

# Personalisation and Choice: Prevention of Intoxicated Driving on Shared e-scooters



# Radboud Universiteit

Willem van Doorn, s1044936

Supervisor: dr. K. Sidaoui

Second examiner: dr. R. Wetzels

Date of Submission: 17-06-2024

Contents

- Chapter 1. Introduction .....4
  - 1.1 Introduction.....4
  - 1.2 Scientific Relevance .....5
  - 1.3 Societal Relevance .....5
  - 1.4 Outline of the Thesis .....6
- Chapter 2. Literature Review .....7
  - 2.1 Personalised warning messages .....7
  - 2.2 Indecisiveness .....8
  - 2.3 Sensation Seeking .....8
  - 2.4 Choice.....9
- Chapter 3. Methodology.....11
  - 3.1 Participants .....11
  - 3.2 VR experiment & Survey .....11
  - 3.3 Operationalisation .....13
    - 3.3.1 Personalisation .....13
    - 3.3.2 Sensation seeking.....14
    - 3.3.3 Indecisiveness .....14
    - 3.3.4 Choice.....14
    - 3.3.5 Control Variables .....15
  - 3.4 Data analysis.....18
  - 3.5 Ethics .....18
- 4. Results.....20
  - 4.1 Pretest .....20
  - 4.2 Data Preparation and Assumptions .....20
  - 4.3 Manipulation Check .....21
  - 4.4 Evaluation of the Measurement Model .....22
  - 4.5 Evaluation of the Structural Model .....24
- 5. Discussion & Conclusion .....28
  - 5.1 Discussion.....28
  - 5.2 Theoretical Implications .....29
  - 5.3 Managerial Implications .....30
  - 5.4 Limitations & Further Research.....31
- 6. References .....33
- 7. Appendix .....41
  - Appendix A: Pretest Survey .....41

Appendix B: SPSS & SMARTPLS data .....	42
Appendix C: Consent Form.....	61
Appendix E: VR Setting & Panels.....	63
Appendix F: Survey .....	67
Appendix G: SmartPLS.....	75

# Chapter 1. Introduction

## 1.1 Introduction

From 2020 to 2021, the number of accidents involving shared e-scooters has grown by 178,3% (Attwood, 2022). A study by Kleinertz et al. (2021) reveals that in more than 28% of e-scooter accidents, drivers were under the influence of alcohol. Out of this group, 92% suffered an injury to the face or head. Despite measures to prevent intoxicated driving, approximately 4 out of 10 people in the Netherlands still drive after consuming alcohol (Rijksoverheid, 2024). This statistic applies to people in the Netherlands who both drive and drink alcohol (not necessarily at the same time).

Shared e-scooters are part of a bigger phenomenon called shared mobility. Shared mobility systems can be seen as alternatives to ownership or public transport, and are gaining popularity in recent years (Machado et al., 2018). Shared e-scooters can also be used as a means to access public transport, by driving to a train station for example (Aguilera-García, 2020). Shaheen & Chan (2016, p. 574) define shared mobility as: “The shared use of a vehicle, bicycle, or other mode that enables users to have short-term access to transportation modes on an “as-needed basis”. Shared mobility offers a number of advantages, including the availability of transport, without the costs and environmental impacts associated with ownership (Shaheen & Chan, 2016). Another advantage is reduced traffic congestion, due to higher vehicle occupancy rates and reduced need for parking spaces in cities (Machado et al., 2018). Moreover, there are advantages that are specific to shared e-scooters. Due to the scooters being electric, air quality in urban areas is improved and noise pollution is reduced (Aguilera-García, 2020). Because of these advantages shared e-scooters offer, they have been introduced in 350 cities around the world as of 2019 (Rose et al., 2020).

Despite the advantages shared e-scooters offer, the rise in popularity is accompanied by public safety concerns. These concerns highlight the need for improved, effective prevention methods. The goal of this research is to measure the effectiveness of personalised warning messages on the choice an individual makes, in order to prevent drunk driving on shared e-scooters. Sensation seeking and indecisiveness can be key factors influencing a person's decision-making process, as seen in research by Jonah (1997) and Patalano and Wengrovitz (2007). So, sensation seeking and indecisiveness are incorporated in this research to reach a better understanding of what guides people when making risky choices. By examining these

factors, this research aims to give insight into the effectiveness of utilising personalised warning messages as a prevention method. The following research question is formulated: *How do indecisiveness and sensation seeking affect the influence of personalisation on the choice to drive a shared e-scooter under the influence of alcohol?*

## **1.2 Scientific Relevance**

Extensive research is available on the topic of driving under the influence of alcohol. Such research often focuses on intentions or judgement processes of individuals with regards to alcohol consumption (McMullin et al., 1991; Turrisi & Jaccard, 1991; Greening & Stoppelbein, 2000). However, most research on this topic was performed before the introduction of shared e-scooters and thus, this innovation has not been taken into account. Research is available on the usage of shared e-scooters, even identifying the possible dangers associated with them (Bieliński & Ważna, 2020; Kleinertz et al., 2021). Existing literature highlights why prevention is necessary, by addressing the consequences intoxicated driving on shared e-scooters can lead to (Kleinertz et al., 2021). However, the way in which this prevention should be shaped remains unclear. This research paper will shed light on preventing intoxicated driving and fill a research gap by implementing a specific focus on shared e-scooters. More specifically, personalised warning messages will be used as a prevention method. Personalised communication can lead to an increase in perceived relevance and usefulness, which is why the concept of personalisation is used in this study (Bol et al., 2018). On the other hand, personalisation of communication can lead to negative effects, resulting in individuals refraining from using personalised services (Finn & Wadhwa, 2014).

Previous research has highlighted the need for research on the difference in effectiveness of personalisation on some people, compared to others (Teeny et al., 2021). Relatively little work is available addressing this research gap. So, this research measures the traits indecisiveness and sensation to analyse their effects and their relationship with personalisation. By doing so, it contributes to the existing literature on personalisation.

## **1.3 Societal Relevance**

In 2015, it was estimated that 12 to 23% of traffic fatalities in the Netherlands occurred as a result of intoxicated driving. This amounted to 75 to 140 traffic fatalities in that year alone

(SWOV, 2023). Moreover, the results of a survey indicated that 5% of respondents admitted to having driven under the influence at least once in the previous year (SWOV, 2023). According to measurements in 2022, 2.6% of drivers are under the influence of alcohol during weekend nights. Reasons for this behaviour differ between the respondents of the survey. Some argue they have no other choice than to drive, while others insist that alcohol does not affect their driving skills (SWOV, 2023).

Drunk driving has a broader impact on society. Economic costs caused by drunk driving accidents are to be taken into account as well. Costs of healthcare, law enforcement, insurance, repair, property damage, etc. are all related to drunk driving (Cismaru et al., 2009). In the United States, these costs are estimated to be around \$123.3 billion in 2020 (Centers for Disease Control and Prevention, 2022).

The combination of the growing popularity of shared mobility (Aguilera-García et al., 2021) and the effects drunk driving has on society, highlights the need for prevention of drunk driving on shared e-scooters. Managers of shared e-scooter companies could gain insight in how to use personalisation as a tool to prevent accidents caused by people using their services. Moreover, the Dutch government has a goal to prevent intoxicated driving (Rijksoverheid, n.d.). Both could use the findings of this research to study the effects personalised warnings have on the choice to engage in intoxicated driving or not. Moreover, this research can shed light on how personalisation could be based on certain personality traits, such as sensation seeking and indecisiveness, depending on if they effectively influence the effect of personalisation during this study.

## **1.4 Outline of the Thesis**

This thesis is divided into five chapters. The first chapter is the introduction, in which the scientific and societal relevance of the study are explained. Moreover, the problem formulation is provided in this chapter and the research question is posed. In the second chapter, relevant literature is reviewed and the conceptual model is presented, accompanied by the hypotheses. Chapter three discusses the chosen methodology and gives an operationalisation of the relevant concepts. The following chapter reflects on the results found during the data analysis. Lastly, chapter five consists of the discussion, a conclusion, theoretical contribution of the research, managerial implications, the limitations of the research, and lastly directions for future research.

# Chapter 2. Literature Review

## 2.1 Personalised warning messages

Individuals are sharing large amounts of data with companies online and companies use this data to personalise communications towards the customer, as an individual (Strycharz et al., 2019). So, communications no longer have to be targeted towards a group of people, but can be specific for each person (Strycharz et al., 2019). By utilising personalisation, different messages can be sent to different individuals or groups, tailored specifically to them (Postma & Brokke, 2002). In practice, this process is a constant loop of input of data by the consumer and output in the form of personalised communication by the company (Bol et al., 2018).

Personalising communication to some aspect of the recipient can be one of the most impactful ways to stimulate persuasion (Teeny et al., 2021). This could be caused by an increase in the perceived relevance and usefulness of the communication felt by the recipient (Bol et al., 2018). Moreover, the use of personalised messages has shown to engage people better and can even be an effective way of motivating people to act (Postma & Brokke, 2002). So, it can be concluded that personalisation can be used to steer people towards a certain behaviour or choice. Steering people towards certain behaviour is an important aspect of this research, as an attempt is made to increase the likelihood of participants choosing for a safer alternative. This has led to the formulation of hypothesis 1 (H1).

However, despite the benefits, personalisation can lead to consumers feeling a sense of vulnerability (Aguirre et al., 2015). When individuals are aware of their data being collected and used by a company, they might refrain from using the services offered by that company (Finn & Wadhwa, 2014). This behaviour could severely influence the effect personalised messages have on the decisions individuals make (Vignolles & Waiguny, 2023). This possible effect of personalisation, contradicting the effect described in H1, has resulted in the formulation of the second hypothesis (H2).

H1: Personalisation of warnings has a positive effect on choosing a safer alternative, due to an increase in perceived relevance, usefulness and motivation to act.

H2: Personalisation of warnings has a negative effect on choosing a safer alternative, due to individuals refraining from using personalised services.

## **2.2 Indecisiveness**

As a mediator between personalisation and choice, indecisiveness is introduced.

Indecisiveness is the degree to which an individual experiences difficulty and delay with decision-making situations (Patalano & Wengrovitz, 2007). A number of negative outcomes are linked to indecisiveness, such as not being able to organise one's own thoughts quickly and consistently (Rassin & Muris, 2005). Individuals with high levels of indecisiveness can experience decision-making difficulty, apparent in the time it takes to respond, the readiness to decide and tendency to defer choices (Patalano & Wengrovitz, 2007). Behavioural results, such as decision-making delay, are a result of an individual's ability to identify a clear preference to which to commit (Janis and Mann, 1977). Furthermore, individuals with high levels of indecisiveness might require more information before being confident in a decision, or they start to doubt their decision afterwards (Rassin & Muris, 2005). Another possible outcome is more related to the content of the decision, instead of the process of decision-making, like the previous examples. It could be argued that indecisiveness leads to more conservative choices, due to reluctance towards far reaching consequences (Rassin & Muris, 2005). These effects have led to the formulation of hypothesis 4 (H3).

By tailoring messages to a specific individual, personalisation can lead to increased usefulness and relevance of information that is provided (Bol et al., 2018). Moreover, receiving a tailored message can be an effective way of motivating people to act. These effects of personalisation are the opposite of the causes of indecisiveness, such as the inability to identify a preference to which to commit (Janis and Mann, 1977). So, it can be hypothesised that personalisation is an effective way to decrease the effects of indecisiveness (H4).

H3: Indecisiveness positively mediates the effect of personalisation on choice for a safer alternative, as this is the more conservative choice.

H4: Personalisation of warnings decreases participants' indecisiveness, as it increases motivation to act, perceived usefulness and perceived relevance.

## **2.3 Sensation Seeking**

The effects of personalisation on choice and indecisiveness are moderated by participants' level of sensation seeking. Sensation seeking is a personality trait, characterised by the pursuit of intense, complex sensations, and experiences and the willingness to take risks for the sake

of them (Zuckerman, 1994). The trait sensation seeking can be influenced by external, social factors, possibly increasing or decreasing the willingness to take risks (Zuckerman, 1984). A positive relationship between levels of sensation seeking and risky driving behaviours has been established in a study by Jonah (1997). Propensity towards drinking whilst under the influence of alcohol is one of these risky driving behaviours (Curran et al., 2018). Sensation seekers either perceive situations as being less risky than individuals with low levels of sensation seeking do, or they accept the risk in order to gain the immediate outcome of thrill (Jonah, 1997). Increased levels of sensation seeking may also result in outcomes on the road, such as collisions (Jonah, 1997). Moreover, alcohol usage itself increases risk taking, regardless of levels of sensation seeking (Hong et al., 2017). So, it can be hypothesised that the combination of high levels of sensation seeking with increased risk taking due to alcohol consumption, leads to a situation in which individuals are extremely prone to risky driving behaviours (H5).

As stated, sensation seeking can lead to increased risk taking and a preference for immediate thrill (Hong et al., 2017; Jonah, 1997). This contradicts the outcomes of indecisiveness, since indecisiveness can lead to a more conservative choice (Rassin & Muris, 2005). Due to this contradiction, it can be argued that sensation seeking negatively affects the outcome of indecisiveness on choice. Based on this, hypothesis 6 is formulated (H6).

H5: High levels of sensation seeking have a negative effect on the relationship between personalised warnings and choice for a safer alternative, because of an increased willingness to take risks.

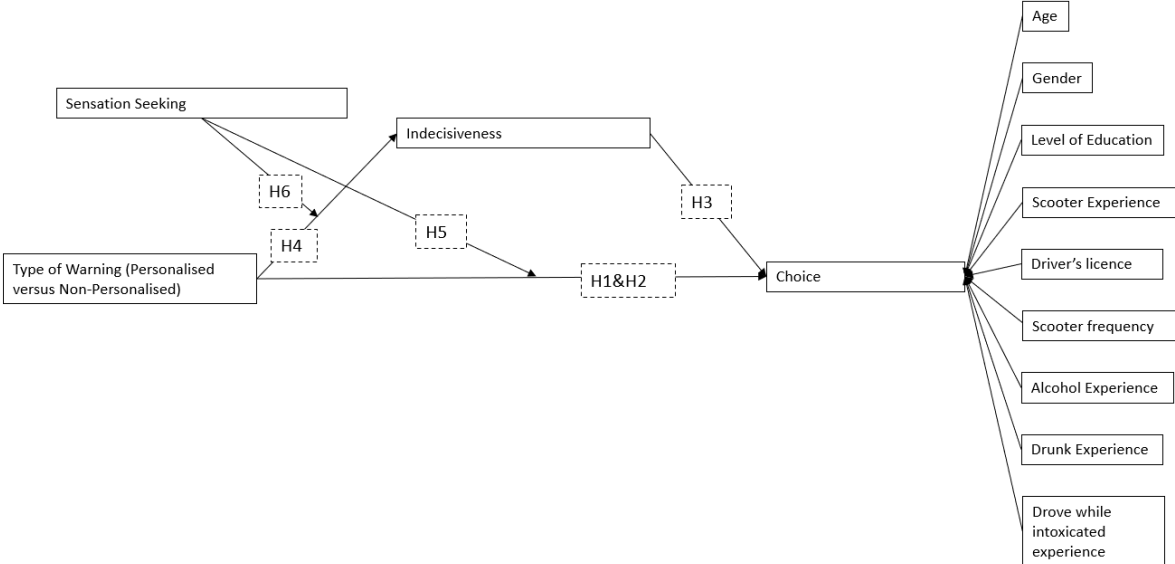
H6: High levels of sensation seeking have a negative effect on the relationship between personalised warnings and indecisiveness, due to the preference of the immediate outcome of thrill.

