, when a user is trying to unsubscribe from a newsletter, some services might include an extra step in the process, stating "Are you sure you want to unsubscribe?", perhaps combined with additional information persuading the user to stay. By introducing the extra step, the action is made more difficult for the user, and they are also given an opportunity to change their mind. Although both encouragement and constraint can be effective in influencing behaviour, designers should be mindful of reactance; when people feel that their freedom to choose an action is under threat. Reactance is an unpleasant feeling, which can also increase people's motivation to perform the threatened behaviour (Changing Minds, 2019).

The two dimensions presented here was inspired by Dan Lockton's *Design with Intent* toolkit. In his toolkit, Lockton uses eight lenses, representing different disciplinary "worldviews" or fields of research, as a loose taxonomy for grouping his 101 design patterns (Lockton, 2010). In Lockton's model of the lenses, the eight categories are shown as eight segments of a square, where two diagonally opposite corners have been labelled *environment* and *mind*. In figure 4.1, *encouragement* and *constraint* have been added to Lockton's model along the other diagonal.
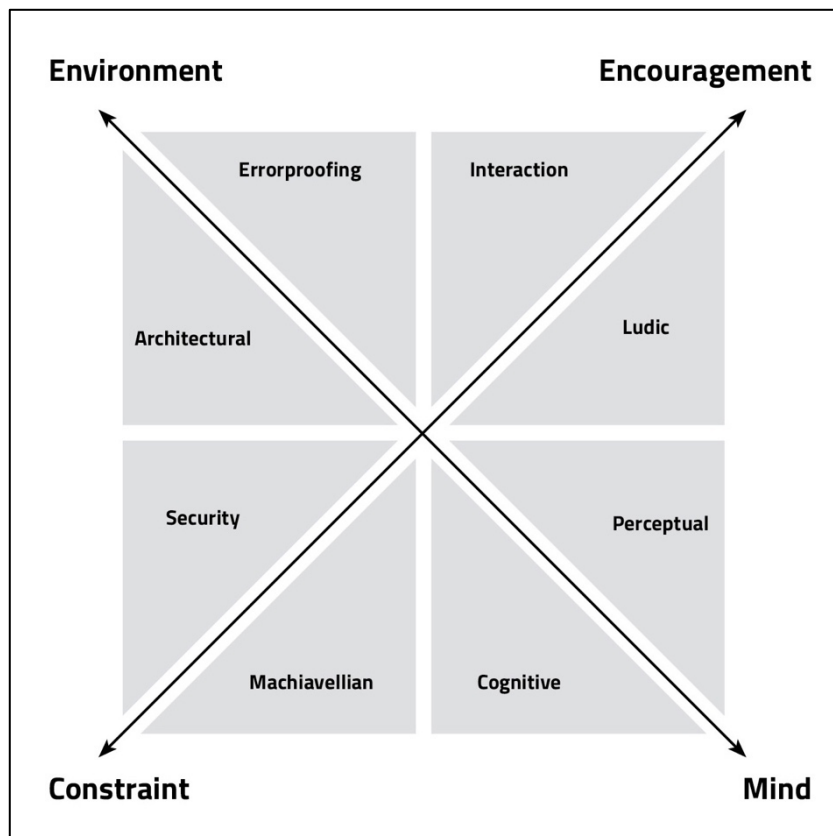
Figure 4.1: Two dimensions (adapted from Lockton, 2010)

4.2 Information Gathering

The information gathering process produced three outcomes; user groups, user personas and scenarios, and user journeys. The purpose of these outcomes was to inform the design decisions with a user-centred approach.

4.2.1 User Groups

As described in part 3.2.1, six groups of gamblers with unique gambling patterns were identified in a study conducted by Auer and Griffiths (2018). In two of the six groups, the percentage of players categorised as "at risk" by *Playscan* was low (0 % and 22 %). Lottery games were more popular among the gamblers in these groups and they were also less active and had lower losses compared to gamblers in the other groups. Because the target audience of the design efforts is gamblers identified as "at risk", it was decided to only create user groups based on the four remaining groups. The four user groups are presented in table 4.3.

For each of the four user groups, age, gender and preferred games are stated. *Gain/loss past week* describes the average amount of money lost or gained by users in each group, while *Spends* indicates whether this amount is higher or about the same as gamblers within the corresponding user groups expect. Average values for playing days the past month, the percentage of players who have previously used voluntary exclusions and the percentage of players in the groups identified as "at risk" by *Playscan* are also included.

	User group 1	**User group 2**	**User group 3**	**User group 4**
Age	32	46	49	48
Gender	Male	Female	Male	Male
Preferred games	Casino Games Sports Betting	Scratch Cards (Lottery Games)	Casino Games Lottery Games	Casino Games Sports Betting VLT Gambling
Gain/loss past week (in NOK)	-792	-730	-1591	3195
Spends	More than expected	More than expected	About as much as expected	About as much as expected
Playing days last month	13	14	17	17
Past exclusions	30 %	9 %	40 %	43 %
Playscan: at risk	62 %	100 %	100 %	84 %

Table 4.3: User groups, based on Auer and Griffiths (2018)

User group 3 and 4 are similar, but where users in group 3 have had an average loss of 1 591 NOK over the past week, users in group 4 have had on average won 3 195 NOK in the same period.

4.2.2 Persona Profiles

One persona was created for each of the user groups, with additional information based on risk factors for problem gambling identified in the national survey by Pallesen *et al.* (2016) and information from a number of semi-structured expert interviews.

The top part of the persona profiles (the section with white background) is based on the user groups, including a name and an illustration (gender), age and gambling habits. The centre part of the persona profiles includes motivations and frustrations, a quote and some basic information. The scenarios are presented at the bottom of each persona profile. The design of the persona profiles was constructed so that the left half of the profile could be presented as a simplified version in the first of the two workshops. The full persona profiles were presented in the second workshop. Minor adjustments to the persona motivations, frustrations and quotes were carried out based on the workshop exercises before the final persona profiles were created (see figure 4.2). All four persona profiles are included in Appendix 3.

The personas were shaped to reflect risk factors for problematic gambling behaviour identified by Pallesen *et al.* (2016), which were being single, having a low level of education, low income, and receiving social benefits. Pallesen *et al.* also identified higher risk levels among men than women, younger than older people, and among people born on other continents than Europe, North-America and Oceania. The user groups reflect the gender differences observed by Pallesen *et al.* Age as a risk factor was reflected to a lesser extent, but the original ages from the user groups were kept. As people born outside Norway represents a minority, only one of the personas were given foreign background. The survey was also mentioned in several of the expert interviews. It was, however, also emphasised by several of the interviewees that problematic gambling affects all types of people, from all tiers of society. For this reason, it was decided to randomly select one of the personas to have a job with higher income, living with a spouse. Motivations and frustrations were also aligned with the three pathways model, based on the user groups' preferred games.
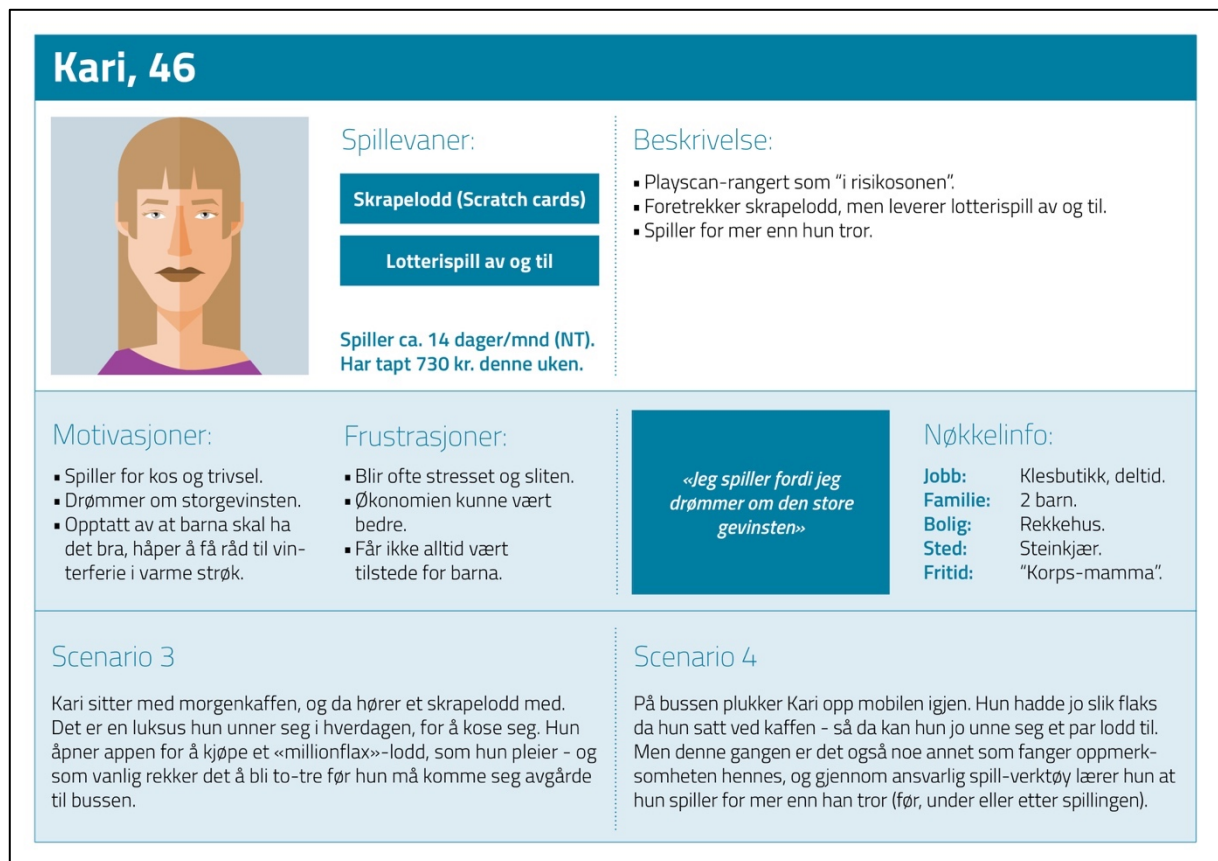
Figure 4.2: Example of full persona profile

4.2.3 User Journeys

Two user journeys were created for each persona, one for each scenario/workshop. The user journeys from the first workshop show each phase of a gambling situation coupled with user actions, thoughts and feelings. Where suggestions for design changes were given, these are also listed (see figure 4.3). User journeys from the second workshop show phases of the gambling situation, coupled with screenshots from NT's mobile application. Suggestions for design changes are also included (see figure 4.4).

Based on the user journeys, a suitable point to introduce design changes within NT's mobile application was identified. For the three personas playing casino games or scratch cards, it was decided to introduce a second "card" after the *game preview* card displayed after a user has selected a game. For the fourth persona who engaged in sports betting, a graphic would be introduced in the list of available games. According to emotions mapped in workshop one, these were stages in the user journeys that users were likely to be in a good mood, increasing the likelihood of them being willing to try an RGT. During a gambling session, it was predicted in the workshops that users would be less willing to use an RGT because they would be consumed by the activity. After finishing gambling, it was also predicted that users would be quick to close the mobile application, possibly not even taking the time to close the game session or log out, making it hard to introduce an RGT after the gambling session.

Scenario 1: Brukerreise Thomas, 32

«Prøver et nytt spill på sofaen»

Thomas liker fart og spenning, men er sliten etter en dag på jobb. Mens han sitter på sofaen tenker han at han vil spille litt, og siden han ikke har PC-en i nærheten åpner han Norsk Tipping sin app på mobilen. Han ser et av de nye hjulspillene, og bestemmer seg for å prøve det.

