Nudging tourists

Manon Nijhuis
MSc Thesis

The application of nudging within tourism to achieve sustainable travelling

Author	Manon Nijhuis
Student number	S2383624
Date	17-08-2020
Supervisors	Prof. Dr. M.D.T. de Jong Dr. J.J. van Hoof Universiteit Twente
Course	Communication Studies Digital Marketing Communication Master Thesis

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Master thesis Communication Studies

Author:	Manon Nijhuis
Student number	S2383624
E-mail	m.m.a.nijhuis@student.utwente.nl
Master	Communication Studies
Specialisation	Digital Marketing Communication
Faculty	Behavioural Management and Social Sciences
Institution	University of Twente
Supervisors	Prof. Dr. M.D.T. de Jong Dr. J.J. van Hoof
Date	17-08-2020

Abstract

Purpose

The tourism sector is becoming bigger every year and the estimation is that it will continue to grow. One serious consequence of tourism is climate change. Within this sector, most of the emissions can be ascribed to transportation, especially aviation. Therefore, the behaviour of tourists need to change, and an approach that can be effective is nudging. Nudging is an approach that aims to influence behaviour by directing people in a desirable direction, which is related to the way that information is presented. However, nudging has hardly been explored within tourism, especially not linked to flying behaviour. This study performed an online experiment and applied three types of nudges: default nudges, norm nudges, and moral nudges. The purpose of this study was to find out whether these nudging types were effective in influencing the level of interest in low carbon and high polluting ways of transportation.

Method

In order to fill the gap of nudging within tourism and transport, an experiment has been created to find out to what extent nudging is effective, and what the most effective nudge would look like, in trying to convince people to choose a more sustainable mode of transport. A 2 (train and plane) X 2 (social norm and descriptive norm) X 2 (pro-self and pro-social) between-subjects experimental design has been used for this study. Participants encountered an advertisement that offered a city trip to London. Afterwards, questions had to be answered regarding the level of interest in the city trip with different ways of transportation.

Results

The findings showed that nudging within sustainable tourism is not effective for two of the three nudge types. Applying default nudging has an effect on people's level of interest in the city trip with a high polluting way of transportation, the plane. The level of interest in the plane when applying a default plane option decreases, but no effects have been found between default nudging and increasing or decreasing the level of interest in more sustainable ways of transportation. However, both norm nudging and moral nudging did not have an effect on people's level of interest in different ways of transportation. Nevertheless, a significant three-way interaction effect was found where norm nudging and moral nudging interact together when the default is set on plane. Social norms together with pro-social nudges with a default plane led to the increase in the level of interest in the city trip by plane. Furthermore, existing attitudes of people towards travelling by train or by plane and level of climate awareness also contributed to the explanation of the level of interest in different ways of transportation.

Conclusion

Default nudging is partly effective in achieving sustainable behaviour. When setting defaults the interest in the unsustainable option decreases, but at the same time the interest in the sustainable option does not increase. Norm nudging and moral nudging did not turn out to be effective in order to reach sustainable behaviour. However, the three-way interaction showed that these nudge types do interact together when the default is set on the unsustainable option. All in all, nudging may not be the wonder approach which leads to sustainable tourism, but higher levels of interest in more sustainable choices could be reached with nudging. Therefore nudging is of importance to reach sustainability in tourism.

Keywords: nudging, tourism, transport, default nudging, norm nudging, moral nudging

Acknowledgement

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Furthermore, I would like to thank the participants of my research for participating in the online experiment. All the participants took the time to participate in the experiment and answer the belonging questions. Their help is very much appreciated and this research would not have been the same without the participants.

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1. Introduction

If you would ask people about their attitudes with regard to travelling, most people would state that travelling to a destination away from home is a pleasant experience. In 1950, there was a total of 25 million international tourist arrivals, which has grown to a total of 1.4 billion international tourist arrivals in 2019 (United Nations World Tourism Organisation, UNWTO, 2019). The numbers show that the tourism sector is becoming bigger and bigger, and as there are many tourists every year, the tourism sector is of global importance and it is a considerable force of economic interest to the world (Cooper, 2012). The World Travel and Tourism Council (2018), found out that the tourism sector, together with the number of jobs it has created, is generating 10.4% of the total GDP (WTTC, 2018). Therefore, the tourism industry is one of the most profitable sectors of the world (Luna-Nevarez & Hyman, 2012). Moreover, the United Nations World Tourism Organisation (UNWTO, 2019), estimates that the tourism sector will continue to face a yearly growth of 3.3%. When considering the aforementioned facts, this growth sounds very positive. However, due to the current situation concerning the COVID-19 pandemic, the tourism sector has suffered greatly (Iacus, Natale, Santamaria, Spyratos, & Vespe, 2020). Iacus et al., argue that in the worst-case scenario, the GDP of the tourism sector could have decreased with 1.4-1.7% and a total of 25 to 30 million jobs can be lost. Therefore, the COVID-19 pandemic could have serious consequences for the positive effects of the tourism sector.

However, despite the positive aspects that come along with tourism, the industry is also responsible for negative consequences. One serious consequence of tourism is related to the changing climate. Year after year, one can see that the earth is warming up because of the greenhouse gasses that are rising (United Nations, 2019). According to NASA (2019), there is a 95 per cent probability that climate change is happening because of human activity. The organisation concluded this because humans are the main producers of carbon dioxide and other greenhouse gasses that cause the earth to warm up. There are several sectors that contribute to climate change, but one of the biggest contributing sectors is the tourism sector. The UNWTO (2019) estimates that the tourism sector is responsible for 4.6% of global warming, which is the result of its production of 5% of all global carbon dioxide emissions. The transport sector, which includes air, car, and rail, is responsible for the generation of the largest proportion, with at least 75% of all the tourism emissions. Travelling by plane causes 54-75% of carbon emissions, whereas travelling by coach and rail causes only 13% (UNWTO, 2019). Therefore, air travel is seen as the main contributor to global warming in the tourism sector. Moreover, Eurostat (2019) expect the aviation sector to continue to grow even further until 2030. This would mean that climate change will become an even bigger problem than in the future. However, due to the COVID-19 pandemic, emissions temporary decreased by 26% on average per country, and an estimation of 4% reduction of annual

emissions is estimated for the year 2020 (Le Quéré et al., 2020). However, how this will evolve in the future remains uncertain.

