

The effects of perceived user freedom on the attitude towards adopting SAVs

MASTER THESIS

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Preface

I am presenting you, with due pride, the master thesis on the effects of perceived user freedom on the attitude towards adopting SAVs. This thesis is part of the master Business Administration with the specialization Innovation and Entrepreneurship at the Radboud University in Nijmegen. The subject of this study arose as a result of my interest in the developments around NiFti (National Individual Floating Transport Infrastructure), an initiative of Prof. Dr. Nigel Hussey. Within this new mobility option, the focus is on shared autonomous vehicles, which I consider a very interesting subject. By focussing on a research subject around the role of perceived user freedom, I have worked with great interest on this thesis during the period from January 2021 to June 2021.

The completion of this research would not have been possible without the guiding influence of Dr. N.G. Migchels, or as I was allowed to call him: Nanne. By means of clear guidance, the supervisor ensured that my interest and motivation remained at a high level. For this I would like to express my sincere gratitude. Furthermore, I would like to thank the second reader for also taking a critical look at this report. Moreover, I would like to thank all respondents for their contribution, their openness, and helpfulness in making this research possible. Last, but not least, I would like to express my sincere gratitude to my family, close friends, roommates, and girlfriend for the necessary moral support as well as their words of wisdom.

I wish you much pleasure in reading this master thesis.

Max Luesink – June 2021

Abstract

What if people could travel by using a 'driverless taxi'? Something that may sound difficult to imagine for some. Nevertheless, due to rapid developments in autonomous mobility technologies, it is only a matter of time before a mobility option becomes available that no longer demands the influence of humans in terms of driving as well as ownership. The question is however, to what extent are people willing to adopt this new form of mobility if it would limit their perceived user freedom. This issue was explored more deeply by answering the following research question: *“What influence does perceived user freedom (autonomy in driving and ownership) have on the attitude towards the adoption of Shared Autonomous Vehicles (SAVs)?”*. Qualitative research, in the form of semi-structured interviews, was conducted among 13 respondents to determine which factors weigh most heavily for current end-users in their choice for a mobility option. Subsequently, it was possible to investigate what these factors did with their attitude towards the adoption of SAVs. This research shows that the majority (69 percent) would currently not exchange their privately owned or leased vehicle for a SAV, and therefore has a negative attitude towards full adoption. Nevertheless, the end-user is open to partial adoption, which means that in many cases it is no longer necessary for a household to own multiple vehicles. Lastly, the SAV is seen as a potential replacement for public transport, or as a solution for long-distance travel. This research has thus laid the foundation for SAV providers by giving a concrete and clear overview of the possibilities for offering this new form of mobility.

Key words: shared autonomous vehicles, autonomous vehicles, perceived user freedom, new mobility, attitude towards adoption

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I. Introduction

The way people currently travel is being influenced widely by technical progress. One of these technical progressions is the Autonomous Vehicle (AVs), which resolves multiple issues that occur due to the current way of transportation, in terms of efficiency, environmental impact, mobility increasement, and safety (Haboucha, Ishaq, & Shifan, 2017). This lays the foundation for advanced techniques in the field of autonomous vehicles, such as Shared Autonomous Vehicles (SAVs) (Fagnant, Kockelman, & Bansal, 2015).

SAVs can be described as a combination of short-term demand rentals (shared mobility) and self-driving capabilities of a vehicle (autonomous driving), in short: “a driverless taxi” (Fagnant et al., 2015). Looking at this form of new mobility, the vehicle is driven forward fully autonomously, whereby the occupant no longer needs to have direct control over the steering wheel. When compared to a ranking drawn up by the Society of Automotive Engineers (SAE), this means that the technology is on either level four or five (SAE, 2018). This level of technology in the transport industry has yet to be fully implemented in the market, thus it hints that the concept is rather unknown by the potential end-users. Furthermore, the current regulations concerning new mobility technologies demand a driver to be able to intervene, even when the vehicle itself drives autonomous (Favarò, Eurich, & Nader, 2018). As the technology behind autonomous vehicles continues to develop, together with the further improvement of the abovementioned advantages, it is likely that the regulations will follow (Fagnant et al., 2015). This endorses the need to further investigate potential barriers, for the end-user, in the adoption of these new types of mobility.

When looking at this concept, four influence factors have been studied in the adoption of Autonomous Vehicles. Next to technology readiness, infrastructure readiness, and legal readiness, the user acceptance of the technology is necessary. The user acceptance is in turn influenced by the aspect driver autonomy as the pleasure of driving would disappear (Alawadhi, Almazrouie, Kamil, & Khalil, 2020). The research of Anable and Gatersleben (2005), shows two factors that have influence on adopting a vehicle, namely the dependence on utilitarian and non-utilitarian considerations. The former consists of the practical usage of vehicles, such as being able to drive the vehicle to a certain destination (driver autonomy). The latter speaks of owning a vehicle (ownership), that is perceived as a status symbol and states that a vehicle can be linked to feelings such as freedom and autonomy (Anable & Gatersleben, 2005). Because a SAV can be considered as a vehicle with an impersonal nature, the potential benefits might not outweigh the utilitarian and non-utilitarian considerations of a private vehicle. Thus, it can be

assumed that a SAV might not be considered as superior to the conservative vehicle when end-users consider the feelings of freedom and autonomy to be important (Krueger, Rashidi, & Rose, 2016). Lastly, there are several aspects important to end-users to positively influence the adoption of SAVs. First, this new mobility option should require little effort from the end-user, by picking up the end-user directly from their location instead of requiring this person to come to a more central collection point (Haboucha et al., 2017). In addition, it is important that the costs associated with the use of a SAV do not exceed the costs of using (and owning) a conventional car (Kockelman, Boesch, & Ciari, 2017).

According to Woisetschläger (2016), most studies address the role of perceived freedom indirectly and therefore it could be critical to find out whether this has direct influence on the adoption of new mobility technologies. Miron and Brehm (2006) mention, in a publication on psychological reactance, that restrictions in the perceived freedom of the end-users could lead to negative psychological responses in the behaviour of customers. Thus, limiting end-users' freedom to own and drive a car independently could create a negative attitude that in turn negatively affects the adoption of SAVs. It is therefore important to find out how crucial the perceived freedom is in the adoption of SAVs, since this type of mobility limits the potential end-user in their perceived freedom, looking at the two components: autonomy in driving and autonomy in ownership (Rupp & King, 2010).

This research focuses on these types of questions and weighs the perceived user freedom against the benefits brought by SAVs, to find out the influence on the attitude towards adoption, of end-users. Autonomy in driving and ownership both recur frequently in research that focusses on the adoption of new mobility options, and together form perceived user freedom (Anable & Gatersleben, 2005; Krueger et al., 2016). Hence, the following question is central in this research:

“What influence does perceived user freedom (autonomy in driving and ownership) have on the attitude towards the adoption of Shared Autonomous Vehicles (SAVs)?”

The following contributions are made by answering the research question in this report. First, a contribution is made to the literature on higher SAE levels of mobility, such as SAVs, as it is only a matter of time before these technologies become fully available to the end-user (Fagnant et al., 2015). As a result, the results of this research can be used as a basis for research into the adoption of other higher SAE levels of mobility. This is particularly important as relatively little research has been done on the adoption of SAVs (Yuen, Huyen, Wang, & Qi, 2020). Second, a more practical contribution has been made in terms of the configuration of the optimal final product, as well as the context in which the product should be offered. This is

plausible as by using qualitative research into the effect of perceived freedom on the ultimate adoption of SAVs, it becomes clearer what the potential end-user considers to be important. As a result, it contributes to literature in such a way that future providers of these forms of mobility have more information on how to positively stimulate adoption among end-users as much as possible. Lastly, a social contribution is made as enriching the literature on SAV adoption can further utilize the potential positive influences that arise in reducing the number of vehicles. Subsequently, this has a positive impact on climate change mitigation (Jones & Leibowicz, 2019).

The remainder of this paper is structured as follows. In section II the relevant literature around the main concepts central in this paper is discussed, as well as the conceptual model. Section III provides an overview of the research methods. Within this section the research strategy, data collection, analysis, ethics, and quality are elaborated. In section IV the main results and findings are discussed and interpreted. After that, section V provides the discussion including theoretical implications, practical implications, limitations, and future research directions. Lastly, section VI presents the main conclusions of this study.

II. Literature review

Concepts

a. New mobility and Shared Autonomous Vehicles

Future mobility concepts are required due to the pressure by different regulators, with a prominent role for the reduction of emissions (Bakker, Maat, & Van Wee, 2014). Currently, manufacturers already extend their product offers in the range of electric vehicles (or hybrid-electric vehicles) (Bakker et al., 2014). The increasing technological improvements make way for autonomous vehicles, in which information is retracted from the environment and provides the data to obey regulations while driving autonomous (Lang & Mohnen, 2019; Campbell, Egerstedt, How, & Murray, 2010). These new mobility technologies provide vehicles with a faster reaction time in dangerous events, which can reduce accidents and increase the efficiency in the flow of traffic (Fagnant & Kockelman, 2014). Considering the improving technologies with the emphasis on the eventual increasement in the flow traffic by autonomous vehicles, it is most likely that the regulations will follow (Bakker et al., 2014; Fagnant et al., 2015).

These improvements in technologies and regulations lay the foundation for the combination of Shared Mobility and Autonomous Vehicles; Shared Autonomous Vehicles (SAVs). Compared to Shared Mobility, SAVs automate tasks which are necessary when only sharing a vehicle, such as driving, refuelling, and parking the vehicle (Cohen & Kietzmann, 2014; Wilhelms, Henkel, & Falk, 2017). Research shows that SAVs have higher utilization of vehicles and therefore can reduce the costs of a single trip by 85 percent (Fagnant & Kockelman, 2014). Furthermore, a single SAV could replace up to 11 vehicles that are currently in use by the public (Chen, Kockelman, & Hanna, 2016). A study on the environmental effects of SAVs show significant reductions on CO₂ emissions (Jones & Leibowicz, 2019). Again, the major economic benefits are addressed as large cost-savings could be obtained due to the full adoption of SAVs, which proves together with the environmental advantages it will contribute to climate change mitigation which is also cost-effective (Jones & Leibowicz, 2019). Even though the SAV has great potential, several barriers considering the preferences of the end-users are defined in research. Having a low number of potential crashes is perceived to be the primary benefit of a SAV and the potential failure of the technology is perceived to be the most worrying, by the potential end-user (Krueger et al., 2016).

b. Attitude towards behaviour

The attitude towards behaviour can be described as positive or negative feelings of an individual about performing certain behaviour (Fishbein & Ajzen, 1975; Yousafzai, Foxall, & Pallister, 2007). In the case of mobility, this direct influence on behaviour could lead to eventual adoption of technologies such as SAVs (Rahman, Lesch, Horrey, & Strawderman, 2017). It is therefore important that the attitude (positive or negative feelings) towards adopting SAVs is further investigated. Attitude is often divided into three segments, namely affective, behavioural, and cognitive attitude (Jain, 2014). This research focuses on measuring behavioural attitude, by measuring the positive or negative feelings about the perceived freedom associated with SAVs.

This research involves a technology that is currently not fully available for the end-user, which makes further research into the attitude towards adoption necessary (Fishbein & Ajzen, 1975). To better understand the attitude towards adopting SAVs, the researcher makes a link with a theory-based model, as the usage provides clearer explanation on the adoption of new mobility technologies such as (S)AVs (Jing, Huang, Ran, Zhan, & Shi, 2019). There are several theoretical models that take the attitude towards behaviour into account. For example, the Theory of Reasoned Action (TRA) describes a link between attitude towards behaviour and the behavioural intention. An expanded version of the TRA is the Theory of Planned Behaviour (TPB), which offers an extension of behavioural actions that cannot be controlled by a person himself (Sparks & Shepherd, 1992). The Technology Acceptance Model (TAM) also elaborates on the TRA, by explaining the attitude towards behaviour, namely through Perceived Usefulness (PU) and Perceived Ease of Use (PEoU) (David, Bagozzi, & Warshaw, 1989). Later models such as the Decomposed Theory of Planned Behaviour (DTPB) and the Integrated Technology Acceptance Model and Task-Technology Fit (TAM/TTF) also cover the concept of attitude towards behaviour in a more extensive way (Ndubisi, 2004). What these models have in common, however, is that the extensions are not so much aimed at the attitude, but, for example, integrate the effects of subjective norms (DTPB) and task characteristics (TAM/TTF) into the model. Considering the conceptual model used in this research, the choice was made for a more simplistic form of covering the attitude towards behaviour, and thus TAM is used as the central theory-based framework during this research. The TAM offers a comprehensive theoretical basis for the concepts that are central to this research, without having to consider additional components as would be the case with DTPB and TAM/TTF.

The focus on investigating the influence of perceived user freedom on attitude towards adopting SAVs can be linked to one of the components of TAM. Within this model, as

illustrated in figure 2.1, the perceived usefulness describes the comparison that the end-user makes between the benefits of new mobility and existing mobility (Acheampong & Siiba, 2020). Looking at this definition, advantages of existing mobility (being able to own and drive a vehicle) can also be considered as disadvantages of SAVs, and thus affects the comparison made within perceived usefulness. Therefore, perceived freedom is a driving factor of perceived usefulness and is observed on the effect it has on the attitude towards adopting SAVs.