Påvirkningsfaktorer:
- Spiller for mer enn han tror
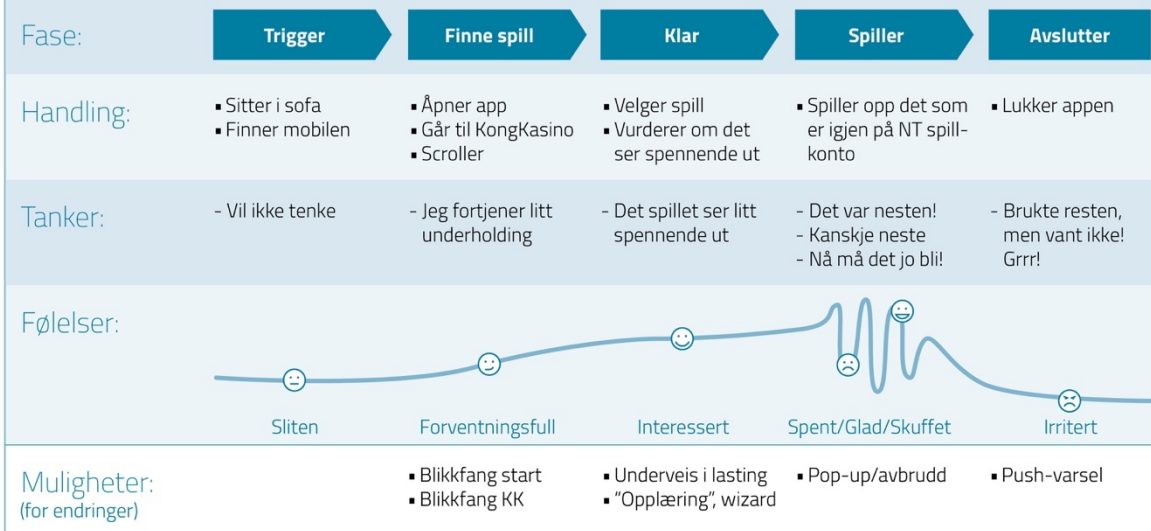- Konkurransemenneske
- Ganske ung spiller

Fase:	Trigger	Finne spill	Klar	Spiller	Avslutter
Handling:	• Sitter i sofa • Finner mobilen	• Åpner app • Går til KongKasino • Scroller	• Velger spill • Vurderer om det ser spennende ut	• Spiller opp det som er igjen på NT spill-konto	• Lukker appen
Tanker:	- Vil ikke tenke	- Jeg fortjener litt underholding	- Det spillet ser litt spennende ut	- Det var nesten! - Kanskje neste - Nå må det jo bli!	- Brukte resten, men vant ikke! Grrr!
Følelser:	Sliten	Forventningsfull	Interessert	Spent/Glad/Skuffet	Irritert
Muligheter: (for endringer)		• Blikkfang start • Blikkfang KK	• Underveis i lasting • "Opplæring", wizard	• Pop-up/avbrudd	• Push-varsel

Figure 4.3: Example of user journey, first workshop

Scenario 2: Brukerreise Thomas, 32

«Kjeder meg… igjen!»

Et par dager senere plukker Thomas opp mobilen igjen mens han sitter på sofaen etter trening. Men denne gangen er det også noe annet som fanger oppmerksomheten hans, og gjennom ansvarlig spill-verktøy lærer han at han spiller for mer enn han tror (før, under eller etter spillingen).

Påvirkningsfaktorer:
- Spiller for mer enn han tror
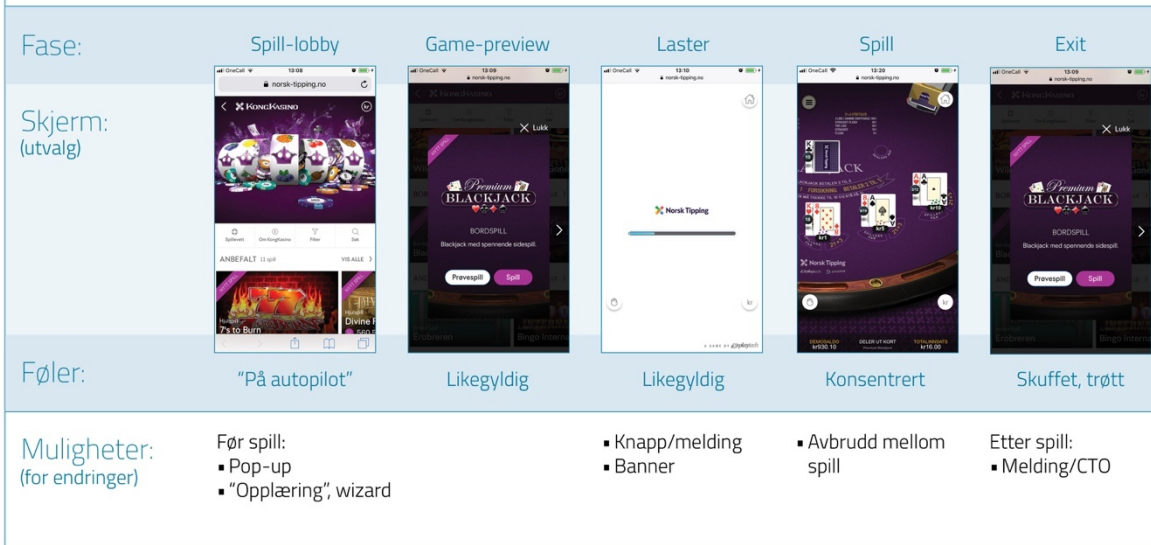- Konkurransemenneske
- Ganske ung spiller

Fase:	Spill-lobby	Game-preview	Laster	Spill	Exit
Skjerm: (utvalg)					
Føler:	"På autopilot"	Likegyldig	Likegyldig	Konsentrert	Skuffet, trøtt
Muligheter: (for endringer)	Før spill: • Pop-up • "Opplæring", wizard		• Knapp/melding • Banner	• Avbrudd mellom spill	Etter spill: • Melding/CTO

Figure 4.4: Example of user journey, second workshop

31

Until a gambling session has been initiated by the user, NT's mobile application does not require the user to log in. If a user is not logged in, the mobile application cannot detect if the user is among the intended target audience and customize the design for them, let alone present personalized information or individual RGT settings. For the three first personas, this means that they would not necessarily be logged in before continuing from the game preview screen. This contributed to the decision of introducing the new design at that point. For the fourth persona, no similar game preview screen allowed for an extra card to be introduced just before gambling. Instead, it was assumed that a gambler taking part in sports betting would be likely to place multiple bets in one gambling session, in line with the scenarios written for this persona. The tailored design could then appear when they returned to the list of games (or bets), after logging in to place their first bet.
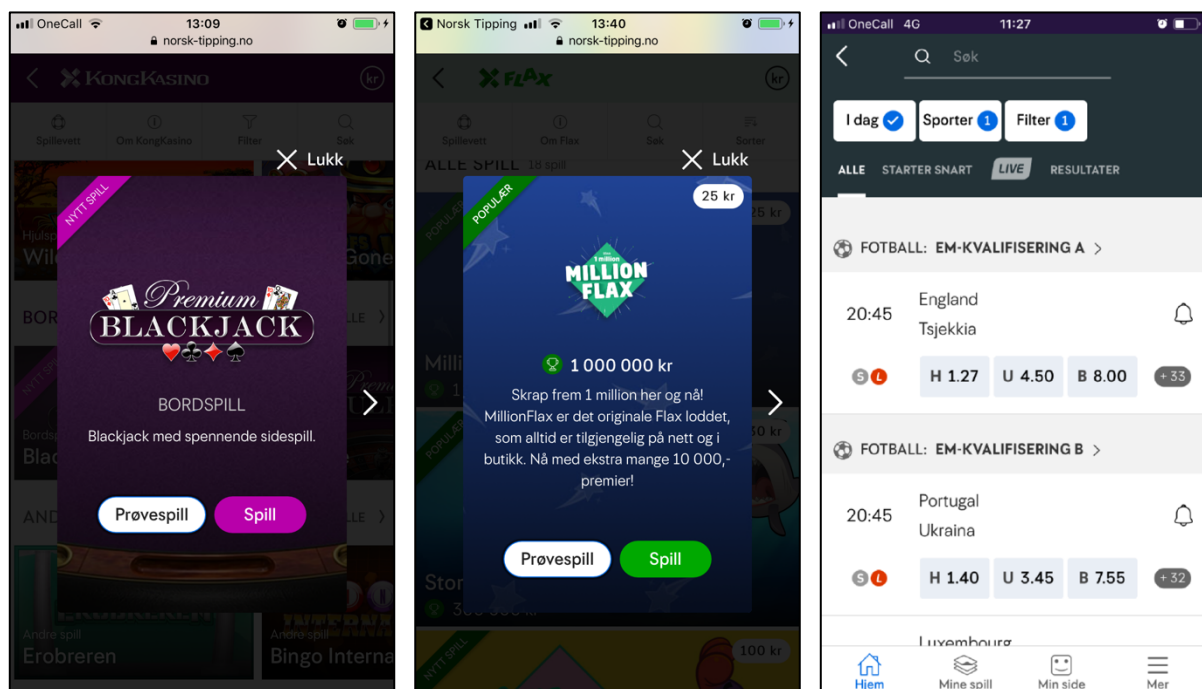

Figure 4.5: Original designs (Norsk Tipping AS, 2019)

After selecting where to introduce design changes, the original designs where design changes would be introduced to the mobile application was very similar for three of the four. Because both the first persona and third persona played a casino game, and the third and fourth persona were based on similar user groups, it was decided to continue the design process without the third persona. The final three original designs that were further considered in the design process are shown in figure 4.5.

4.3 Design Suggestions

For all design suggestions, a BT was introduced to the users as an opportunity for acquiring information. BA and IA were increased by providing easy access to the information (one touch of a button), following platform conventions, and by phrasing the associated call to action-copy positively. A strategy from each level of persuasion was selected for persuading to use the RGTs: Personalization, to increase perceived credibility (BH), social comparison, to introduce consensus (SH), and attractiveness (based on

preferred games), to increase liking (IH). Different combinations of these three were used in the designs. Only design suggestions for the first screen giving users the opportunity to use an RGT were created. It is therefore possible to see the design suggestions as primarily facilitating persuasion that will take place in the next step.

In figure 4.6, three design suggestions for the game previews are shown. In the design to the left, the user is offered an opportunity to see personalised information regarding how much they have spent on gambling, and their gambling-limits (BH). In the centre design, this is combined with an offer to compare their information with gamblers playing the same game types (scratch cards, BH + SH). In the design to the right, the user is offered to see the average gambling limits and amount of money spent by gamblers playing the same game types, with the design being adjusted to match the design of the game type they are playing (casino games, SH + IH).
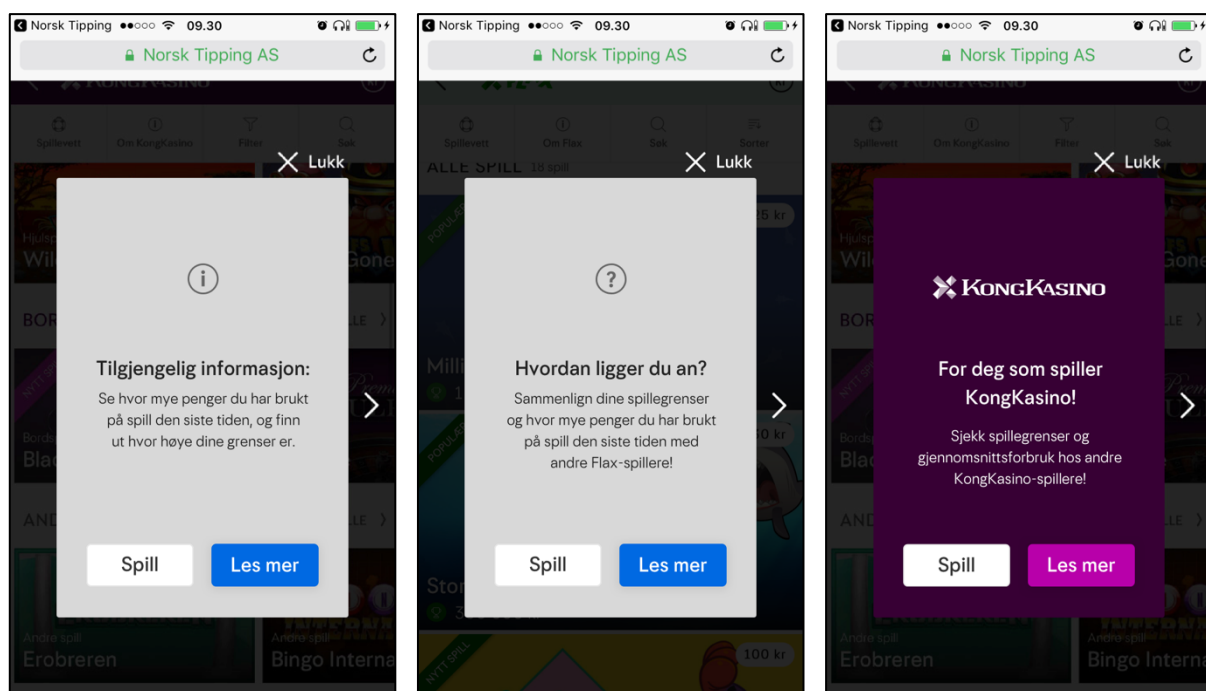

Figure 4.6: Selected design suggestions game preview

Three designs using the same persuasive strategies for the fourth persona is shown in figure 4.7. In the design to the left, the user is made aware that information is available (BH). In the centre design, the user is offered to compare their information with other sports betters (BH + SH). In the design to the right, the user is invited to see the average gambling limits and amount of money spent by other sports betters, with a design that have been adapted to look more like NT's sports betting games (SH + IH).