All in all, this means that tourism has many advantages on the one hand but is harmful to the environment on the other hand. As the tourism sector is very important, the sector should be protected. However, the climate also needs protection and therefore, the tourism sector needs to be adapted to make sure that the tourism sector remains profitable and the climate will be cared for. According to Amelung, Nicholls and Viner (2007), action is needed from the tourism sector because without this action the negative effects on climate change will continue to grow. As most of the emissions from the tourism sector can be ascribed to transportation, especially aviation, improvements need to be made here (Strasdas, 2010). However, the problem here is that tourists prefer flying to their destination and therefore reject other ways of transport (Hares, Dickinson, & Wilkes, 2010). Next to that, a study done amongst Dutch tourists by Eijgelaar, Nawijn, Barten, Okuhn and Dijkstra (2016), found out that environmental sustainability is perceived as the least important element when they have to book a holiday. In order to change the behaviour of tourists regarding sustainable holiday choices, communication is often used in order to try to achieve this.

A communication approach that can be effective in order to convince people to choose a more sustainable mode to travel is called nudging. Nudging is a strategy which aims to influence behaviour and was first introduced by Thaler and Sunstein (2008). Nudges are designed in such a way that it is "pushing" people in a desirable direction at low costs and with minimum efforts (Thaler & Sunstein, 2008). However, when someone is nudged into a desirable direction, this does not mean that other options are taken away from people. There will still be a free choice between every available option. Nudging is not only related to the amount of information that is provided to people, but also on how this information is presented to them (Lehner, Mont, & Heiskanen, 2016). There are several articles that discuss methods that can be used for nudging consumers in buying more sustainable products. Sunstein (2014), claimed that nudging is effective for promoting sustainable consumption behaviour. However, literature concerning behavioural economics in the tourism sector is limited (Font & McCabe, 2017). Furthermore, Higham, Cohen, Cavaliere, Reis and Finkler (2016) also concluded that these nudging interventions have hardly been explored within the context of sustainable tourism, especially not in the manipulation of public flying behaviour.

Considering the fact that climate change is a serious problem and the tourism sector is remarkably big, existing research concerning nudging to achieve a more sustainable form of tourism is relatively limited. In order to contribute to the filling of this gap, an experiment will be conducted. The experiment aims

to find out to what extent nudging is effective in trying to convince tourists to choose a more sustainable way of transportation. This experiment will be designed in the context of an online booking environment. This is because of the fact that nowadays, 71% of all independent travel-related bookings are done online (Schuckert, Liu, & Law, 2015) and 95% of all people with an internet connection search for travel-related information online (Luna-Nevarez & Hyman, 2012). This means that most of the tourists book their holidays via an online platform and therefore the online environment has become fairly important in the tourism sector (Gao & Bai, 2014). In 2006, Dixit, Belwal and Singh, already stated that the internet was a successful tool for tourists to find out more about their potential holiday, seek details about the destination itself, the prices of the facilities, etc. Since that time, tourism businesses started with marketing their service online (Dixit et al., 2006). Therefore, this study has applied nudges to an online booking environment related to the available travel options. Three different nudge types have been applied in this experiment and different scenarios have been tested: default nudges; social norm versus descriptive norm nudges; pro-self versus pro-social nudges. The experiment of this study helped to answer the following research question:

> "To what extent is nudging effective in letting tourists make sustainable travel choices and what does the most efficient nudge look like?".

In order to give an answer to this research question, this report started with a thorough analysis of existing literature concerning nudging and transport and different types of nudges. Based on this literature, hypotheses have been formulated. In order to test these hypotheses, an online experiment has been created and the methodology section of this report will elaborate on how and why this experiment has been created. After that, the results chapter discusses the outcomes of the experiment. Finally, the paper concludes with a discussion of the main findings, a clarification of what the results mean, implications of the study, and limitations and proposals for future research.

2. Literature Review and Theoretical Framework

This chapter will examine the theoretical background that is relevant to this research. First, the concept of nudging is elaborated upon as it is used as the basis of this research. Subsequently, nudging related to the topic of sustainable transport will be discussed. This is followed by an explanation of the different types of nudges that have been used for this research, which will also contain information about why these nudges are relevant for this research. Furthermore, the hypotheses of this study will also be discussed in this chapter.

2.1 Nudging

An average person makes around 35,000 choices per day (Krockow, 2018). This means that in the time that people are awake, a person makes 2,000 decisions per hour, which means one decision every two seconds. This means that decisions are being made every moment and this happens consciously as well as unconsciously (Tyers, 2018). Every single decision that is made is influenced by the choice environment and is therefore highly context-dependent (Thaler & Sunstein, 2008). Choice environments can be designed with the help of nudges (Mirsch, Lehrer & Jung, 2017). Nudging can be used to influence the behaviour of people and was first introduced by Thaler and Sunstein (2008). Thaler and Sunstein (2008) define nudges as:

> "A nudge is any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid" (p. 6).

This definition implies that changing behaviour is achieved by pushing people in a desirable direction. This does not mean that only the preferred and desirable option will be given. All alternatives stay available, and people will still have a free choice between all the different options. Nudging can be used by different organisations, but the approach can also be used by public authorities to change civic behaviour (John, Smith & Stoker, 2009). According to these authors, this intervention to change behaviour can also be used to tackle social problems such as climate change.