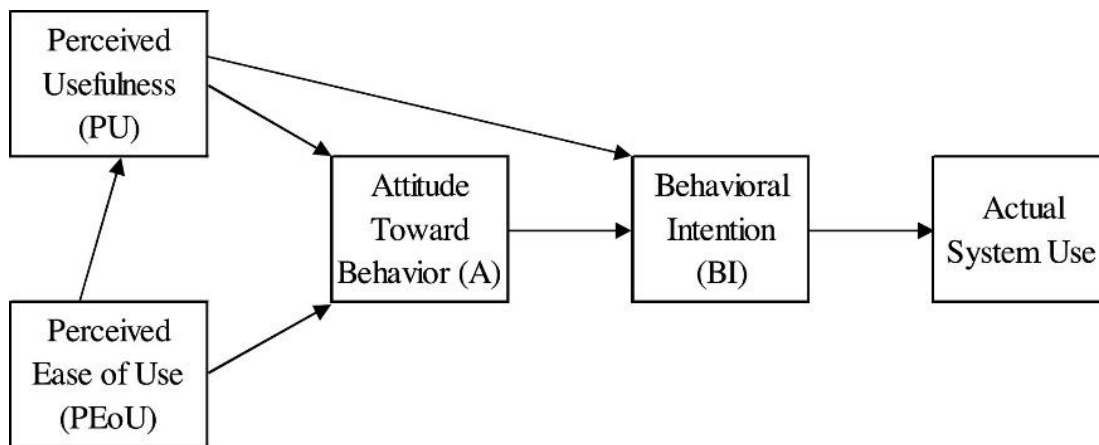


Figure 2.1: Technology Acceptance Model (1985) (Rahman et al., 2017)

A study conducted on the adoption of (shared) autonomous vehicles shows differences in attitudes varying with gender and age (Menon, Barbour, Zhang, Pinjari, & Mannering, 2019). The abovementioned study, as well as other studies, mostly focused on the attitude towards certain features, such as auto parking and self-driving technologies, but did not focus on the potential restrictions in freedom compared to owning and using vehicles (Wang, Jiang, Noland, & Mondschein, 2020; Menon et al., 2019). Therefore, these studies look at advantages of (S)AVs, compared to the existing mobility, but potential disadvantages are neglected. This research continues on this gap by investigating the influence of perceived user freedom on the attitude towards adopting SAVs.

c. Perceived user freedom

Perceived user freedom is defined based on two components: outcome freedom and decision freedom (Steiner, 1970). The outcome freedom describes the ability to obtain certain desired outcomes of a person. These outcomes are available when the right number of resources are present (Steiner, 1970). In the case of mobility, this would mean that the outcome freedom is influenced by the availability of the vehicle that an end-user desires the most. Therefore, the

factor autonomy in ownership is the first direct influence on perceived user freedom. Decision freedom continues upon outcome freedom, as it looks into the different ways of seeking certain outcomes (Steiner, 1970). If the outcome, looking at the area of mobility, would be to arrive at a certain destination, the decision freedom compares the possibilities in outcomes. Therefore, arriving at a certain destination can be done in different ways, for example a person could choose to take a different route which alters the time of destination. This is where the second factor, autonomy in driving, appears as a direct influence on the perceived freedom. Both components of perceived user freedom are explained in more detail in the following two sections.

Perceived user freedom has been mentioned in different contexts, resulting in different attitudes. For example, the influence of perceived user freedom on the adoption of autonomous vehicles has already been mentioned indirectly before, within the four readiness categories of KPMG (Threlfall, 2018). Perceived user freedom has an influence on user acceptance, in which a negative influence could lead to failure in the adoption (Alawadhi et al., 2020). Attitudes towards SAVs also differ due to the restriction on perceived user freedom. First, concerns remain on the impact of new mobility technologies on the issues of freedom, as the current autonomy in ownership and driving of a vehicle has been present for generations (Boeglin, 2015). Glancy (1995), even implies that the end-users of mobility regard a restriction in perceived freedom as "dehumanizing" as it limits control in a vehicle. This is in line with research into the possible effect of this on the adoption of new mobility technologies, since the potential restriction on the freedom of the end-user is referred to as a threat to the adoption (Rupp & King, 2010; Woisetschläger, 2016). The restriction of user freedom is already present to a certain extent within the vehicles that are currently available for end users, for example in the adaptive cruise control (ACC) or electronic stability control (ESC) systems (Boeglin, 2015). With SAVs, the restriction on perceived user freedom is significantly higher. Specifically, by adopting a SAV, this would mean that the end-user can no longer rely on both utilitarian and non-utilitarian considerations (SAE, 2018; Anable & Gatersleben, 2005). In the case of utilitarian considerations, a vehicle is looked at as instrumental (driving the vehicle to a certain destination). The non-utilitarian considerations imply that mobility is not per definition considered through reaching a certain destination and can also be affected by aspects such as control (Anable & Gatersleben, 2005; Mokhtarian & Salomon, 2001). The impact on both considerations, in the case of SAVs, describes the importance of the issue that is central to this research. By examining the impact of both components of perceived user freedom, autonomy in driving and autonomy in ownership, the influence on the attitude towards adopting SAVs

can be determined. Therefore, the literature described above is in line with the definition given by Steiner (1970), resulting in the two components. This confirms that perceived freedom in the case of SAVs consists of autonomy in driving (d.) and autonomy in ownership (e.).

d. Autonomy in driving

The definition of autonomy can be derived from “autonomos”, a Greek word for self-governing, by which it can be stated that one is autonomous when one is self-directing in their freedom (Ballou, 1998). Within autonomy, decision making is a central theme as explained by two components: freedom to choose and freedom to act (Batey & Lewis, 1982).

From here on, it is possible to make the connection to autonomy in driving, which means that the end-user, or driver, has full freedom to choose and act in a vehicle. One of the most common arguments for wanting full autonomy in driving, is that driving a vehicle induces feelings of freedom, pleasure, and independence (Raue, et al., 2019). Other research compares driving a conventional car with other forms of mobility. This shows that the most important arguments for having autonomy in driving are speed, comfort, and convenience (Anable, 2005; Jensen, 1999). Having flexibility, for example in being able to choose a different route or adjust the speed is another argument for wanting autonomy in driving (Beirão & Cabral, 2007). However, having autonomy in driving is also associated with negative associations. It is stated that having autonomy in driving can be accompanied by stress, for example due to traffic congestion (Beirão & Cabral, 2007).

In the case of new mobility such as autonomous vehicles, or even SAVs, the definition and arguments of autonomy in driving are affected. Within the autonomous vehicles that are currently available to the end-user, researchers speak of adjusted autonomy since the systems' autonomous behaviour must be taken into account. Managing the systems' autonomy (while maintaining the global control over the behaviour of the system) by humans is the central target (De Visser, LeGoullon, Freedy, Weltman, & Parasuraman, 2008). In other words, an operator could intervene, share, or oversight control of the vehicle to be able to avoid potential negative outcomes (Zieba, Polet, Vanderhaegen, & Debernard, 2010). In the situation of newer (higher SAE level) autonomous vehicles, such as SAVs, the aspect of being able to intervene, share or oversight control is no longer the case. Therefore, the arguments given on the autonomy in driving are being adjusted too. Evidence for this has been found in research into the attitudes towards autonomous vehicles. For example, the lack of feelings of pleasure and independence, as well as the aspects of losing control to the system with the accompanying feelings of safety, is referred to as disadvantages of autonomous vehicles (Alawadhi et al., 2020; Howard & Dai,

2014). Hence, it is necessary to investigate which arguments mentioned above (e.g., being able to adjust the speed or route), are relevant within wanting autonomy in driving to determine the attitude of end-users. Subsequently, it becomes clearer which arguments for having autonomy in driving eventually determine the adoption of SAVs.

e. Autonomy in ownership

When assessing ownership, most studies include three segments to define the concept: vehicle holding, vehicle transaction and vehicle purchase (Anowar, Eluru, & Miranda-Moreno, 2014; de França Doria, Boyd, Tompkins, & Adger, 2009). Vehicle holding describes the likelihood that a person will privately own a vehicle (Bhat & Pulugurta, 1998; Paleti, Bhat, & Pendyala, 2013). Vehicle transaction takes into consideration that at some point, vehicles get replaced due to several reasons, which affects the ownership (Hossein Rashidi & Mohammadian, 2016). The process of vehicle purchase consists of the probability that the decision is being made to actually buy a vehicle (Paleti, Bhat, Pendyala, & Goulias, 2013; Rezvani, Jansson, & Bodin, 2015; Sierzechulu, Bakker, Maat, & Van Wee, 2014). In addition to this, no distinction is made in this study between private ownership and leasing of a vehicle. In both cases, the end-user has a vehicle in which a certain degree of autonomy is present. With leasing this is expressed by, for example, a budget that can be spent on a vehicle. Combining this definition of ownership with the definition of autonomy, shows that autonomy in ownership is defined as having the freedom to choose and act in vehicle holding, purchase and transaction (Batey & Lewis, 1982; Anowar, et al., 2014; de França Doria, et al., 2009).

Research shows that autonomy in ownership is accompanied by a sense of status, freedom, and power (Steg, 2005; Anable, 2005). In addition, autonomy in ownership offers the end-user a private space in which comfort, such as listening to music, is positively valued (Beirão & Cabral, 2007; He & Thøgersen, 2017). Furthermore, autonomy in ownership provides reassurance for the end-user as the vehicle is always present in the driveway, in case of an emergency (Wadud & Chintakayala, 2021).

The full adoption of SAVs would affect these arguments for autonomy in ownership. The biggest advantage of shared mobility, within SAVs, lies mainly in the environmental benefits that sharing a vehicle entail. For example, an influence is exerted on the number of privately owned vehicles, which in turn has a positive effect on CO₂ emissions (Jones & Leibowicz, 2019). However, sharing a vehicle, rather than owning one privately, does influence the arguments given for autonomy in ownership. The studies of Anable (2005) and Steg (2005)

prove that psychosocial aspects such as status, freedom, and power are important in owning a vehicle. The study by Paundra, Rook, van Dalen and Ketter (2017) states that the value end-users attach to autonomy in ownership varies from person to person. For example, this shows that people with a high score on psychological ownership show strong feelings towards possessing a vehicle and have strong identification towards it (Paundra et al., 2017). There may also be some form of compulsion to control among end users, which would increase the value of autonomy in ownership (Pierce, Kostova, & Dirks, 2003; Paundra et al., 2017). It is therefore important to investigate to what extent these arguments determine the preference for having autonomy in ownership, in the case of the SAV. By examining which arguments are important within autonomy in ownership, a better estimate can be made about the attitude towards adopting SAVs.

f. Mobility as a Service (MaaS)

The Shared Autonomous Vehicle is central to this research, in which shared mobility (or short-term demand rentals) is a critical factor in addition to the autonomous driving technology (Fagnant et al., 2015). In comparison to owning a conventional vehicle (privately or leasing), there is an increasing popularity in the field of on-demand mobility options such as ridesharing as well as car-sharing (Alonso-González, Hoogendoorn-Lanser, van Oort, Cats, & Hoogendoorn, 2020). This results in more mobility options available to the end-users. Since, in addition to the advantages in terms of availability, these increasing number of (shared) mobility options also entail complexity, MaaS is a service that allows end users to control all aspects of traveling by means of a mobile app. This makes it possible to arrange the payment and booking of the shared mobility option (Jiitrapitrom, et al., 2017). The study by Sochor et al. (2016) shows that MaaS increases the satisfaction experienced by end-users in traveling. This made it clear that preference is increasingly being given to other mobility options instead of requiring a personally owned vehicle (Alonso-González et al., 2020).

Alonso-González et al. (2020) found two barriers in the adoption of MaaS. First, it is indicated that car enthusiasts as well as end-users who have an aversion to new mobility do not opt for adoption. Furthermore, it is indicated that people with a low degree of technology adoption do not proceed with adoption. It is therefore important to investigate to whether these barriers are present when combined with the SAV. Since a 'self-driving taxi' cannot arrive at the end-user without instructions, it is necessary to investigate to what extent this reduction of complexity regarding mobility usage by using MaaS has influence on the desire to have autonomy in ownership as well as autonomy in driving.

Conceptual model

After the meanings and relevance of the constructs have been discussed, it is possible to summarize this in a conceptual model. As described, the two components within perceived user freedom are autonomy in driving and autonomy in ownership. Within this research, the effect of perceived user freedom is measured on the end-user's attitude towards the adoption of SAVs. The conceptual model is visualised in figure 2.2 below.

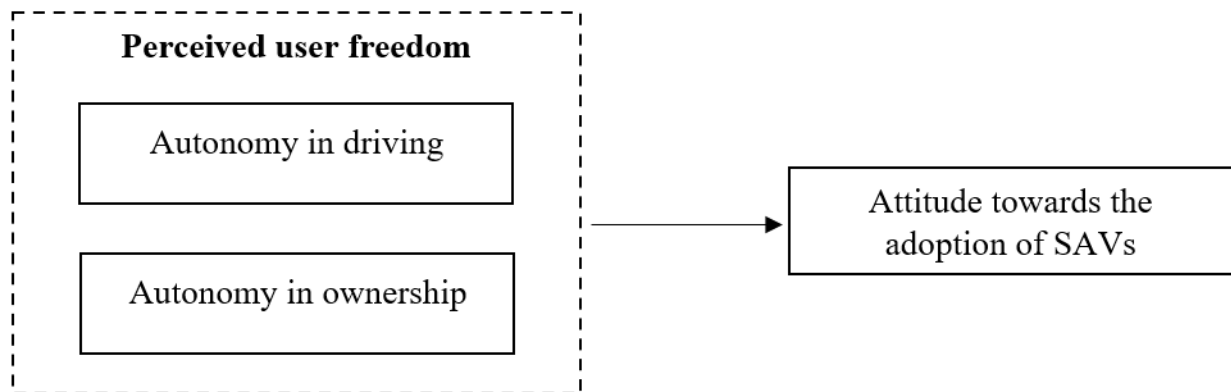


Figure 2.2: Conceptual model

The conceptual model is used in this research as the guideline for answering the main question. Observing the conceptual model, perceived freedom consists of autonomy in driving and autonomy in ownership. These components are both investigated to determine the influence on the positive or negative attitude towards the adoption of SAVs. The first component is autonomy in driving, which focuses on freedom of choice and act while driving a vehicle (Batey & Lewis, 1982; Zieba et al., 2010). This component is investigated through the arguments for wanting autonomy in driving (for which reference is made to the operationalization of the constructs) given by the potential end-users and by measuring the effect on the attitude towards adopting. In this way it becomes clearer which arguments for the desire towards autonomy in driving can form a potential barrier for end-users in the adoption of SAVs. This process is repeated with the second component of perceived user freedom, namely autonomy in ownership. Here, the focus is on having freedom in being able to own, replace and buy a vehicle (Bhat & Pulugurta, 1998; Paleti et al., 2013). Once again, the relevant arguments for wanting autonomy in driving are measured by focusing on potential end-users. Ultimately, this provides a complete picture that provides insight into the influence of perceived user freedom on the attitude towards the eventual adoption of SAVs.