## **2.4 Choice**

Participants in this research are given a choice, regarding risky behaviour. This choice is between getting on the scooter, accepting alternative transport for a discounted price, or doing neither. Decision-making around risky driving behaviour involves sensation seeking and a trade-off between immediate outcomes and long-term outcomes (Qu, Zhang & Ge, 2020). The trade-off in this research would be between the immediate thrill of risky driving behaviours

and the long-term outcome of safety. The choice for short-term rewards, instead of larger long-term rewards is described as short-sightedness for the future (Bari & Robbins, 2013). Choice and decision-making can be influenced by alcohol consumption, as it can increase impulsivity in other risky scenarios, such as gambling (Del Valle Vera et al., 2018). As hypothesised in the previous chapter, choice could be influenced by sensation seeking, with individuals seeking immediate thrill (Jonah, 1997). These factors overlap with the previously mentioned sensation seeking characteristics, highlighting the need for further research. The choice could also be influenced by indecisiveness, as behaviour can be steered by an individual's ability to identify a clear preference (Janis and Mann, 1977). In doing so, indecisiveness can lead to a preference for a more conservative choice (Rassin & Muris, 2005).

**Figure 1. Conceptual model**



# Chapter 3. Methodology

## 3.1 Participants

Participants willing to partake in a VR experiment are required for this research. The location at which they are recruited is the Radboud University in Nijmegen. At this location, participants are asked to take part in both the VR experiment and the survey.

According to the central limit theorem, a sample size of 30 is required per condition (Chang et al., 2006). This study is performed together with two other studies, researching the effects of personalisation on choice. In total, six conditions are present for these studies, resulting in a required sample size of 180. The required sample size was surpassed, as 184 participants took part in the study ( $N = 184$ ) (See Appendix B9). In order to gather participants for the experiment and survey, convenience sampling is used. Convenience sampling is a non-random method in which participants who fit the study's criteria are used, for example by going to a location that offers a high likelihood of finding participants (Emerson, 2021). This is the case, since potential participants were approached and asked to participate at the Radboud University. A negative effect of using convenience sampling based on location is that the sample is often biased (Emerson, 2021).

## 3.2 VR experiment & Survey

The goal of this research is to prevent drunk driving on shared e-scooters, by measuring the effectiveness of personalised warning messages on the choice an individual makes. This goal is to be achieved by simulating a situation in virtual reality, in which participants are confronted with the effects of being under the influence of alcohol. As said before, the experiment is performed at the Radboud University, in a setting controlled by the researchers.

An important reason for the use of VR in this study is the ability to present information in a way that is engaging and easy to understand (Dietrich et al., 2019). Due to these advantages, VR experiences are able to facilitate outcomes such as behaviour change (Van Kerrebroeck, 2017). According to Dietrich et al. (2019), VR experiments allow exposure to risk taking environments, without any of the dangers involved with those risks in real life. This makes VR the ideal tool to use for this study, as it allows for an analysis of drunk driving behaviour, without any of the physical risks of getting on a scooter while intoxicated. The virtual

environment (VE) is created using Unity, as this program offers the ability to create an immersive VR experience (Linowes, 2015).

Immersion and presence are two concepts that are key in the understanding of VR (Jensen & Konradsen, 2018). Immersion in VR is described by the exchange of sensory input of the real world into sensory input created in the digital environment of VR (Freina & Ott, 2015). When someone is immersed in this digital environment, presence is experienced when the way your nervous system reacts the same way to the simulation as it would to the real world (Slater, 2003).

This feeling of presence by the participants is attempted to be reached in the VE by means of a number of stimulants. First of all, participants are asked to read a scenario (See Appendix D). Keeping this scenario in mind, participants enter the VE by putting the VR headset on their head. Within the VE, they are confronted with visual effects, reproducing the effects of being intoxicated. For example, motion blur is used to simulate the blurred view one experience when under the influence of alcohol (Höpli & Cuervo-Alvarez, 2016). These effects are used in order to give participants the feeling of being intoxicated. Moreover, sounds from a busy street are present in the VE, helping the scenario feel realistic. This research is focused on participants that are under the influence of alcohol, but not to the point that they are unable to complete the test. The reasoning behind this is that individuals that cannot pass the test are already stopped from drunk driving, as they will be unable to unlock the scooter (Simcox, 2021).

When the participants have placed the VR headset on their head, the experiment starts. The setting in which they are present is an urban street at night (See Appendix E1). At the other side of the street, a scooter is visible, which they have been instructed to walk towards. When they get close to the scooter, a smartphone appears, which they can interact with (See Appendix E2). After pressing 'Unlock Scooter' on the smartphone, a test pops up. Participants are to follow a moving dot with their eyes (See Appendix E3). This test represents the Horizontal Gaze Nystagmus Test, which is starting to be implemented, using an algorithm that detects intoxicated driving (Coleman et al., 2024). Afterwards, a message is shown indicating the participant passed the test, although he or she might be under the influence of alcohol. This warning message randomised as either being personalised or not (See Appendix E4 & E5). After having read the warning message, the participants can continue and are shown a screen in which three choices are presented to them simultaneously.

The choice they have to make is between accepting a taxi ride with a 50% discount, getting on the scooter or doing neither (See Appendix E6).

After this choice, the VR experiment is finished and the participants are shown a screen telling them to exit the VE (See Appendix E7). The participants are then asked to answer questions in a survey. This survey consists of 10 questions from the Sensation Seeking Scale (Zuckerman, 1994), and a number of questions regarding the control variables. The questions of the survey are visible in the operationalisation table in chapter 3.3 (Table 1.)

In conclusion, indecisiveness and choice are measured during the VR experiment, after which sensation seeking and the control variables are measured in the survey. By combining these elements, the research effectively captures all the concepts from the conceptual model.

## **3.3 Operationalisation**

### **3.3.1 Personalisation**

Personalised messages can be used in order to motivate individuals to act (Postma & Brokke, 2002). Considering this, personalised warning messages could be used to steer behaviour of shared e-scooter users. During the experiment, personalisation is used to persuade participants to choose a safer alternative (Teeny et al., 2021). In this study, the safer alternative is a discounted taxi ride presented to the participants. The personalisation of the warning messages is done by addressing the participants by their name, since individuals who see their name are more likely to relate the information of the message to themselves (Howard & Kerin, 2011). For the same reason, more relevant, personal information is shown in the warning message, such as characteristics of the participant (See Appendix E4) (Teeny et al., 2021).

During the experiment, half of the participants receive a personalised message and the other half receive a similar, more general message, without any personal information. The choices of the participants in both groups will be compared, to see if the personalisation had any effect on the outcome.

### **3.3.2 Sensation seeking**

As a moderator between personalisation and choice, sensation seeking is introduced. Zuckerman's Sensation Seeking Scale V (SSS V) can be used to measure participant's levels of sensation seeking (Zuckerman, 1994). The total scale includes 40 forced choices about behaviours that can be seen as high or low sensation seeking. The 40 items are categorised in 4 subscales, each including 10 items: Thrill and adventure seeking, disinhibition, boredom susceptibility and experience seeking. Both 'Thrill and adventure seeking' and 'Disinhibition' have been proven to be positively related to driving under the influence of alcohol (Rimmö and Åberg, 1999). Driving under the influence of alcohol provides the thrill of a risk taking activity to an individual (Hatfield et al., 2014). Due to time restraints with the participants of this current research, the scale is reduced to 10 items. So, in the survey, respondents can score one point for each item, resulting in a maximum score of 10. This score will be used to measure the effect of sensation seeking as a moderator between type of warning and choice, and between type of warning and indecisiveness.

### **3.3.3 Indecisiveness**

The relationship between receiving a personalised warning message and the ability to identify a clear preference will be analysed in this research paper, by measuring participants' indecisiveness. Delay in decision-making has been identified as an important indicator of indecisiveness (e.g. Germeijs & De Boeck, 2002; Patalano & Wengrovitz, 2007). So, delay in decision-making will be measured in order to analyse indecisiveness as a mediator. During the experiment, participants will be monitored and the time they need to make a choice will be measured. Participants are shown a screen with three options and as soon as this screen is shown, the timer starts (See Appendix E6). The timer stops the moment the participants have clicked on their choice in the VE. The goal here is to see if indecisiveness, measured by decision-making delay, has any influence on the relationship between personalisation and choice. For example, indecisiveness could lead to more conservative choices, due to a reluctance towards far reaching consequences (Rassin & Muris, 2005).

### **3.3.4 Choice**

During the test, participants are confronted with a warning message, followed by a choice. They are asked to choose between disregarding the warning and riding the scooter, accepting

alternative transport offered to them with a discount, or doing neither of the two (See Appendix E6). In this research, participants are asked to consider a trade-off between immediate thrill and long-term safety (Qu, Zhang & Ge, 2020). A taxi ride is offered to participants, as it resembles a safe alternative, away from the dangerous consequences of riding an e-scooter under the influence of alcohol, showcased in the article by Kleinertz et al. (2021). Half of the participants receive a warning message personalised to them, based on available personal data, such as their names (Howard & Kerin, 2011). The other half receive a general message, lacking any personal information. By analysing the choices made by participants, and comparing them between the two groups, the effectiveness of personalisation is measured. As explained earlier, the possible mediating effect of indecisiveness is analysed by measuring the amount of time it takes participants to make a choice (Germeijs & De Boeck, 2002). The moderating effect of sensation is analysed, in relationship with personalisation, by means of survey questions.

### **3.3.5 Control Variables**

In order to isolate relevant measures that predict the relationships of interest in this study, control variables are added (Bernerth & Aguinis, 2016). Control variables are essential for the generalisability of this research, allowing for future researchers and managers to use the findings (Becker, 2005). In order to personalise the warnings during the VR experiment, participants are asked for personal information. Part of this information will be used to personalise the warnings, while another part will be used to serve as control variables.

Participants will be asked their gender, since this has proven to have significant effects on driving under the influence of alcohol (Oh et al., 2020). Individuals that drive e-scooters are often between ages 18 and 25 (Blomberg et al., 2019). To analyse if a difference in age affects the choice participants make, the control variable 'Age' is added to the analysis. Moreover, the highest level of completed education is measured, as low levels of education are also positively related to driving under the influence of alcohol (Impinen et al., 2011; Riala et al., 2003). Having a driver's licence is another variable that is used in this research as a control variable, since shared e-scooters require a licence to drive. Previous experience with driving under the influence can be an indicator to predict drunk driving recidivism, so this is measured as a control variable as well (Portman et al., 2018). Having experience drinking alcohol and having experience being drunk are also taken into account as control variables. Lastly, individuals with experience in driving on e-scooters have a higher risk of doing so

under the influence of alcohol, likely due to growing familiarity resulting in increased confidence (Gioldasis et al., 2021). The frequency in which participants ride e-scooters is also measured, serving as a control variable (Özmen, 2023). So, all the previously mentioned control variables possibly have an influence on choice in this specific scenario and are thus being taken into account during the analysis.

**Table 1. Operationalisation**

Concept	Definition	Item	Values	Source
Personalisation of warning	The customisation of warning messages, based on participants' data.	Personalised or Non-Personalised	no (0) yes (1)	Strycharz et al. (2019)
Sensation seeking	A personality trait, characterised by the pursuit of intense, complex sensations, and experiences and the willingness to take risks for the sake of them	<p>I like (wild) uninhibited parties. (0)</p> <p>I prefer quiet parties with good conversations. (1)</p> <p>There are some movies I enjoy seeing a second or even a third time. (0)</p> <p>I can't stand watching a movie I've seen before. (1)</p> <p>I can't understand people who risk their necks climbing mountains. (0)</p> <p>I often wish I could be a mountain climber. (1)</p> <p>I like some of the earthy body smells. (0)</p> <p>I dislike all body odors. (1)</p> <p>I like the comfortable familiarity of everyday friends. (0)</p> <p>I get bored seeing the same old faces. (1)</p> <p>I prefer a guide when I am in a place I don't know well. (0)</p> <p>I like to explore a strange city or section of town by myself, even if it means getting lost. (1)</p> <p>I dislike people who do or say things just to shock or upset other people. (0)</p> <p>When you can predict almost everything a person will do and say he or she must be a bore. (1)</p> <p>I don't mind watching a movie or play where I can predict what will happen in advance. (0)</p> <p>I usually don't enjoy a movie or a play where I can predict what will happen in advance. (1)</p> <p>I would never smoke marijuana. (0)</p> <p>I have tried marijuana or would like</p>	0-10 (score of SSS V: 'Thrill and adventure seeking')	Zuckerman (1994)

		to. (1) I would not like to try any drug which might produce strange and dangerous effects on me. (0) I would like to try some of the new drugs that produce hallucinations. (1)		
Indecisiveness	The degree to which an individual experiences difficulty and delay with decision-making situations	Time in seconds before making a choice	0.000+	Patalano & Wengrovitz (2007)
Choice	The selection made by participants, when presented with three options: engaging in risky behaviour, accepting safer alternative, or doing neither	Which option did you pick in the VR scenario?	Accept taxi ride with a 50% discount (0), Get on the scooter (1), Do neither (2)	
<b>Control variables</b>				
Age		How old are you?	Under 18 (1), 18-24 (2), 25-34 (3), 35-44 (4), 45-54 (5), 55-64 (6) or 65 or older (7)	Taylor et al. (2017)
Gender		What is your gender?	Male (0), Female (1) or Other (2)	Leary et al. (2022)
Highest level of completed education		What is your highest completed level of education?	Secondary school (0), Secondary vocational education (1), Higher professional education (2), University education (3) or Phd (4)	Impinen et al. (2011); Riala et al. (2003)
Driver's licence		Do you have a valid driver's licence?	No (0), Yes (1)	Zanis et al. (1997)
Scooter experience		Have you ever driven an (e-)scooter?	No (0), Yes (1)	Antoniazzi et al. (2023)
Scooter frequency		How frequently have you driven an e-scooter in the past year?	Once a week (0), A few times a month (1), Once a month (2), A few times a year (3), One time (4), Never (5)	Özmen (2023)

Alcohol experience		Have you ever consumed alcohol?	No (0), Yes (1), Prefer not to say (2)	Morgenstern et al. (2009)
Drunk experience		Have you ever been drunk?	No (0), Yes (1), Prefer not to say (2)	Morgenstern et al. (2009)
Drove while intoxicated experience		Have you ever driven a motorised vehicle when you had consumed enough alcohol to be in trouble, had the police stopped you?	No (0), Yes (1), Prefer not to say (2)	Caetano and Clark (2000)

### 3.4 Data analysis

During this research, data will be collected in the form of answered survey questions and observed behaviour in the VE. The data will be analysed using PLS-SEM, which is a combination of principal components analysis and ordinary least squares path analysis (Chin, 1998). Firstly, SPSS is used to analyse the descriptive information of the data, looking for possible outliers or missing data for example (Hair et al., 2019). Then, construct reliability and indicator reliability is ensured, along with convergent and discriminant validity (Hair et al., 2019). Afterwards, the latent variables in the conceptual model are inserted into SmartPLS, measuring and analysing the underlying relationships. Bootstrapping is used to generate robust standard errors and t-statistics (Hair et al., 2016). The results of this analysis are discussed and interpreted in chapter four of this research paper.