2.1.1 Applications of Nudging

Nudging has been applied in different fields already and therefore effective results of nudging are visible. One outstanding example is that of changing designs in cafeterias to steer people towards choosing a healthy option instead of unhealthy food from the menu which would normally be chosen (Thaler & Sunstein, 2009). This was done by locating the healthy food options at eye level, which causes

that these options are reached easier. However, the unhealthier options are not removed from the menu, they will still be available but the ability to reach them will be harder than the healthy options (Thaler & Sunstein, 2008). What is more, research done by Higham et al. (2016), found evidence for persuasive strategies, especially in the form of information provision, to encourage pro-climate decision-making. This has been done by trying to reduce the electricity consumption of households in the United Kingdom. Nudging was here applied in the form of providing feedback to the household with their own electricity usage compared to the usage of the neighbours. The results of this research found that this nudge was effective and resulted in a decrease in electricity consumption (Higham et al., 2016). These are just two of many examples of nudging that have proven to be effective. Other examples are applications that tell people how much they consumed the day before, an alarm clock, automatic enrolments, default settings, automatic payments, and graphic warnings on cigarette packages (Sunstein, 2014).

As the examples already imply, nudging can be done in the offline as well as the online world. The approach is becoming more relevant in the digital environment as more and more decisions are made in the online world (Mirsch et al., 2017). This includes decisions regarding the choice of a travel destination and travel mode towards this destination. However, it is proven that in an online environment, people make decisions in an impulsive and automated way (Mirsch et al., 2017). Next to that, people do not always think about every available option when they have to make a decision and therefore, they do not always make the choice that is of the best utility for them (John et al., 2009). What is even more important in an online environment, is that there is an enormous amount of information available. This also adds to the fact that people do not always make the best choice regarding their wishes (Benartzi & Lehrer, 2015). Therefore, nudging can be applied to make people more aware of different options and it can be an effective approach to steer the decision-making process. Digital nudging can be defined as "the use of user-interface design elements to guide people's behaviour in digital choice environments" (Weinmann, Schneider & vom Brocke, 2016). According to these authors, even simple adjustments to the choice environment can influence the choices people make and therefore people will be "nudged" into behaving in a desirable way.

Hence, nudging can be an effective approach to promote sustainable consumption behaviours (Sunstein, 2014). But it remains unclear if this is also applicable when choosing between different transport options. When people want to book a vacation, they have to consider a lot of different choices regarding their travel plans. Tourists have to decide where to go, how to get there, what kind of accommodation to stay in, etc. By making all of these decisions, they influence the sustainability of the destination they are visiting (Araña & León, 2016). With regards to transport, aviation is the most used

form of transport for international tourists (UNWTO, 2019). In the transportation area, they have been trying to facilitate "the right behaviour" for a long time already. One example of this is providing feedback on transport use and mobility patterns through an application. These apps use personal information to inform individuals about their behaviour and what this means to the environment (Lehner et al., 2016).

However, the approach nudging has not been used frequently when aiming to alter behaviour while choosing between transportation options (Mont, Lehner, and Heiskanen, 2014). The approach has been applied before, but nudging related to transport has not been tested on a large scale, therefore, their effectiveness remains unexplored (Avineri & Goodwin, 2010). Moreover, until now, governments have not directly addressed public flying behaviour (Lehner et al., 2016). Higham et al. (2016) also concluded that these persuasive interventions have hardly been explored within the context of sustainable tourism, especially not in the manipulation of public flying behaviour. As nudging has been applied in different contexts and has been proven to be effective, nudging may also be used in marketing in order to steer people towards a more sustainable form of tourism. Araña and León (2016), also concluded that it is necessary to further investigate what the most effective and efficient ways of nudging are to achieve a more sustainable form of tourism.

2.1.2 Types of Nudging

There are various contexts in which nudging can be applied and next to that also a lot of different types of nudges exist. This paragraph will elaborate on the three different nudge types that have been applied to the experiment of this study. First, default nudging has been applied, followed by norm nudging and lastly moral nudging. This chapter will justify what the types of nudging mean and their relevance will be discussed.

Default Nudging

First, one of the most well-known and effective ways of nudging is the use of default options. When something is set as the default option, it means that the option is pre-selected (Paunov, Wänke, & Vogel, 2019). Regardless of the context, there will be multiple options available to choose from, but the option that is preferred by the institution will be pre-selected. Nonetheless, people will still have the possibility to choose one of the alternatives if they would wish to. However, it is proven that in general, people tend to stick to the pre-selected option, therefore, setting something as the default is an effective strategy for influencing people's choices (Paunov et al., 2019). Setting default options also happens a lot in the online environment. An example of this is the application called Square, which is a mobile

payment app (Weinmann et al., 2016). The app sets the default setting to “tipping”, which means that when customers pay, they automatically will give a tip as well. Customers must actively select the option that they do not want to give a tip if they choose not to. Setting this default was proven to be effective as the tip amounts have grown enormously. These examples show that working with default options has a large effect. Therefore, providing a default option affects the outcome (Weinmann et al., 2016).

There is also proof that default options are effective in the promotion of pro-social behaviours, such as the decision to donate your organs, and energy-saving (Allcott & Mullainathan, 2010). Next to that, setting defaults also impacts environmentally friendly choices such as the choice of energy-efficient light bulbs (Ölander & Thøgersen, 2014). However, there are only a few studies that researched the effectiveness of default nudging related to sustainable behaviours (Lehner et al., 2016). Taking care of the environment is also an example of such pro-social sustainable behaviour. As mentioned previously, the aviation sector is a big contributor to harming the environment. Taking the train to a destination is more environmentally friendly than taking the plane. As previous research found out that setting defaults is often effective, also in the case of influencing sustainable behaviour, a default setting has been applied to the experiment of this research.

Until now, there is a lack of studies related to default options and booking a mode of transport towards a holiday destination. The experiment of this research consisted of eight different scenarios, four scenarios included the default train option and four included the default plane option. With regards to the default knowledge and the aim of this research, this research expected that setting the sustainable default train option, compared to the less sustainable default plane option, will be more effective in influencing tourists to choose a more sustainable way of transportation.