III. Methods

Research strategy

Within this research, the influence of perceived user freedom is measured on the attitude towards adopting SAVs. To make statements about these effects, the researcher measured the opinions and attitudes directly from the potential end-users. Within the model there is talk of attitudes, which is described as a subjective phenomenon (Fishbein & Ajzen, 1975). In addition, perceived user freedom originates from social psychological science (Steiner, 1970). The choice was therefore made for qualitative research, as this describes reality as something that can be influenced psychologically and socially (Gelo, Braakmann, & Benetka, 2008). Qualitative research focuses on explaining behavioural manifestations, among other things. Therefore, this choice is considered to be the most suitable method for this study (Fossey, Harvey, McDermott, & Davidson, 2002).

Data collection

a. Method

The way in which data was collected is through in-depth interviews. This approach is consistent with the investigative nature and the interest at the underlying thoughts and perspectives of the participants regarding the attitudes towards adopting SAVs. Between the different forms of interviews mentioned in the literature, the choice was made for semi-structured interviews (Vennix, 2019). The reason that this type of research has been chosen is due to its flexible and versatile nature (DiCocco-Bloom & Crabtree, 2006). In addition, the structure of the interview can be adjusted based on the research question and the aim of the research (Kelly, Bourgeault, & Dingwall, 2010). The high degree of interaction between the participant and the researcher ensures that the researcher can ask follow-up questions, depending on the input of the participant. This creates scope for the amount of information that can be provided within an interview (Kallio, Pietilä, Johnson, & Kangasniemi, 2016). Furthermore, by using this method it was possible to gain extra insights around the variables, according to the respondents. Within this study, seven interviews were conducted in an online environment, and six interviews were conducted physically.

b. Operationalization

The latent variables became measurable by operationalizing the constructs. Table 3.1 therefore lists the three constructs that are central in this research, operationalized by means of dimensions and indicators which are obtained through the review of the theory in section II.

Table 3.1: Operationalisation of the constructs

Construct	Dimensions	Indicators	Sources
Autonomy in driving	Psychosocial effects	<ul style="list-style-type: none"> • Freedom; • Pleasure; • Independence. 	(Anable & Gatersleben, 2005; Krueger et al., 2016; Raue, et al., 2019)
	Physical effects	<ul style="list-style-type: none"> • Speed; • Comfort; • Convenience. 	(Anable, 2005; Jensen, 1999; Beirão & Cabral, 2007; Hagman, 2003)
Autonomy in ownership	Vehicle holding	<ul style="list-style-type: none"> • Private space; • Flexibility; • Reassurance. 	(Beirão & Cabral, 2007; Wadud & Chintakayala, 2021; He & Thøgersen, 2017)
	Vehicle purchase and transaction	<ul style="list-style-type: none"> • Status; • Power; • Goals. 	(Steg, 2005; Anable, 2005; Anable & Gatersleben, 2005; Gartman, 2004)
Attitude	Behavioural attitude	<ul style="list-style-type: none"> • Positive feelings towards adopting SAVs; • Negative feelings towards adopting SAVs. 	(Fishbein & Ajzen, 1975; Yousafzai et al., 2007; Jain, 2014)

c. Interview guideline

With the operationalisation of the constructs, basis was set for the interview guideline. The researcher used an interview guideline to provide structure for the collection of data. By using this guideline, the researcher had an overview of the most important questions to stimulate the interview with the participants. This also created space for the researcher to ask follow-up questions, which provided a greater stimulus for data. Thus, the researcher had access to direct the conversation towards the issues in which the researcher wants clarification (Qu & Dumay, 2011). The type of questions used in the interview guideline are of open nature, which allowed respondents to provide additional input. The researcher also gave the respondents the

opportunity to express their own opinion before asking follow-up questions. This provided complementary findings. For the full interview guideline, reference is made to appendix I.

d. Sample

Compiling the sample was important for obtaining the desired data to be able to answer the central research question. Within the existence of various sampling techniques, judgment sampling was chosen. Marshall (1996) describes judgment sampling as actively selecting a sample that is best suited to answer the central research question. Within the composition of the sample, the researcher focused as much as possible on a wide variety of age, social classes, and gender, to be able to make potential statements about demographic influences. The sample also only consisted of residents of the Netherlands to increase generalizability (Leung, 2015). The compilation of this sample was done by searching in the immediate social as well as professional environment of the researcher, for respondents who, in addition to willingness, could also contribute to the variety in the field of demographic variables. In addition to selecting respondents based on demographic variables, owning a vehicle was also considered. By only selecting respondents who owned (private ownership or lease) a vehicle at the time, this ensured that information was collected on all variables within each interview. Obtaining the correct sample size was done based on data saturation. By means of an iterative and reflective process, the researcher evaluated whether the saturation of data is present and thus sufficient data had been obtained (Marshall, 1996). This data saturation took place after approximately eleven interviews were conducted. In addition, two additional interviews were conducted to collect as much useful data as possible. This brings the total of the sample examined in this research to thirteen respondents (N=13). The table below provides an overview of the respondents, interview context, and demographic variables.

Table 3.2: Sample

#	Context	Demographics		Context	Demographics
1	<ul style="list-style-type: none"> • 28-04-2021 • 3:00 p.m. • Microsoft Teams 	<ul style="list-style-type: none"> • 32 years old • Female • Married • University, master • 32 hours per week 	8	<ul style="list-style-type: none"> • 08-05-2021 • 8:00 p.m. • Physical interview 	<ul style="list-style-type: none"> • 24 years old • Male • Single • Intermediate vocational education • 40 hours per week
2	<ul style="list-style-type: none"> • 29-04-2021 	<ul style="list-style-type: none"> • 30 years old • Female 	9	<ul style="list-style-type: none"> • 08-05-2021 • 9:30 p.m. 	<ul style="list-style-type: none"> • 63 years old • Male

	<ul style="list-style-type: none"> • 10:00 a.m. • Microsoft Teams 	<ul style="list-style-type: none"> • Engaged • University of applied sciences • 40 hours per week 		<ul style="list-style-type: none"> • Physical interview 	<ul style="list-style-type: none"> • Married • General secondary education • 32 – 35 hours per week
3	<ul style="list-style-type: none"> • 03-05-2021 • 1:30 p.m. • Microsoft Teams 	<ul style="list-style-type: none"> • 23 years old • Male • Single • University of applied sciences • Part time (hours unknown) 	10	<ul style="list-style-type: none"> • 13-05-2021 • 7:30 p.m. • Physical interview 	<ul style="list-style-type: none"> • 51 years old • Female • Single • Intermediate vocational education • 32 hours per week
4	<ul style="list-style-type: none"> • 04-05-2021 • 10:00 a.m. • Microsoft Teams 	<ul style="list-style-type: none"> • 27 years old • Female • Registered partnership • University of applied sciences • 36 hours per week 	11	<ul style="list-style-type: none"> • 13-05-2021 • 8:30 p.m. • Physical interview 	<ul style="list-style-type: none"> • 50 years old • Male • Single • Intermediate technical school • 40 hours per week
5	<ul style="list-style-type: none"> • 04-05-2021 • 1:30 p.m. • Microsoft Teams 	<ul style="list-style-type: none"> • 28 years old • Female • Cohabitant • University of applied sciences • 32 hours per week 	12	<ul style="list-style-type: none"> • 14-05-2021 • 7:00 p.m. • Physical interview 	<ul style="list-style-type: none"> • 22 years old • Female • Single • Pre-university education • 16-18 hours per month
6	<ul style="list-style-type: none"> • 08-05-2021 • 6:00 p.m. • Zoom 	<ul style="list-style-type: none"> • 23 years old • Male • Single • University of applied sciences • 28 hours per week 	13	<ul style="list-style-type: none"> • 17-05-2021 • 2:00 p.m. • Microsoft Teams 	<ul style="list-style-type: none"> • 34 years old • Female • Cohabitant • University of applied sciences • 40 hours per week
7	<ul style="list-style-type: none"> • 08-05-2021 • 7:00 p.m. • Physical interview 	<ul style="list-style-type: none"> • 54 years old • Female • Married • Senior general secondary education • 30 hours per week 			

Data analysis

To analyse the qualitative data, recordings of the interviews were first transformed into textual data by verbatim transcription. By using this type of transcription, all verbal outcome was literally written down. Therefore, pauses, difficulties and other potential important verbal expressions were taken into account in the transcription (Bleijenbergh, 2016).

After transcribing the data, it was necessary to find connections and analytical categories within the data. All outcomes are constantly compared with the other interviews conducted, to find these categories and connections, also called constant comparison (Pope, Ziebland, & Mays, 2000). The process was typified by the usage of codes, in which the data is converged into the categories. Typically, this process is conducted from open to axial and eventually selective coding, as was also the case within this research. First, open codes were applied that determine the main theme per fragment, mainly consisting of the predetermined indicators as well as new codes according to the respondents' input. These open codes were applied in the first five interviews, after which saturation took place in the new codes to be found. This resulted in a complete list of relevant (axial) codes. For this list as well as the description and concrete examples, reference is made to appendix III. Subsequently, a combination was found between the different codes by means of axial coding, resulting in groups. Lastly, by selective coding, connections were found between the various codes with which support was created for describing the findings and eventually the conclusions (Bleijenbergh, 2016). The findings are supported by quotes from the transcripts of the interviews. These quotes have been translated from Dutch, for which reference is made to appendix IV.

Ethics

In this research, the researcher considers three types of ethical issues that needed attention of the researcher, by conducting qualitative research. First, the approval of participants was central. The researcher obtained this approval by requesting, prior to the interview, consent about being able to record data and use socio-demographic variables (Orb, Eisenhauer, & Wynaden, 2001). Reference is made to appendix IV for the consent form that was used. Second, it is important that the anonymity of the participants was guaranteed. This ethical aspect speaks of an obligation for the researcher to protect both the information obtained and the identity of the participant (Orb et al., 2001). Prior to the interview, while obtaining approval, the researcher clearly stated that the participant was able to share information completely anonymously, in

which the identity was not disclosed. Lastly, the participant had to be protected throughout the procedure. A situation in which the participant incurred any form of damage could not have happened. The researcher prevented this by being transparent prior to the interviews. This provided clarification towards the participants that his or her protection comes first, and how the researcher would guarantee this during the research (Orb et al., 2001).

Reliability, validity, and generalizability

The validity of a research describes the correct measurement of what needs to be measured (Vennix, 2019). In addition, a study is considered reliable when the same study is repeated and as a result will provide the same results. To achieve validity during this research, a pilot was conducted prior to the data collection. With this pilot, any problems considering the data collection were solved, which improved the validity. In addition, the researcher worked with an interview guideline that ensures that the most important themes for answering the research question were discussed. Furthermore, a coding scheme (appendix III) was used that could be supplemented when necessary. Descriptions were pre-named in this scheme to ensure that the interpretation remained equal during the coding. Achieving full reliability was difficult within this research, as obtaining the same results by repeating the process, within qualitative research, is not self-evident (Leung, 2015). In addition, a future phenomenon is central within this research, which means that the attitudes of participants could change over time. To be able to speak of a reliable research, all interviews were recorded and verbatim transcribed to prevent interpretation errors and a potential data loss. The researcher also used a theoretical basis for the coding, which makes it possible to repeat this research. The ultimate validity and reliability of the research is tested based on the transparency during the process. To be able to make legitimate statements applicable to a broader population than solely the sample, the researcher adhered to an iterative and transparent process (Fishbein & Ajzen, 1975). Furthermore, the researcher worked with predetermined sample requirements (as mentioned in paragraph d.), which improved the generalizability and limits potential biases. Lastly, the researcher provided the respondents with the opportunity to view the results of this study. Nevertheless, despite the efforts of the researcher, it was not entirely possible to obtain full generalizability, given the qualitative research format.

IV. Results

The results are described based on the proposed operationalization of the concepts. This operationalization was subsequently used in the interview guide, for which reference is made to appendix I. In addition to the operationalization, complementary indicators were found during the coding of the interview data. The (complementary) indicators are further explored in the results below.

Autonomy in driving

a. Psychosocial effects

According to Raue et al. (2019), people mainly require autonomy in driving since much value is attached to the feelings of freedom, pleasure, and independence.