### 3.5 Ethics

This research paper consists of a number of practises that require attention, from an ethics perspective. Participants are given a consent form, in which it is stated that anonymity is ensured and no data will be published that can be traced back to them (Martin & Murphy, 2017). Since personal data of participants is collected during the research, they have the right to know what data is collected, why it is collected and how (Martin & Murphy, 2017). The general goal of the research and the procedure are also explained, and it is made clear to participants that if they wish to withdraw from the survey or experiment, they are allowed to (Fischer, 2006). The signing of this consent form is essential for the participant to take part in the experiment. Moreover, this research paper shall be uploaded to the Radboud University's digital thesis repository, allowing future students to access it. If participants have any

questions regarding the research or the paper, they are able to contact the researcher via e-mail.

## 4. Results

### 4.1 Pretest

The design of the pretest was focused on analysing if the manipulation succeeded. Two groups were created, both existing of 10 participants. All of them took part in the experiment, as explained in Chapter 3.2. The survey for the pretest consisted of a limited number of questions, focused specifically on the personalisation (Appendix A). Participants were asked to answer whether they noticed their name and/or other personal information in the VE. Moreover, they were asked to what degree they felt the warning message was targeted to them and designed specifically for them. (Kalyanaraman & Sundar, 2006; ).

In SPSS, an independent samples t-test was conducted in order to compare the means of the two groups in the experiment. The results show a significant difference between the group that received a personal warning message and the group that did not. The group with the personalised warning message indicated that the warning message was personalised to them significantly more than the group with the non-personalised message did ( $M_{\text{personalised}} = 5,250$ ,  $M_{\text{non-personalised}} = 3,350$ ,  $t = 3,107$ ,  $p = <0,05$ ;). As a control question, the perceived amount of information was also measured. No significant difference between the groups was found with regards to the perceived amount of information ( $M_{\text{personalised}} = 5,750$ ,  $M_{\text{non-personalised}} = 5,950$ ,  $t = -,401$ ,  $p = >0,05$ ) (King et al., 2014).

### 4.2 Data Preparation and Assumptions

Descriptive statistics of all relevant variables were analysed using output from SPSS (See Appendix B9 & B10). A couple noteworthy values are present in the descriptive statistics, such variables with extreme values of kurtosis and skewness (Hair et al., 2019). An example of this is the control variable 'Alcohol experience'. The survey question related to this variable received 183 valid responses. Out of these responses, 177 indicated they had consumed alcohol before, and 6 indicated they had not. The control variable 'Alcohol experience' also has a value of skewness greater than 3,00, namely 5,291 ( $5,291 > 3,00$ ) and a kurtosis of 26,279 ( $26,279 > 3,00$ ) (See Appendix B9 & B10) (Hair et al., 2019). Due to these extreme values, 'Alcohol experience' was removed from the analysis as a control variable (Hair et al., 2019).

Like the control variable ‘alcohol experience’, the control variable ‘Drunk experience’ has a high value for kurtosis: 6,749 ( $6,749 > 3,00$ ) (Hair et al., 2019). Out of the 183 valid responses, 167 answered ‘yes’ and 16 answered ‘no’, which has led to the extreme kurtosis value. Similar to ‘Alcohol experience’, ‘Drunk experience’ was removed as a control variable (Hair et al., 2019).

A similar issue occurred with the control variable ‘Gender’. Within the survey given to the respondents, four answers were available to the question related to the variable ‘Gender’; Male, Female, Other and Prefer not to say. Out of the 184 respondents of this research, no respondents answered ‘Prefer not to say’ and only 2 respondents answered ‘Other’. Due to these extreme differences between the groups, the control variable ‘Gender’ was transformed into two dummy variables: ‘Male’ and ‘Not-Male’. This allowed for the analysis of the effect of being male, compared to not being male on the dependent variable.

Indecisiveness has a skewness of 3,903 ( $3,903 > 3,00$ ) and a kurtosis of 25,791 ( $25,791 > 3,00$ ). In order to get the skewness and kurtosis closer to the acceptable values, a log transformation was performed in SPSS. The descriptives of the created variable ‘Log\_Indecisiveness’ were analysed and values of 0,99 ( $-3,00 < 0,99 < 3,00$ ) for skewness and 1,055 ( $-3,00 < 1,055 < 3,00$ ) for kurtosis were measured (Hair et al., 2019).

Lastly, the control variable ‘Age’ has a kurtosis value of 6,771 ( $6,771 > 3,00$ ). To decrease the kurtosis value measured for ‘Age’, some categories were merged into one. This resulted in a kurtosis of 4,032, which is still above the threshold of 3,00 ( $4,032 > 3,00$ ) (Hair et al., 2019). Out of the 184 respondents, 162 were in the age group ‘18-24’, resulting in the high level of kurtosis. This age group can serve as a good representation of e-scooter drivers, as most of the users are in this age group (Blomberg et al., 2019). However, due to the high kurtosis created by the lack of respondents in any other age groups, the control variable ‘Age’ had to be removed from the model.

### **4.3 Manipulation Check**

Contrary to the pretest, the manipulation check revealed the manipulation did not work as intended (See Appendix B8) . During the survey, after the VR experiment, participants were asked to answer two questions regarding the perceived personalisation of the warning messages. The first question instructed the participants to score the following statement on a Likert scale, ranging from 1 to 7: ‘The warning message seemed to be designed specifically

for me'. No significant difference between the group with the personalised warning message and the group with the non-personalised warning message was found here ( $M_{\text{personalised}} = 3,82$ ,  $M_{\text{non-personalised}} = 3,48$ ,  $t = -1,375$ ,  $p > 0,05$ ) (See Appendix B8). The second question also instructed participants to score a statement on a Likert scale, ranging from 1 to 7: 'The warning message targeted me as a unique individual'. No significant difference between the two groups was found here either ( $M_{\text{personalised}} = 3,98$ ,  $M_{\text{nonpersonalised}} = 3,52$ ,  $t = -1,889$ ,  $p > 0,05$ ) (See Appendix B8). So, the results of the effects of personalisation need to be interpreted with caution. This issue is discussed further in chapter 5.4 'Limitations & Further Research'.

## 4.4 Evaluation of the Measurement Model

The evaluation of the measurement model was performed by analysing four aspects: internal reliability, construct reliability, convergent validity, and discriminant validity. In the model for this research, 'Sensation Seeking' is the only structure made out of a number of indicators. So, the following analyses are performed for 'Sensation Seeking' using SmartPLS.

The value measured for composite reliability in SmartPLS represents the internal validity of the model, and is supposed to be greater than the threshold of 0,600 (Hair et al., 2019). A value of 0,608 was measured, surpassing the threshold of 0,600 and indicating internal validity (See Appendix B14) (Hair et al., 2019).

Construct validity was measured by analysing the Cronbach's alpha of the indicators. First, the overall Cronbach's alpha including all 10 indicators was measured at -0,100. This resulted in the reverse coding of a number of variables. After performing this step, Cronbach's alpha was measured at 0,481, below the required value of 0,700 ( $0,481 < 0,700$ ) (Hair et al., 2019). Analysing the Cronbach's alpha if item deleted (See Appendix B17), resulted in the increased score of 0,518 if 'Sensation Seeking 4' is removed. So, construct reliability was not achieved. After removing this item, no more items were deleted, in order not to change the theoretical integrity of the sensation seeking scale any further (Zuckerman, 1994). The reasoning and consequences of this are discussed further in chapter 5.4 'Limitations & Future research'.

Convergent validity was measured by measuring the average variance explained (AVE) values. The AVE value measured for Sensation Seeking is 0,196, which is below the acceptable threshold of 0,500 (Hair et al., 2019). Similar to the decision regarding the low construct validity, the indicators of Sensation Seeking were not further adjusted. This will also

be discussed further in the Limitations chapter (See Chapter 5.4 ‘Limitations & Future Research’). The HTMT values were all measured below the threshold of 0,850, so discriminant validity has been achieved (See Appendix B24) (Hair et al., 2019).

**Table 2. Factor loadings, composite reliability, and average variance extracted of the constructs and their items.**

<b>Components and manifest variables</b>	<b>Loading (t-value)</b>
<b>Sensation seeking</b>	CR: 0.191 AVE: 0.605
Sensation Seeking 1: A. I like «wild» uninhibited parties. B. I prefer quiet parties with good conversation.	0.538 (2.990)*
Sensation Seeking 2: A. There are some movies I enjoy seeing a second or even a third time. B. I can't stand watching a movie I've seen before.	0.110 (0.499)
Sensation Seeking 3: A. I often wish I could be a mountain climber. B. I can't understand people who risk their necks climbing mountains.	0.331 (1.457)*
Sensation Seeking 5: A. I get bored seeing the same old faces. B. I like the comfortable familiarity of everyday friends.	0.278 (1.596)
Sensation Seeking 6: A. I like to explore a strange city or section of town by myself, even if it means getting lost. B. I prefer a guide when I am in a place I don't know well.	0.077 (0.312)
Sensation Seeking 7: A. I dislike people who do or say things just to shock or upset other people. B. When you can predict almost everything a person will do and say he or she must be a bore.	0.639 (3.572)*
Sensation Seeking 8: A. I usually don't enjoy a movie or a play where I can predict what will happen in advance. B. I don't mind watching a movie or play where I can predict what will happen in advance.	0.110 (0.464)
Sensation Seeking 9: A. I have tried marijuana or would like to. B. I would never smoke marijuana.	0.705 (3.665)*

Sensation Seeking 10: A. I would not like to try any drug which might produce strange and dangerous effects on me. B. I would like to try some of the new drugs that produce hallucinations.	0.533 (3.086)*
--	----------------

Note. CR: composite reliability; AVE: average variance extracted; \*p < 0.001

## 4.5 Evaluation of the Structural Model

The overall fit of the model was evaluated, using the Goodness-of-Fit (GoF) Index. The Goodness of fit Index has been suggested as a more appropriate evaluation measure for Goodness of Fit (Tenenhaus et al., 2005). The index uses three thresholds in order to indicate the Goodness of Fit of the model. These thresholds are 0,1 for small, 0,25 for medium and 0,36 for large. The steps to reach a Goodness of Fit level have been taken, resulting in a value of 0,1718 (See Appendix B4). This is above the value of 0,1, but below the value of 0,25 ( $0,1 < 0,1718 < 0,25$ ), indicating that the model has a small good fit (Tenenhaus et al., 2005).

To assess the structural model and the hypothesised interactions, the collinearity, coefficient of determination, effect size, size and significance of path coefficients were evaluated (Hair et al., 2019).

Collinearity in the data was assessed by analysing the measured VIF values. Using SmartPLS, the highest value for VIF was measured at 1,301. The threshold for VIF values is  $<5.00$ , so no collinearity issues were detected ( $1,301 < 5,00$ ) (See Appendix B18) (Hair et al., 2019).

To measure the coefficients of determination,  $R^2$  was used, with a threshold of 0,10 for a weak explanatory power and 0,30 for a medium explanatory power (Hair et al., 2019). Comparing the measured  $R^2$  values to the thresholds reveals the  $R^2$  of indecisiveness is very weak ( $0,012 < 0,10$ ) (See Appendix B19). This very weak explanatory power of indecisiveness is further discussed in the Limitations chapter. Moreover, the  $R^2$  of the dependent dummy variables are valued as being weak ( $0,227 < 0,25$ ;  $0,215 < 0,25$ ) (See Appendix B19). This suggests that variance of the dependent variables are poorly explained by the independent variables in the model (Hair et al., 2019).

The effect sizes were measured by analysing the  $f^2$  output on SmartPLS. Three values were measured at a value of over 0,02, which is the threshold for a small effect (See Appendix B20) (Hair et al., 2019). The control variable ‘Noticed personal information’ has effects sizes of 0,030 and 0,025 on the dependent variables ‘Accept taxi’ and ‘Ride scooter’ respectively

(0,030 > 0,02; 0,025 > 0,02). The third value measured at above 0,02 is the effect control variable ‘Dummy Male’ on the dependent variable ‘Ride scooter’.

**Table 3. Path coefficients & P-values of hypothesised effects.**

Hypothesis	Relationships	Original Sample	P-value	Conclusion
H1&H2	Personalisation -> AcceptTaxi	-0.162	0.234	Hypothesis not supported (p > 0,05)
H1&H2	Personalisation -> RideScooter	0.149	0.236	Hypothesis not supported (p > 0,05)
H3	Personalisation -> Indecisiveness	0.023	0.947	Hypothesis not supported (p > 0,05)
H4	Personalisation -> Indecisiveness -> RideScooter	0,000	0.99	Hypothesis not supported (p > 0,05)
H4	Personalisation -> Indecisiveness -> AcceptTaxi	0,000	0.977	Hypothesis not supported (p > 0,05)
H5	SensationSeeking x Personalisation -> AcceptTaxi	0.108	0.476	Hypothesis not supported (p > 0,05)
H5	SensationSeeking x Personalisation -> RideScooter	-0.086	0.578	Hypothesis not supported (p > 0,05)
H6	SensationSeeking x Personalisation -> Indecisiveness	-0.242	0.54	Hypothesis not supported (p > 0,05)

Lastly, the significance of path coefficients were analysed. The first two hypotheses (H1&H2) were tested by measuring the direct effect of personalisation on the dummy variables ‘Ride Scooter’ and ‘Accept Taxi’. The effect of personalisation on ‘Ride Scooter’ was measured resulting in a non-significant, negative effect of receiving a personalised message on the choice to accept the discounted taxi ride ( $\beta = -0,162$ ;  $p > 0,05$ ) (Hair et al., 2019). The effect

of receiving a personalised message on the choice to ride the scooter was measured at a non-significant, positive value ( $\beta = 0,149$ ;  $p > 0,05$ ) (Hair et al., 2019). So, these results imply that hypothesised effects of H1 and H2 are not supported by the data. Moreover, whilst keeping in mind that the effects were non-significant, it is interesting to note that measured effects contradicted the hypothesised effects, as the personalisation had a positive effect on 'Ride Scooter' and a negative effect on 'Accept Taxi'.