Designs combining all three levels of persuasion were also created for each of the three personas (see figure 4.8). More design suggestions are included in Appendix 5.
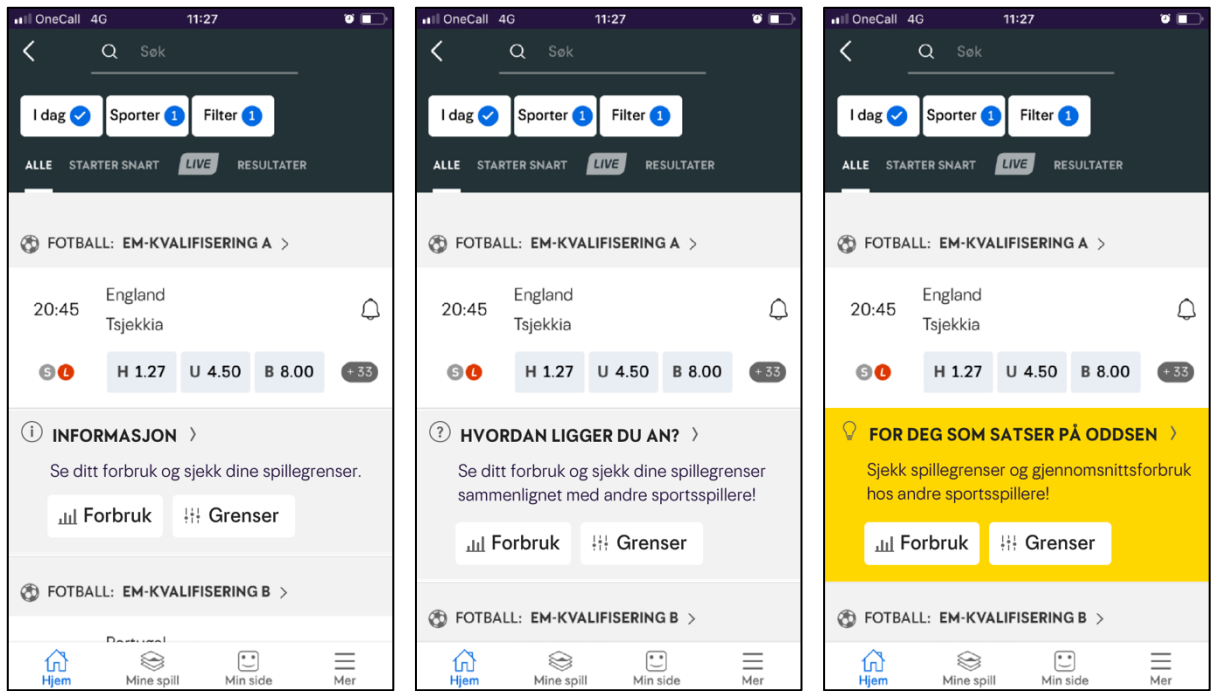
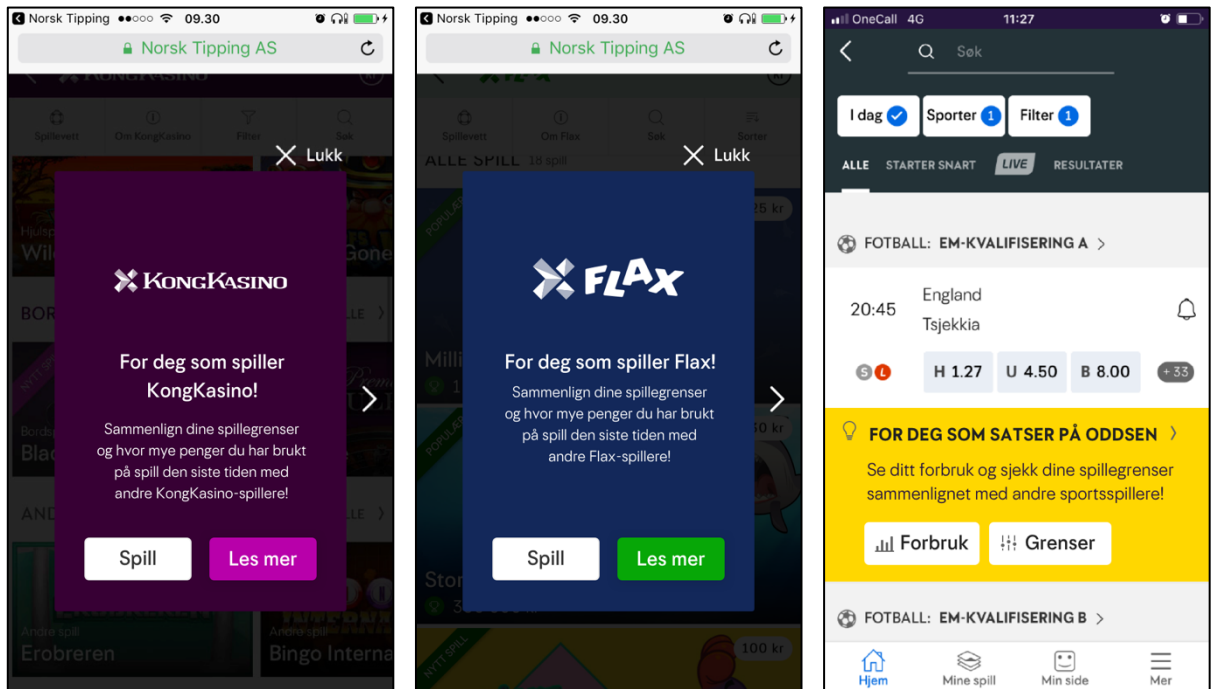**Figure 4.7: Selected design suggestions sports betting**

Figure 4.8: Design suggestions combining all three levels of persuasion

4.4 Ethical Considerations

Even with the best intentions, the design of products and services can lead to negative outcomes. In the following section, some of the ethical implications of designing with persuasive strategies are considered. This is continued by a section considering design for gambling services, both in terms of the gambling services themselves, and for prevention of problem gambling.

4.4.1 Ethical Persuasion

Persuasive strategies can be applied in ways that potentially have great influence on people's emotions, beliefs and actions. In a sense, persuasion is therefore a type of manipulation. If asking whether persuasion through design is *good* or *bad*, the popular answer is clear but perhaps a little unsatisfying: *It depends*.

As noted by Fogg, Persuasion is a value-laden activity. If used to promote outcomes that we as a society find unacceptable, to deceive or otherwise compromise values that we regard as positive, persuasion is undoubtedly unethical (Fogg, 2003). Through persuasion, users can be lured into doing things they would not otherwise have wanted to do. When used irresponsibly, persuasive products can produce bad habits, that "quickly degenerate into mindless, zombielike addictions" (Eyal, 2014, p. 11).

If negative effects of persuasion are to be avoided, designers must be aware of the ethical implications of their work. However, it is important to note that this does not simply involve avoiding persuasive strategies: Persuasion can, if applied ethically, be of great value for both consumers and providers alike. Just as the opposite is true, persuasion can be utilized to promote positive social goals; like health, safety and education. Manipulation or deception can be argued to be positive if it is in the user's best interest, or they have given implicit consent (Nodder, 2013). When aligned with user needs and user goals, persuasion can support users in meeting their needs and achieving their goals. A user-centred approach in design will as such be beneficial to understand how persuasion can be applied ethically.

As all persuasion is intentional, it can be useful to examine the underlying intention of a persuasive product or service for assessing its ethical implications. However, products and services can also be unethical by other means. As suggested by Fogg (2003), in addition to the intentions, the methods used for persuasion and outcomes of a persuasive technology are also areas worthy of inquiry. Some methods of persuasion can be questionable or directly unethical, and outcomes can diverge from the product or service's intention. Even if unexpected, outcomes are the designer's responsibility: "Creators of persuasive technology must take responsibility for unintended unethical outcomes that can reasonably be foreseen" (Fogg, 2003, p. 229).

There should be no doubt that the use of persuasive strategies can go too far. Center for Humane Technology (2019b) argues that the technology platforms of today have been caught in a race for human attention, resulting in addiction, social isolation, outrage, misinformation, and political polarization. They claim companies are using technology to exploit human nature, or *downgrading humans*, calling for a more humane approach to technology that instead embraces and supports human nature. While repeated engagement may serve as an indicator of user satisfaction, it is important to remember that other priorities can contribute to building user preference for a product or service. As formulated by Shariat and Saucier, "people appreciate more than delight. People appreciate kindness, respect, honesty and politeness as well" (2017, p. 107). This

humane approach is better aligned with the values of our society than exploitation and concealed manipulation. Consequently, it can be argued that combining a human-centred approach with a humane attitude is a worthy strategy for applying persuasion in an ethical manner.

4.4.2 Ethical Gambling Services

Gambling can offer entertainment; it can excite and engage. It can be an effective means for generating funds, like in the case of NT: for ideal organizations, sports and culture. However, gambling can also lead to serious problems. For designers working with the creation of gambling services, it is important to keep both sides in mind.

In the design of a product or service, it is often natural to take a positive view of the challenge ahead; what will the customers love, what will increase the sales, how can we become the best among our competitors. As argued by Shariat and Saucier (2017), designers often fail to design for user failure, because their goals are always positive; to bring value, joy and create delight. In a gambling context, designers must as such be careful not to forget the potentially harmful sides to gambling, and that their designs can contribute to them.

One approach to limit the negative effects of gambling services is to introduce RGTs that support users to make better gambling choices for themselves. However, RGTs alone is not enough; a gambling service can be highly unethical in its design even if RGTs are available. Consider, for example, a gambling service that targets problem gamblers through direct marketing. This is a vulnerable group that will have limited capacity to resist the urge to gamble if they are offered an opportunity, even if they have access to RGTs. This tactic would likely be beneficial for the gambling provider, but harmful to the user. Similarly, a gambling service could also target a group that is vulnerable to developing gambling problems, as they have a potential for generating large incomes to the company. These are both examples of exploiting vulnerable groups, which, as argued by Fogg, would make the product unethical (2003). In a gambling context, it is therefore important that designers are aware of their users' vulnerabilities in order to minimize harm caused by problem gambling. For example, as young age is known to be a risk factor for developing gambling problems, an age limit could be introduced - as it has been done in the (regulated) Norwegian gambling market (Meld. St. 12 (2016-2017)).