Freedom

In examining the role of freedom in requiring autonomy in driving a vehicle, a clear pattern emerged in the value attached to it. The respondents all indicated that freedom is a feeling that arises while driving. This feeling of freedom was highly valued among the respondents, whereby in some situations according to respondent 4 it can even lead to a feeling of subconscious driving, making this feeling of freedom even more valued.

"Then I drove there and then I thought wow I actually drive on an autopilot. That you no longer think, started looking around me and that gives a certain feeling. Especially if you drive where you come more often. Some kind of automatism or something and um, yes. That you say it's almost unconsciously or so. I don't want to say it because you are always alert. But it's a kind of freedom or something. If you can just enjoy a ride."
(Respondent 4).

It turned out to be difficult for the respondents to explain why so much value was attached to freedom. Especially when it was mentioned as a feeling that arose while driving, it was difficult to describe where this came from. Yet it was highly appreciated and indicated by all. This would imply that freedom is a latent need, meaning a need that one is not aware of. However, this turned out not to be the case. The data does also show that freedom is not only a feeling that occurs during driving but is also concretely mentioned as an advantage by all respondents. Therefore, the end-users are aware of this feeling of freedom and that it is also of great importance to them in requiring autonomy in driving. Respondent 12 described this

advantage based on having autonomy in decisions during two situations. First, it is important to have freedom in driving the vehicle whenever the end-user wants, for example to start the journey to a certain destination. Furthermore, also autonomy in decisions during the ride is of importance.

“That I am flexible in leaving, thus I can decide when I want to leave. If I need to turn around when I forgot something and I can decide where I want to go. That's what I think, yes.” (Respondent 12).

Lastly, the data shows that a complementary indicator, not included in the operationalization, is strongly linked, or even cited together with freedom, namely the desire to be in control of the vehicle. It has been found that the end-user attaches great value on being in control while driving, and a lack of this can be frightening to them. Respondent 13 even mentions this as the biggest argument and advantage for driving a vehicle yourself.

“Um... Feeling in control? That seems to be the biggest advantage for me.” (Respondent 13).

Pleasure

The data shows that pleasure is not initially mentioned as a major advantage of having autonomy in driving. What is striking, however, is that pleasure does turn out to be an important feeling that end-users experience while driving a vehicle. Respondent 2 describes pleasure as a feeling of experiencing adrenaline and excitement. Respondent 1 agrees and describes that the energy obtained by driving a vehicle is vital in explaining this pleasure. Respondent 5 views pleasure more soberly, and states that driving a vehicle is not experienced as tedious and therefore corresponds to a feeling of pleasure. It is important to point out that pleasure was not always directly identified as a feeling experienced while driving a vehicle but required deeper questioning of the researcher. The data thus show that pleasure can be classified as a latent need, which could result in the requirement of autonomy in driving.

“Yes, I quite like driving a car. I don't mind doing it and you just get everywhere so I think that bit of fun is what you can have in it.” (Respondent 5).

In addition to the feeling of pleasure, the data also shows that stress can be a side note that is also experienced in having autonomy in driving. In this it becomes clear that pleasure is experienced to a certain extent, as respondent 4 mentioned that pleasure turns into stress in situations where irritation about other road users arises. Furthermore, respondent 1 describes

that pleasure is a feeling experienced in familiar situations but can turn into stress when having autonomy in driving in unfamiliar situations. This shows that the value attached to the sense of pleasure in requiring autonomy in driving can be limited by situations of stress.

"And, um, I always enjoy it on routes that I know, but on unfamiliar routes it can be stressful because you are also using the navigation, or if you do not know where you have to park." (Respondent 1).

Lastly, it has become clear that not only does the feeling of stress reduce the value attached to pleasure, but it also depends on the distance to be covered. What emerged most strongly here was that when the distance to be covered increases, the sense of pleasure was less present and therefore less important. This showed that on longer distances, preference was given to other mobility options, such as public transport according to respondent 2, and carpooling according to respondent 10. For one respondent, however, it turned out that this limitation was not present at all, and that autonomy is even more preferable on longer distances. According to respondent 4, this was mainly due to the fact that a feeling of boredom arose when autonomy in driving was not possible, so that more value was attached to this over longer distances.

"Suppose, if I really have to drive a very long distance, I prefer to do it by public transport or something. But short distances or just work, commuting, I prefer to go by car." (Respondent 2).

"Um. Yes it is less boring. I already think when I go somewhere with (name partner), it is already more boring. I don't mind for a smaller drive, but if it really is a ride for an hour, I prefer to drive by myself. Because then time goes faster or something." (Respondent 4).

Independence

The data clearly shows that independence was experienced as both a feeling and a concretely stated benefit of having autonomy in driving. In the case of respondent 1, much value was attached to independence because it meant that she was no longer dependent on other mobility options such as public transport. When discussing both the advantage and feeling of independence, it proved difficult for the end-user to put their finger on trying to explain why it was so highly valued by them. However, more clarity arose when the respondents were asked to describe their feelings compared to other mobility options such as public transport. An

important argument was made by respondent 8, who describes that the gain in terms of time is decisive. It became clear that requiring relatively more time from the end-user leads to a negative attitude, which in turn leads to a stronger need for a sense of independence and thus a preference for wanting autonomy in driving.

"Yes, exactly. If you compare it, even with public transport, let's say, there you are also obliged to certain stops, and with a car you do not really have that. Yes you are not allowed in certain zones, but besides that you can reach practically everywhere with a car and with public transport... Yes it is possible, but you are again dependent on walking for a while or renting a bicycle or things like that." (Respondent 8).

b. Physical effects

Alongside the psychosocial effects, according to Anable (2005) and Jensen (1999), there are also physical effects to be experienced by having autonomy in driving, namely speed, comfort, and convenience.

Speed

Examining the role of the first tangible indicator, namely speed, showed (as expected after the statements about independence) that the end-user attaches great importance to it from a practical point of view. This became mainly clear due to the comparison with other mobility options. In that comparison, respondent 9 highly values not having to deal with waiting times, as would be the case with, for example, public transport.

Yes and speed, you can go whenever you want. You are not seated... you are not bound by certain departure times or anything, you get in the car and you're gone." (Respondent 9).

Since the results regarding independence and speed early in the research process became to be very similar, as well as the argumentation for this, the researcher decided to investigate speed from a different viewing point. As a result, this research also looked at the value that the end-user attaches to having autonomy in determining the speed while driving a vehicle (e.g., feelings that occur while accelerating a vehicle). From this it became clear that only respondent 2 mentioned speed from this point of view as an advantage of having autonomy in driving, whereby this was mainly explained by the fact that it brought her a lot of pleasure.

"Um. The driving itself is fun, pushing your right foot on the throttle every now and then, I just like it when I can feel the engine by moving my right foot; I like that sensation. Steering, turning, letting go of the throttle a bit; that makes it fun for me to drive a car." (Respondent 2).

Comfort

Comfort was not directly identified by the respondents as a major indicator for wanting autonomy in driving. However, this again turned out to be a latent need, as follow-up questions made it clear that comfort was indeed highly valued. For example, respondent 8 described that having comfort is important when someone must travel longer distances. The lack of comfort on the road can also cause stress and irritation while driving a vehicle. What became clear here was that comfort was not directly linked to driving a vehicle, but rather to the possession of a vehicle and its luxury. According to respondent 9 a lack of comfort can lead to less pleasure while driving, which implies that it would be an argument for requiring autonomy in driving. However, it appears that the core of this argument for the end-user is linked to the advantages of having autonomy in ownership.

"Yes, exactly. I think if you have a car where everything rattles and where you sit completely slumped in such a car, and with bad seats, you don't enjoy sitting in the car either. So, that's why comfort certainly has to do with it." (Respondent 9).

Furthermore, the data shows that a need for comfort depends on personal interests. The respondents who did not attach much importance to comfort mainly stated this in the comparison with other mobility options. This made it clear that comfort was not an important argument for them to opt for autonomy in driving over another mobility option. Respondent 5, for example, described this in a cynical way, showing that the comfort of a private vehicle does not outweigh some benefits of public transport.

"No, not very much. Well, if it's a car with heated chairs (laughter). But no, that doesn't really matter to me; I'm also just fine on the train or on the bus. You can do other things there. But no, I don't really care about the chair; as long as it has a decent seat" (Respondent 5).

Convenience

Convenience appeared to be important mainly in the comparison with other mobility options. In this it became clear that it turned out to be difficult for respondent 13 to separate convenience from the feelings of freedom and independence (as previously discussed). Again, a connection was made with the argument that independence provides time advantages, so that in turn more convenience was experienced compared to, for example, having to wait for a bus. The main argument turned out to be that the end-user attaches great importance to being able to leave at any desirable moment. Once again, data shows that the value attached to this indicator was mainly linked to owning a vehicle, so that convenience could be always experienced by entering the vehicle that is standing in the driveway. Respondent 12 clearly linked convenience to autonomy in ownership, in which the emphasis was placed on the urgency of having a vehicle nearby as well as not requiring any waiting time. Explaining why this convenience due to ownership was so important seemed rather difficult for the end-user. Nevertheless, it became widely clear that the convenience due to autonomy in ownership was highly appreciated by the end-user.

“Yes, yes, just the convenience. Yes, that I can just go at any moment and that I can decide for myself when I want to go and how long I am staying, and that I do not have to go because I have to be ready at a certain time because a bus or something will be leaving. I just want to decide for myself at what time, when, how long...” (Respondent 12).

Autonomy in owning

a. Vehicle purchase and transaction

Anable (2005) and Steg (2005) stated in their papers that aspects such as status and power are of importance in wanting autonomy in ownership. Furthermore, it seemed interesting to the researcher to investigate to what extent achieving certain goals (e.g., a dream car) is of influence in the need for autonomy in ownership. These aspects are linked to the situation of the purchase or transaction of a vehicle, in other words the initial contact with the vehicle.

Status

Status appeared to be an indicator that was not top of mind as a feeling that arose when having autonomy in ownership. Data shows that after asking follow-up questions, the presence

of the sense of status is personal. Furthermore, it became apparent that naming status as an important consideration was particularly done by a younger age category. Respondent 8 (24 years old) described this feeling in owning a vehicle as something that has been worked towards and therefore it is difficult to deny that status plays a direct role. Moreover, respondent 3 (23 years old) clearly associates, and attaches a lot a value to, the feeling of status to owning a vehicle and being able to show it to others.

"I personally see it as a piece of value. Personally, I think it is important to have a nice car, because I love it and it is also possible to show that I have a certain possession." (Respondent 3).

The respondents in the age category of 50 years and older associated status as a negative argument for owning a vehicle and viewed this from a more practical point of view. With respondent 11 (50 years old) it became clear that in his view owning a vehicle should make you happy as a person, and that someone should not do this to radiate something to others. It was also found that in some cases the negative association turned into denial with an emphasis on making it clear that the person did not choose to purchase a vehicle for a sense of status. Respondent 9 (63 years old) made this clear by indicating that if a feeling of status was present, he would put more effort into maintaining the vehicle.

"It still works, it drives. Status? No, no. Then I would wash it every week and I don't do that." (Respondent 9).

Power

The data shows that power was often associated with status. In both cases it was predominantly negatively associated with the purchase or transaction of a vehicle. It turns out that the end-user does not associate power with any authority or certain influence over others but is associated with a particular sense of pride in possession. Respondent 2 referred to power as a gain from being independent over other mobility options, as well as a positive feeling that arises from being able to have a certain possession. Eventually, none of the respondents identified power in its predetermined definition as an advantage (or disadvantage), nor a feeling that occurred by owning a vehicle.

"Um. I think that bit of pride that you're like 'cool' I have my own car, my own thing. You don't have that with public transport." (Respondent 2).

Goals

Being able to set materialistic goals considering a vehicle does not appear to be an important need for requiring autonomy in ownership. Respondent 3 indicated that he did have certain ambitions regarding a vehicle, but this did not play a role in requiring autonomy in ownership, according to him. This made it clear that these goals are present at the end-user but are not decisive at the time of purchase or transaction. This means that sufficient evidence has not been gathered that goals are a decisive factor in requiring autonomy in ownership. Nevertheless, since the presence was acknowledged several times and a situation in which it is not possible to have these goals may have been difficult for the respondents to imagine, a limitation in this area could cause problems.

"Um. Yes, I do have that. I would like to have a certain type of car. Um. But whether that means immediately having progression in mind when buying a car, no, that's not the case. So I wouldn't buy a car, buy it and then think okay I'm going to buy that one after this. I would find that strange." (Respondent 3).

b. Vehicle holding

Vehicle holding describes the likelihood that a person would own a vehicle (Bhat & Pulugurta, 1998; Paleti, Bhat, & Pendyala, 2013). To make a clear distinction between vehicle purchase and transaction and vehicle holding, vehicle holding zoomed in on a situation of long-term ownership. Vehicle holding is in the literature associated with three indicators: private space, flexibility, and reassurance (Beirão & Cabral, 2007; Wadud & Chintakayala, 2021; He & Thøgersen, 2017).

Private space

The data shows that having a private space with regard to having autonomy in ownership is valued by all respondents. Not only was private space a top-of-mind advantage when asked, it also became clear why great value was attached to it. For respondent 2, a private space was of great importance since it is not necessary to be considerate towards others. It was therefore experienced as pleasant that in this private space it is possible to for example to listen to music on the speakers, regulate the volume, and it was therefore overall valued as a pleasant place to start or end the working day.

"That also plays a role for me. I like that. In the morning, but also after work, I play the music really hard. So I like that there is no one in the car, that you are by yourself. You

can't play your music in a train, yes you can turn it up loud, but you can't sing. Having a bit of comfort like your own space is nice, yes.” (Respondent 2).