The third hypothesis (H3) is concerned with the mediating effect indecisiveness has on the relationship between personalisation and choice. This effect was measured by analysing the mediation effect of 'Indecisiveness' on the relationship between personalisation on 'Ride Scooter' and 'Accept Taxi'. With regards to 'Ride Scooter', no mediating effect of indecisiveness was found ( $\beta = 0,000$ ;  $p > 0,05$ ) (Hair et al., 2019). As for 'Accept Taxi', the results were very similar, as no effect was found ( $\beta = 0,000$ ;  $p > 0,05$ ) (Hair et al., 2019). These results indicate indecisiveness does not mediate the effect between personalisation and choice, meaning the hypothesised effect of H3 is not supported.

With regards to H4, the effect of personalisation on indecisiveness was measured. No significant effect was measured here either ( $\beta = 0,023$ ;  $p > 0,05$ ) (Hair et al., 2019). Consequently, H4 is not supported by the data, indicating personalisation does not have a significant effect on indecisiveness.

The effect of sensation seeking on the relationship between personalisation and choice was hypothesised in H5. The path coefficient for this relationship was measured for the dummy variables 'Ride Scooter' and 'Accept Taxi'. The effect of sensation seeking as a moderator on the relationship between personalisation and 'Ride Scooter' was measured as being negative and non-significant ( $\beta = -0,086$ ;  $p > 0,05$ ) (Hair et al., 2019). The effect of sensation seeking as a moderator on the relationship between personalisation and 'Accept Taxi' was measured as positive, but also non-significant ( $\beta = 0,108$ ;  $p > 0,05$ ) (Hair et al., 2019). The path coefficients are in reference to the third option 'Do Neither'. This means the effect of sensation seeking on 'Ride Scooter' is positive, relative to the effect on 'Do Neither', although insignificant. The effect of sensation seeking on 'Accept Taxi' is negative, relative to the effect on 'Do Neither', although also insignificant. The insignificance of these effects means the hypothesis is not supported, indicating sensation seeking does not have a significant effect choice.

The effect of the last hypothesis (H6) was tested by measuring the effect of sensation seeking as a moderator on the relationship between personalisation and indecisiveness. The path coefficient was measured as non-significant and negative ( $\beta = -0,242$ ;  $p > 0,05$ ) (Hair et al., 2019). So, no significant effect was measured, meaning this hypothesis is also not supported by the data.

Some effects worth mentioning were found, which were not hypothesised. The control variable 'Dummy\_NoticedPersonalInfo' was measured to have a significant impact on the dependent dummy variable 'Accept Taxi' ( $\beta = 0,246$ ;  $p < 0,05$ ) (Hair et al., 2019). The path coefficient is positive, indicating that the participants who noticed personal information were more likely to accept a taxi than choose the option 'do neither'. The control variable 'Dummy\_NoticedPersonalInfo' was also very close to having a significant effect on the dependent variable 'Ride Scooter', with a p value of 0,051 ( $\beta = -0,213$ ;  $p > 0,05$ ) (Hair et al., 2019). Lastly, 60,9% of the participants chose for the discounted taxi ride (N = 112), compared to 30,4% (N = 56) choosing to get on the scooter and 8,7% (N = 16) choosing to do neither (See Appendix B23). This indicates that even though the personalisation did not lead to significant differences in choice, a large number of participants were swayed by the discounted taxi ride.

# 5. Discussion & Conclusion

## 5.1 Discussion

To address the issue of intoxicated driving on shared e-scooters, the following research question has been formulated: '*How do indecisiveness and sensation seeking affect the influence of personalisation on the choice to drive a shared e-scooter under the influence of alcohol?*'. The results discussed in Chapter 4 reveal none of the hypothesised effects are supported by the data.

Personalisation of the warning message was used to increase the perceived relevance and usefulness of the warning, in an attempt to influence the participants' choice (Bol et al., 2018). However, the personalisation of the warning messages did not impact choice to the extent that was intended (See Appendix B21). No significant difference in choice between the group receiving the personalised warning message and the group receiving the non-personalised warning message was found (See Appendix B21). As mentioned before, the manipulation check was not successful, even though it was successful during the pretest. The issue within this current research might be that the personalisation of the warning message was not clear enough to the participants. Further reflection on this issue is provided in chapter 5.4 'Limitations & Further Research'.

Delay in decision-making has been identified as an important indicator of indecisiveness (e.g. Germeijs & De Boeck, 2002; Patalano & Wengrovitz, 2007). However, indecisiveness did not serve as a significant mediator in the relationship between personalisation and choice in this current study. Due to the negligible path coefficient discussed previously, it could be suggested that indecisiveness does not play a role in the choice people make in a scenario like the one studied. On the other hand, it could be that these outcomes are a result of an incomplete measurement of indecisiveness. This is further discussed in chapter 5.4 'Limitations & Further Research'.

Sensation seeking also did not have the moderating effect that was hypothesised, since none of the moderating path coefficients were measured at significant values. According to the literature, driving under the influence of alcohol provides the thrill of a risk taking activity to an individual (Hatfield et al., 2014). A modified version of the sensation seeking scale by Zuckerman (1994) was used to measure participants' levels of sensation seeking. It was

hypothesised high levels of sensation seeking would lead to individuals being less indecisive and less likely to be influenced by personalisation to make a safer choice (Rimmö and Åberg, 1999). Due to the fact the sensation seeking scale was modified, it could be argued that the levels of sensation seeking of participants was not properly reflected in the measurement. This shall be further discussed in chapter 5.4 'Limitations & Further Research'.

To conclude, personalisation did not significantly affect the choices individuals make with regards to driving an e-scooter under the influence of alcohol. Neither has indecisiveness or sensation seeking affected the influence of personalisation in any significant way.

## **5.2 Theoretical Implications**

The goal of this research is to measure the effectiveness of personalised warning messages on the choice an individual makes, in order to prevent drunk driving on shared e-scooters. Personalisation was used to increase perceived relevance and usefulness of a warning message and motivate individuals to act a certain way (Bol et al., 2018; Postma & Brokke, 2002). A contradicting effect of personalisation could be that individuals refrain from using personalised services, as it makes them feel vulnerable (Aguirre et al., 2015; Finn & Wadhwa, 2014). No significant effect of personalisation on choice was found, contradicting the findings of the previously mentioned literature on this topic. This raises questions about the effectiveness of personalisation in different contexts. However, it is important to keep the failed manipulation-check of the research in mind.

Moreover, the effects of sensation seeking as a moderator and indecisiveness as a mediator were studied. According to prior research, individuals with high levels of sensation seeking are more likely to engage in risky behaviour (Jonah, 1997). Despite the theoretical support, no significant effect of sensation seeking was found in this research. However, it is important to note that this could be the result of a number of limitations within this research, regarding sensation seeking. These limitations are further discussed in chapter 5.4 'Limitations & Future Research'. Existing literature suggests that indecisive individuals would have a tendency to choose for the conservative option (Rassin & Muris, 2005). However, this study does not support that claim, as no significant effect of indecisiveness on choice was found. There are two possible explanations for this. The first is that indecisiveness simply does not affect choice in the specific scenario of this research. Another possible explanation is that decision-making delay does not fully capture the complexity of indecisiveness. Including other

variables that might explain the degree to which individuals experience decision-making difficulty could lead to better results (Patalano & Wengrovitz, 2007).

### **5.3 Managerial Implications**

The findings of this research can provide valuable insights for a number of organisations. First of all, the Dutch government wants to improve safety on the road, by preventing intoxicated driving (Rijksoverheid, n.d.). In 2015, it was estimated that intoxicated driving was the cause of 12 to 23% of traffic fatalities in the Netherlands. This amounted to 75 to 140 traffic fatalities in the Netherlands in that single year (SWOV, 2023). As previously mentioned, the rise of popularity of shared e-scooters is accompanied by a large increase in the number of accidents (Kleinertz et al., 2021). In at least 28% of the accidents measured in a study by Kleinertz et al. (2021), e-scooter drivers were under the influence of alcohol, highlighting the need for prevention methods to be applied to intoxicated driving on shared e-scooters. For the Dutch Government, the findings of this research can provide insights into the development of prevention methods regarding intoxicated driving. A way in which prevention could be achieved is by implementing the choice for alternative transport in shared e-scooter apps, such as in this research. Even though the personalisation of the warning messages did not lead to the desired results, 60,9% of this study's participants chose the discounted taxi ride (N = 112) (See Appendix B23). So, governments should try to focus on working together with shared e-scooter companies and with companies offering alternative modes of transport to create a system in which this is possible.

A provider of shared e-scooter the government could work together with is Felyx. Felyx is a provider of shared e-scooters in the Netherlands present in eighteen cities (felyx, n.d. a). Currently, Felyx utilises a puzzle in the app that customers have to solve to prove they are fit to ride (felyx, n.d. b). Managers of Felyx could use the findings of this research to further improve their commitment to a safer urban environment (felyx, n.d. b). Working together with the government and a provider of alternative transport would be a step towards reaching this goal they have set.

A possible provider of alternative transport that the government and Felyx could work with is Uber. Uber is a platform that matches drivers to consumers looking for rides (Uber, n.d.). Uber has launched a campaign to discourage people from driving drunk called 'Decide to Ride'. This initiative offers discounted Uber rides to consumers at events such as football

games, to prevent them from driving under the influence of alcohol (PRNewswire, 2023). Uber, Felyx and the Dutch government could partner up to expand on this campaign, by using the findings of this study and offering discounted Uber rides in the Felyx app.

## **5.4 Limitations & Further Research**

Several limitations of this research paper need to be acknowledged. First of all, the exclusion of 30 items of the SSS V, created by Zuckerman (1971), could overlook nuances in participants' levels of sensation seeking. The items were removed due to time limitations with the participants. However, this removal led to a number of issues. The construct reliability of sensation seeking was measured at a Cronbach's alpha below the acceptable threshold of 0,700 (Hair et al., 2019). This indicates the correlations between the 9 indicators are not strong enough. No more items were removed, as a higher construct reliability could not be achieved. Moreover, convergent validity of the sensation seeking construct was not achieved. As a result, the sensation seeking scale used in this research does not aptly represent the trait sensation seeking. So, any findings related to this construct need to be interpreted with caution.

Another limitation of this research is the low explanatory value of indecisiveness and an absence of any mediation effect. Indecisiveness was operationalised by measuring decision-making delay. So, indecisiveness of participants was analysed only by measuring the time it took them to make a choice. This could have led to the variable missing context and not fully capturing the complexity of indecisiveness, such as personality traits like self-esteem (Germeijs & De Boeck, 2002).

Another significant limitation of this research is the failed manipulation check. The manipulation check of the pretest was successful, as results revealed the distinction between the group receiving the personalised message and the group receiving the non-personalised was clear. The results from this manipulation check revealed participants that received the personalised message felt the message was designed for them and was targeted towards them specifically. Contrary to the manipulation check of the pretest, the manipulation check of the main experiment revealed no distinction between the two groups. The data from the manipulation check revealed that participants receiving the personalised message did find it was designed for them or targeted towards them specifically, suggesting that the

personalisation was not sufficiently clear to participants. This raises concerns about the manipulation and limits the interpretability of the experiments' results.

The use of VR offers a number of advantages regarding the simulation of risky situations, as discussed in chapter 3. But the use of VR has a number of limitations. First of all, participants of the current experiment were asked to imagine being intoxicated, whilst effects in the VE stimulated this feeling. However, the participants were not really under the influence of alcohol. So, effects of alcohol consumption, such as impulsivity could not truly be felt by participants (Del Valle Vera et al., 2018). Other limitations of VR are limited space the participants could move around in, no simulation of physical objects and limited interactivity in the VE (Bebko & Troje, 2020). So, choices made in a VE might not fully translate to real-world settings, where individuals make choices under the influence of alcohol.

Based on the limitations of this research, the following research questions have been formulated to guide future research:

**Table 4. Future research questions.**

Area of research	Research question
Sensation Seeking	How does the impact of using a full scale to measure sensation seeking compare to using a sub-scale in the context of prevention programs?
Indecisiveness	To what extent does including personality traits in the measurement of indecisiveness improve its explanatory power compared to only measuring decision-making delay?
Personalisation	Which aspects of a personalised warning message are most effective in motivating individuals to act in the desired way?
VR studies	How do the outcomes of intoxication studies conducted using VR compare to those conducted without VR technology?

## 6. References

- Aguilera-García, Á., Gomez, J., Sobrino, N., & Vinagre Díaz, J. J. (2021). Moped scooter sharing: citizens' perceptions, users' behavior, and implications for urban mobility. *Sustainability*, 13(12), 6886.
- Aguirre, E., Mahr, D., Grewal, D., De Ruyter, K., & Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of retailing*, 91(1), 34-49.
- Antoniazzi, A., Davoli, E., Nodari, C., & Crispino, M. (2023). Safety aspects of e-scooters in urban areas: Preliminary results on citizens' perception, users' behavior and role of pavement. In *Roads and Airports Pavement Surface Characteristics* (pp. 125-135). CRC Press.
- Attwood, J. (2022). New data shows big rise in collisions involving e-scooters in 2021. *Move Electric*. Retrieved from: <https://www.moveelectric.com/e-scooters/new-data-shows-big-rise-collisions-involving-e-scooters-2021>
- Awad, N. F., & Krishnan, M. S. (2006). The personalization privacy paradox: an empirical evaluation of information transparency and the willingness to be profiled online for personalization. *MIS quarterly*, 13-28.
- Bari, A., & Robbins, T. W. (2013). Inhibition and impulsivity: behavioral and neural basis of response control. *Progress in neurobiology*, 108, 44-79.
- Bebko, A. O., & Troje, N. F. (2020). bmlTUX: Design and control of experiments in virtual reality and beyond. *i-Perception*, 11(4), 2041669520938400.
- Becker, T. E. (2005). Potential problems in the statistical control of variables in organizational research: A qualitative analysis with recommendations. *Organizational research methods*, 8(3), 274-289.
- Bernerth, J. B., & Aguinis, H. (2016). A critical review and best-practice recommendations for control variable usage. *Personnel psychology*, 69(1), 229-283.
- Bieliński, T., & Ważna, A. (2020). Electric scooter sharing and bike sharing user behaviour and characteristics. *Sustainability*, 12(22), 9640.