When designing specifically to prevent problem gambling, the goal is to stop an unhealthy behaviour before a serious gambling problem can evolve. Prevention is ethically preferable over damage control; both because it will limit the amount of harm that users will be exposed to, but also because it takes less effort from the user to change. Habits can take time to build, but once in place, they can be difficult to break – similar to a gambling problem.

Problem gambling is a sensitive subject, both due to its severe effects and social stigma. In a user-centred design process where at-risk or problem gamblers are to be involved, this introduces two ethical challenges: First, users may be hard to recruit and unwilling to participate. Second, specific care must be taken not to bring harm to the users, and to protect their personal information. It can be tempting to argue that when faced with a challenge as serious as problem gambling, the means will justify the end. However, dealing with a difficult challenge does not excuse unethical design, and there is almost always an ethical alternative to explore. Instead, designers should search for ethical

solutions, and are as such urged to use persuasion ethically, always – in intents, methods and outcomes – also in the prevention of problem gambling.

NT have a dominant position in the Norwegian gambling market. Although responsibility is NT's top priority, they are also responsible for channelling users to their services, and away from the unregulated gambling market. As competition from the unregulated market has increased, their identity as a responsible gambling provider might be under threat. In order to appear as an attractive alternative among their competitors, NT relies on advertising to promote their services. They also offer high-risk games like casino games that are similar to those of their competitors. Channelling represents a difficult dilemma, as attracting customers and preventing problem gambling can seem contradictory. Some might consider channelling efforts as incompatible with NTs obligation to offer gambling services in a responsible manner, but on the other hand, excluding certain game types and reducing advertising for NT would probably have minimal effect on problem gambling prevalence in the Norwegian population when the unregulated gambling market can readily replace it. However, through continued efforts to support responsible gambling, it is a possibility for NT to use responsibility as a marketing argument to a larger extent than they do to today. Only offered as a suggestion, advertisements could, for example, include information about which gambling operators that can legally offer their services in Norway: According to Anne Mette Hjelle in the Norwegian Gaming Authority, this is something that many Norwegians are unsure about, and could influence their choice of gambling provider (NRK TV, 2019). Information that educates users about common misunderstandings about gambling could also be used in advertisements. This way, NT could support responsible gambling in their own channels, inform "external" gamblers that may not otherwise benefit from NTs responsibility efforts, and strengthen their image as a responsible gambling provider.

When designing for services that can potentially cause harm, designers must be aware of the outcomes of their creations. Yet, as illustrated by the case of gambling in Norway, simply removing a problem from your own platform might not contribute much to solving the problem elsewhere. Instead, using persuasive design in existing channels in new and innovative ways can create new opportunities to support ethical goals; whether it includes improving existing services such as RGTs, reinventing how a service is marketed, or something completely different.

The intention of this project has been to support prevention of problem gambling through the promotion of RGTs. Due to the unwanted effects that problem gambling can have on both a personal and societal level, the intention was evaluated as ethical. The methods used rely on users voluntarily choosing to use RGTs, not force or threats. The information users would be presented with would be unbiased and based on NTs *Playscan* data. The designs were also created carefully not to accuse users to be problem gamblers or framing them as having negative gambling patterns. Although the designs do not explicitly state that they are created to prevent problem gambling, they describe what information the user can expect to retrieve. The methods used were therefore also considered to be ethical. Evaluating possible outcomes, the results would be ethical if more users choose to use RGTs. It is also possible that the designs could cause annoyance, but unlikely to a degree that could be considered unethical. The designs were evaluated as having little risk of facilitating excessive RGT use. An outcome that would be unethical, is if presenting users with their tracing data as compared with others could spark a competitive motivation to have higher spending or gambling limits than "the average gambler". This should be kept in mind in a further development of the designs,

while testing the designs with users before implementation could reveal if the concern is legitimate. Finally, while it was considered unlikely that the designs could reduce RGT use, it is possible that the designs could have little or no effect. In this case the designs could be argued to be unethical, in the sense that they do not provide any value. In this case, it is suggested that the designs should be changed in an attempt to improve their effect or be removed.

4.5 General Discussion

The final design suggestions demonstrate how different persuasive strategies can be implemented in an existing product, in different combinations, to persuade users to carry out a specified behaviour.

It is possible that different categories or combinations of persuasive strategies will be more effective for some user groups than others. However, until further user testing or user research is carried out, it is difficult to predict which strategies would match which user groups. It is therefore suggested that using a combination of strategies from all three levels of persuasion in one design (as shown in figure 4.8) might be the most favourable at the current time. If a link between a user group and a category of persuasive strategies can be made at a later point, it should be considered to create new design suggestions that instead incorporate several persuasive principles from the given category.

The design suggestions created in this project only scratch the surface of what could be done to persuade gamblers to use RGTs. First of all, the design suggestions are incomplete; a better demonstration of persuasive strategies could have been achieved if the designs also included *how* the RGTs themselves could be presented, and not only the invitation to use them. It could be argued that the suggested designs are merely *triggers,* and that persuasion would only happen in the next step. Further, the logic of how RGT's would be offered to users are only partially considered; while a specified target audience and placement within the mobile application have been described, how often and how many times the designs should potentially be presented to users have not been examined. A change of tactics if the user ignores the invitation to use RGTs after a given period could also have been considered. In addition, not enough time was spend considering different persuasive strategies to apply in the design suggestions. This part of the design process represents an important stage for creative development, that due to time constraint were limited to simply selecting three strategies to represent the categories. Although the strategies represent the three levels of persuasion, they might not fit too well within the *heuristics* opportunity, and there might be other strategies that would have been better suited to demonstrate the different categories for persuasion. If new design suggestions should be produced, utilizing persuasive strategies to persuade users to make use of RGTs, the process of selecting persuasive strategies should be given more time and consideration.

The design suggestions are a first draft, that would have to be user tested and adjusted before they could be implemented in the mobile application. This would of course also include completing the designs by including the RGTs and how they would be presented, in addition to considering the logic of when they should be presented. In order to conclude if persuasive strategies really can be effective in influencing users to make use of RGTs, and if certain strategies will be more efficient than others, designs would have to be tested in a real-life situation with real users.

The *Persuasive Strategies Matrix* was used to identify which categories of persuasive strategies to apply in the design project, yet considerable effort could still have been put into identifying specific strategies to apply. Unfortunately, this left much to be desired from the framework in the current project. With limited available time, the three first strategies that were found to somewhat fit the categories were selected. Although the resulting designs could be argued to somewhat demonstrate the selected categories of persuasion, having a list of persuasive principles corresponding to each category to choose from would have been very useful to spark creative idea generation. While the *Persuasive Strategies Matrix* was applied to a specified part of an existing design in this project, there might be different contexts where the matrix could be put to use. For example, pairing the matrix to a user persona, instead of a design, might be an interesting approach to tailoring a service to a user group.

The user groups were directly based on data sourced from a previous study by Auer and Griffiths (2018). While the participant sample in Auer and Griffiths study corresponded to the description of the intended target audience in this project, their method for identifying groups of gamblers (based on whether the gamblers experienced cognitive dissonance or not when presented with data on how much money they had actually spent) may or may not be relevant for this project. Knowing if a user spends more than they expect, or about as much as they expect, can be used to inform which type of RGT they should be introduced to. For example, if a player spends more than they expect, showing them their net win/loss for a specified period (like NT's Spillregnskap) might be sufficient to motivate them to change their gambling patterns. If a player spends about as much as they expect, persuading them to adjust their gambling limits (using limit-setting tools) might be more appropriate. However, in a real-life setting knowing what users *believe* they spend on gambling is hard, meaning that other preconditions might be more realistic to employ when tailoring content for users. With the same participant sample, using a different precondition for grouping users (like gender, age or preferred games) would likely have resulted in different gambler groups.

After incorporating data from the user groups, the user personas were written to reflect general risk factors associated with problem gambling, motivations for gambling and vulnerability factors, but also that people from all layers of society can be affected by problem gambling. Although vulnerability factors can be linked with preferred game types to some degree, the majority of the other persona information was assigned without knowing how well it corresponded to users within the different user groups. It could be argued that because all users are unique, no single persona could possibly represent all traits of users within a user group, leaving some room open for interpretation. Yet, personas should represent a *typical* user from its user group. Applying general traits from a larger population is unprecise and does not express differences between user groups, in turn reducing the validity of the user personas. Further, the user scenarios were written based on the user personas and their gambling patterns, but without knowing if the situations described were realistic for users from the user group. Interviews or observation of users, even just a few, could have reduced the described uncertainties.

The eight user journeys were created based on workshops in a constructed environment, with workshop participants that did not belong to the target audience. Based on the four user personas, the workshop participants were asked to suggest what actions, thoughts and emotions the users might have, as they went through the scenarios. Although user personas can be great tools to keep the end users in mind during a design process, they might not be enough to describe realistic user journeys. Again, user observations or user

testing, for example having a user "think aloud" while walking through tasks similar to those described in the scenarios, could have informed the final outcomes considerably.

Within the scope and limited time frame of a master thesis, the design process was not carried out as thoroughly as it could have been. However, the *Persuasive Strategies Matrix* was created and put to practical use in the design of a number of design suggestions for NT's mobile application. The project also resulted in several suggestions for further research (see part 4.7). With some additions and further development, the author believes that the *Persuasive Principles Matrix* can become a useful tool for designers wanting to use persuasive principles. Although it is recognised that the lack of direct contact with users might have had a negative impact on the project outcomes, user personas were experienced as being useful tools for keeping the end users in mind throughout the design process. Considering how user research with the very particular target audience of this project would require considerable effort and time, making use of somewhat constructed user personas and user journeys might be an acceptable approach; at least if the alternative would be to omit users altogether.

The goal of the design efforts was to support prevention of problem gambling, intervening before a serious gambling problem can develop. By international standards, Norway and NT are leading actors in the implementation of RGTs (Meld. St. 12 (2016-2017); Norsk Tipping, 2019), and as specified for this project in part 1.2, RGTs are assumed to be effective instruments to reduce problem gambling. In this context, it makes sense to investigate how persuasive strategies can contribute to increased voluntary use of RGTs. From a persuasive perspective, having users voluntarily make use of RGTs, as opposed to being forced to do so, is especially interesting. This is due to the forces of consistency and reactance, which both depend on personal choice. If a user can be persuaded to use an RGT once, there is reason to believe they will be more willing to use it again, more likely to accept limitations they enforce themselves, and less likely to respond with reactance.

Persuasion is all about appealing to system one in the mind, using the same methods as those employed in gambling games to create captivating experiences. Much of the time though, the role of RGTs are to support rational decision making (the first strategy described in part 2.2.1, which requires engaging system two). Although the design of RGTs has not been directly investigated in this project, it is possible that introducing persuasive principles within the tools could increase their appeal and effect. For example, emotionally engaging simulations could show users how much they could save by adjusting their gambling limits, or a reward system could be introduced to promote use of the tools. Yet, there might be different approaches to preventing problem gambling through persuasion that does not include the use of RGTs - at least not directly. Here, we should remember that the underlying problem is not that few people use RGTs, but that some users develop unhealthy gambling habits. It could therefore be useful in future design projects to consider how gambling habits could be changed through persuasion directly, and not just via RGTs. In any case, tracking user behaviour is an indispensable resource for identifying gamblers at risk of developing a gambling problem. RGTs such as *Playscan* are incredibly useful tools for identifying user needs and can contribute to tailoring and personalizing of content.

4.6 Limitations

This master thesis and its results are subject to a number of limitations. Beginning with the *Persuasive Strategies Matrix*, only a small selection of persuasive theory was used as

a foundation for its creation. A fuller review of existing literature in relation to the matrix might have led to a different rendering. Further, the matrix was only applied practically for one design project, for a very specific context. This leaves a very limited foundation for making an assessment of its utility. In its current form, the *Persuasive Strategies Matrix* also requires its users to have prior knowledge of different persuasive strategies. Only describing *categories* of persuasive principles, users are left to identify *specific* persuasive categories, in addition to how they should be put to use.