Moreover, an important role for the current situation regarding the COVID-19 virus was discovered in the requirement for a private space. The outbreak of the virus has shown that end-users are thinking more consciously about aspects such as hygiene, which can prevent further spread of the virus. As a result, respondent 3 states that in comparison with other mobility options such as public transport, it is a major advantage that there is individual responsibility and certainty about the overall hygiene in the private space.

“(…) And um, because of the corona aspect, it also counts that you can be as hygienic as you want.” (Respondent 3).

Flexibility

The flexibility due to having a vehicle in their driveway was highly valued by all respondents. Previously it was already stated that the indicator convenience is linked to autonomy in ownership instead of driving, which was closely linked to the answers given around flexibility during this phase. This made it even more clear that convenience is of great importance and that it is a clear argument for requiring autonomy in ownership. Respondent 4 particularly emphasized the importance of the availability of a vehicle, which in turn provided flexibility in the time of departure as well as being able to quickly respond to certain situations when needed. The data shows that the end-users attach great importance to being able to determine the time of departure themselves, again as the main argument is to save time compared to the amount that is needed by using other mobility options.

“Um. Well just that it is always available, so if I now think of “oh I want to quickly get something”, that I can use it right away. Because it's just outside the door and it's mine.” (Respondent 4).

Reassurance

In the area of reassurance, there was a clear consensus among the respondents that this was considered an important argument in requiring autonomy in ownership. Reassurance was cited by all as an advantage of having a vehicle in their driveway. For respondent 10 this was mainly important as it allowed a form of reassurance towards family in the event of an emergency. The data clearly shows that family is mentioned as one of the main arguments,

making it clear that owning a vehicle is necessary at any time. This actually indicates that at least one vehicle must be in possession for these kinds of unexpected situations.

"Yes, that also, yes. If something happens or something, yes. Once, I don't know, (son's name) falls off his bike. Yes." (Respondent 10).

Another aspect that emerged strongly from the data is that the importance attached to reassurance is dependent by the place of residence. This showed that respondent 7, who lives more remote, attaches greater value to autonomy in ownership. Once again it is very clear that having a vehicle is important in the event of an unexpected situations.

"I also really like that. Especially because we are very remote here, so that you have the car in front of the door and can go somewhere at any time when necessary, for example in the event of an emergency." (Respondent 7).

Costs and effort

In addition to examining the advantages in terms of autonomy, this study also examined the disadvantages. Particularly in the area of possession, two main disadvantages appeared. The biggest disadvantage is the costs evolved around owning a vehicle, mentioned by all respondents. Although the costs are seen as a disadvantage, there is a difference between end-users who privately own a vehicle and end-users who lease a vehicle. Despite the fact that the costs are present for respondent 5, there is the feeling that it is more beneficial since there is less to worry about, for example, the costs of refueling. Furthermore, respondent 3 indicates that these costs are taken for granted as he is a car enthusiast, which makes it a disadvantage but not a stumbling block. Nevertheless, according to the end-user, the costs of a vehicle has always been identified as a disadvantage.

"Yes (laughter). And then it makes a difference with leasing a vehicle, which is a lot cheaper in comparison. But the costs of owning a car are always quite expensive. So that's the biggest drawback." (Respondent 5).

In addition to the costs, the data shows that having to make an effort is also a drawback of owning a vehicle. This effort is mainly described by respondent 3 as having to clean and refuel. Moreover, it becomes clear that the end-user may experience the search for a parking space as a negative, especially when it must be done in a busy city. This makes it clear that

owning a vehicle goes hand in hand with several unavoidable requirements, which in the long run can be experienced as negative by the end user.

"The only downside for me would be cleaning and refueling. Those are the only things I think, oh and if I'm in a city, finding a parking spot. That also." (Respondent 3).

Attitude

a. Behavioural attitude

Within this section, the researcher gave the respondents the opportunity to weigh up all the arguments given in the previous components, to ultimately arrive at a decision regarding whether to consider adopting the new form of mobility. By measuring behavioral attitude, it becomes clear whether the respondents are open to this new technology (Rahman, Lesch, Horrey, & Strawderman, 2017).

Positive feelings towards adopting SAVs

Within this study, several positive feelings have emerged regarding the adoption of SAVs. The respondents named several advantages, that made it clear which aspects of a SAV are considered positive by the respondents, which could ultimately lead to adoption. First, the main argument given for using a SAV is the convenience it brings. The occupant does not have to worry about the responsibility that comes with driving, leaving room to do other things. Furthermore, respondent 4 mentions the greatest advantage of a SAV that there may also be room for, for example, drinking alcohol. This implies that a SAV could serve as a replacement for other mobility options besides driving a conventional vehicle.

"Um. Yes, I think it's actually a kind of taxi and I don't know what the conditions are, but when you say the steering wheel is completely gone. So as a driver you don't have to be sober yourself, so that seems like a nice type of transport if you wanted to go for a drink in the city or whatever." (Respondent 4).

Moreover, it appears that for respondent 12 the greatest advantage lies in not having to drive a vehicle over long distances. As was shown earlier, this research showed that the pleasure of having autonomy in driving is limited by the factor of distance. An advantage is also mentioned here of not having to use public transport, with the emphasis on having a private space. For respondent 3, next to not having to drive long distances, a SAV does not require effort in, for example, finding a parking space.

“Um. If I had to drive a lot, and even more than I do now, I would benefit from having someone else or something else drive so I could work on the road or do other things. Of course you have to be aware of the climate as an individual, so I would certainly like to take that into account. And probably also at that moment finding a parking spot, so that I don’t have to do the effort.” (Respondent 3).

Ultimately, the question is whether the benefits of a SAV outweigh the benefits of having autonomy in being able to drive and own a vehicle to find out whether there is an overall positive attitude towards adoption. In this case, the data shows that four respondents state that the positive attitude is present, which could lead to full adoption of the SAV. The main reason for two respondents was that they did not experience any pleasure in driving a vehicle. Less value was therefore attached to both autonomy in driving, as well as autonomy in owning. Respondent 12 described that she generally prefers to be a co-driver rather than the driver, which results in the positive attitude towards the self-driving features. Furthermore, it became clear that for the other two respondents there was a positive attitude, but that they chose to first feel out the situation before adoption.

“That that still plays a role, but in general for someone who is not too fond of driving and simply prefers to be a passenger than a driver, I think that is actually a very nice option to be mobile after all.” (Respondent 12).

Negative feelings towards adopting SAVs

There are several arguments in favour of the conventional vehicle, from which a negative attitude towards the SAV could be derived. The data shows that these arguments can be divided into the two central variables: autonomy in driving and owning. First, it became clear that in the field of driving the biggest argument is, as mentioned earlier, that it is difficult for the end-user to relinquish control. This is mentioned by respondent 5 as the biggest obstacle. Moreover, it turned out that pleasure was an important argument for the end-user. Respondent 2, for example, states that not having autonomy in driving leads to experiencing much less pleasure in travelling. With this, the data shows that arguments for requiring autonomy in driving can lead to a negative attitude towards mobility options, where this autonomy is not available.

"That's right. I prefer my freedom, driving myself. I think it would be very boring. I mean, with those quiet cars already, you don't even hear the engine. All the fun gets taken out of the car." (Respondent 2).

Respondent 13 indicated that not having autonomy in driving would not directly lead to a negative attitude, but that this would be the case if autonomy in ownership was lost. The most important argument for the end-user is the desire to own a vehicle. There are several reasons for this, with respondent 3 attaching great importance to reassurance in the event of an emergency. This makes it clear that the arguments given for autonomy in ownership can lead to a negative attitude towards the adoption of SAVs.

"Speed... private space... Also the possibility, I haven't mentioned that yet, but that you can offer something to another person. That you can say "hey I can drive" when there is a critical situation, for example." (Respondent 13).

Overall, it became clear that a general feeling of freedom is of great importance, in both driving and owning a vehicle, as for example mentioned by respondent 9. The reasons for this differ per person. This ensures that a majority of respondents (69 percent) indicate that they would not exchange their conventional vehicle for a SAV. The data thus shows that a limitation in the area of autonomy in both driving and owning can lead to a negative attitude towards adoption of the potential end-users.

"I think a bit of freedom, which you want to keep. Yes." (Respondent 9).

Neutral feelings towards adopting SAVs

Even though the data shows that the majority of respondents express a negative attitude towards full adoption of the SAV, there is an additional finding that is necessary to discuss. Where it was previously thought that the attitude could be divided into solely a positive or negative attitude, this study shows that a so-called neutral attitude was also present. It became clear that, despite initial negative attitude towards full adoption, a lot of potential was seen in the SAV. This made it clear that the potential end-user sees a role for the SAV, which leads to partial adoption. First, a SAV would be used as an adjunct to the conventional vehicle. Respondent 4, for example, clearly indicated that it is a requirement to have autonomy in both ownership and driving but did see a role for the SAV in addition to this. This means that the SAV is seen as a potential replacement for a single vehicle in case of owning multiple vehicles.

"That's a bit of a two-way thing, I would say, because I would certainly always want a vehicle that is always there, especially because of the child. Which you can use immediately. Um. But I would like it for other things, which you mentioned, the self-driving vehicle, if that's just, if you don't have to wait long for it, then I would really use it. Then I would really say we could settle just fine with only one car, if, if you need it, you can use it. But I would never want to not own a car myself." (Respondent 4).

Another argument for partial adoption is seeing the SAV as a replacement for public transport. In this way, the potential end-user can experience the advantages of a SAV, which outweigh the advantages of today's public transport. Respondent 2 would prefer a SAV over public transport because it is, for example not necessary to be considerate towards a full train compartment.

"Um. Yes, I think it's a bit two-sided, because I partly think like, I do sometimes use public transport. I would see it as a kind of public transport. I would still like to have a car. In addition, if I go by public transport, I would rather take such a SAV, because you got your privacy, yes you do eventually share your space. But it's not a whole train." (Respondent 2).

Lastly, important to mention is that this partial adoption would not take place immediately upon availability of the product. The potential end-user indicates that they first want to wait in order to experience and see how the product works in practice. For example, respondent 6 indicates that the (partial) use of a SAV depends on the quality of the infrastructure.

"Yes, what I said.. If it... I would not want to be a test subject so to speak.. If it would be fully integrated, and um, yes and there is a decent road network, and yes, if it is just as good as a car, then yes." (Respondent 6).

V. Discussion

Theoretical implications

The central theme addressed in this research focuses on perceived user freedom. Woisetschläger (2016) stated that perceived user freedom could have a critical direct influence on the adoption of new mobility technologies. Within this context, it is necessary to zoom in on the two variables (autonomy in driving and autonomy in owning) relevant in the case of SAVs, before elaborating on the attitude towards adoption. First, Anable (2005) and Jensen (1999) described that the main arguments for requiring autonomy in driving have to do with experiencing the feelings of speed, comfort, and convenience. This research has shown that these physical effects are indeed important arguments for wanting autonomy. Contrary to what was expected, however, the potential end-user saw a different role for the experience of speed as it was not linked to a physical feeling during driving, but rather to a practical feeling. In the case of comfort and convenience, the effect appeared to be more consistent with having autonomy in ownership. Moreover, this study clearly showed that the main arguments revolve around psychosocial feelings experienced while driving a vehicle. This showed that feelings of pleasure, freedom and independence play a large role in requiring autonomy, which is consistent with the research by Raue, et al. (2019). Second, it has become clear that autonomy in driving can be associated with feelings of stress, as also described by Beirão & Cabral (2007). Additionally, this research has shown that the distance to be covered also has a significant effect on the degree of pleasure. The greater the distance to be covered, the less a feeling of pleasure is experienced for most.

In assessing autonomy in owning, this research is not entirely consistent with studies on this matter. First, contrary to what Steg (2005) and Anable (2005) stated in their studies, the importance of status and power was not completely found during this research as only three respondents valued them. What did occur, however, was that the importance of striving for status and power appeared to be a personal preference, which is consistent with the study by Paundra, Rook, van Dalen and Ketter (2017). An interesting contribution of this research is that age seemed to play a role in valuing a feeling of status, in which a younger target group appears to attach more value to it. Furthermore, this research was consistent with Wadud and Chintakayala (2021) in proving the importance of wanting to have reassurance, as well as with the statement of He & Thøgersen (2017) that implies a high value of a private space in striving for autonomy in ownership.

Finally, the behavioral attitude measured in this research was consistent with the studies of Rupp & King (2010) and Woisetschläger (2016) in stating that a restriction of user freedom is a threat to adoption, as well as the high value end-users attach to having control. An interesting finding in addition to the current theory, however, is that the attitude towards adoption appears to not be completely negative. Requiring perceived user freedom is therefore an important factor for the degree of adoption, which in most cases will lead to partial adoption of SAVs. This research has shown that although it has been confirmed that adoption could be limited due to a loss of control and freedom (Rupp & King, 2010; Woisetschläger, 2016), the potential end-user is open to using a SAV for additional use or to replace one vehicle in case of owning several vehicles. The main arguments for this partial adoption have to do with the multiple benefits (e.g., in terms of convenience and costs) recognized by the potential end-users. Therefore, this research does not acknowledge Glancy (1995) in the statement that end-users believe that a restriction in perceived freedom is “dehumanizing”, which assumes that a completely negative attitude towards adoption is the result. This may be the result of a process of habituation, though, which could also lead to a more positive attitude towards adoption in the future.