Hypothesis 1:
Applying a default nudge is effective in influencing people’s interest in more sustainable ways of transportation

Norm Nudging: Social Norm versus Descriptive Norm Nudges

Besides default nudging, there are also other ways in which nudges can be framed. Framing is the phrasing of information in such a way that it brings up values of individuals (Lehner et al., 2016). Values that people have are associated with norms. Applying norms to nudges is an upcoming topic of interest and is called norm nudging. Norm nudging relies on social expectations, with the intention to encourage desirable behaviour (Bicchieri & Dimant, 2019). However, this only works when the preference of the individual to perform the desired behaviour is depending on social expectations (Bicchieri & Dimant,

2019). Norm nudging can, therefore, include information about what other people do or what they approve or disapprove of in the same situation. The desired behaviour should thus depend on social expectations before someone will perform that behaviour. This means that the behaviour needs to be interdependent. The motivation to undertake the behaviour should depend on someone's belief about what is normally done (Bicchieri & Dimant, 2019). In the case of choosing a mode of transport, this study expects the behaviour to be interdependent. People may have a certain preference for a mode of transport, but with regard to the importance of the climate change topic, people will still consider other opinions before choosing their mode of transport.

There are different types of norm nudges and according to Bicchieri and Dimant (2019), descriptive norms and social norms belong in the same group as they are both interdependent and depending on social expectations. Descriptive norms are about someone's preference to do something because they expect others do to that same thing as well (Bicchieri & Dimant, 2019). Therefore, the choice in a descriptive norm depends on empirical expectations of the behaviour of others. On the other hand, social norms are rules of behaviour in such a way that people have a preference to do something because they expect others to do the same thing and that most people around them believe that they ought to conform to it (Bicchieri & Dimant, 2019). This means that social norms rely on empirical as well as normative expectations. As descriptive and social norms rely on different expectations, it is important to make a distinction between descriptive and social norms (Bicchieri & Dimant, 2019).

Therefore, norm nudging is being done by providing information about what other people do. In the case of descriptive norm nudging, this is being done by letting people know what others do in a similar situation. An example of this is when someone is comparing himself to his peers, neighbours, family, friends, etc. Allcott (2010) found out that when households get a notification about their electricity consumption compared to that of their neighbours, the electricity consumption reduced as much as it would have when the prices would have risen with 11-20%. Therefore, comparing someone to people in his or her environment has proven to often be effective in changing behaviour (Bicchieri & Dimant, 2019). Furthermore, according to Schuckert et al. (2015), potential customers perceive information about the behaviour of others as trustworthy and helpful. This is also proven by a study by Goldstein, Cialdini and Griskevicius (2008). This study showed hotel guests will reuse their towels when it is stated that a lot of the other guests do the same. However, when the same behaviour is targeted but the statement read that reusing a towel saves water and is therefore good for the environment (a normative message), this did not have an effect.

As described above, there are many studies done that show that providing empirical information in the form of telling what others do, is powerful. Previous research has shown that descriptive social norms are effective in changing behaviour (Czajkowski, Zagórskaa, & Hanley, 2019). However, according to Bicchieri and Dimant (2019), it is also clear that just informing someone what other people do may not always be effective. Moreover, the authors state that empirical messages can also be ineffective because people reject information that is not in line with their own beliefs. Therefore, adding normative information to the empirical message may be more effective. This study expects that norm nudges will have an effect on people's interest in different types of transport modes. Furthermore, this study also expects that applying social norm nudges, will have a bigger effect than descriptive norm nudges.

Hypothesis 2:
Applying social norm nudges, compared to descriptive norm nudges, is more effective in influencing people's interest in more sustainable ways of transportation

Moral nudging: Pro-self versus Pro-social Nudges

Last, another distinction within the framing of nudging relevant for this study can be made in moral nudging. Hagman, Andersson, Västfjäll, and Tinghög (2015), made a distinction between pro-self nudges and pro-social nudges. These nudges can aim to achieve the same thing, but both try to get to this goal in a different way. Pro-self-nudges steer people away from "wrong" behaviour that would decrease their well-being on the long-term (Tyers, 2018). This would mean that a pro-self-nudge is focussed on the individual and is trying to make sure that the individual notices the benefits for him- or herself. Pro-social nudges on the other hand, also steer individuals towards "better" behaviours but this is done by referring to the public interest instead of individual benefits (Tyers, 2018). For this study, it would mean that influencing the interest in a more sustainable transport mode can be achieved by applying either a pro-self or a pro-social nudge. A pro-self-nudge will, in this case, focus on the benefits for the individual that are present when choosing the more sustainable option and a pro-social nudge would focus on the benefits that society would obtain if the individual chooses a more sustainable travel mode.

Applying moral nudges is relevant for this research as the desired behaviour concerns travelling in a more sustainable way. This behaviour requires an individual choice, but choosing for the desirable behaviour also is a positive contribution to society. Moreover, it is also important to find something that helps to promote pro-social choices over choosing an option that is not profitable for society (Capraro, Jagfeld, Klein, Mul, & van de Pol, 2019). According to Hagman et al. (2015), pro-self-nudges are more effective compared to pro-social nudges. This is because of the fact that it is more difficult for individuals to see the benefits for them when pro-social behaviour is asked from them. When stating that choosing

the train instead of the plane is the best option because it is good for the environment and therefore the well-being of society, the benefits for the individual are less obvious (Tyers, 2018). Next to that, Tyers also states that less research has been conducted concerning pro-social nudging, especially related to the encouragement of pro-environmental behaviours. However, moral nudging has been proven to be able to promote pro-social behaviour, but it is not clear whether their effects are the same for different contexts (Capraro et al., 2019). With the knowledge of previous studies concerning the effectiveness of pro-self nudges, and the uncertainty of the effectiveness of pro-social nudges, this research expects that pro-self-nudges, compared to pro-social nudges, are more effective in leading tourists to choose a more sustainable travel option.