Blomberg, S. N. F., Rosenkrantz, O. C. M., Lippert, F., & Christensen, H. C. (2019). Injury from electric scooters in Copenhagen: a retrospective cohort study. *BMJ open*, *9*(12), e033988.

Bol, N., Dienlin, T., Kruikemeier, S., Sax, M., Boerman, S. C., Strycharz, J., ... & De Vreese, C. H. (2018). Understanding the effects of personalization as a privacy calculus: Analyzing self-disclosure across health, news, and commerce contexts. *Journal of Computer-Mediated Communication*, *23*(6), 370-388.

Borges, N. J., & Hansen, S. L. (1993). Correlation between college students' driving offenses and their risks for alcohol problems. *Journal of American College Health*, *42*(2), 79-81.

Caetano, R., & Clark, C. L. (2000). Hispanics, Blacks and Whites driving under the influence of alcohol: Results from the 1995 National Alcohol Survey. *Accident Analysis & Prevention*, *32*(1), 57-64.

Centers for Disease Control and Prevention. (2022, December 28). *Impaired driving: Get the facts*. [https://www.cdc.gov/transportationsafety/impaired\\_driving/impaired\\_drv\\_factsheet.html](https://www.cdc.gov/transportationsafety/impaired_driving/impaired_drv_factsheet.html)

Chin, W.W. (1998), "The partial least squares approach to structural equation modelling", *Modern Methods for Business Research*, Vol. 295 No. 2, pp. 295-336.

Cismaru, M., Lavack, A. M., & Markewich, E. (2009). Social marketing campaigns aimed at preventing drunk driving: A review and recommendations. *International Marketing Review*, *26*(3), 292-311.

Coleman, C., Coulthard, J., Dodds, P., Salman, A., & MacDonald, R. (2024, May). Enhancing Road Safety with AI: A Secure System for Detecting Impairment through Horizontal Gaze Nystagmus. In *2024 Systems and Information Engineering Design Symposium (SIEDS)* (pp. 118-123). IEEE.

Curran, M. F., Fuertes, J. N., Alfonso, V. C., & Hennessy, J. J. (2010). The association of sensation seeking and impulsivity to driving while under the influence of alcohol. *Journal of Addictions & Offender Counseling*, *30*(2), 84-98.

Del Valle Vera, B., Pilatti, A., Garimaldi, J. A., & Pautassi, R. M. (2018). Acute effects of alcohol intoxication on decision making and impulsivity in at-risk gamblers with or without

problematic drinking. *Psychology & Neuroscience (Online)*, 11(3), 252–265.

<https://doi.org/10.1037/pne0000133>

Emerson, R. W. (2021). Convenience sampling revisited: Embracing its limitations through thoughtful study design. *Journal of Visual Impairment & Blindness*, 115(1), 76-77.

felyx. (n.d. a) *Our locations*. Retrieved from: <https://felyx.com/nl/producten/our-locations/>

felyx. (n.d. b). *Incredibly smooth, remarkably safe*. Retrieved from:

<https://felyx.com/company/safety/>

Finn, R. L., & Wadhwa, K. (2014). The ethics of “smart” advertising and regulatory initiatives in the consumer intelligence industry. *info*, 16(3), 22-39.

Fischer IV, B. A. (2006). A summary of important documents in the field of research ethics.

<https://doi.org/10.1093/schbul/sbj005>

Germeijs, V., & De Boeck, P. (2002). A measurement scale for indecisiveness and its relationship to career indecision and other types of indecision. *European Journal of Psychological Assessment*, 18(2), 113.

Gioldasis, C., Christoforou, Z., & Seidowsky, R. (2021). Risk-taking behaviors of e-scooter users: A survey in Paris. *Accident Analysis & Prevention*, 163, 106427.

Greening, L., & Stoppelbein, L. (2000). Young drivers’ health attitudes and intentions to drink and drive. *Journal of Adolescent Health*, 27(2), 94-101.

Hair, J., Black, W., Babin, B. & Anderson, R. (2019). *Multivariate Data Analysis* (8th edition), Cengage Learning.

Hair, J.F., Hult, G.T.M., Ringle, C., and Sarstedt, M. (2016), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage Publications, Thousand Oaks.

Hatfield, J., Fernandes, R., & Job, R. S. (2014). Thrill and adventure seeking as a modifier of the relationship of perceived risk with risky driving among young drivers. *Accident Analysis & Prevention*, 62, 223-229.

Hong, J. W., Noh, J. H., & Kim, D. J. (2017). The prevalence of and factors associated with high-risk alcohol consumption in Korean adults: The 2009–2011 Korea National Health and Nutrition Examination Survey. *PloS one*, *12*(4), e0175299.

Höpli, K., & Cuervo-Alvarez, R. (2016). *Virtual Buzz: Simulating visual Influences of Alcohol in an Augmented-Reality App* (Doctoral dissertation, HSR Hochschule für Technik Rapperswil).

Howard, D. J., & Kerin, R. A. (2011). The effects of name similarity on message processing and persuasion. *Journal of Experimental Social Psychology*, *47*(1), 63-71.

Impinen, A., Mäkelä, P., Karjalainen, K., Haukka, J., Lintonen, T., Lillsunde, P., ... & Ostamo, A. (2011). The association between social determinants and drunken driving: a 15-year register-based study of 81,125 suspects. *Alcohol and alcoholism*, *46*(6), 721-728.

Janis, I. L., & Mann, L. (1977). *Decision making*. New York: Free Press.

Jonah, B. A. (1997). Sensation seeking and risky driving: a review and synthesis of the literature. *Accident Analysis & Prevention*, *29*(5), 651-665.

Kalyanaraman, S., & Sundar, S. S. (2006). The psychological appeal of personalized content in web portals: Does customization affect attitudes and behavior?. *Journal of Communication*, *56*(1), 110-132.

King, A. J., Jensen, J. D., Davis, L. A., & Carcioppolo, N. (2014). Perceived visual informativeness (PVI): Construct and scale development to assess visual information in printed materials. *Journal of health communication*, *19*(10), 1099-1115.

Kleinertz, H., Ntalos, D., Hennes, F., Nüchtern, J. V., Frosch, K. H., & Thiesen, D. M. (2021). Accident mechanisms and injury patterns in E-scooter users: a retrospective analysis and comparison with cyclists. *Deutsches Ärzteblatt International*, *118*(8), 117.

Leary, M., Pursey, K. M., Verdejo-Garcia, A., Smout, S., McBride, N., Osman, B., ... & Burrows, T. L. (2022). Socio-demographic, self-control, bullying, parenting, and sleep as proximal factors associated with food addiction among adolescents. *Behavioral Sciences*, *12*(12), 488.

Linowes, J. (2015). *Unity virtual reality projects*. Packt Publishing Ltd.

Martin, K. D., & Murphy, P. E. (2017). The role of data privacy in marketing. *Journal of the Academy of Marketing Science*, *45*, 135-155.

Mer, P. (2022). A study on Electric Scooters in India: Comparison and Purchase Intention of potential customers (Doctoral dissertation, School of Petroleum Management).

McMullin, S. D., Motschman, C. A., Hatz, L. E., McCarthy, D. M., & Davis-Stober, C. P. (2022). Decision strategies while intoxicated relate to alcohol-impaired driving attitudes and intentions. *Psychology of addictive behaviors*.

Morgenstern, M., Wiborg, G., Isensee, B., & Hanewinkel, R. (2009). School-based alcohol education: results of a cluster-randomized controlled trial. *Addiction*, 104(3), 402-412.

<https://doi.org/10.1111/j.1360-0443.2008.02471.x>

Oh, S., Vaughn, M. G., Salas-Wright, C. P., AbiNader, M. A., & Sanchez, M. (2020). Driving under the influence of alcohol: findings from the NSDUH, 2002–2017. *Addictive behaviors*, 108, 106439.

Özmen, E. (2023). Examining Women's Intention to Use E-Scooters with Technology Acceptance Model: Istanbul Case. *OPUS Journal of Society Research*, 20(52), 224-238.

Patalano, A. L., & Wengrovitz, S. M. (2007). Indecisiveness and response to risk in deciding when to decide. *Journal of Behavioral Decision Making*, 20(4), 405-424.

Portman, M., Penttilä, A., Haukka, J., Eriksson, P., Alho, H., & Kuoppasalmi, K. (2010). Predicting DUI recidivism of male drunken driving: a prospective study of the impact of alcohol markers and previous drunken driving. *Drug and alcohol dependence*, 106(2-3), 186-192.

Postma, O. J., & Brokke, M. (2002). Personalisation in practice: The proven effects of personalisation. *The Journal of Database Marketing & Customer Strategy Management*, 9(2), 137–142. <https://doi.org/10.1057/palgrave.jdm.3240069>

PRNewswire. (2023, August 31). *Anheuser-Busch, MADD, and Uber Launch 'Decide To Ride' Campaign on College Campuses to Encourage 21+ Fans to Plan Ahead for Sober Rides on Game Days*. PRNewswire. Retrieved from: <https://www.prnewswire.com/news-releases/anheuser-busch-madd-and-uber-launch-decide-to-ride-campaign-on-college-campuses-to-encourage-21-fans-to-plan-ahead-for-sober-rides-on-game-days-301914575.html>

Qu, W., Zhang, W., & Ge, Y. (2020). The moderating effect of delay discounting between sensation seeking and risky driving behavior. *Safety science*, 123, 104558.

Rassin, E., & Muris, P. (2005). Indecisiveness and the interpretation of ambiguous situations. *Personality and Individual Differences*, 39(7), 1285-1291.

Rijksoverheid. (2022). Rijden Onder Invloed in Nederland in 2006-2022. *Ministerie van Infrastructuur & Waterstaat. Rijkswaterstaat Water, Verkeer en Leefomgeving*. Retrieved from: <https://www.rijksoverheid.nl/documenten/rapporten/2022/11/25/bijlage-2-aanbieding-rijden-onder-invloed-in-nederland-in-2006-2022>

Rijksoverheid. (2024). Nuchter rijden nader verklaard. *Ministerie van Infrastructuur en Waterstaat*. Retrieved from: <https://open.overheid.nl/documenten/3f95c16c-5069-4026-b9ab-fbfa11ac9d5c/file>

Rijksoverheid. (n.d.) Maatregelen Verkeersveiligheid. *Ministerie van Infrastructuur en Waterstaat*. Retrieved from: <https://www.rijksoverheid.nl/onderwerpen/verkeersveiligheid/maatregelen-verkeersveiligheid>

Riala, K., Isohanni, I., Jokelainen, J., Taanila, A., Isohanni, M., & Räsänen, P. (2003). Low educational performance is associated with drunk driving: a 31-year follow-up of the northern Finland 1966 birth cohort. *Alcohol and alcoholism*, 38(3), 219-223.

Rimmö, P. A., & Åberg, L. (1999). On the distinction between violations and errors: sensation seeking associations. *Transportation Research Part F: Traffic Psychology and Behaviour*, 2(3), 151-166.

Rose, J., Schellong, D., Schaezberger, C., & Hill, J. (2020). How e-scooters can win a place in urban transport. BCG Global. Available online: <https://www.bcg.com/publications/2020/e-scooters-can-win-place-in-urban-transport>

Simcox, G. (2021, July 25). *E-scooter hire firms use apps to determine if a rider has been drinking to stop them riding intoxicated*. Mail Online. <https://www.dailymail.co.uk/news/article-9823245/E-scooter-hire-firms-use-apps-determine-rider-drinking.html>

Stoppelbein, L., & Greening, L. (2000). Posttraumatic stress symptoms in parentally bereaved children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(9), 1112-1119.

Strycharz, J., van Noort, G., Helberger, N., & Smit, E. (2019). Contrasting perspectives—practitioner’s viewpoint on personalised marketing communication. *European Journal of Marketing*, 53(4), 635-660.

SWOV. (2023, September 1). Rijden onder invloed van alcohol.

<https://swov.nl/nl/factsheet/rijden-onder-invloed-van-alcohol#:~:text=Volgens%20de%20laatste%20meting%20>

Taylor, A. W., Bewick, B. M., Makanjuola, A. B., Qian, L., Kirzhanova, V. V., & Alterwain, P. (2017). Context and culture associated with alcohol use amongst youth in major urban cities: A cross-country population based survey. *PLoS One*, 12(11), e0187812.m

<https://doi.org/10.1371/journal.pone.0187812>

Teeny, J. D., Siev, J. J., Briñol, P., & Petty, R. E. (2021). A review and conceptual framework for understanding personalized matching effects in persuasion. *Journal of Consumer Psychology*, 31(2), 382-414.

Tenenhaus, M., Vinzi, V. E., Chatelin, Y.-M., & Lauro, C. (2005). Pls path modeling. *Computational Statistics and Data Analysis*, 48(1), 159–205.

<https://doiorg.ru.idm.oclc.org/10.1016/j.csda.2004.03.005>

Turrisi, R., & Jaccard, J. (1991). Judgment Processes Relevant to Drunk Driving 1. *Journal of Applied Social Psychology*, 21(2), 89-118.

Uber. (n.d.) *Uber’s technology offerings*. Uber. Retrieved from:

[https://www.uber.com/nl/en/about/uber-offerings/?uclick\\_id=2f47c806-a1db-4745-a3a2-6a214cfcc51c](https://www.uber.com/nl/en/about/uber-offerings/?uclick_id=2f47c806-a1db-4745-a3a2-6a214cfcc51c)

Vignolles, A., & Waiguny, M. K. (Eds.). (2023). *Advances in Advertising Research (Vol. XII): Communicating, Designing and Consuming Authenticity and Narrative* (Vol. 12). Springer Nature.

Zanis, D. A., McLellan, A. T., & Corse, S. (1997). Is the Addiction Severity Index a reliable and valid assessment instrument among clients with severe and persistent mental illness and substance abuse disorders?. *Community Mental Health Journal*, 33, 213-227.

Zuckerman, M., Kolin, E. A., Price, L., & Zoob, I. (1964). Development of a sensation-seeking scale. *Journal of consulting psychology*, 28(6), 477.

Zuckerman, M. (1971). Dimensions of sensation seeking. *Journal of consulting and clinical psychology*, 36(1), 45.

Zuckerman, M. (1984). Sensation seeking: A comparative approach to a human trait. *Behavioral and brain sciences*, 7(3), 413-434.

Zuckerman, M. (1994). Behavioral expressions and biosocial bases of sensation seeking. Cambridge university press.

# 7. Appendix

## Appendix A: Pretest Survey

Figure A1.

Please read each statement carefully and indicate how much you agree or disagree with it.

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
The warning message seemed to be designed specifically to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The warning message targeted me as a unique individual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure A2.

Did you notice personal information in the warning message?

- Yes
- No
- I do not recall

Figure A3.

Did you see your name on the warning message?