Practical implications

Research on SAV adoption is critical, as relatively little research has been conducted on this matter (Yuen, Huyen, Wang, & Qi, 2020). Therefore providing practical implications could be beneficial for SAV providers. Potential providers of SAVs can use the results of this research in various formations. First, it is possible to give a more concrete interpretation to the offer by looking carefully at which advantages of the conventional vehicle could be used within a SAV. For example, all respondents indicated that they attach great value to having a private space, which clearly indicates that despite the shared origin, a SAV should not be offered as a self-driving taxi in which the space should be shared with different people. Providing an option through which people can indicate that they can use a SAV solely by themselves (or, for example, with co-drivers chosen by them) increases the chances of (partial) adoption. The usage of MaaS is an excellent way to do so.

Furthermore, it has become clear that the potential end-user first wants to see if the vehicle is safe to use. It is therefore very important that providers of SAVs provide clarity and transparency in the system to improve this overall feeling of safety. Clarity about other matters, such as responsibility in the event of calamities (e.g., in the event of an accident), are also

important here.

This research has also shown that the potential end-user would only choose for (partial) adoption if using the SAV would actually be preferred over other mobility options such as public transport. In concrete terms, it has emerged that the SAV will have to compete in terms of convenience and costs. A practical implication is therefore that the SAV needs to be offered inexpensively and requires little effort from the potential end-users in, for example, picking them up from the sidewalk in front of their houses, as well as not requiring long waiting time.

Finally, this research has shown that there is a relationship between not experiencing pleasure in driving a vehicle and a positive attitude towards full adoption of SAVs. This implies that providers of SAVs should focus on a target group that, for example, prefers public transport over driving a vehicle themselves, which in turn will increase the willingness to full adoption.

Limitations

This research has several limitations, both in terms of methodology and developments during the research. First, the researcher has opted for qualitative research, which means that several general limitations apply. Even though the researcher has tried to increase this as much as possible through a critical composition of the sample, the generalizability of this research is limited due to the qualitative research strategy. Furthermore, respondents may have provided desirable answers despite discussing confidentiality before the interviews.

Some limitations also emerged during the data collection and analysis. First, due to the current situation regarding the COVID-19 virus, it was not possible to make a good representation of an elder target group (65 years or older). As a result, in this research no statements could be made about the attitude of this age category who, for example, could be less mobile due to their age. Furthermore, the current situation regarding the COVID-19 virus has also led to the majority of the interviews being conducted in an online environment, which could have influenced the outcome and therefore the quality of the data.

A general important limitation on investigating a future phenomenon should also be mentioned. This ensures that the opinion of the respondents may change over time, as the product (SAV) is currently not on the market in the Netherlands. This also results in a difficult imagination of how a SAV will look like and how it works in practice, resulting in data based on estimates of the respondents.

Directions for future research

This research offers interesting directions for future research. First, relatively little research has been conducted on the adoption of these 'futuristic' new mobility options, such as the SAV, which offers many possibilities. A general recommendation for conducting more research on these rapidly developing mobility options is therefore justified.

Furthermore, there are also more concrete directions as a result of this research. For example, this research can be repeated via a different research approach, such as a quantitative approach. This makes it possible to measure the effect of autonomy on the attitude towards adoption on a wider scale. It would also be interesting to opt for an experiment with an actual visual representation of the product which may provide different results. Another direction for future research would be to repeat this research among people who currently already use autonomous vehicles. This could be interesting as the value they attach to for example autonomy in driving, could differ from the attitude of the sample in this study.

Lastly, this research solely focused on a Dutch target group in order to increase generalizability, so it might be interesting to investigate possible cultural differences in requiring autonomy in driving or owning a vehicle. Consistent with researching another sample is the integration of an older target group, so that statements can be made about people who are less mobile, so that an attitude towards adoption can differ compared to the results of this research.

Critical reflection

During the data collection it became clear that the respondents struggled with the differences between certain indicators. The researcher should have been more critical in applying more nuance to the difference between, for example, power and status. The lack of attention prior to data collection has therefore led to certain indicators not being associated to the variable it was linked to in the operationalization. In general this led to not obtaining the desired data around a small amount of indicators. More attention to this, prior to data collection, could have prevented these issues.

Despite the fact that the course of the research went smoothly, the researcher encountered difficulties during the data processing. It became clear that the operationalization in the case of possession was not consistent with the different options around ownership. For example, the researcher has opted not to make a distinction between private ownership and leasing a vehicle, in researching the influence of autonomy in ownership. This has led to an

inconsistency in terminology (e.g., vehicle purchase and transaction), which focuses rather on private ownership and does not take into account the differences compared to leasing a vehicle. Despite the researcher's aim to distinguish between the initial contact with the vehicle (e.g., making choices in the type or brand of vehicle) and long-term ownership of a vehicle, the terminology may lead to different interpretation. This has led to a limited difference in the results between private ownership and leasing of a vehicle. Furthermore, despite the (limited) collection of demographic variables, little association was found within this study. The choice for a qualitative research has led to a focus on the attitude towards the adoption of SAVs and the indicators linked to this by the end-user. As a result, there was limited scope within this study to find connections with, for example, age, marital status, and gender. Opting for partial quantitative data collection could have resulted in clearer links between the attitude towards adoption and relevant demographic variables.

In previous studies it became clear that perceived user freedom was mainly mentioned as an indirect effect for making choices in the field of mobility. Within this research, however, it has become clear that perceived user freedom plays a greater role than expected. The end-user mentioned that having freedom in their choices around driving as well as owning a vehicle is of great importance. Due to the literature review and personal preferences around mobility, the researcher got the expectation that this would logically lead to a negative attitude towards adoption of SAVs. This expectation appears to have only partially come true, as it has become apparent that the end-user is open to partial adoption.

VI. Conclusion

The conclusion below answers the central question within this research: “*What influence does perceived user freedom (autonomy in driving and ownership) have on the attitude towards the adoption of Shared Autonomous Vehicles (SAVs)?*”.

To answer this question, this research focused on analyzing the main arguments for requiring autonomy in terms of two variables: driving and owning. This research has shown that requiring autonomy in driving a vehicle is mainly dependent on psychosocial effects (Anable & Gatersleben, 2005; Krueger et al., 2016; Raue, et al., 2019). The general feeling of freedom in being able to go wherever one wants is the main argument. Closely linked to freedom is control, as the end-users have a continuous urge to take control of the vehicle themselves. Furthermore, it has become clear that pleasure while driving is highly valued, but that it can also be limited by experiencing stress or driving long distances. As a final psychosocial effect, it has been found that a sense of independence stimulates the end-user to drive a vehicle themselves instead of using, for example, public transport. Contrary to expectations, physical effects such as comfort and convenience are rather associated with vehicle ownership. Requiring autonomy in owning a vehicle was mainly found in arguments for vehicle holding, in other words the likelihood that a person would own a vehicle for a longer period. Yet, the feelings that arise in particular with the purchase or a transaction of a vehicle (status, power, and goals), play a minor role and is considered to be a personal preference influenced by age. This research has shown that the main reasons for wanting to own a vehicle are private space, flexibility, and reassurance (Beirão & Cabral, 2007; Wadud & Chintakayala, 2021; He & Thøgersen, 2017). The requirement for a private space has been reinforced by the current situation regarding the COVID-19 virus, which has made hygiene in the eyes of the end-user more important. Furthermore, it has become clear that flexibility (convenience) is one of the main reasons for wanting a vehicle in the driveway, as well as the reassurance which allows one to act quickly in the event of an emergency. Despite the many advantages of owning a vehicle, two disadvantages clearly emerged, namely the costs and the effort involved.

It has become clear that many arguments are given implying that the potential end-user attaches great value to having autonomy in driving and owning a vehicle, which could lead to a negative attitude towards adopting SAVs. However, the answer to the central question is more complex than this implication.

In conclusion, autonomy in driving and owning a vehicle has a major influence on the

attitude towards adopting SAVs, which, however, does not directly lead to a completely negative attitude. Despite the fact that most potential end-users indicate that they do not opt for a full adoption in which the conventional vehicle is exchanged for a SAV, many opportunities did emerge. This research shows that potential end-users have so-called neutral feelings towards adopting SAVs, whereby a role for this new mobility form is seen in two situations. First, there are great benefits seen in partially adopting a SAV for the convenience it brings as well as the possibility of having a private space, making it seen as a replacement for other mobility options (e.g., public transportation). Second, it has been found that a SAV can provide replacement for one vehicle, eliminating the need to own multiple vehicles. This partial adoption can therefore offer a (partial) solution for negative emotions during driving, the costs and effort regarding owning and contribute to the benefits of the SAV in the field of climate change and road safety.

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Appendix

I. Interview guideline

a. Introduction

Allereerst welkom, en bedankt dat u wilt bijdragen aan dit onderzoek. Mijn naam is Max Luesink en ik ben een Masterstudent aan de Radboud Universiteit in Nijmegen. Momenteel ben ik bezig met de afronding van mijn master Business Administration met als specialisatie Innovation en Entrepreneurship. Deze afronding dient behaald te worden door het succesvol schrijven van een masterthesis.

Ik zal allereerst kort uitleggen wat de focus is van dit onderzoek. Dit onderzoek heeft als hoofdonderwerp shared autonomous vehicles (SAVs). Dit is een technologie dat voortborduurdt op de zelfrijdende auto, zoals bijvoorbeeld de Tesla. De zelfrijdende auto zoals we deze nu kennen, is in staat om van A naar B te rijden zonder het vereisen van een bestuurder. Een belangrijk aspect hierbij is dat er hier beperkingen zijn op het gebied van de autonomie van het voertuig, waardoor de inzittende verplicht is om in te kunnen grijpen (handen bij het stuur). Bij SAVs is dit niet langer meer het geval. Een SAV verschilt met de ‘hedendaagse’ zelfrijdende auto op twee aspecten. Het eerste verschil bevindt zich bij de razendsnelle ontwikkeling van de technologieën waardoor het in de nabije toekomst niet meer noodzakelijk is voor een inzittende om in te kunnen grijpen. Met andere woorden, een stuur in een auto zal bijvoorbeeld niet meer noodzakelijk zijn. Het niet langer vereisen van een echte bestuurder maakt de weg vrij voor het tweede aspect, namelijk shared mobility. Dit aspect houdt in dat het voertuig niet langer in het bezit van één persoon dient te zijn, en dit als het ware gedeeld kan worden over een grote groep mensen. Concreet betekent dit dat een SAV eigenlijk een zelfrijdende taxi is. Deze ontwikkelingen brengen een hoop verwachte voordelen met zich mee, waarbinnen het belangrijkste voordeel de vermindering in het aantal auto's in privébezit is; wat een positief gevolg heeft op bijvoorbeeld het broeikaseffect. Het levert echter wel de vraag op of mensen het conventioneel voertuig zouden inruilen voor de SAV. Een onderwerp wat hierbij belangrijk is, en wat ik verder wil onderzoeken, is de ‘vrijheidsperceptie’. Bij de conventionele auto beschikt men over de vrijheid om te gaan en staan waar zij willen, kijkend naar het rijden én het bezitten van een voertuig. De rol van deze twee aspecten, het zelf kunnen besturen en bezitten van een voertuig, wordt dieper onderzocht tijdens dit interview.

b. Consent

Concreet betekent dit dat ik de rol van de vrijheidsperceptie op de adoptie van SAVs ga onderzoeken door te spreken met potentiële eindgebruikers. Dit onderzoek wordt gedaan aan de hand van een semigestructureerd interview, wat betekent dat er een basis is gecreëerd door een lijst aan vragen waarbinnen er ruimte is om vervolgvragen te stellen.

Deze lijst bestaat uit een totaal van 29 vragen, onderverdeeld onder de eerder benoemde hoofdonderwerpen: vrijheid in het rijden en vrijheid in het bezitten van een voertuig. Afsluitend wordt er ingegaan op de attitude en worden er demografische vragen gesteld. Naast de vooropgestelde vragenlijst zal ik vervolgvragen stellen om meer duidelijkheid te creëren omtrent bepaalde antwoorden. Indien een bepaalde vraag of vervolgvraag voor u als niet prettig ervaren wordt, hoeft u géén antwoord te geven. Om de antwoorden goed te kunnen verwerken, zou ik u graag willen vragen of er bezwaar is tegen het opnemen van het interview. Uw antwoorden, evenals uw identiteit, zullen strikt vertrouwelijk behandeld worden. Dit betekent dat uw identiteit en antwoorden niet te herleiden zijn.

Gaat u akkoord met het opnemen van het interview?

[JA]/[NEE]

c. Autonomy in driving**Algemeen:**

1. Hoe vaak rijdt u een voertuig per week?
2. Wat zijn volgens u de voordelen van het rijden van een voertuig?
 - a. Wat is het grootste voordeel, en waarom?
3. Wat zijn volgens u de nadelen van het rijden van een voertuig?
 - a. Wat is het grootste nadeel, en waarom?

Psychosociaal: Het algemene gevoel bij het hebben van autonomie tijdens het rijden

4. Welke gevoelens wekt het rijden van een voertuig bij u op?
 - a. Welke rol speelt het gevoel van vrijheid?

- b. Welke rol speelt het gevoel van plezier?
- c. Welke rol speelt het gevoel van onafhankelijkheid?

Fysiek: De fysieke uitkomsten bij het hebben van autonomie tijdens het rijden

- 5. Prefereert u het zelf besturen van een voertuig ten opzichte van een andere (mobiliteit) optie, zoals het openbaar vervoer?
 - a. Waarom wel of niet?
 - b. Welke rol speelt het algemene gemak van het zelf rijden?
 - c. Welke rol speelt het comfort van het zelf rijden?
 - d. Welke rol speelt de snelheid van het zelf rijden?

d. Autonomy in ownership

Algemeen:

- 6. Wat zijn volgens u de voordelen van het bezitten van een voertuig?
 - a. Wat is het grootste voordeel, en waarom?
- 7. Wat zijn volgens u de nadelen van het bezitten van een voertuig?
 - a. Wat is het grootste nadeel, en waarom?