Hypothesis 3:

Applying pro-self nudges, compared to pro-social nudges, is more effective in influencing people's interest in more sustainable ways of transportation

2.2 Research Model

The model of this study consists of four variables. The three independent variables are the different nudges: norm nudge, moral nudge, and default nudge. This study will test their effectiveness in influencing the interest of tourists in a more sustainable transportation choice. Figure 1 on the next page shows the research model of this study. The research question that belongs to the aforementioned hypotheses is: "To what extent is nudging effective in letting tourists make sustainable travel choices and what does the most efficient nudge look like?".

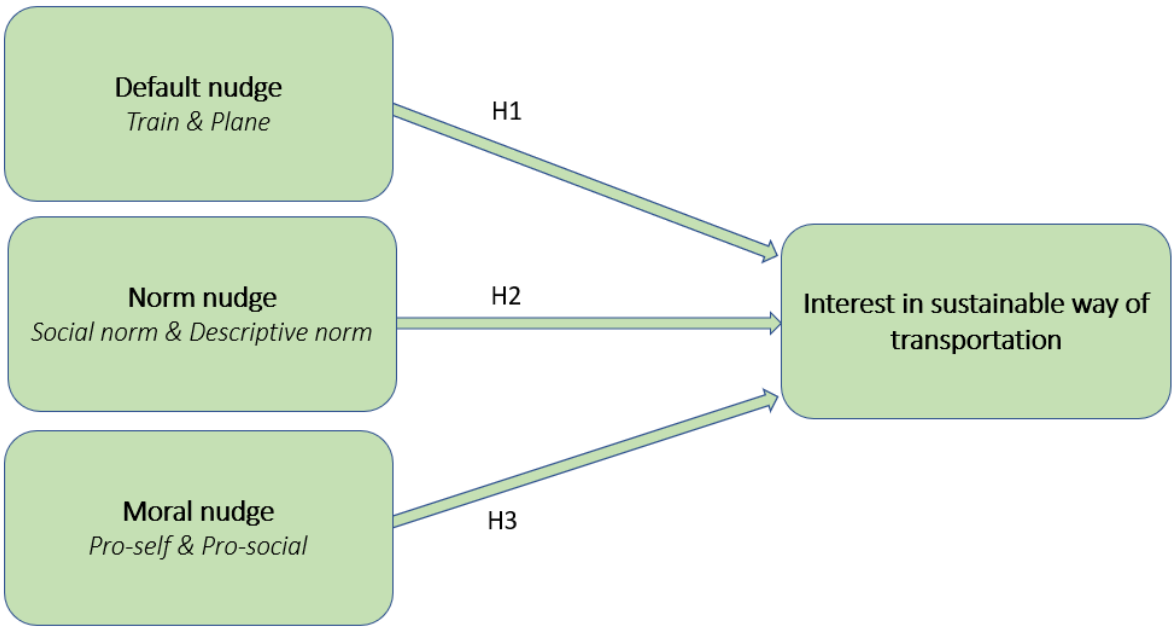


Figure 1. Research model

3. Method

The aim of this study was to investigate the effectiveness of nudging in order to influence people's interest in a sustainable way of transportation. This chapter will elaborate on the experimental design, research materials, procedure, measures, and the participants of this study.

3.1 Experimental Design

To investigate the hypotheses of this study, an online experiment has been designed. A distinction was made between the levels of the different nudge types which resulted in a 2 (train and plane) X 2 (social norm and descriptive norm) X 2 (pro-self and pro-social) between-subjects experimental design. The dependent variables of this study were the level of interest in the low carbon way of transportation (train) and the level of interest in the high polluting way of transportation (plane). Participants have encountered an advertisement that offered a city trip to London. Different combinations have been made between two default options; train and plane, as well as between social norms and descriptive norms, and last between pro-self and pro-social nudges. This means that there were eight conditions that are related to this design, which are presented in table 1 below. This study has been approved by the Behavioural, Management and Social sciences ethical committee of the University Twente.

Table 1
Experimental Conditions

Conditions	Default nudging	Norm nudging	Moral nudging
Condition 1	Train	Social norm	Pro-self
Condition 2	Plane	Social norm	Pro-self
Condition 3	Train	Descriptive norm	Pro-self
Condition 4	Plane	Descriptive norm	Pro-self
Condition 5	Train	Social norm	Pro-social
Condition 6	Plane	Social norm	Pro-social
Condition 7	Train	Descriptive norm	Pro-social
Condition 8	Plane	Descriptive norm	Pro-social

Note: Default train and plane means that either the city trip by train or plane is pre-selected.
Social norms are formed by the expectations of what others do and have the feeling that those people believe one is ought to conform to it.
Descriptive norms are preferences to do something because of the expectation that others do the same.
Pro-self nudges steer people away from wrong behaviour that would be bad for oneself.
Pro-social nudges steer people towards better behaviours by referring to the public interest.

3.2 Research Materials

3.2.1 Research Context

For the experiment of this study, the destination that has been used in the advertisements is London. London has been used in this experiment because the destination can be reached by train and by plane. Taking the plane to London takes around one hour. However, when going to a destination by plane, presence before the flight and dropping and picking of luggage also needs to be taken into consideration. Therefore a flight from Amsterdam to London will take about four and a half hours. A plane ticket for this route will be around €100 when flying with KLM. Furthermore, when going by plane, one person is responsible for 63 kilograms of carbon dioxide emissions. However, London is also reachable by train. When taking the train from Amsterdam to London, it takes four hours and five minutes to get there. This means that taking the train to London instead of the plane will save travel time. Furthermore, a train ticket to London costs around €40, which means the costs are less when taking the train instead of the plane. Lastly, taking the train will lead to the production of 8.17 kilograms of carbon dioxide. This means that taking the train to London compared to the plane saves 80% carbon dioxide emissions (Eurostar, 2019). In order to provide truthful information, these statistics have been used in the advertisements.

Furthermore, the advertisements have been created in such a way that it is not possible to have prior attitudes towards the company that is selling the city trip. To avoid the influence of prior attitudes towards the travel company, no company has been mentioned in the advertisement. In this way, people indicated their preferences towards the advertisement only, no prior experiences played a role here. Furthermore, all advertisements offer the same trip for the same price and the imagery and the information about the destination have not been changed. All the advertisements were therefore comparable in terms of layout, imagery and information.