Yes

No

I do not recall

**Figure A4.**

Please read each statement carefully and indicate how much you agree or disagree with it.

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
The warning message contained essential information.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The information in the warning message was clear.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix B: SPSS & SMARTPLS data

**Table B1.**

Group Statistics					
	Personalized or non-personalized	N	Mean	Std. Deviation	Std. Error Mean
PersonalizationLevel1	Personalized	10	5,2500	1,49536	,47288
	Non-personalized	10	3,3500	1,22588	,38766
InformativenessLevel	Personalized	10	5,7500	1,33853	,42328
	Non-personalized	10	5,9500	,83166	,26300

**Table B2.**

**Independent Samples Test**

		Levene's Test for Equality of Variances					t-test for Equality of Means			95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
PersonalizationLevel1	Equal variances assumed	,240	,630	3,107	18	,006	1,90000	,61146	,61536	3,18464	
	Equal variances not assumed			3,107	17,333	,006	1,90000	,61146	,61181	3,18819	
InformativenessLevel	Equal variances assumed	1,290	,271	-,401	18	,693	-,20000	,49833	-,124695	,84695	
	Equal variances not assumed			-,401	15,048	,694	-,20000	,49833	-,126187	,86187	

**Table B3.**

	<b>Original sample (O)</b>	<b>Sample mean (M)</b>	<b>Standard deviation (STDEV)</b>	<b>T statistics ( O/STDEV )</b>	<b>P values</b>
<b>SensationSeeking1 &lt;- SensationSeeking</b>	0.538	0.463	0.18	2.99	<b>0.003</b>
<b>SensationSeeking10 &lt;- SensationSeeking</b>	0.553	0.476	0.179	3.086	<b>0.002</b>
<b>SensationSeeking2 &lt;- SensationSeeking</b>	0.11	0.116	0.221	0.499	<b>0.618</b>
<b>SensationSeeking3 &lt;- SensationSeeking</b>	0.331	0.282	0.227	1.457	<b>0.145</b>
<b>SensationSeeking5 &lt;- SensationSeeking</b>	0.278	0.255	0.174	1.596	<b>0.11</b>

<b>SensationSeeking6 &lt;- SensationSeeking</b>	0.077	0.074	0.248	0.312	<b>0.755</b>
<b>SensationSeeking7 &lt;- SensationSeeking</b>	0.639	0.55	0.179	3.572	<b>0</b>
<b>SensationSeeking8 &lt;- SensationSeeking</b>	0.11	0.1	0.237	0.464	<b>0.642</b>
<b>SensationSeeking9 &lt;- SensationSeeking</b>	0.705	0.587	0.192	3.665	<b>0</b>

**Table B4.**

GoF-Index calculation:	
Mean construct reliability	$0.538 * 0.538 + 0.11 * 0.11 + 0.331 * 0.331$ $+ 0.278 * 0.278 + 0.077 * 0.077 + 0.639 *$ $0.639 + 0.11 * 0.11 + 0.705 * 0.705 + 0.553$ $* 0.553 = 1.717573$ $1.717573 / 9 = 0.19084144$
Mean R-square	$0.219+0+0.016+0.229=0.464$ $0.464/3 =$

Mean construct communality x Mean $R^2$	$0.19084144 * 0.15467 = 0.02951745$
GoF-Index	$\sqrt{0.02951745} = 0.1718$

**Table B5.**

### Have you ever consumed alcohol?

		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Yes	177	96,2	96,7	96,7
	No	6	3,3	3,3	100,0
	Total	183	99,5	100,0	
Missing	System	1	,5		
Total		184	100,0		

**Table B6.**

### What is your gender?

		Frequenc y	Percent	Valid Percent	Cumulative Percent
Valid	Male	97	52,7	52,7	52,7
	Female	85	46,2	46,2	98,9
	Other	2	1,1	1,1	100,0
	Total	184	100,0	100,0	

**Table B7.**

### Group Statistics

	Personalized or Non-Personalized	N	Mean	Std. Deviation	Std. Error Mean
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message seemed to be designed specifically to me.	0	93	3,48	1,717	,178
	Personalized	91	3,82	1,637	,172
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message targeted me as a unique individual.	0	92	3,52	1,680	,175
	Personalized	91	3,98	1,584	,166

**Table B8.**

		Levene's Test for Equality of Variances				t-Test for Equality of Means				95% Confidence Interval of the Difference	
		F	Sig.	t	df	Significance One-Sided p	Significance Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message seemed to be designed specifically to me.	Equal variances assumed	,172	,678	-1,375	182	,085	,171	-,340	,247	-,828	,148
	Equal variances not assumed			-1,376	181,879	,085	,170	-,340	,247	-,828	,148
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message targeted me as a unique individual.	Equal variances assumed	1,056	,306	-1,889	181	,030	,060	-,456	,241	-,933	,020
	Equal variances not assumed			-1,890	180,589	,030	,060	-,456	,241	-,933	,020

**Table B9.**

### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Std. Error
Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Personalized or Non-Personalized	184	1	2	1,51	,501	,251	-,022	,179

Time in Seconds before choice made	184	,666	46,984	6,4350 7	4,90923 2	24,101	3,903	,179
Which option did you pick in the VR scenario?	184	1	3	1,48	,652	,426	1,036	,179
What is your gender?	184	1	3	1,48	,522	,273	,298	,179
How old are you?	184	1	4	2,11	,351	,124	2,416	,179
What is your highest completed level of education? - Selected Choice	184	1	6	2,38	1,447	2,095	,252	,179
Do you have a valid driver's license?	182	1	2	1,15	,362	,131	1,935	,180
Have you ever driven an (e-)scooter?	183	1	2	1,43	,496	,246	,301	,180

How frequently have you driven an e-scooter in the past year?	184	1	7	5,84	1,357	1,842	-1,172	,179
Have you ever consumed alcohol?	183	1	2	1,03	,179	,032	5,291	,180
Have you ever been drunk?	183	1	2	1,09	,283	,080	2,945	,180
Have you ever driven a motorized vehicle when you had consumed enough alcohol to be in trouble, had the police stopped you?	184	0	1	,21	,406	,165	1,462	,179

<p>Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message seemed to be designed specifically to me.</p>	184	1	7	3,65	1,682	2,829	,172	,179
<p>Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message targeted me</p>	183	1	7	3,75	1,645	2,706	,140	,180

as a unique individual.									
Did you notice personal information in the warning message?	184	1	3	2,14	,733	,537	-,227	,179	
Did you see your name on the warning message?	184	1	3	2,03	,701	,491	-,045	,179	
Total Sensation Seeking	183	1,00	9,00	4,5246	1,90378	3,624	,027	,180	
Valid N (listwise)	180								

**Table B10.**

**Descriptive Statistics**

Kurtosis

	Statistic	Std. Error
Personalized or Non-Personalized	-2,022	,356
Time in Seconds before choice made	25,791	,356
Which option did you pick in the VR scenario?	-,065	,356
What is your gender?	-1,388	,356
How old are you?	6,771	,356
What is your highest completed level of education? - Selected Choice	-1,590	,356
Do you have a valid driver's license?	1,763	,358
Have you ever driven an (e-)scooter?	-1,931	,357
How frequently have you driven an e-scooter in the past year?	1,347	,356
Have you ever consumed alcohol?	26,279	,357
Have you ever been drunk?	6,749	,357
Have you ever driven a motorized vehicle when you had consumed enough alcohol to be in trouble, had the police stopped you?	,139	,356
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message seemed to be designed specifically to me.	-1,047	,356
Please take your time to carefully read the following statements and indicate whether you agree or disagree with them. - The warning message targeted me as a unique individual.	-1,079	,357
Did you notice personal information in the warning message?	-1,107	,356
Did you see your name on the warning message?	-,944	,356

Total Sensation Seeking		-,651	,357
Valid N (listwise)			

**Table B11.**

Descriptive Statistics									
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
log_Indecisiveness	184	-,41	3,85	1,6706	,60511	,099	,179	1,055	,356
Valid N (listwise)	184								

**Table B12.**

Descriptive Statistics									
	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
Age_Transformed	184	1,00	2,00	1,1141	,31884	2,447	,179	4,032	,356
Valid N (listwise)	184								

**Table B13.**

Have you ever been drunk?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	167	90,8	91,3	91,3
	No	16	8,7	8,7	100,0
	Total	183	99,5	100,0	
Missing	System	1	,5		
Total		184	100,0		

**Table B14.**

Composite Reliability	Original Sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistic	P value
SensationSeeking	0.605	0.516	0.160	3.793	0.000

**Table B15.**

Reliability Statistics	
Cronbach's Alpha <sup>a</sup>	N of Items
-,100	10

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

**Table B16.**

**Reliability Statistics**

Cronbach's Alpha	N of Items
,481	10

**Table B17.**

**Item-Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q32	4,09	3,069	,203	,453
Q33	4,42	3,410	,066	,492
Q34	4,10	2,940	,282	,423
Q35	4,08	3,401	,014	,518
Q36	4,52	3,306	,238	,449
Q37	3,82	3,237	,199	,455
Q38	4,28	3,114	,196	,455
Q39	4,22	3,095	,194	,456
Q40	3,91	2,975	,321	,413
Q41	4,22	2,933	,296	,419

**Table B18.**

	VIF
AcceptTaxi	1

DidNotNoticeName	1
DidNotNoticePersonalInformation	1
DrivenDrunkYes	1
DrunkYes	1
EduLvl	1
License	1
Log_Indecisiveness	1
Male	1
NoticedName	1
NoticedPersonalInformation	1
RideScooter	1
dsgnd	1
sctrYN	1
sctrfrq	1
trgtd	1

Pers	1
SensationSeeking x Personalisation	1
SensationSeeking7	1.058
SensationSeeking6	1.059
SensationSeeking8	1.079
SensationSeeking2	1.082
SensationSeeking5	1.084
SensationSeeking3	1.1
SensationSeeking1	1.13
SensationSeeking10	1.243
SensationSeeking9	1.301

**Table B19.**

	<b>R-square</b>	<b>R-square adjusted</b>
<b>AcceptTaxi</b>	0.215	0.134
<b>Indecisiveness</b>	0.012	-0.004

<b>RideScooter</b>	0.227	0.147
--------------------	-------	-------

**Table B20.**

	<b>AcceptTaxi</b>	<b>Indecisiveness</b>	<b>RideScooter</b>
<b>AcceptTaxi</b>			
<b>DesignedSpecificallyForMe</b>	0.000		0.000
<b>DrivenScooterYesNo</b>	0.003		0.000
<b>Dummy_DidNotNoticeName</b>	0.002		0.000
<b>Dummy_DidNotNoticePersonalInfo</b>	0.003		0.004
<b>Dummy_DrivenDrunk_Yes</b>	0.014		0.015
<b>Dummy_Male</b>	0.009		0.023
<b>Dummy_NoticedName</b>	0.000		0.001
<b>Dummy_NoticedPersonalInfo</b>	0.030		0.025
<b>EducationLevel</b>	0.013		0.003
<b>Indecisiveness</b>	0.002		0.000
<b>Licence</b>	0.004		0.010

<b>RideScooter</b>			
<b>ScooterFrequency</b>	0.002		0.013
<b>SensationSeeking</b>	0.009	0.001	0.009
<b>TargetedMe</b>	0.019		0.013
<b>Personalisation</b>	0.007	0.000	0.007
<b>SensationSeeking x Personalisation</b>	0.003	0.003	0.002

**Table B21.**

	<b>Original sample (O)</b>	<b>Sample mean (M)</b>	<b>Standard deviation (STDEV)</b>	<b>T statistics ( O/STDEV )</b>	<b>P values</b>
<b>DesignedSpecificallyForMe -&gt; AcceptTaxi</b>	-0.004	-0.001	0.042	0.105	0.916
<b>DesignedSpecificallyForMe -&gt; RideScooter</b>	0.011	0.009	0.038	0.299	0.765
<b>DrivenScooterYesNo -&gt; AcceptTaxi</b>	-0.068	-0.072	0.113	0.600	0.548
<b>DrivenScooterYesNo -&gt; RideScooter</b>	-0.020	-0.017	0.102	0.198	0.843
<b>Dummy_DidNotNoticeName - &gt; AcceptTaxi</b>	-0.049	-0.050	0.091	0.534	0.593

<b>Dummy_DidNotNoticeName -&gt; RideScooter</b>	0.006	0.005	0.082	0.075	<b>0.940</b>
<b>Dummy_DidNotNoticePerson allInfo -&gt; AcceptTaxi</b>	0.063	0.068	0.089	0.708	<b>0.479</b>
<b>Dummy_DidNotNoticePerson allInfo -&gt; RideScooter</b>	-0.065	-0.066	0.083	0.790	<b>0.430</b>
<b>Dummy_DrivenDrunk_Yes -&gt; AcceptTaxi</b>	-0.161	-0.142	0.117	1.376	<b>0.169</b>
<b>Dummy_DrivenDrunk_Yes -&gt; RideScooter</b>	0.156	0.139	0.119	1.312	<b>0.190</b>
<b>Dummy_Male -&gt; AcceptTaxi</b>	-0.096	-0.094	0.081	1.185	<b>0.236</b>
<b>Dummy_Male -&gt; RideScooter</b>	0.142	0.139	0.076	1.882	<b>0.060</b>
<b>Dummy_NoticedName -&gt; AcceptTaxi</b>	-0.014	-0.001	0.113	0.127	<b>0.899</b>
<b>Dummy_NoticedName -&gt; RideScooter</b>	-0.037	-0.050	0.110	0.337	<b>0.736</b>
<b>Dummy_NoticedPersonalInfo -&gt; AcceptTaxi</b>	0.246	0.241	0.111	2.219	<b>0.027</b>
<b>Dummy_NoticedPersonalInfo -&gt; RideScooter</b>	-0.213	-0.205	0.109	1.953	<b>0.051</b>
<b>EducationLevel -&gt; AcceptTaxi</b>	-0.052	-0.051	0.037	1.379	<b>0.168</b>
<b>EducationLevel -&gt; RideScooter</b>	0.024	0.023	0.034	0.717	<b>0.473</b>