As described by Shariat and Saucier (2017), the power of user-centred design lies in studying, researching and really understanding users before designing anything, ensuring that resulting designs aligns with user needs and motivations. Although effort was put into researching the intended users, no part of the project included direct communication with actual potential users. Important insights and nuances with implications for design decisions can be discovered through direct user research (like interviews or field observations), but instead much of the design process have relied on "best guesses" based on constructed user personas and user journeys. Realistically, a "best guess" approach will to some extent be biased, reducing the validity of any resulting outcomes.

The limited time and scope of a master thesis only allowed for a partial investigation of possible design outcomes in the design process. The design suggestions do not show the complete extent of the design changes that would have been required with the suggested approaches, and a broader selection of persuasive design strategies could have been considered in the design process. In order to better evaluate the effect of persuasive design strategies, the design suggestions should also have been tested in a real-life situation.

4.7 Suggestions for Future Research

Based on the research themes and project outcomes in this master thesis, several suggestions for future research are proposed: A broader literature review of persuasive design could be carried out to evaluate, or possibly validate, the structure of the *Persuasive Strategies matrix.* Further, a useful addition to the matrix for practical design work would be a list identifying different persuasive strategies for each of the eighteen categories. If possible, this could be accompanied by examples of the strategies used in designs. Further, the *Persuasive Strategies Matrix* could be employed in more design projects, to better evaluate its utility. The matrix could be applied in a similar manner to what it was in this project, as a tool for selecting strategies in relation to a specific part of a design product. A different possibility (as proposed in part 4.5) is to use the matrix to a persona, to describe how the user could be persuaded to change or carry out a behaviour.

Regarding responsible gambling in online channels, one suggestion for a future design project could in this context be to consider a broader selection of persuasive strategies to persuade users to make use of RGTs. An interesting approach could be to compare the effect of persuasive strategies from different levels of persuasion from the *Persuasive Strategies Matrix*, and several levels combined. While this project focused on supporting responsible gambling through increased use of RGTs, another suggestion for a future project could be to focus on how users could be persuaded directly to change their gambling patterns, with or without the support of RGTs. To better understand what effect persuasive strategies might have in a responsible gambling setting, persuasive design suggestions should be tested in real-life situations. For example, NT could conduct A/B testing of persuasive designs in their mobile application. This should naturally include

complete designs and implementation logic. Designers are also urged to include real user representatives in future design projects.

5 Conclusion

Problem gambling and persuasion are both complex areas of investigation, where new technology have played an important role in recent developments. New technology offers new opportunities for innovative digital services, new gambling markets and increased persuasion through design, however, there are also concerns as to whether new technology can contribute to unhealthy addictions, both in gambling and elsewhere. Combining gambling and persuasion, this project investigated how persuasive strategies can be employed in an effort to *prevent* problem gambling, aided by new technology.

RGTs are increasingly used by gambling providers as a means to prevent problem gambling. RGTs are often directed toward the conscious and rational mind, system two. By applying persuasive techniques to RGTs, it is possible that increased engagement of the unconscious, intuitive system one can contribute to an increased appeal and effect of such responsible gambling initiatives. This could be done through how the tools are presented to the users (like it was in this project), or it may be done within the design of the RGTs themselves.

The *Persuasive Strategies Matrix* was created as a means for selecting which persuasive strategies to apply in the suggested designs. Built on a foundation of theory from the authors Fogg, Cialdini and Eyal, the eighteen categories of the matrix did provide some assistance in the selection process, although it might be beneficial to develop the system further. By adding a selection of different strategies for each of the eighteen categories, it is believed that the *Persuasive Strategies Matrix* can be of high interest for other designers too.

The design suggestions show how different persuasive strategies could be utilized in a design within NT's mobile application. Knowing how powerful persuasion can be in influencing human behaviour, it can be a promising approach to increase the use of RGTs. However, a complete design should be produced and tested with users, before any conclusions about the effectiveness of such an approach can be reached. Testing may also be carried out to identify if certain categories of persuasive principles can be more effective than others in increasing RGT use among specific user groups.

Problem gambling can be a sensitive subject, which complicates the process of involving users in the design process. Although involvement of users would be preferable, user personas served as a helpful strategy for keeping the end user in mind throughout this project. Both designers working on gambling services and designers using persuasive strategies should be aware of the ethical implications of their work. In the case of this project, a designer would be doing both! Persuasive technology can be effective tools for influence, but designers should be aware of why and how they harness its power.

The project was subject to a number of limitations. Importantly, only a small selection of theory was used in the creation in the *Persuasive Design Matrix,* and the design process did not involve any users from the specified target audience. Additionally, the thoroughness of the design process was compromised to realistically fit within the scope of a master thesis, and for the same reason, the project outcomes were only evaluated on a theoretical level. However, the design suggestions were created with users in mind and illustrates their intended purpose. With some further development, it is believed that

the *Persuasive Strategies Matrix* could also become a useful tool for designers that wish to utilize persuasive strategies in their designs.

For future research, it is suggested that the *Persuasive Strategies Matrix* could be further tested, evaluated and developed. In addition, it is suggested that designs using persuasive strategies to support prevention of problem gambling in digital channels should be fully realised and tested with users.

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7 Appendices

Appendix 1: Interview Guide

Appendix 2: Persuasive Strategies Matrix

Appendix 3: User Personas

Appendix 4: User Journeys

Appendix 5: Design Suggestions

Appendix 1: Interview Guide

Dato	**Hvem, forening** Tittel
Del	**Spørsmål / probes**
Ice.	**TLF: Hvor befinner du deg?** Hvordan er været der? **Hvor lenge har du jobbet her/med dette?** **Kan du bekrefte navn og tittel for meg, så jeg har det helt riktig?**
	I dag håper jeg å lære om pengespillproblemer og verktøy for ansvarlig spill sett fra deres perspektiv. For dette intervjuet ønsker jeg ikke at du uttaler deg som privatperson, men som representant for stiftelsen/bedriften. Er det greit for deg/dere om jeg tar lydopptak? Det er kun for mitt eget bruk for å ta notater. Det er mulig at intervjuet vil refereres i min oppgave. Hvis det blir aktuelt å benytte direkte sitat vil jeg ta kontakt.

Intro.	**Hva er spilleproblemer?**
	      Bruker dere noen spesifikke definisjoner?
	      Er noen oppførsel eller handlinger typiske for de med spilleproblemer?
	
	Hvilke konsekvenser har pengespillproblemer?
	      På personlig nivå?
	      I samfunnet?
	
	Hva er deres rolle for noen med pengespillproblemer?

Key 1	**Hvem får problemer med pengespill?**
	      Alder/kjønn
	      Familiesituasjon
	      Utdanning / Yrke / Interesser
	      Finnes det en sammenheng med gaming?
	      Finnes det typiske "spilleavhengige"?
	
	Hvordan oppstår pengespillproblemer?
	      Kan hendelser trigge spilleproblemer?
	      Er det omstendigheter som kan gjøre spillere ekstra sårbare?
	      Spiller sosiale normer / gruppeinteresser en rolle?
	
	Gir noen spilltyper høyere risiko for å utvikle spilleproblemer enn andre?

		Er noen spill spesielt populært hos noen "typer" spillere?
		Casino, Lotto, Oddsen, Bingo,
		Online/offline
		
		Hvilke elementer av et pengespill øker risikoen for pengespillproblemer?
		Hvor viktig er:
		    Reklame, synlighet / oppfølging, påminnelser
		    Funksjoner: Gevinststørrelse, hyppighet spill og gevinst, bonuser,
		    Form/utseende: Farger, lyd, lys, form, personlighet/emosjonell, taktilt...

Key 2		Internett og digitale flater: Har åpnet en ny verden av pengespill og tilgjengelighet.
		Har dere merket noen effekt av dette?
		    Flere eller færre med problemer? Større eller mindre problemer?
		    Andre typer problemer enn før?
		
		Er det noen spesielle triks som brukes for å hekte spillere online?
		    Tilgjengelighet, oppfølging, påminnelser
		    Funksjoner: Gevinststørrelse, hyppighet spill og gevinst, bonuser,
		    Form/utseende: Farger, lyd, lys, form, personlighet/emosjonell, taktilt ...
		
		Hva mener dere at tilbydere av pengespill i digitale kanaler kan gjøre for å forebygge pengespillproblemer?
		
		Hva mener dere om verktøy for ansvarlig spill?
		    Kjenner dere til verktøy for ansvarlig spill?
		    Fungerer de?
		    Ønsker spillere å bruke dem?
		
		Har dere noen tanker om hvordan ny teknologi kan benyttes til å forebygge pengespillproblemer?
		    Personlig identifikasjon?
		    Øke bruk av verktøy for ansvarlig spill?
		
		Tror dere kanalisering av spillere til lovlige aktører eller strengere regulering er mest effektivt for å forebygge pengespillproblemer?

Sum		**Av det vi har snakket om i dag, hva mener dere er det viktigste tiltaket for å forebygge pengespillproblemer?**
Slutt		**Er det noe vi ikke snakket om som dere synes er viktig?**
		Kan jeg få lov til å sende den til dere? Til hvem/epost? **Har dere noen spørsmål til meg?**
		Det var alt jeg hadde, takk for at du/dere ville delta!

Appendix 2: Persuasive Strategies Matrix

Persuasive Strategies Matrix, Descriptions

		Opportunities for persuasion					
		Trigger	**Ability**	**Motivation**	**Heuristics**	**Reward**	**Investment**
Levels of persuasion	**Ideal**	Ideal trigger	Confidence and fit	Liking	Ideal shortcuts	Progress	Self-investment
	Social	Social trigger	Social deviance	Consensus	Social shortcuts	Community	Social investment
	Basic	Basic trigger	Resources and effort	Credibility	Basic shortcuts	Commodity	Basic investment

Persuasive Strategies Matrix, Codes

		Opportunities for persuasion					
		Trigger	**Ability**	**Motivation**	**Heuristics**	**Reward**	**Investment**
Levels of persuasion	**Ideal**	IT	IA	IM	IH	IR	II
	Social	ST	SA	SM	SH	SR	SI
	Basic	BT	BA	BM	BH	BR	BI

Persuasive Strategies Matrix, Background

		Opportunities for persuasion					
		Trigger **G**	**Ability** **H**	**Motivation** **H**	**Heuristics** **H**	**Reward** 7, **I, J, K**	**Investment** **L**
Levels of persuasion	**Ideal**	30	3, 4, 5, 9, 11, (30), 31, 32, 34,	12, 13, 14, 40, 41, **43, A, E**	**A, E**	10, 42, **I**	**A**
	Social		6	(15) 36, 37, 38, 39, (40, 41) **45, B, C**	**B, C**	10, 42, **J**	15, **B, C**
	Basic		1, 2, 8, 33, 35	16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, **44, D**	**D, F**	10, **K**	

Key:

Fogg's Principles of Persuasive Technologies
Computers as persuasive tools
1 Reduction
2 Tunnelling
3 Tailoring
4 Suggestion
5 Self-Monitoring
6 Surveillance
7 Conditioning

Computers as persuasive Media: Simulation
8 Cause and Effect
9 Virtual Rehearsal
10 Virtual Rewards
11 Simulation in Real-World Contexts

Computers as persuasive Social Actors
12 Attractiveness
13 Similarity
14 Praise
15 Reciprocity
16 Authority

Credibility and computers
17 Trustworthiness
18 Expertise
19 Presumed Credibility
20 Surface Credibility
21 Reputed Credibility
22 Earned Credibility
23 (Near) Perfection

Credibility and the World Wide Web
24 "Real-World Feel"
25 Easy verifiability
26 Fulfilment
27 Ease-of-Use
28 Personalization
29 Responsiveness

Increasing Persuasion through Mobility and Connectivity
30 Kairos
31 Convenience
32 Mobile Simplicity
33 Mobile Loyalty
34 Mobile Marriage
35 Information Quality
36 Social facilitation
37 Social comparison

38 Normative influence
39 Social learning
40 Competition
41 Cooperation
42 Recognition

Fogg/Eyal universal motivators:
43 Pleasure/pain
44 Hope/fear
45 Acceptance/rejection

Cialdini's six principles of persuasion:
A Commitment/consistency
B Reciprocity
C Social proof
D Authority
E Liking
F Scarcity

Eyal's Hooked-model:
G Trigger
H Action
I Rewards of the hunt
J Rewards of the tribe
K Rewards of the self
L Investment

Appendix 3: User Personas

Thomas, 32

Beskrivelse:
- Playscan-rangert som "i risikosonen".
- Spiller for mer enn han tror.
- Har økt spilleaktivitet den site måneden (TL)

Spillevaner:

Oddsen (Sports betting)

Casinospill (Casino Games)

Spiller ca. 13 dager/mnd (NT). Har tapt 769 kr. denne uken.