3.2.2 Manipulations

The experimental conditions that have been presented in table 1 have been visualised in the form of an advertisement that sells a city trip to London. The nudges that belong to the conditions have been included in the advertisement. As the experiment was in Dutch, the advertisements were also in Dutch. An overview of the Dutch, as well as, English translations of the nudges can be found in appendix A. The advertisement that has been used for condition 1 is presented below, which contains a default train option, social norm nudge, a pro-self nudge. An overview of all the advertisements can be found in appendix B.

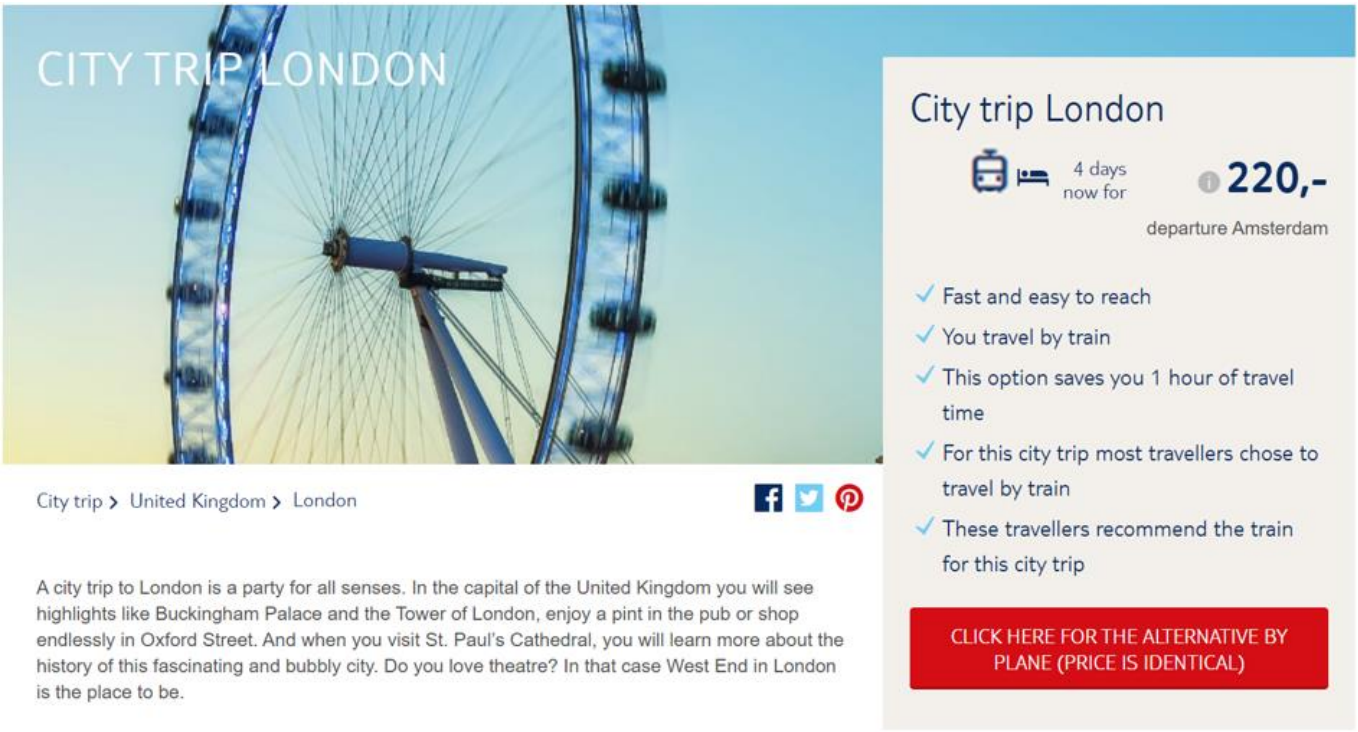


Figure 2. Condition 1

Note: This advertisement has been translated to English. The original Dutch advertisements can be found in appendix B.

The advertisements are manipulated in the form of the addition of nudges. The nudges have been added below the statement of the price in the box on the right side. The checkmarks in this box all represent a nudge, except for the first checkmark. This checkmark stands for "fast and easy to reach" and is present in every advertisement. This is followed by the second check sign representing the default nudge, this will either state that you will travel by train or by plane to the destination. This was stated with the phrases: "you travel by train" or "you travel by plane", furthermore, a symbol of either a train of plane was placed in the advertisement. The third checkmark contains the moral nudge, which either focusses on saving travel time for oneself or the reduction of carbon dioxide emissions for the public. Last, the fourth and fifth check signs belong to the norm nudges. When the advertisement contained a social norm nudge, both checkmarks were used, whereas the descriptive norm nudge only needed the fourth checkmark and the fifth one was removed. The fourth checkmark was always the same for every advertisement and *included the following claim: "while booking this city trip, most travellers chose to travel by train and these travellers say that more people should do this"*. However, the fifth checkmark additionally mentioned that those travellers would recommend travelling by train during the offered city trip.

3.3 Procedure

Data has been collected by using an online experiment designed in Qualtrics. Participants have randomly been assigned to one of the eight conditions. The participants started the experiment with the advertisement and were asked to imagine that they live in a world where the COVID-19 pandemic does not exist, and they can travel through Europe without any restrictions. Then an advertisement was shown which offered a city trip to London. The participants were instructed to scan the advertisement well and read the information carefully. Then the participants answered questions regarding their preferences concerning the advertisement they had just encountered. Then, they were asked to rate their level of interest towards the city trip with a different transport mode. Afterwards, they were asked to answer questions regarding their usage of and attitude towards transport modes and demographics. The system made sure that all questions needed to be answered before they were able to continue and browsing back to previous questions was not possible. The order of the experiment made sure that people's preference towards travelling by plane or train was not biased by expectations that the experiment was about sustainable travelling.