<b>Indecisiveness -&gt; AcceptTaxi</b>	-0.019	-0.021	0.037	0.520	<b>0.603</b>
<b>Indecisiveness -&gt; RideScooter</b>	-0.007	-0.006	0.034	0.201	<b>0.841</b>
<b>License -&gt; AcceptTaxi</b>	0.087	0.083	0.090	0.963	<b>0.335</b>
<b>License -&gt; RideScooter</b>	-0.126	-0.122	0.085	1.480	<b>0.139</b>
<b>ScooterFrequency -&gt; AcceptTaxi</b>	0.028	0.018	0.059	0.476	<b>0.634</b>
<b>ScooterFrequency -&gt; RideScooter</b>	-0.074	-0.066	0.056	1.332	<b>0.183</b>
<b>SensationSeeking -&gt; AcceptTaxi</b>	-0.140	-0.211	0.121	1.155	<b>0.248</b>
<b>SensationSeeking -&gt; Indecisiveness</b>	0.090	0.059	0.247	0.363	<b>0.717</b>
<b>SensationSeeking -&gt; RideScooter</b>	0.129	0.193	0.111	1.161	<b>0.246</b>
<b>TargetedMe -&gt; AcceptTaxi</b>	0.089	0.082	0.049	1.826	<b>0.068</b>
<b>TargetedMe -&gt; RideScooter</b>	-0.071	-0.064	0.047	1.517	<b>0.129</b>
<b>Personalisation -&gt; AcceptTaxi</b>	-0.162	-0.142	0.136	1.191	<b>0.234</b>
<b>Personalisation -&gt; Indecisiveness</b>	0.023	-0.034	0.341	0.067	<b>0.947</b>
<b>Personalisation -&gt; RideScooter</b>	0.149	0.133	0.126	1.185	<b>0.236</b>

<b>SensationSeeking x Personalisation -&gt; AcceptTaxi</b>	0.108	0.103	0.151	0.712	<b>0.476</b>
<b>SensationSeeking x Personalisation -&gt; Indecisiveness</b>	-0.242	-0.181	0.394	0.613	<b>0.540</b>
<b>SensationSeeking x Personalisation -&gt; RideScooter</b>	-0.086	-0.081	0.154	0.556	<b>0.578</b>

**Table B22.**

	<b>Original sample (O)</b>	<b>Sample mean (M)</b>	<b>Standard deviation (STDEV)</b>	<b>T statistics ( O/STDEV  )</b>	<b>P values</b>
<b>Personalisation -&gt; Indecisiveness -&gt; RideScooter</b>	-0.000	0.001	0.012	0.013	<b>0.990</b>
<b>Personalisation -&gt; Indecisiveness -&gt; AcceptTaxi</b>	-0.000	0.000	0.015	0.029	<b>0.977</b>

**Table B23.**

**Which option did you pick in the VR scenario?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accept taxi ride with a 50% discount	112	60,9	60,9	60,9
	Get on the scooter	56	30,4	30,4	91,3
	Do neither	16	8,7	8,7	100,0
	Total	184	100,0	100,0	

**Table B24.**

Personalisation		0.139	0.219	0.017	0.007	0.034	0.095	0.027	0.274	0.498	0.021	0.102	0.275	0.402	0.002	0.101	0.014
Targeted me			0.163	0.015	0.166	0.013	0.218	0.112	0.300	0.202	0.059	0.076	0.338	0.110	0.021	0.682	0.210
Sensation seeking				0.472	0.255	0.164	0.095	0.222	0.104	0.257	0.262	0.382	0.127	0.200	0.346	0.227	0.250
Scooter frequency					0.252	0.238	0.043	0.146	0.002	0.088	0.146	0.444	0.027	0.013	0.721	0.042	0.224
Ride scooter						0.004	0.008	0.088	0.221	0.078	0.295	0.275	0.049	0.033	0.192	0.074	0.825
Licence							0.076	0.137	0.211	0.181	0.024	0.152	0.041	0.039	0.331	0.048	0.052
Indecisiveness								0.117	0.026	0.129	0.046	0.060	0.044	0.089	0.006	0.095	0.060
Education level									0.023	0.018	0.046	0.154	0.039	0.051	0.229	0.079	0.136
Noticed personal info										0.490	0.270	0.061	0.457	0.253	0.073	0.202	0.244
Noticed name											0.133	0.086	0.331	0.556	0.027	0.205	0.091
Male												0.322	0.039	0.012	0.190	0.005	0.246
Driven drunk													0.029	0.150	0.361	0.066	0.251
Did not notice personal info														0.418	0.049	0.244	0.088
Sensation seeking															0.052	0.099	0.072
Licence																0.049	0.223
Indecisiveness																	0.113

## Appendix C: Consent Form

### Consent form

**Purpose:** The purpose of this research study is to investigate an individual’s decision-making process in an intoxication simulation.

**Equipment:** Virtual Reality (VR) headset, Computer

**Procedure:** This research consists of two parts: first, you will be exposed to a Virtual Reality (VR) experiment, after this you will be asked to complete a survey. The VR experiment will consist out of a Virtual Reality simulation in which you will be asked to convey an answer to a certain warning notification you will see on a mobile phone. Please read the text thoroughly.

**By signing the consent form you agree to the following:**

- I understand that the Virtual Reality simulation will be recorded.
- I understand that Virtual Reality experiences are immersive and can feel extremely realistic at times.
- I confirm that I do not have any physical, mental or health-related reasons or problems that should preclude my participation in the Virtual Reality experiment (e.g. dizziness, nausea, epilepsy, seizures).
- I confirm that I assume all of the physical and psychological risks and their possible consequences for me associated with the use of Virtual Reality equipment.

If you agree to participate in this study, you will be asked to do the following:

- a) Be immersed in VR experiment using the VR headset and be recorded.
- b) Complete a short survey.

This research will take about 5 to 10 minutes (including briefing, set up/calibration and survey).

**Health Notice/Risks:**

The VR headset you will be administered is not expected to cause any harm or discomfort, however if you experience feelings of distress as a result of participation in this study you can let the researcher know and you will be provided with assistance. You are allowed to withdraw at any given time. In some cases, participants report a so-called 'Virtual Reality Simulator Sickness' caused by the Virtual Reality experience, which can cause dizziness, headaches, anxiety, or other effects on the user's sense of balance, or other mental or physical negative effects when experiencing Virtual Reality. I voluntarily assume all associated risks and take full responsibility for these and any other consequences that may arise from my participation. I agree to report any discomfort or disorientation immediately, so that the researcher can remove the equipment and take appropriate measures to assist.

**Confidentiality:** Your participation in this study is entirely voluntary and you may refuse to complete the study at any point during the experiment or refuse to answer any questions with which you are uncomfortable. You may also stop at any time and ask the researcher any questions you may have. Your data will be treated strictly confidential and will be used for a research project, in which data of all participants will be collated. The collected data can and may only be shared with the researcher's supervisor. Information collected for this research project may be made available to other research projects in de-identified form only. Additionally, the information and results from this project may be submitted for publication in the Radboud Thesis repository, however this information will not identify you in any way.

**Contact and Questions:**

If you have any questions regarding this study, you may contact the researcher via [Joep.weijs@ru.nl](mailto:Joep.weijs@ru.nl)

**Statement of Consent:**

I have read and understood the above information. I have asked any questions I had regarding the experimental procedure, and they have been answered to my satisfaction. I consent to participate in this study. Please sign below.

Date: \_\_\_\_\_

Name of participant: \_\_\_\_\_

Signature of Participant \_\_\_\_\_

If you are interested in the thesis, you will be able to find it in the Radboud repository after summer.

Thanks for your participation!

## **Appendix D: Scenario**

“Consider the following scenario. You are walking home from a social setting where you had several alcoholic drinks. You’ve reached a level of intoxication where driving is illegal, and you need to get home. It is late at night, therefore there are no public transportation options available. As you walk, you see an moped style e-scooter available for public short-term rental. You are contemplating using this vehicle as a way to get home. Please put on the headset and walk towards the scooter.”