Motivasjoner:
- Søker spenning og under-holdning.
- Opptatt av å "leve livet".
- Status hos gutta.

Frustrasjoner:
- For få vakter på jobb, ønsker også mer ansvar.
- Blir ofte utålmodig – synes andre er treige.
- Liker ikke hockey-treneren.

«Jeg spiller fordi det er noe vi gutta synes er spennende»

Nøkkelinfo:
Jobb:	Vekter.
Familie:	Single.
Bolig:	Leilighet.
Sted:	Oslo.
Fritid:	Trening, ishockey.

Scenario 1
Thomas liker fart og spenning, men er sliten etter en dag på jobb. Mens han sitter på sofaen tenker han at han vil spille litt, og siden han ikke har PC-en i nærheten åpner han Norsk Tipping sin app på mobilen. Han ser et av de nye spillene, og bestemmer seg for å prøve det.

Scenario 2
Et par dager senere plukker Thomas opp mobilen igjen mens han sitter på sofaen etter trening. Men denne gangen er det også noe annet som fanger oppmerksomheten hans, og gjennom ansvarlig spill-verktøy lærer han at han spiller for mer enn han tror (før, under eller etter spillingen).

Kari, 46
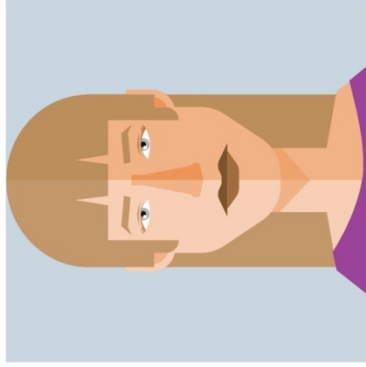
Spillevaner:

Skrapelodd (Scratch cards)

Lotterispill av og til

Spiller ca. 14 dager/mnd (NT). Har tapt 730 kr. denne uken.

Beskrivelse:

- Playscan-rangert som "i risikosonen".
- Foretrekker skrapelodd, men leverer lotterispill av og til.
- Spiller for mer enn hun tror.

Motivasjoner:

- Spiller for kos og trivsel.
- Drømmer om storgevinsten.
- Opptatt av at barna skal ha det bra, håper å få råd til vinterferie i varme strøk.

Frustrasjoner:

- Blir ofte stresset og sliten.
- Økonomien kunne vært bedre.
- Får ikke alltid vært tilstede for barna.

«*Jeg spiller fordi jeg drømmer om den store gevinsten*»

Nøkkelinfo:

Jobb: Klesbutikk, deltid.
Familie: 2 barn.
Bolig: Rekkehus.
Sted: Steinkjær.
Fritid: "Korps-mamma".

Scenario 3

Kari sitter med morgenkaffen, og da hører et skrapelodd med. Det er en luksus hun unner seg i hverdagen, for å kose seg. Hun åpner appen for å kjøpe et «millionflax»-lodd, som hun pleier – og som vanlig rekker det å bli to-tre før hun må komme seg avgårde til bussen.

Scenario 4

På bussen plukker Kari opp mobilen igjen. Hun hadde jo slik flaks da hun satt ved kaffen – så da kan hun jo unne seg et par lodd til. Men denne gangen er det også noe annet som fanger oppmerksomheten hennes, og gjennom ansvarlig spill-verktøy lærer hun at hun spiller for mer enn hun tror (før, under eller etter spillingen).

Felix, 49
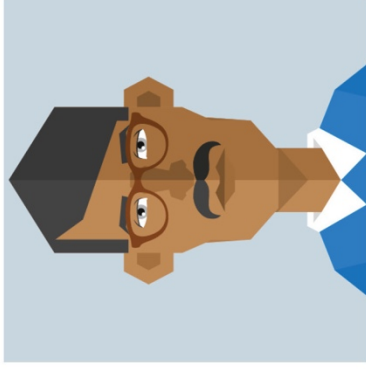
Spillevaner:

Casinospill (Casino Games)

Lotterispill, ganske ofte

Spiller ca. 17 dager/mnd (NT). Har tapt 1591 kr. denne uken.

Beskrivelse:

- Playscan-rangert som "i risikosonen".
- Høy-involvert spiller.
- Har tidligere brukt frivillig utestengning.
- Er kanskje ikke helt ærlig ovenfor seg selv mtp. spilleforbruk.

Motivasjoner:

- Drømmer om å oppleve følelsen av å vinne stort igjen.
- Få tankene på noe annet.
- Støtte kreftforeningen.

Frustrasjoner:

- Synes at kona er for negativ til spilling.
- Stressende på jobb.
- Føler han har lite tid til å dyrke hobbyer.

«Jeg spiller fordi jeg trenger å koble av»

Nøkkelinfo:

Jobb: Sykehuslege.
Familie: Gift, tre barn.
Bolig: Enebolig.
Sted: Bergen.
Fritid: Båt og hytte.

Scenario 5

Felix sitter i bilen etter en lang og stressende dag på jobben. For å koble av litt før kjøreturen hjem, åpner han appen til Norsk Tipping. Han synes kasinospill er en veldig god måte å få tenkene over på andre ting, og synes tanken på å gevinst er veldig spennende. Han velger å spille Tiger's glory, som han pleier.

Scenario 6

Felix sitter på gjesteromskontoret på kvelden etter at kona har lagt seg. For å roe ned litt før han legger seg, åpner han NT-appen (i lydløs modus) for å spille litt, denne gangen Blackjack. På et tidspunkt (før, under eller etter spillingen) er det noe som avbryter spillemønsteret hans.

Bjørn-Runar, 48
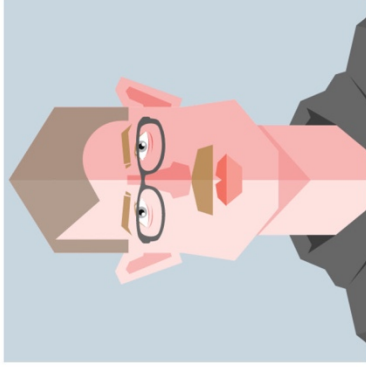
Spillevaner:

Oddsen (sports betting)

Casinospill (Casino Games)

**Spiller ca. 17 dager/mnd (NT).
Har vunnet 3 195 kr. denne uken.**

Beskrivelse:

- Playscan-rangert som "i risikosonen".
- Har i snitt tapt penger den siste måneden (på tross av gevinstene denne uka).
- Har tidligere brukt frivillig utestengning.
- Høy-involvert spiller.
- Spiller også av og til på VLT.

Motivasjoner:

- Teste fotballkunskapene.
- Den gode følelsen som kommer ved å vinne.
- Spenning.

Frustrasjoner:

- Synes hverdagen kan bli litt tung og kjedelig.
- Ustabil økonomi som ufør.
- Helsa tillater ikke lenger at han spiller fotball selv.

Nøkkelinfo:

Jobb: Ufør.
Familie: Skilt, en katt.
Bolig: Sokkelleilighet.
Sted: Sarpsborg.
Fritid: (Se på) fotball.

> *«Jeg spiller fordi jeg kan teste fotballkunnskapene, og slik komme over "lettjente penger"»*

Scenario 7

Bjørn-Runar er veldig interessert i fotball, og denne uka er det noen ekstra spennende kamper. Han logger seg på NT-appen for å levere Oddsen. Han bestemmer seg for å satse litt mer enn han pleier denne uka, da han er inne i en "god flyt" og har litt ekstra til overs etter nylige gevinster.

Scenario 8

Kveldens kamp har begynt, og Bjørn-Runar følger med. Han klikker seg inn på live-oddsen for å øke spenningen ytterligere. På et tidspunkt (før, under eller etter spillingen) er det noe som avbryter spillemønsteret hans.

Appendix 4: User Journeys

Scenario 1: Brukerreise Thomas, 32

«Prøver et nytt spill på sofaen»

Thomas liker fart og spenning, men er sliten etter en dag på jobb. Mens han sitter på sofaen tenker han at han vil spille litt, og siden han ikke har PC-en i nærheten åpner han Norsk Tipping sin app på mobilen. Han ser et av de nye hjulspillene, og bestemmer seg for å prøve det.

Påvirkningsfaktorer:
- Spiller for mer enn han tror
- Konkurransemenneske
- Ganske ung spiller

Fase:	Trigger	Finne spill	Klar	Spiller	Avslutter
Handling:	• Sitter i sofa • Finner mobilen	• Åpner app • Går til KongKasino • Scroller	• Velger spill • Vurderer om det ser spennende ut	• Spiller opp det som er igjen på NT spill-konto	• Lukker appen
Tanker:	- Vil ikke tenke	- Jeg fortjener litt underholding	- Det spillet ser litt spennende ut	- Det var nesten! - Kanskje neste - Nå må det jo bli!	- Brukte resten, men vant ikke! Grrr!
Følelser:	Sliten	Forventningsfull	Interessert	Spent/Glad/Skuffet	Irritert
Muligheter: (for endringer)		• Blikkfang start • Blikkfang KK	• Underveis i lasting • "Opplæring", wizard	• Pop-up/avbrudd	• Push-varsel

Scenario 2: Brukerreise Thomas, 32

«Kjeder meg... igjen!»

Et par dager senere plukker Thomas opp mobilen igjen mens han sitter på sofaen etter trening. Men denne gangen er det også noe annet som fanger oppmerksomheten hans, og gjennom ansvarlig spill-verktøy lærer han at han spiller for mer enn han tror (før, under eller etter spillingen).

Påvirkningsfaktorer:

- Spiller for mer enn han tror
- Konkurransemenneske
- Ganske ung spiller

Fase:	Spill-lobby	Game-preview	Laster	Spill	Exit
Skjerm: (utvalg)					
Føler:	"På autopilot"	Likegyldig	Likegyldig	Konsentrert	Skuffet, trøtt
Muligheter: (for endringer)	Før spill: • Pop-up • "Opplæring", wizard		• Knapp/melding • Banner	• Avbrudd mellom spill	Etter spill: • Melding/CTO

Scenario 3: Brukerreise Kari, 46
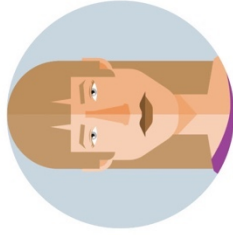
«Hverdagskos med Million-flax»

Kari sitter med morgenkaffen, og da hører et skrapelodd med. Det er en luksus hun unner seg i hverdagen, for å kose seg. Hun åpner appen for å kjøpe et «millionflax»-lodd, som hun pleier – og som vanlig rekker det å bli to-tre før hun må komme seg avgårde til bussen.