3.4 Measures

3.4.1 Level of Interest

In order to find out whether the nudges had an effect on people's interest in travelling in a sustainable way, different constructs have been measured. The purchase interest and purchase intention were measured by using three items. Existing scales (Dodds, Monroe, & Grewal, 1991) have been used to create a scale for this study. Items concerning interest and purchase intention have been filtered out and the following have been used: "to what extent are you interested in this city trip", "to what extent do you consider to book this city trip", and "how big is the chance that you would actually book this city trip". These questions had to be answered on a scale from 0 to 100 per cent. This purchase intention scale is reliable, the Cronbach's alpha for the three items is .89.

3.4.2 Attitudes

Next, attitudes towards travelling by train and plane have been measured. This has been done with the help of a 5-point Likert scale. The scale ranged from absolutely not important, not important, neutral, important, to absolutely important. This is because of the fact that Likert scales are popular methods for measuring attitude (Anderson, 1981). For this question, four items were related to travelling by train and four related to travelling by plane, the that have been used for both transport modes were similar. These items included attractiveness, comfort, relaxation and feeling safe. These scales have also been proven to be reliable, respectively the Cronbach's alpha for attitudes towards travelling by train and

plane are .84 and .84. This question related to travelling by train and plane in general. The other constructs and corresponding Cronbach's alphas can be found in appendix D.

3.5 Participants

In order to make sure that participants were likely to have experience with booking a holiday, participants had to be 18 years or older. This is because of the fact that when someone wants to book a holiday online, he or she should usually state the date of birth. In this way, the company will check whether one is allowed to go on a holiday or not, because, under the age of 18, one will not be accepted everywhere without an adult accompanying them. Furthermore, there was no maximum age for participating in the research because elderly people are also able to book their holiday online and arranging a holiday is therefore imaginable and realistic for them.

A link to the online experiment was published on Facebook and LinkedIn. Therefore, a convenience sample has been used for this study. Furthermore, participants got the opportunity to leave their e-mail address behind in order to receive a summary of the results of the study. In total there were 320 participants in this research. 14 participants have been excluded because the experiments were not entirely finished. Next to that, another 26 participants have been excluded from participation because they either spent a very short amount of time or took too long to complete the experiment. As a result, a total of 280 experiments have been used for the analysis of this study. Of these 280 participants, 86 (30.7%) were males, 193 (68.9%) were females, and 1 (0.4%) preferred not to elaborate on their gender. The age of the participants ranged between 18 and 80 years old, with an average age of 29.8 years. Finally, the highest completed level of education of the participants varied a lot, but the majority of the participants got a university degree (36.1%). The participants have randomly been included in one of the eight conditions. The number of participants per group varied from 27 to 49. The difference between participants per condition is due to the fact that 40 people have been eliminated from participation. These participants were randomized in the conditions which now have a lower number of participants.

Table 2 below gives an overview of the participants per condition, including background variables of the participants. This includes the average age of participants per condition, gender, educational level, attitude towards travelling by train and attitude towards travelling by plane in general and during a city trip within Europe, and last climate awareness. Next to that, the table also shows the significance level for that variable between the different conditions. To start off with the average age of the participants per condition, an ANOVA test has been performed. A significant effect was found between the different conditions ($p < .001$). As age significantly differed between the conditions, another test was done to find

out whether age correlates with the dependent variables interest in the city trip by train and by plane. This test showed that there is no correlation between age and the dependent variables: age and the level of interest in the city trip by train (p = .79) and age and interest in the city trip by plane (p = .51). Furthermore, when it comes to gender represented in every condition, a chi-squared test has been performed. No significant difference has been found here (p = .47). Another chi-squared test has been done for educational level, also no significant difference was found between the level of education and the different conditions (p = .87). Next, also the attitude of the participants towards travelling by train and plane in general and during a city trip within Europe have been measured with the help of an ANOVA test. All attitudes also showed no difference between the attitudes and the distribution over the conditions. Last, the level of climate awareness between the different conditions has also been measured with an ANOVA test. Also, no significant difference was found between the level of climate awareness and the different conditions (p = .52).

Table 2

Background variables

Conditions	N	Age	Gender	Educa-tional level	Attitude towards train general	Attitude towards plane general	Climate aware-ness	Attitude towards train city trip	Attitude towards plane city trip
Condition 1	27	27.2 (12.5)	30% male 70% female	High	3.4 (.89)	3.4 (.87)	3.6 (.63)	3.1 (.7)	3.6 (.62)
Condition 2	28	30.2 (14.1)	39% male 61% female	High	3.8 (.84)	3.1 (1.12)	3.6 (.82)	3.5 (.82)	3.4 (.98)
Condition 3	27	30.9 (12.6)	26% male 74% female	High	3.6 (.8)	3.3 (.88)	3.6 (.71)	3.5 (.69)	3.5 (.87)
Condition 4	41	30.6 (12)	24% male 76% female	High	3.6 (.79)	3.4 (.93)	3.3 (.57)	3.1 (.87)	3.6 (.75)
Condition 5	36	29.1 (12.9)	36% male 64% female	High	3.7 (.5)	3.4 (.56)	3.5 (.69)	3.6 (.6)	3.5 (.68)
Condition 6	49	25.6 (8.6)	20%male 80% female	High	3.6 (.82)	3.5 (.88)	3.6 (.67)	3.4 (.65)	3.6 (.79)
Condition 7	37	37.4 (17.3)	38% male 62% female	High	3.7 (.9)	3.6 (.65)	3.5 (.58)	3.3 (.79)	3.6 (.81)
Condition 8	35	27.8 (9.6)	34% male 66% female	High	3.6 (.72)	3.4 (.75)	3.6 (.61)	3.3 (.74)	3.4 (.79)
Significance	-	.00	.47	.87	.85	.31	.52	.31	.76

Note. For age, attitudes and climate awareness, first the mean is given, followed by the standard deviation: M(SD).

Educational level is expressed as either high or low. Low stands for: no education/uncompleted elementary education, elementary education and secondary education. High stand for vocational education, university of applied sciences and university degree.