Vehicle purchase and transaction: De gevoelens omtrent de koop en inruiling van een voertuig

- 8. Welke gevoelens wekt het bezitten van een voertuig bij u op, kijkend naar een koop- of inruilsituatie?
 - a. Welke rol speelt het gevoel van status?
 - b. Welke rol speelt het gevoel van macht?
 - c. Welke rol speelt het gevoel van ambitie (het bereiken van doelen)?

Vehicle holding: De gevoelens omtrent het algemene (langdurige) bezit van een voertuig

9. Welke gevoelens wekt het bezitten van een voertuig bij u op, kijkend naar een situatie wanneer u dit vergelijkt met andere mobiliteit opties zoals bijvoorbeeld het openbaar vervoer?
 - a. Welke rol speelt het gevoel van flexibiliteit?
 - b. Welke rol speelt het gevoel van geruststelling?
 - c. Welke rol speelt het gevoel van het hebben van een eigen ruimte?

- e. Attitude**
10. Welke overwegingen maakt u in de keuze voor een mobiliteit optie, en waarom?
 - a. Welke rol speelt het hebben van vrijheid in het bezitten van een voertuig hierin?
 - b. Welke rol speelt het hebben van vrijheid in het besturen van een voertuig hierin?
11. Indien u géén vrijheid zou hebben in het bezitten en het besturen van een voertuig, wat doet dit met uw attitude ten opzichte van deze mobiliteitsvorm?
 - a. Hoe zou dit het geval zijn voor uw attitude ten opzichte van het eerder besproken Shared Autonomous Vehicle?
12. Zouden voor u de voordelen van een SAV, zoals het positieve effect op het klimaat en de verbetering van de veiligheid in het verkeer, zwaarder wegen dan de voordelen van het hebben en het besturen van een conventioneel voertuig?
 - a. Waarom wel of niet?
 - b. Welke voordelen zijn voor u het belangrijkste in deze overweging, als u kijkt naar de SAV?
 - c. Welke voordelen zijn voor u het belangrijkste in deze overweging, als u kijkt naar het conventionele voertuig?

13. Zouden voor u de voordelen van nieuwe mobiliteit, zoals het positieve effect op het klimaat en de verbetering van de veiligheid in het verkeer, zwaarder wegen dan de beperkingen op het gebied van vrijheid die zijn inbegrepen?

a. Waaron wel of niet?

f. Demografisch

14. Wat is uw leeftijd?

15. Wat is uw geslacht?

16. Wat is uw burgerlijke staat?

17. Wat is het hoogste schoolniveau dat u heeft voltooid of de hoogste graad die u heeft behaald?

18. Wat is uw arbeidsstatus?

II. Coding scheme

Codes	Description	Example quotes
Freedom	A respondents experiences a general feeling of freedom while driving a vehicle.	“De vrijheid die je krijgt, ik mag gaan en staan waar ik wil.” (Respondent 3).
Control	A respondent wants to be responsible for their own actions while driving a vehicle.	“En ook nog wel het idee denk ik dat je, dat je zelf de controle hebt.” (Respondent 5).
Pleasure	A respondent experiences some sort of joy or fun while driving a vehicle.	“Klopt. Ik heb liever mijn vrijheid, lekker zelf rijden. Ik denk dat het heel saai zou worden. Ik bedoel, met die stille auto’s, je hoort de motor niet eens. Al het plezier wordt uit de auto gehaald.” (Respondent 2).
Stress	A respondent experiences any form of discomfort, irritation or stress while driving a vehicle.	“En, um, op trajecten dat ik ken vind ik het altijd erg leuk maar op onbekende trajecten kan het stressvol zijn omdat je ook met de navigatie zit, of als je niet weet waar je moet parkeren” (Respondent 1).
Distance	A respondent indicates that the distance to be covered while driving a vehicle is decisive in their mobility preference.	“Stel voor, als ik echt een hele lange afstand moet doen, dan doe ik dat liever met openbaar vervoer of iets. Maar korte afstanden of gewoon werk, woon-werkverkeer, doe ik liever met de auto.”. (Respondent 2).
Independence	A respondent indicates that importance is attached to a feeling of not being dependent on others while driving a vehicle.	“Ja dat is er ook zeker wel, zeg maar omdat je gewoon, ja, um, als ik ergens heen wil, maakt niet uit waarheen, ik heb een auto; ik kan zelf rijden; ik kan daar gewoon altijd heen (...).” (Respondent 4).
Speed	A respondent indicates that a general physical feeling of speed is experienced while driving a vehicle.	“(…). Um. Het rijden zelf is leuk, je rechtervoet af en toe gas geven, ik vind het gewoon fijn als ik met mijn rechtervoet de motor kan voelen; die sensatie vind ik leuk. “ (Respondent 2).
Comfort	A respondent indicates that experiencing physical comfort is of influence, while driving a vehicle.	“(…)Ook al rijd ik maar kleine stukken, ik vind het wel belangrijk en helemaal zo gauw je ook langere afstanden rijdt, dan ik dat het wel heel belangrijk is dat je echt comfortabel in de auto zit en onderweg niet hoeft te irriteren aan je zithouding en dat soort dingen.. Dus, um, ik denk dat je daar onderweg niet mee bezig zou moeten zijn.” (Respondent 8).

Convenience	A respondent indicates a general feeling of practicality while driving a vehicle.	“Gemak! En dat je gewoon in kunt stappen, dat je niet eerst hoeft te bellen of... Dat je, voor mij part is het, al is het maar vijf minuten, maar als je weg wilt is vijf minuten lang (...).” (Respondent 9).
Status	A respondent indicates an influence of reputational pressure in the purchase or transaction phase of a vehicle.	“Ik zie het persoonlijk wel als een stukje waarde. Ik vind het persoonlijk belangrijk om een mooie auto te hebben, omdat ik er van houd en het kan ook laten zien dat ik een bepaald bezit heb.” (Respondent 3).
Power	A respondent indicates that there is a feeling of influence in the purchase or transaction phase of a vehicle.	“Um. Ik denk dat stukje trots dat je zoiets hebt van ‘cool’ ik heb mijn eigen auto, mijn eigen ding. Dat heb je niet met het OV.” (Respondent 12).
Goals	A respondent indicates that there are certain materialistic desires experienced in the purchase or transaction phase of a vehicle.	“Ik zou prima in een dikke wagen willen rijden. Ik wil bijvoorbeeld een Mercedes AMG. Zou ik best willen hebben (...).” (Respondent 2).
Private space	A respondent indicates that there is influence of privacy in the vehicle holding phase.	“Ja, ja, ook dat heeft, ja. Het is, jij bent eigen baas op dat moment. Hè. Als je in jouw auto zit en je verplaatst van A naar B en ik heb zin om naar weet ik veel wat voor muziek dan ook te luisteren, dan kan ik dat doen. Heeft niemand daar problemen mee.” (Respondent 9).
Flexibility	A respondent indicates that easily modifying due to certain situations is of influence in the vehicle holding phase.	“Um. Als je bijvoorbeeld, ja dat is misschien een beetje gek, als je denkt ik ga lekker naar de stad om te borrelen *gelach*, dan pak je gewoon eerder het OV dan de auto.” (Respondent 5).
Reassurance	A respondent indicates that there is influence of the desire to remove doubts or fears in certain situations, in the vehicle holding phase.	“Ja, stel je moet ineens naar het ziekenhuis, dus dan, ja, is het ook, ja...” (Respondent 6).
Costs	A respondent indicates that the requirement for payment is of influence in the vehicle holding phase.	“(...) Een taxi is natuurlijk ook een optie, maar dat zou me dan te veel in de kosten gaan schelen.” (Respondent 3).
Effort	A respondent indicates that a requirement of physical or mental activity is present in the vehicle holding phase.	“Ja.. Het vergt wat onderhoud maar ik zie dat niet als... een nadeel zegmaar.” (Respondent 6).
Positive feelings towards adopting SAVs	A respondent describes arguments that stimulate, positively influence or lead	“Ja, dat stukje misschien wel. Maar ook wel het relaxte, dat je jezelf niet druk hoeft te maken van, nou, moet je links moet je rechts...” (Respondent 10).

	to a possible adoption of a SAV.	
Negative feelings towards adopting SAVs	A respondent describes arguments that does not stimulate, negatively influence or prevents a possible adoption of a SAV.	“Dan zou ik mij wel een heel stuk afhankelijker voelen.” (Respondent 7).
Neutral feelings towards adopting SAVs	A respondent describes arguments showing that there is no predominant negative or positive attitude, allowing partial adoption of SAVs.	“Um. Wel dubbel denk ik. Aan de ene kant heel erg fijn om gewoon te gaan zitten en heen te gaan waar je wilt. Aan de andere kant vervelend omdat je niet zelf de controle hebt bijvoorbeeld. Wel heel erg fijn is om nu te hebben en gewoon te pakken wanneer je kan.” (Respondent 5).

III. Quotes

Section	#	Transcript	Translation
Freedom	4	<i>"Toen was ik daarheen gereden en toen dacht ik van wow ik rijd eigenlijk op een automatische piloot. Dat je niet meer nadenkt, lekker om me heen kijken en dat geeft een bepaald gevoel. Zeker als je rijdt waar je vaker komt. Een soort van automatisme ofzo. En um, ja. Dat je het zeg maar bijna onbewust, ik wil het niet zeggen want je bent altijd wel alert ofzo. Maar het is een soort vrijheidsgevoel ofzo. Als je gewoon lekker een stukje kunt rijden."</i>	<i>"Then I drove there and then I thought wow I actually drive on an autopilot. That you no longer think, started looking around me and that gives a certain feeling. Especially if you drive where you come more often. Some kind of automatism or something And um, yes. That you say it's almost unconsciously or so. I don't want to say it because you are always alert. But it's a kind of freedom or something. If you can just enjoy a ride."</i>
	12	<i>"Dat ik op dat moment weg kan gaan, dus dat ik zelf kan kiezen wanneer ik wil gaan. Als ik een keertje terug kan mocht je iets vergeten zijn, zelf kan bepalen waar ik heen ga. Dat denk ik ja."</i>	<i>"That I am flexible in leaving, thus I can decide when I want to leave. If I need to turn around when I forgot something and I can decide where I want to go. That's what I think, yes."</i>
	13	<i>"Um... Gevoel van controle? Dat lijkt me het grootste voordeel."</i>	<i>"Um... Feeling in control? That seems to be the biggest advantage for me."</i>
Pleasure	5	<i>"Ja, ik vind autorijden best wel leuk. Ik vind het niet erg om te doen en je komt gewoon overal dus, ik denk dat dat stukje plezier is wat je erin kan hebben."</i>	<i>"Yes, I quite like driving a car. I don't mind doing it and you just get everywhere so I think that bit of fun is what you can have in it."</i>
	1	<i>"En, um, op trajecten dat ik ken vind ik het altijd erg leuk maar op onbekende trajecten kan het stressvol zijn omdat je ook met de navigatie zit, of als je niet weet waar je moet parkeren"</i>	<i>"And, um, I always enjoy it on routes that I know, but on unfamiliar routes it can be stressful because you are also using the navigation, or if you do not know where you have to park."</i>
	2	<i>"Stel voor, als ik echt een hele lange afstand moet doen, dan doe ik dat liever met openbaar vervoer of iets. Maar korte afstanden of</i>	<i>"Suppose, if I really have to drive a very long distance, I prefer to do it by public transport or something. But short distances or just work, commuting, I prefer to go by car."</i>

		<i>gewoon werk, woon-werkverkeer, doe ik liever met de auto."</i>	
	4	<i>"Um. Ja het is minder saai zeg maar. Ik vind het nu al als ik met (partner) ergens heen ga, is het toch al saaier. Voor een klein stukje is het niet erg vind ik, maar als het echt een rit voor een uur is, ga ik liever zelf. Want dan gaat de tijd sneller ofzo."</i>	<i>"Um. Yes it is less boring. I already think when I go somewhere with (name partner), it is already more boring. I don't mind for a smaller drive, but if it really is a ride for an hour, I prefer to drive by myself. Because then time goes faster or something."</i>
Independence	8	<i>"Ja, precies. Als je het vergelijkt, ook met het openbaar vervoer zeg maar, daar ben je ook verbonden aan bepaalde stops en dat heb je met een auto eigenlijk niet tot weinig. Ja je mag in bepaalde zones niet komen, maar voor de rest kun je met een auto praktisch overal komen en, ja dat is het met openbaar vervoer... Ja het kan wel, maar dan ben je toch wel weer afhankelijk van alsnog een stuk lopen, of een fiets huren of dat soort dingen dus. Zo zie ik het een beetje."</i>	<i>"Yes, exactly. If you compare it, even with public transport, let's say, there you are also obliged to certain stops, and with a car you do not really have that. Yes you are not allowed in certain zones, but besides that you can reach practically everywhere with a car and with public transport... Yes it is possible, but you are again dependent on walking for a while or renting a bicycle or things like that."</i>
	9	<i>"Ja en snelheid, je kunt gaan wanneer je wilt. Je zit niet, je bent niet gebonden aan bepaalde vertrektijden ofzo, je stapt in de auto en je bent weg."</i>	<i>"Yes and speed, you can go whenever you want. You are not seated... you are not bound by certain departure times or anything, you get in the car and you're gone."</i>
Speed	2	<i>"Um. Het rijden zelf is leuk, je rechtoeroet af en toe gas geven, ik vind het gewoon fijn als ik met mijn rechtoeroet de motor kan voelen; die sensatie vind ik leuk. Zelf sturen, een bochtje, gas beetje los laten; dat maakt het leuk zeg maar voor mij om een auto te besturen."</i>	<i>"Um. The driving itself is fun, pushing your right foot on the throttle every now and then, I just like it when I can feel the engine by moving my right foot; I like that sensation. Steering, turning, letting go of the throttle a bit; that makes it fun for me to drive a car."</i>
Comfort	9	<i>"Ja, precies. Ik denk dat als je een auto hebt waar alles aan rammelt en waar je</i>	<i>"Yes, exactly. I think if you have a car where everything rattles and where you sit completely slumped in such a</i>