Påvirkningsfaktorer:

- Spiller for mer enn hun tror
- Økonomiske begrensninger
- Opptatt av familie

Fase:	Trigger	Finne spill	Spiller	Fortsetter	Avslutter
Handling:	• Morgenrutine med kaffekos • Titter på mobilen	• Åpner app • Finner frem til million-flax på vane	• Vinner 100,- på første spill	• Spiller videre, men får ikke premie på de neste loddene	• Lukker appen • Gjør seg klar til å dra på jobb
Tanker:	- Jeg har god tid - God start på dagen! - Kanskje i dag?	- En million hadde vært fint! Da skulle vi dratt til Hellas...	- Dobbelt av innsats! - Da får jeg to lodd til, gratis!	- Jeg rekker en til... - Nå har flaksen snudd	- Kanskje jeg spiller mer på bussen - Kan fortsatt vinne
Følelser:	Fornøyd, rutine	Drømmmer	Glad!	Skuffet	Optimistisk
Muligheter: (for endringer)	• Pop-up • "Opplæring", wizard		• "Tips" etter premie	• Melding/CTO før nytt spill	• Før nytt spill

Scenario 4: Brukerreise Kari, 46
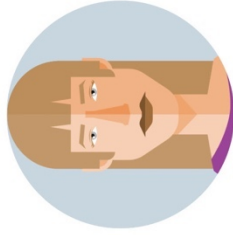
«Nytt forsøk på bussen»

På bussen plukker Kari opp mobilen igjen. Hun hadde jo slik flaks da hun satt ved kaffen – så da kan hun jo unne seg et par lodd til. Men denne gangen er det også noe annet som fanger oppmerksomheten hennes, og gjennom ansvarlig spill-verktøy lærer hun at hun spiller for mer enn han tror (før, under eller etter spillingen).

Påvirkningsfaktorer:
- Spiller for mer enn hun tror
- Økonomiske begrensninger
- Opptatt av familie
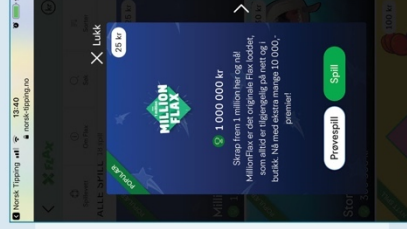
Fase:	Spill-lobby	Game-preview	Laster	Spiller	Resultat
Skjerm: (utvalg)					
Føler:	Kjeder seg	"På autopilot"	Spent	Konsentrert	Fornøyd
Muligheter: (for endringer)	▪ Melding/varsel eller pop-up. ▪ Blikkfang		▪ Knapp/melding ▪ Banner	▪ Kontinuerlig forbruk	▪ Knapp/melding ▪ Pop-up ▪ Banner
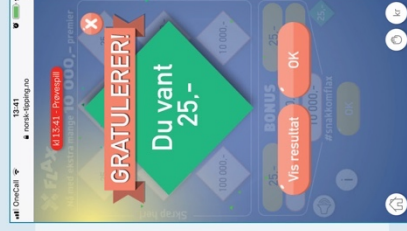
Scenario 5: Brukerreise Felix, 49
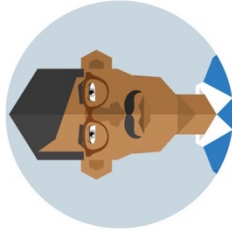
«Avkobling etter jobb»

Felix sitter i bilen etter en lang og stressende dag på jobben. For å koble av litt før kjøreturen hjem, åpner han appen til Norsk Tipping. Han synes kasinospill er en veldig god måtte å få tenkene over på andre ting, og synes tanken på gevinst er veldig spennende. Han velger å spille Tiger's glory, som han pleier.

Påvirkningsfaktorer:

- Har opplevd å vinne en stor gevinst
- Bruker spill som distraksjon
- Ønsker mer fritid

Fase:	Trigger	Finne spill	Klar	Spiller	Avslutter
Handling:	▪ Setter seg inn i bilen etter jobb ▪ Plukker frem mobil	▪ Logger på, går til Kong Kasino. ▪ Finner favorittspillet	▪ Åpner spill, studerer symbolene.	▪ Spiller flere spinn, vinner noen småpremier.	▪ Lukker, slenger fra seg mobilen. ▪ Kjører hjem.
Tanker:	- Jeg må slappe av litt før jeg kommer hjem til mer mas...	- Sånn, sånn, sånn... - Bare noen runder før jeg skal hjem	- Kanskje jeg vinner denne gangen	- Oi, det var nesten!	- Dårlig jobb og spill - Resten av dagen blir sikkert dårlig!
Følelser:	Sliten	"På autopilot"	Mild optimisme	Irritert/spent	Gretten
Muligheter: (for endringer)	▪ Pop-up ▪ Bryte rutinen?		▪ Blikkfang under lasting	▪ Pop-up mellom spill	

Scenario 6: Brukerreise Felix, 49
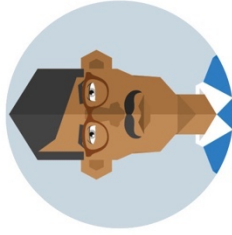
«Bare ett spill til før jeg legger meg»

Felix sitter på gjesteromskontoret på kvelden etter at kona har lagt seg. For å roe ned litt før han legger seg, åpner han NT-appen (i lydløs modus) for å spille litt, denne gangen 7's to burn. På et tidspunkt (før, under eller etter spillingen) er det noe som avbryter spillemønsteret hans.
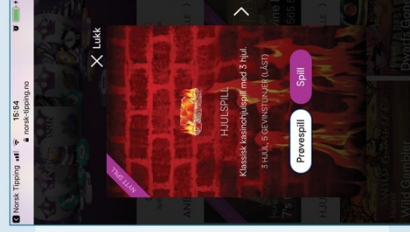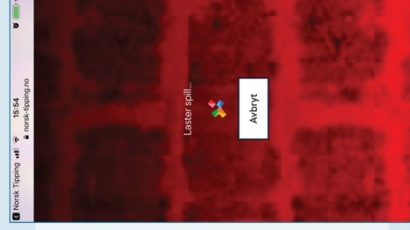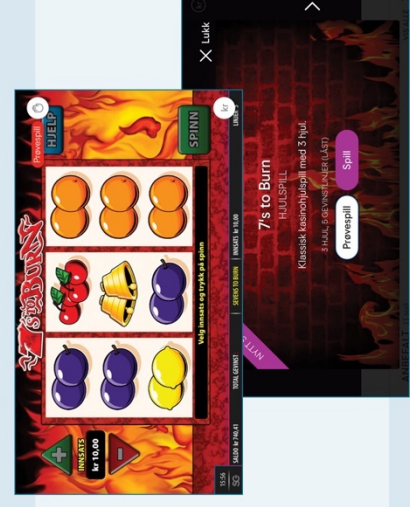
Påvirkningsfaktorer:
- Har opplevd å vinne en stor gevinst
- Bruker spill som distraksjon
- Ønsker mer fritid
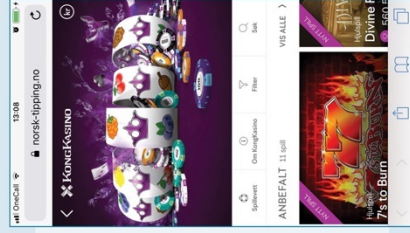
	Spill-lobby	Game-preview	Laster	Spiller	Avslutter
Fase:					
Skjerm: (utvalg)					
Føler:	Sliten	Vurderende	Utålmodig	Spent/Glad/Skuffet	Kjeder seg
Muligheter: (for endringer)	Det kan også være mulig å bryte inn på forsiden.		▪ Beskjed ▪ Login, før laster også mulig plassering		Etter spill: ▪ Avslutnings-screen?

Scenario 7: Brukerreise Bjørn-Runar, 48
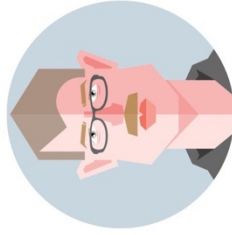
«Inne i en god flyt»

Bjørn-Runar er veldig interessert i fotball, og denne uka er det noen ekstra spennende kamper. Han logger seg på NT-appen for å levere Oddsen. Han bestemmer seg for å satse litt mer enn han pleier denne uka, da han er inne i en "god flyt" og har litt ekstra til overs etter nylige gevinster.

Påvirkningsfaktorer:

- Opptatt av kunnskap og sport
- Liker godt å spille, og bruker både tid og penger på dette
- Har nylig vunnet en del penger

| Fase:	Trigger	Finne spill	Klar	Satse	Levert
Handling:	▪ Rigger seg til foran TV-en før kamp ▪ Finner mobilen	▪ Går inn på sport ▪ Finner kampen	▪ Velger odds	▪ Øker innsatsen ▪ Leverer spill	▪ Setter seg frem i sofaen, med ett øye på mobilen
Tanker:	- Det blir mange mål på hjemmelaget - God lagoppstilling	- Hehe, her er det noen som har undervurdert oddsene	- Jeg vet bedre! - Her kan jeg tjene litt penger!	- Budsjettet er i pluss - Dette er et lurt trekk	- Nå er jeg klar til å se kampen! - Show me the money!
Følelser:	Tankefull	Tilfreds	Selvsikker	Glad	Forventningsfull
Muligheter: (for endringer)	▪ Blikkfang sport		▪ Blikkfang, f.eks "Hvor god er du?"	▪ Kontekstuell informasjon	▪ Wizard eller "tips" etter levert spill

Scenario 8: Brukerreise Bjørn-Runar, 48
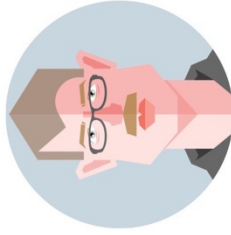
«Kampen er i gang»

Kveldens kamp har begynt, og Bjørn-Runar følger med. Han klikker seg inn på live-oddsen for å øke spenningen ytterligere. På et tidspunkt (før, under eller etter spillingen) er det noe som avbryter spillemønsteret hans.
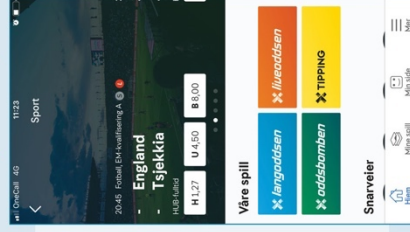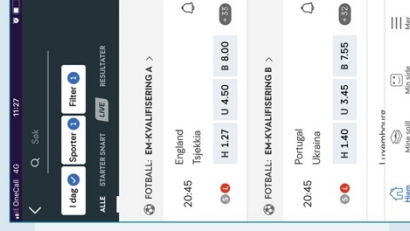
Påvirkningsfaktorer:

- Opptatt av kunnskap og sport
- Liker godt å spille, og bruker både tid og penger på dette
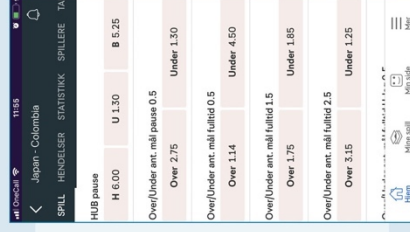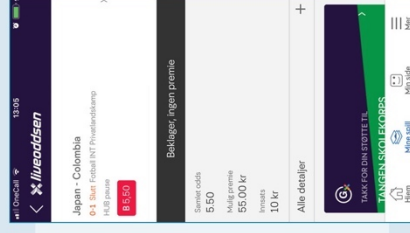- Har nylig vunnet en del penger

Fase:	Spill-lobby	Velge spill	Live: Satse	Live	Resultater

Skjerm: (utvalg)

	Konsentrert	Konsentrert	Konsentret	Spent, varierende	Glad/skuffet, sliten
Føler:	Spent				

Muligheter: (for endringer)

Før spill:
- Melding/varsel eller pop-up. Bør ikke avbryte "flyten"