## **Appendix E: VR Setting & Panels**

**Figure E1: Scene open**



Figure E2: Unlock Scooter Panel

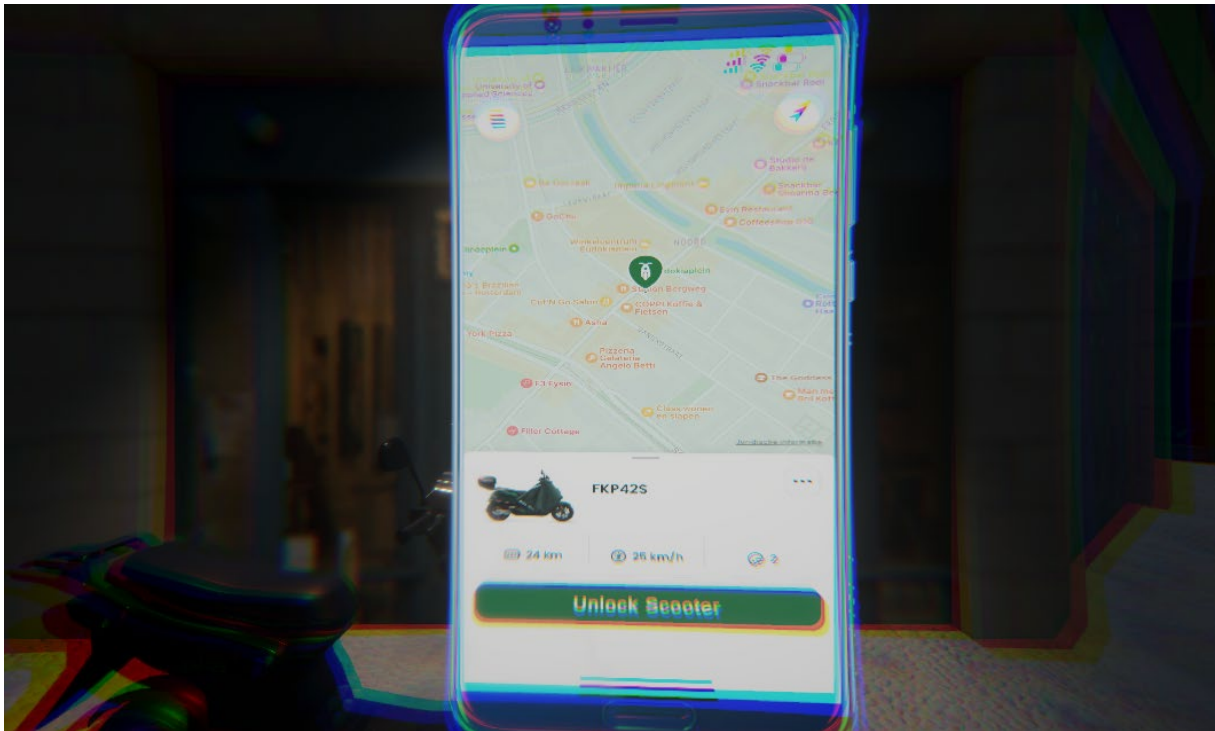


Figure E3: Dot Panel

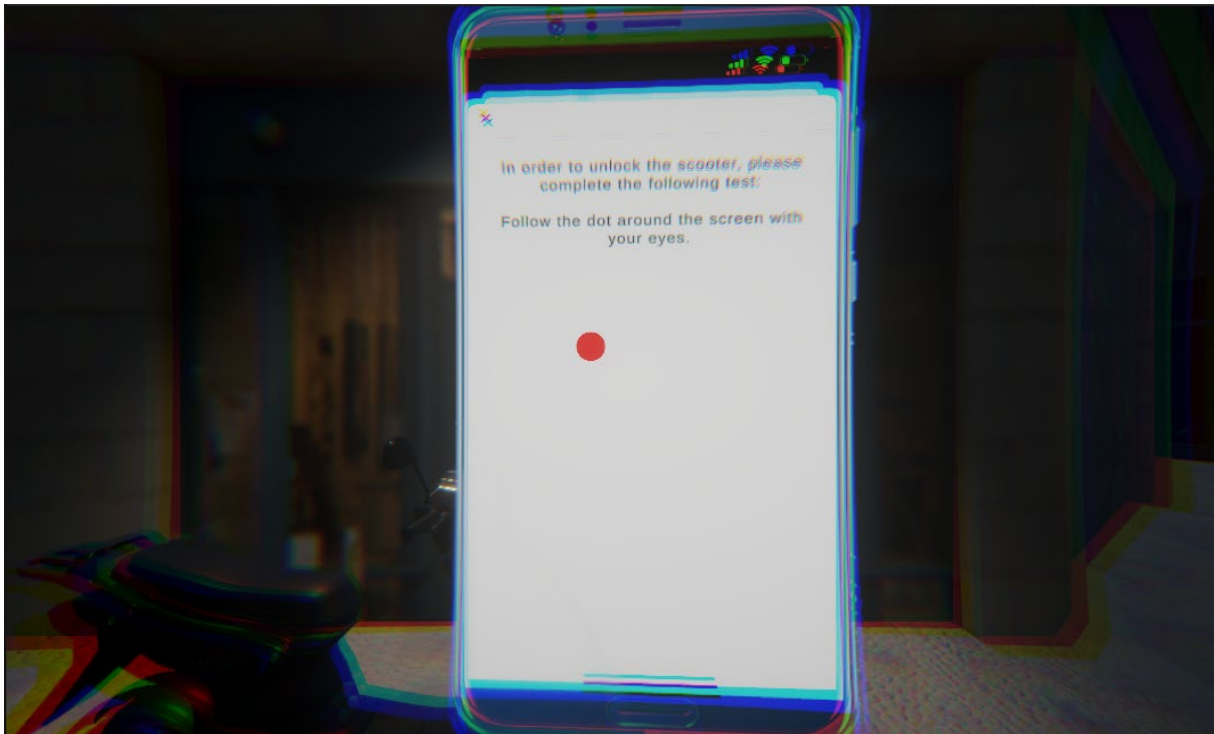


Figure E4: Personalised Warning Message Panel

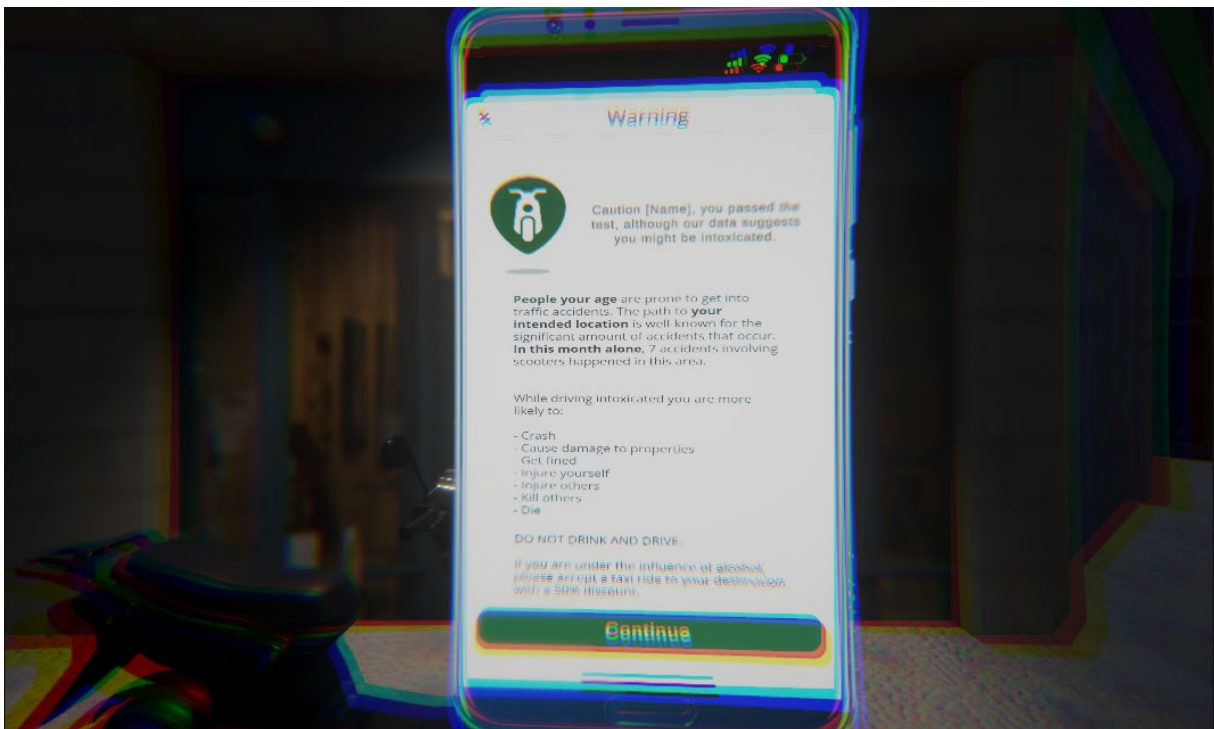


Figure E5: Non-Personalised Warning Message Panel

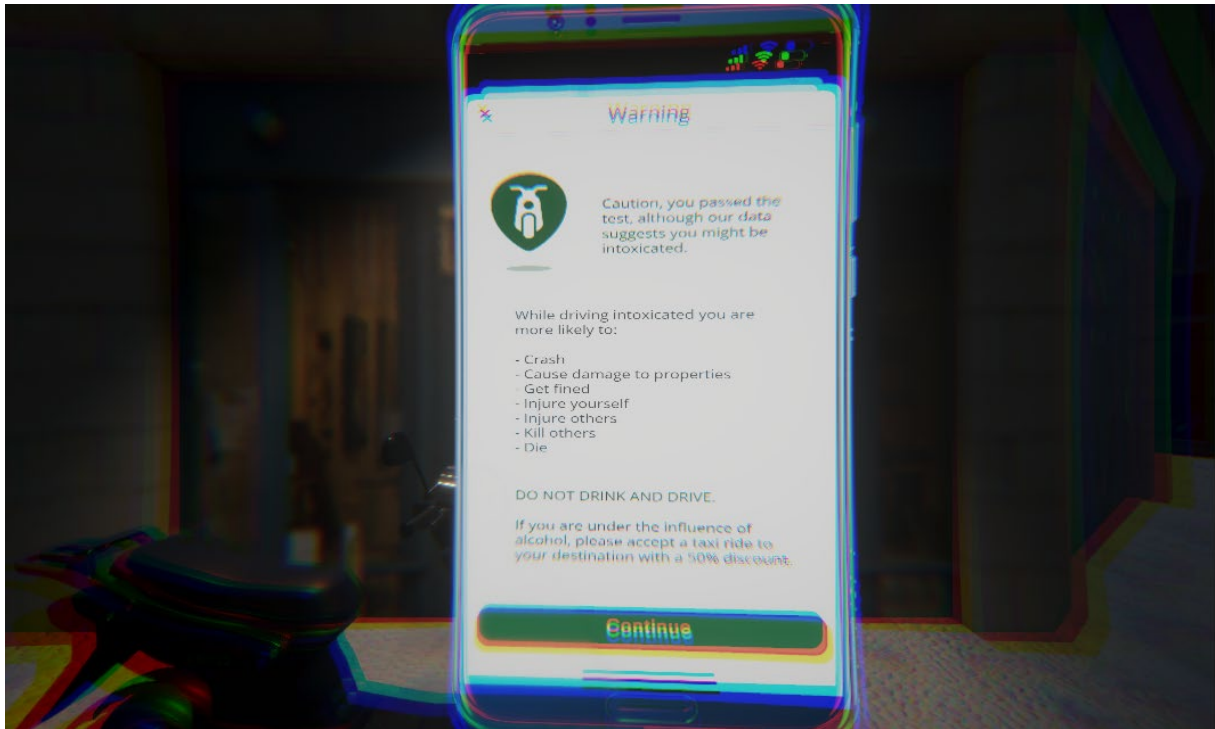


Figure E6: Choice Panel

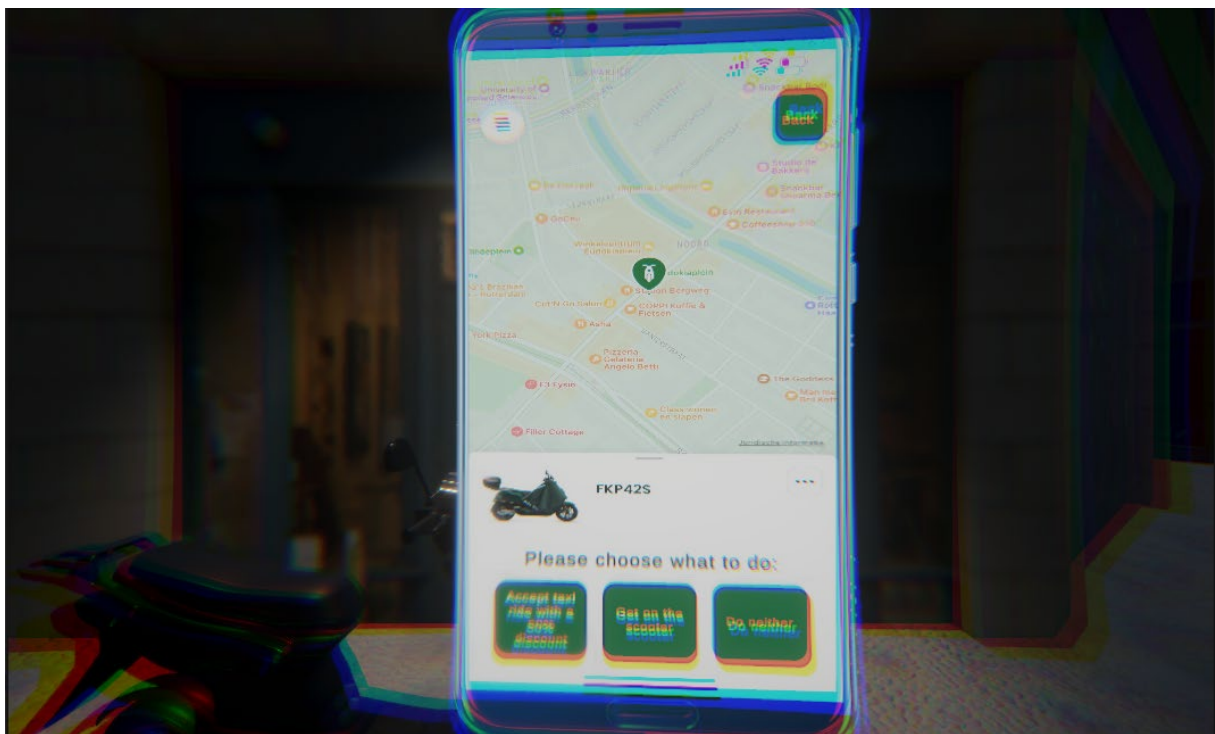
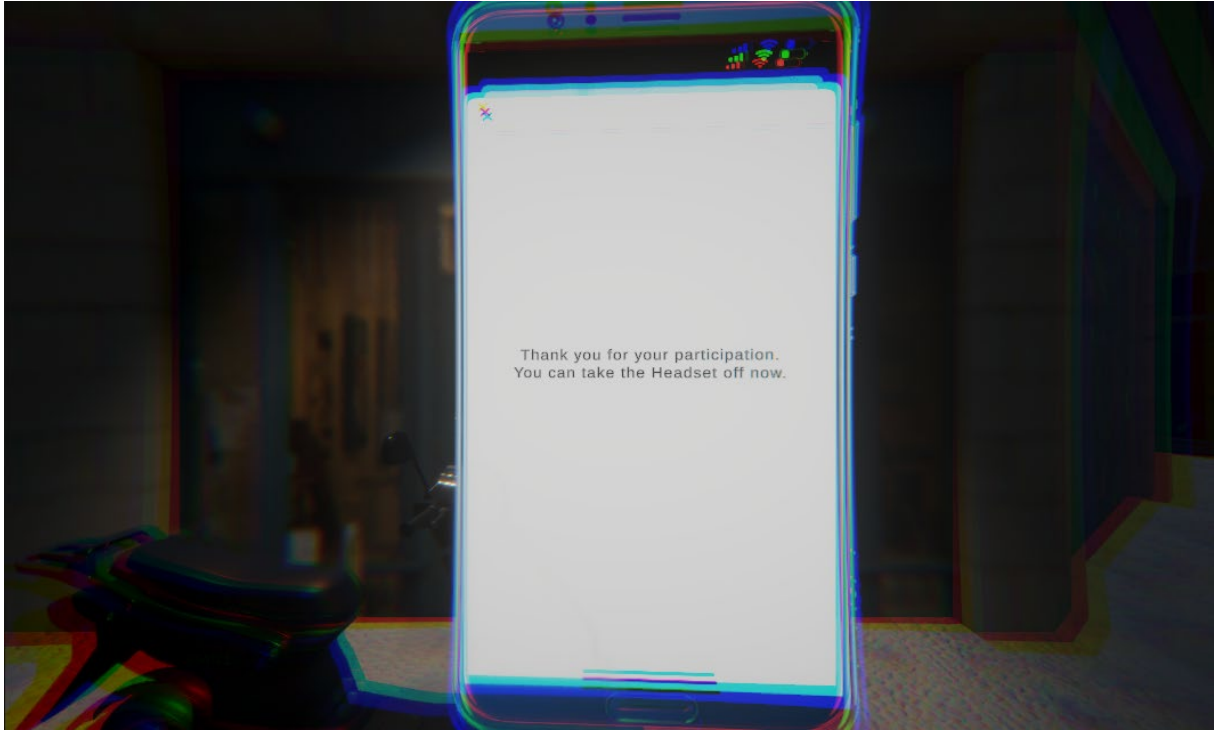


Figure E7: Final Message Panel



## Appendix F: Survey

Please enter your name.

Which option did you pick in the VR scenario?

Accept taxi ride with a 50% discount

Get on the scooter

Do neither

Thank you for participating in our experiment and agreeing to fill in this survey. Filling it in will take approximately 5 minutes.

This survey contains several statements per page. For each statement you are requested to indicate how much you agree or disagree with it. The answer options vary between (1) completely agree and (5) completely disagree. Please take your time to carefully read each statement and to answer honestly.

**The first three statements are about the warning message you saw on the phone in the VR scenario.**

	Completely agree	Somewhat agree	Neutral	Somewhat disagree	Completely disagree
I believe that the threat to my health is severe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that the threat to my health is serious.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that the threat to my health is significant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely agree	Somewhat agree	Neutral	Somewhat disagree	Completely disagree
Safety rules do not apply to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taking safety precautions is far more important for other people than it is for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not likely to get hurt if I did a dangerous thing.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Driving very fast wouldn't be very dangerous if I were driving.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nothing can harm me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could probably drink and drive without getting into an accident.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are times when I think I am indestructible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<hr/>					
It is not necessary for me to worry about being injured or harmed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm unlikely to be injured in an accident.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nothing bad will happen to me when I go to a place by myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Special problems, like getting an illness or disease, are not likely to happen to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The problems that happen to people my age are unlikely to happen to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely agree	Somewhat agree	Neutral	Somewhat disagree	Completely disagree
I can always manage to solve difficult problems if I try hard enough.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If someone opposes me, I can find means and ways to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for me to stick to my aims and accomplish my goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am confident that I could deal efficiently with unexpected events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thanks to my resourcefulness, I know how to handle unforeseen situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can solve most problems if I invest the necessary effort.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can remain calm when facing difficulties because I can rely on my coping abilities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am confronted with a problem, I can usually find several solutions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I am in trouble, I can usually think of something to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No matter what comes my way, I'm usually able to handle it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Completely agree	Somewhat agree	Neutral	Somewhat disagree	Completely disagree
I am frightened of being injured.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The thought of injury terrifies me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry about being injured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It would be awful to be injured in any way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry about my physical health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can't stand the thought of being injured.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The following questions each consist of two statements.  
Please select the statement that best represents you.

I like (wild) uninhibited parties.

I prefer quiet parties with good conversations.

There are some movies I enjoy seeing a second or even a third time.

I can't stand watching a movie I've seen before.

I often wish I could be a mountain climber.

I can't understand people who risk their necks climbing mountains.

I dislike all body odors.

I like some of the earthy body smells.

I get bored seeing the same old faces.

I like the comfortable familiarity of everyday friends.

I like to explore a strange city or section of town by myself, even if it means getting lost.

I prefer a guide when I am in a place I don't know well.

I dislike people who do or say things just to shock or upset other people.

When you can predict almost everything a person will do and say he or she must be a bore.

I usually don't enjoy a movie or a play where I can predict what will happen in advance.

I don't mind watching a movie or play where I can predict what will happen in advance.

I have tried marijuana or would like to.

I would never smoke marijuana.

I would not like to try any drug which might produce strange and dangerous effects on me.

I would like to try some of the new drugs that produce hallucinations.

Last but not least, please fill in these general questions.

What is your gender?

- Male
- Female
- Other
- Prefer not to say

How old are you?

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 or older

What is your highest completed level of education?

- Secondary school (VMBO/HAVO/VWO)
- Secondary vocational education (MBO)
- Higher professional education (HBO)
- University education (WO)
- PhD
- Other (please specify)

Do you have a valid driver's license?

- Yes
- No

[Einde van tekstterugloop]

Have you ever driven an (e-)scooter?

Yes

No

How frequently have you driven an e-scooter in the past year?

Multiple times a week

Once a week

A few times a month

Once a Month

A few times a year

One time

Never

Have you ever consumed alcohol?

Yes

No

Prefer not to say

Have you ever been drunk?

Yes

No

Prefer not to say

Have you ever driven a motorized vehicle when you had consumed enough alcohol to be in trouble, had the police stopped you?

Yes

No

Prefer not to say

---

Please take your time to carefully read the following statements and indicate whether you agree or disagree with them.

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
The warning message seemed to be designed specifically to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The warning message targeted me as a unique individual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Did you notice personal information in the warning message?

- Yes
- No
- I do not recall

Did you see your name on the warning message?

- Yes
- No
- I do not recall

We thank you for your time spent taking this survey.

Your response has been recorded.

If you have any questions or comments about this research, please send an email to: [joep.weijs@ru.nl](mailto:joep.weijs@ru.nl)

## Appendix G: SmartPLS