		<i>helemaal afgezakt in zo'n auto zit, en slechte stoelen, dat je ook niet met plezier in de auto zit. Dus, dat is, comfort heeft er zeker mee te maken."</i>	<i>car, and with bad seats, you don't enjoy sitting in the car either. So, that's why comfort certainly has to do with it."</i>
	5	<i>"Nee, niet heel erg. Nou ja, als het een auto is met stoelverwarming *gelach*. Maar nee, op zich maakt me dat niet heel veel uit; ik zit ook gewoon prima in de trein of in de bus. Daar kan je wel lekker weer andere dingen doen. Maar nee, verder met de stoel maakt me niet zo heel veel uit; als het maar gewoon een beetje goed zit"</i>	<i>"No, not very much. Well, if it's a car with heated chairs (laughter). But no, that doesn't really matter to me; I'm also just fine on the train or on the bus. You can do other things there. But no, I don't really care about the chair; as long as it has a decent seat."</i>
Convenience	12	<i>"Ja, ja, wel het gemak gewoon. Ja, dat ik gewoon op dat moment kan gaan en dat ik zelf kan bepalen wanneer ik wil gaan en hoelang ik bezig ben, en dat ik niet hoeft te kijken van ik moet zo laat weer klaar zijn want dan gaat een bus ofzo. Ik wil gewoon dat zelf kunnen bepalen hoe laat, wanneer, hoe lang..."</i>	<i>"Yes, yes, just the convenience. Yes, that I can just go at any moment and that I can decide for myself when I want to go and how long I am staying, and that I do not have to go because I have to be ready at a certain time because a bus or something will be leaving. I just want to decide for myself at what time, when, how long..."</i>
Status	3	<i>"Ik zie het persoonlijk wel als een stukje waarde. Ik vind het persoonlijk belangrijk om een mooie auto te hebben, omdat ik er van houd en het kan ook laten zien dat ik een bepaald bezit heb."</i>	<i>"I personally see it as a piece of value. Personally, I think it is important to have a nice car, because I love it and it is also possible to show that I have a certain possession."</i>
	9	<i>"Hij doet het nog, hij rijdt. Echt status? Niet nee. Dan zou ik hem ook elke week wassen en dat doe ik niet."</i>	<i>"It still works, it drives. Status? No, no. Then I would wash it every week and I don't do that."</i>
Power	2	<i>"Um. Ik denk dat stukje trots dat je zoiets hebt van 'cool' ik heb mijn eigen auto, mijn eigen ding. Dat heb je niet met het OV."</i>	<i>"Um. I think that bit of pride that you're like 'cool' I have my own car, my own thing. You don't have that with public transport."</i>
Goals	3	<i>"Um. Ja, ik heb wel. Ik zou wel graag een bepaald soort</i>	<i>"Um. Yes, I do have that. I would like to have a certain type of car. Um. But</i>

		<i>auto willen hebben. Um. Maar of dat nou bij de aanschaf van een auto direct de doorgroei in het achterhoofd hebben nee, dat niet. Dus ik zou niet een auto kopen om daarna te denken van oké ik ga na deze die kopen. Dat zou ik vreemd vinden."</i>	<i>whether that means immediately having progression in mind when buying a car, no, that's not the case. So I wouldn't buy a car, buy it and then think okay I'm going to buy that one after this. I would find that strange."</i>
Private space	2	<i>"Dat speelt bij mij ook een rol. Ik vind dat wel fijn. Ik heb 's ochtends maar ook na werk de muziek knetter hard aan. Dus dat vind ik wel fijn dat er niemand in de auto zit, dat je dan lekker alleen bent. Je kan niet in de trein je muziek, ja je kan het wel hard zetten, maar je kan niet gaan zingen. Een stukje comfort van je eigen ruimte hebben is wel fijn ja."</i>	<i>"That also plays a role for me. I like that. In the morning, but also after work, I play the music really hard. So I like that there is no one in the car, that you are by yourself. You can't play your music in a train, yes you can turn it up loud, but you can't sing. Having a bit of comfort like your own space is nice, yes."</i>
	3	<i>"(...) En um, omwille van het corona aspect telt het ook mee dat je zelf zo hygiënisch kan zijn als je zelf bent."</i>	<i>"(...) And um, because of the corona aspect, it also counts that you can be as hygienic as you want."</i>
Flexibility	4	<i>"Um. Nou gewoon dat die altijd beschikbaar is, dus als ik nu bedenk van "oh ik wil even snel iets halen, dat ik hem meteen kan gebruiken". Omdat hij gewoon voor de deur staat en van mij is."</i>	<i>"Um. Well just that it is always available, so if I now think of "oh I want to quickly get something", that I can use it right away. Because it's just outside the door and it's mine."</i>
Reassurance	10	<i>"Ja, dat ook wel ja, ja. Als er wat gebeurt ofzo, ja. Ik moet een keer, weet ik veel, (naam zoon) is van de fiets gevallen. Ja."</i>	<i>"Yes, that also, yes. If something happens or something, yes. Once, I don't know, (son's name) falls off his bike. Yes."</i>
	7	<i>"Dat vind ik ook wel heel erg prettig. Met name omdat wij hier toch wel heel erg afgelegen zeten, dat je dus op elk moment wanneer dat dat nodig moet zijn bij calamiteiten, dat je de auto voor de deur hebt staan en ergens naar toe kunt."</i>	<i>"I also really like that. Especially because we are very remote here, so that you have the car in front of the door and can go somewhere at any time when necessary, for example in the event of an emergency."</i>

Costs and effort	5	<i>“Ja (gelach). En dan scheelt het nog wel met lease, dat is in vergelijking wel een stuk goedkoper. Maar de kosten voor een auto bezitten zijn altijd best wel duur. Dus dat is wel het grootste nadeel.”</i>	<i>“Yes (laughter). And then it makes a difference with leasing a vehicle, which is a lot cheaper in comparison. But the costs of owning a car are always quite expensive. So that's the biggest drawback.”</i>
	3	<i>“Het enige nadeel voor mij zou zijn het schoonmaken en tanken. Dat zijn de enige dingen waar ik zelf van denk, oké. Oh en als ik in een stad ben, een parkeerplek zoeken. Dat eventueel ook.”</i>	<i>“The only downside for me would be cleaning and refueling. Those are the only things I think, oh and if I'm in a city, finding a parking spot. That also.”</i>
Positive feelings towards adopting SAVs	4	<i>“Um. Ja het is denk ik eigenlijk een soort taxi en ik weet niet wat de voorwaarden zijn, maar als je zegt het stuur is helemaal weg. Dus dan hoef je als bestuurder zelf ook niet nuchter te zijn, dus dat lijkt me een prettig vervoersmiddel als je een borreltje in de stad wilde gaan doen of wat dan ook.”</i>	<i>“Um. Yes, I think it's actually a kind of taxi and I don't know what the conditions are, but when you say the steering wheel is completely gone. So as a driver you don't have to be sober yourself, so that seems like a nice type of transport if you wanted to go for a drink in the city or whatever.”</i>
	3	<i>“Um. Als ik heel erg veel zou moeten rijden, dus nog meer als ik nu doe, dan zou ik dat wel als voordeel hebben dat iemand anders of iets anders rijdt zodat ik zou kunnen werken onderweg of met andere zaken bezig zou kunnen zijn. Tuurlijk een stukje klimaat moet je als individu wel bewust van zijn dus dat zou ik zeker wel willen meenemen. En waarschijnlijk ook op zo'n moment een stukje parkeren, zodat je hem niet kwijt hoeft.”</i>	<i>“Um. If I had to drive a lot, and even more than I do now, I would benefit from having someone else or something else drive so I could work on the road or do other things. Of course you have to be aware of the climate as an individual, so I would certainly like to take that into account. And probably also at that moment finding a parking spot, so that I don't have to do the effort.”</i>
	12	<i>“Dat dat nog meespeelt, maar over het algemeen voor iemand die niet zo gek is op autorijden en gewoon liever inzittende is dan bestuurder, denk ik dat dat eigenlijk wel een hele mooie</i>	<i>“That that still plays a role, but in general for someone who is not too fond of driving and simply prefers to be a passenger than a driver, I think that is actually a very nice option to be mobile after all.”</i>

		<i>optie is om toch mobiel te zijn”</i>	
Negative feelings towards adopting SAVs	2	<i>“Klopt. Ik heb liever mijn vrijheid, lekker zelfrijden. Ik denk dat het heel saai zou worden. Ik bedoel, met die stille auto’s, je hoort de motor niet eens. Al het plezier wordt uit de auto gehaald.”</i>	<i>"That's right. I prefer my freedom, driving myself. I think it would be very boring. I mean, with those quiet cars already, you don't even hear the engine. All the fun gets taken out of the car."</i>
	13	<i>“Snelheid... Eigen comfort... Ook de mogelijkheid, die heb ik nog niet benoemd, maar dat je zelf iets kan bieden aan een ander. Dat je kan zeggen van “hey ik kan wel rijden” als er paniek is bij een ander bijvoorbeeld.”</i>	<i>"Speed... private space... Also the possibility, I haven't mentioned that yet, but that you can offer something to another person. That you can say "hey I can drive" when there is a critical situation, for example."</i>
	9	<i>“Toch een stukje vrijheid denk ik, die je dan wilt behouden. Ja.”</i>	<i>"I think a bit of freedom, which you want to keep. Yes."</i>
Neutral feelings towards adopting SAVs	4	<i>“Dat is een beetje tweedelig zeg maar, want ik zou gewoon wel zeker nu met een kind inderdaad altijd een voertuig willen hebben dat er altijd is. Wat je meteen kan gebruiken. Um. Maar ik het zou voor overige dingen, wat jij noemt, zo’n zelfsturend voertuig, als dat gewoon, als je er niet lang op hoeft te wachten dan zou ik daar echt wel gebruik van maken. Dan zou ik echt wel zeggen van we kunnen prima met één auto af, als je dat nodig hebt maak je daar gebruik van. Maar ik zou nooit zelf géén auto willen hebben”</i>	<i>“That's a bit of a two-way thing, I would say, because I would certainly always want a vehicle that is always there, especially because of the child. Which you can use immediately. Um. But I would like it for other things, which you mentioned, the self-driving vehicle, if that's just, if you don't have to wait long for it, then I would really use it. Then I would really say we could settle just fine with only one car, if, if you need it, you can use it. But I would never want to not own a car myself."</i>
	2	<i>“Um. Ja ik vind het een beetje dubbel omdat ik deels denk van soms pak ik wel het OV. Ik zou het dan zien als een soort van OV. Ik zou dan nog steeds een auto willen hebben. Daarnaast als ik dan met het OV ga, zou ik</i>	<i>“Um. Yes, I think it's a bit two-sided, because I partly think like, I do sometimes use public transport. I would see it as a kind of public transport. I would still like to have a car. In addition, if I go by public transport, I would rather take such a SAV, because you got your privacy,</i>

		<i>liever zo'n SAV pakken, omdat je kleiner zit, ja je deelt je ruimte wel. Maar het is niet een hele trein."</i>	<i>yes you do eventually share your space. But it's not a whole train."</i>
	6	<i>"Ja, wat ik zeg.. Als het... Ik zou niet het proefpersoon willen zijn zeg maar.. Als het echt geïntegreerd zou zijn, en um, ja en er is een fatsoenlijk netwerk qua wegen netwerk, en ja als het goed is net zoals een auto, dan ja."</i>	<i>"Yes, what I said.. If it... I would not want to be a test subject so to speak.. If it would be fully integrated, and um, yes and there is a decent road network, and yes, if it is just as good as a car, then yes."</i>

IV. Consent form

Dear Respondent,

To complete the master Business Administration (Innovation & Entrepreneurship), a research is conducted in the field of mobility. The main question of this master's thesis is: *“What influence does perceived user freedom (autonomy in driving and ownership) have on the attitude towards the adoption of Shared Autonomous Vehicles (SAVs)?”*. The supervisor of this study is Dr. N.G. Migchels.

If you do not object, this recording will be included to simplify the processing of the data. A recording prevents errors and misinterpretations of the response. During the interview, the researcher will also ask about a number of demographic variables, including your age, gender, marital status and highest level of completed education. Furthermore, your identity is anonymized, so that the results cannot be traced back to you personally. With this written consent you also agree that the results of this research can be used in future scientific research.

I hereby declare that I understand: <ul style="list-style-type: none"> ➤ The purpose of the research ➤ What information is requested from me ➤ That I can withdraw my consent at any time by contacting Max Luesink, phone number 	YES	NO
I hereby declare that I had the freedom to ask questions in case of any difficulties	YES	NO
I hereby declare that I give permission for: <ul style="list-style-type: none"> ➤ Audio and/or video recordings ➤ Processing the following personal data: age, gender, marital status, education level and employment status ➤ The usage of my opinions and response for future research 	YES	NO
Name:	Date:	
Signature:		