- Innføre konkurranseelement knyttet til ansvarlig spill

- Blikkfag kan ev. legges her

Etter spill:
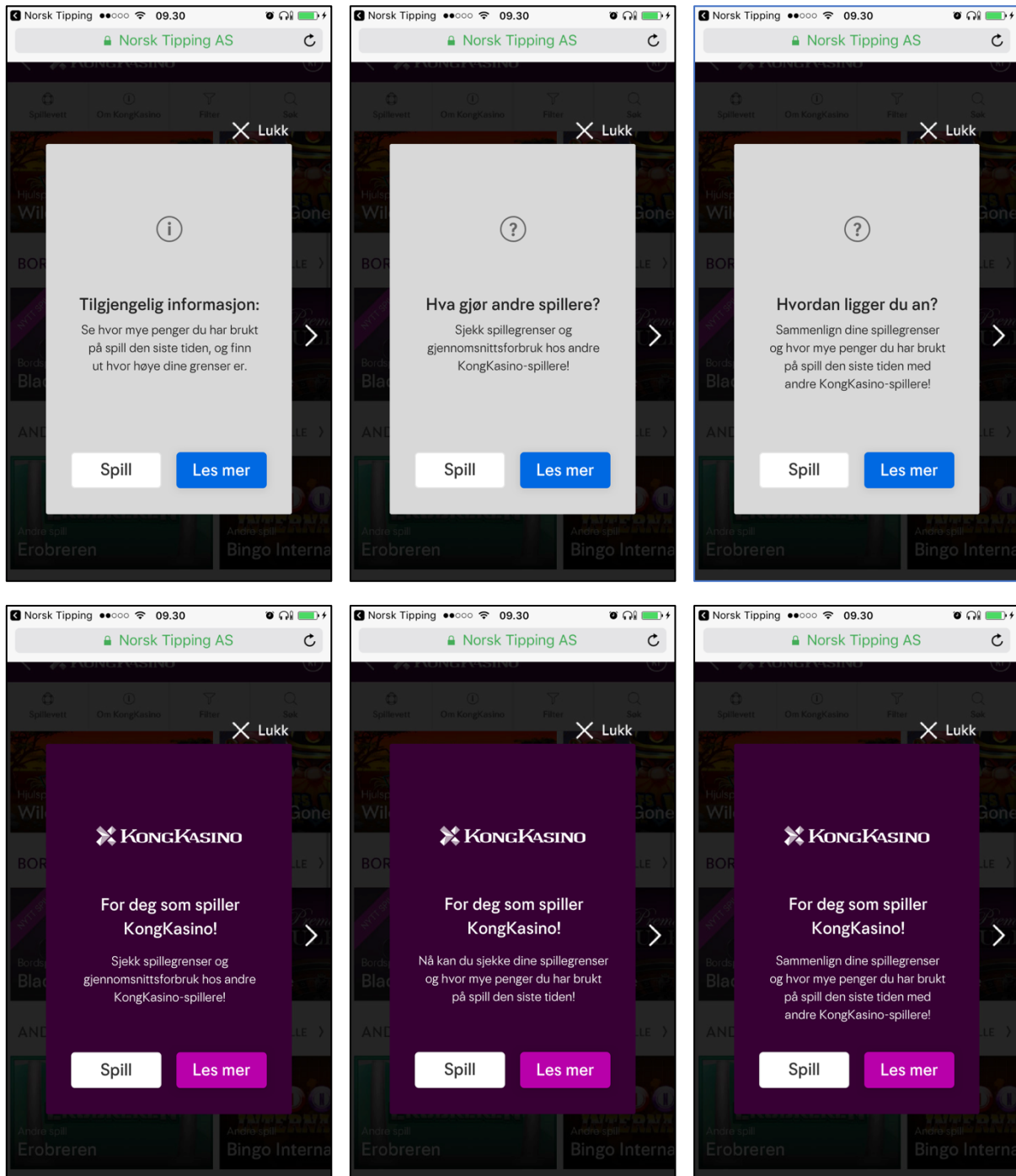- Statistikk
- Benchmarking
- Flaks/kunnskap

Appendix 5: Design Suggestions

Design suggestions: Persona 1 (would look identical for persona 3)
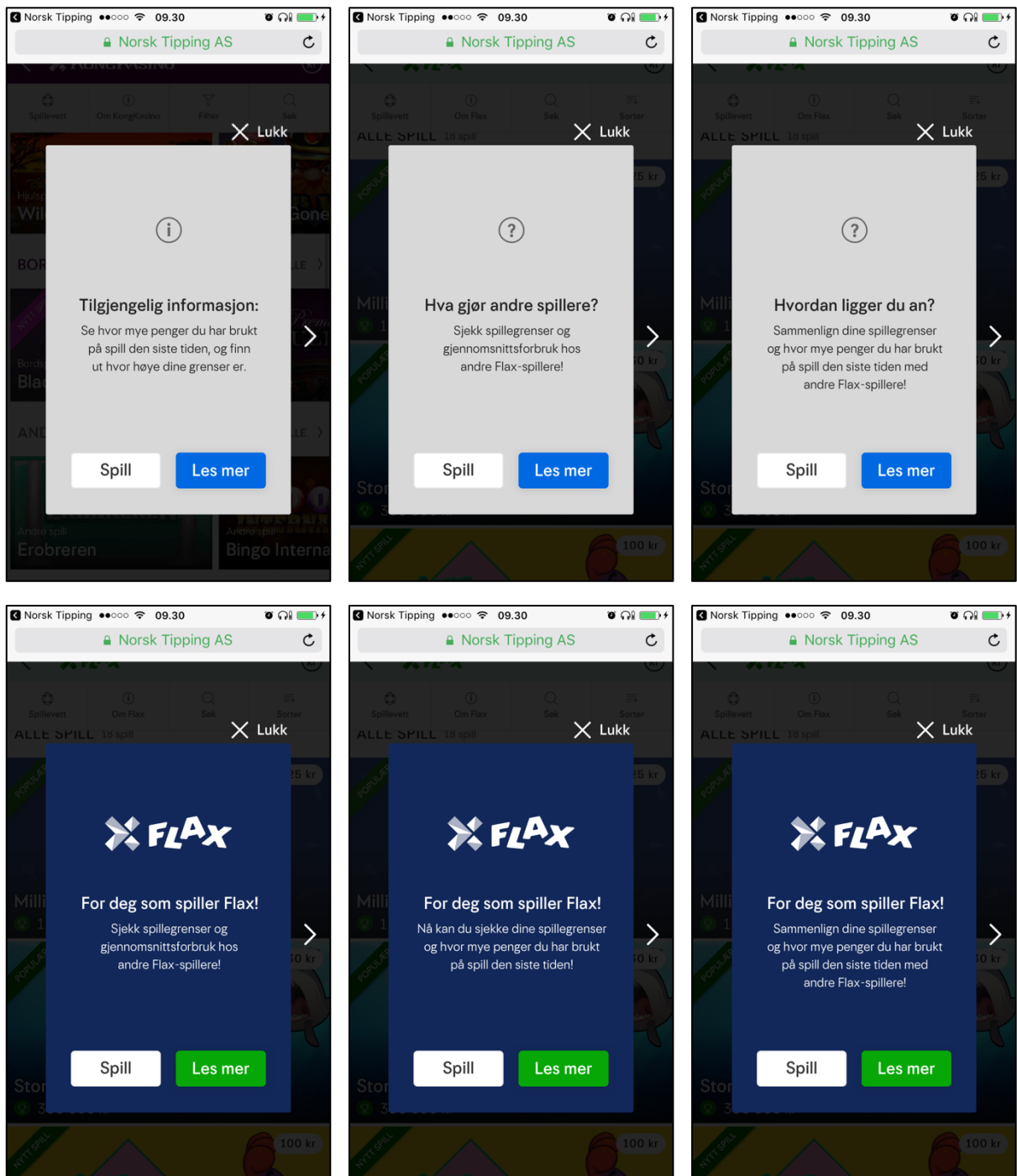Top left: Personalization (BH)
Top centre: Social comparison (SH)
Top right: Personalization (BH) and social comparison (SH)
Bottom left: Social comparison (SH) and attractiveness (IH)
Bottom centre: Social comparison (SH) and personalization (BH)
Bottom right: Personalization (BH), social comparison (SH) and attractiveness (IH)

Design suggestions: Persona 2
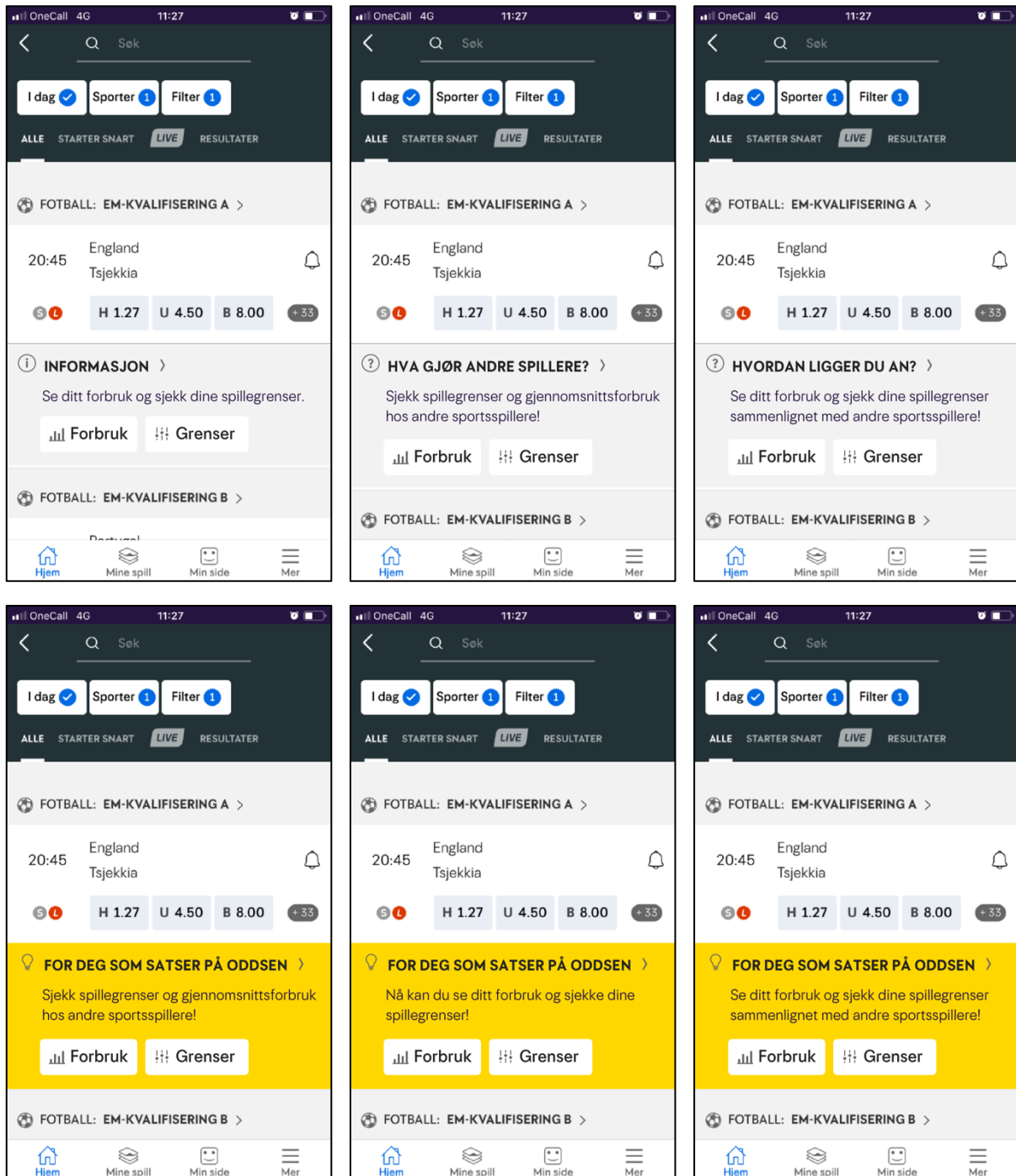
Top left: Personalization (BH)

Top centre: Social comparison (SH)

Top right: Personalization (BH) and social comparison (SH)

Bottom left: Social comparison (SH) and attractiveness (IH)

Bottom centre: Social comparison (SH) and personalization (BH)

Bottom right: Personalization (BH), social comparison (SH) and attractiveness (IH)

Design suggestions: Persona 4
Top left: Personalization (BH)
Top centre: Social comparison (SH)
Top right: Personalization (BH) and social comparison (SH)
Bottom left: Social comparison (SH) and attractiveness (IH)
Bottom centre: Social comparison (SH) and personalization (BH)
Bottom right: Personalization (BH), social comparison (SH) and attractiveness (IH)