4. Results

In order to find out whether the different nudge types were effective in influencing the level of interest of tourists in sustainable travelling, different tests have been performed. The dependent variables in this study were the level of interest in the city trip by train and the level of interest in the city trip by plane. The three independent variables are the three nudge types: default nudging, norm nudging, and moral nudging. The first paragraph will focus on the effects of the three types of nudges on the level of interest in the city trip with different ways of transportation. The second paragraph will focus on which background characteristics and attitudes of the participants predicted the level of interest. Next to that, this paragraph will address what nudges do in terms of the level of interest.

4.1 Effects of Three Types of Nudges

To start, an overview of the three nudge types and how people responded to those nudges in terms of interest in the city trip by train and by plane has been given in table 3. The table shows the two levels for each nudge type and respectively which mean score and standard deviation was given related to the level of interest in the city trip with a low carbon way of transportation and with a high polluting way of transportation for the offered city trip. A significant difference between groups was found for interest in the city trip by plane, a high polluting way of transportation (p = .004). For all the other types, no significant difference between the groups was found.

Table 3

Level of Interest per Nudge Type

	Default nudging		Norm nudging		Moral nudging	
Dependent variable	**Train**	**Plane**	**Social norm**	**Descriptive norm**	**Pro-self**	**Pro-social**
Interest city trip by train	60 (21)	60.5 (27.6)	63.1 (23.2)	57.4 (26)	59 (25.1)	61.2 (24.6)
Interest city trip by plane	49.8 (29.6)	58.9 (22.5)	55.9 (27)	53.6 (25.6)	53.7 (26.7)	55.6 (26)

Note: The mean scores have been given for each default nudge, with the belonging standard deviation in brackets behind it: M(SD).
The mean scores and standard deviations have been measured with a slider bar on a scale from 0 to 100. The value 0 means not interested at all and the value 100 means very interested.

Consequently, an analysis has been performed in the form of a MANOVA test. This MANOVA test was performed with level of interest in the low carbon way of transportation (the train), and the level of interest in the high polluting way of transportation (the plane) as the dependent variables. The three different nudge types have been used as factor variables. As table 4 illustrates, the multivariate test results showed a significant Pillai's trace for the default nudge type (p = .03). This means that there is a difference between train and plane for the default nudge. The partial eta² that belongs to this is .027, which indicates a relatively small overall effect (Cohen, 1992). For the nudge types norm nudging and moral nudging, no significant difference was found. This is also the case for all the two-way interactions, no significant differences were found here. However, a significant effect has been found for the three-way interaction between the three nudge types (p = .05). This means that a difference was found between the levels of the different nudges acting together. The partial eta² that belongs to this is .023, which also indicates a small overall effect. Furthermore, Levene's test of equality of error variance for the dependent variables were both significant: interest in the city trip by train (p < .05) and interest in the city trip by plane (p < .05). This means that the variances in the population for the level of interest were not equal.

Table 4

Multivariate Test Results

Predictor	Pillai's Trace	F	Significance *p*	Partial Eta Squared
Nudge Type 1– Default	.027	3.718	.03	.027
Nudge Type 2 – Norms	.013	1.772	.17	.013
Nudge Type 3 – Moral	.002	.316	.73	.002
Nudge Type 1 – Default * Nudge Type 2 – Norms	.000	.038	.96	.000
Nudge Type 1 – Default * Nudge Type 3 – Moral	.003	.371	.69	.003
Nudge Type 2 – Norms * Nudge Type 3 – Moral	.001	.161	.85	.001
Nudge Type 1 – Default * Nudge Type 2 – Norms * Nudge Type 3 – Moral	.023	3.14	.05	.023

The other part of the MANOVA test results is presented in table 5. This table only focussed on the default nudge and the three-way interaction between the three types of nudges because these were the only two variables that turned out to have a significant difference between the levels. This test showed that a significant effect has been found for nudge type 1, the default nudge, and interest in the high polluting way of transportation, the plane, $F(1,272) = 6.9$, $p = .01$. This means that the presence of the default nudge affected the level of interest that the participants had in the high polluting way of transportation for the offered city trip. Furthermore, another significant effect has been found for the three-way interaction between the three nudge types and interest in the high polluting way of transportation for the offered city trip, $F(1,272) = 6.29$, $p = .01$.

Table 5

MANOVA Test Results

Predictor	Dependent variable	F	Significance
Nudge type 1 default nudging	Interest train	.28	.89
	Interest plane	6.9	.01
Nudge type 1 *2 * 3	Interest train	.97	.33
	Interest plane	6.29	.01

4.2 Interactions

The results of the MANOVA showed a significant three-way interaction for default nudging, norm nudging and moral nudging ($F(1,272) = 3.14$, $p = .05$). Table 5, in turn, showed that this three-way interaction was only significant when the level of interest in the city trip by plane was measured. In order to find out in what way this three-way interaction exactly works, separate ANOVA's have been performed to find out what the effects are per nudge type and how they interact.

First, the interaction effect between default nudging and norm nudging has been tested on different levels of moral nudging. This means that tests were done in order to find out how default nudging and norm nudging interact together when moral nudging is either on the level of pro-self nudging or pro-social nudging. Two interaction plots have been made to investigate these interactions and can be found in figure 3. The focus is first on the level of pro-self nudges and the figure shows that the interest in the city trip by plane rose when a descriptive norm was used in combination with the default plane option. At the same time, the interest in the city trip by plane also rose when social norms were used together with the default train option. On the other hand, the level of interest decreased when social norms were used in combination with the default plane option. However, this effect did not turn out to be significant ($F(1,119) = 3.25$, $p = .07$). Furthermore, another focus is made on the level of pro-social nudges. The

figure here shows that the interest in the city trip by plane rose when a social norm was used and a default plane option was shown. Next to that, the level of interest dropped when a default train option was shown in combination with a social norm nudge. Nonetheless, this interaction effect also did not turn out to be significant ($F(1,153) = 3.01$, $p = .09$).

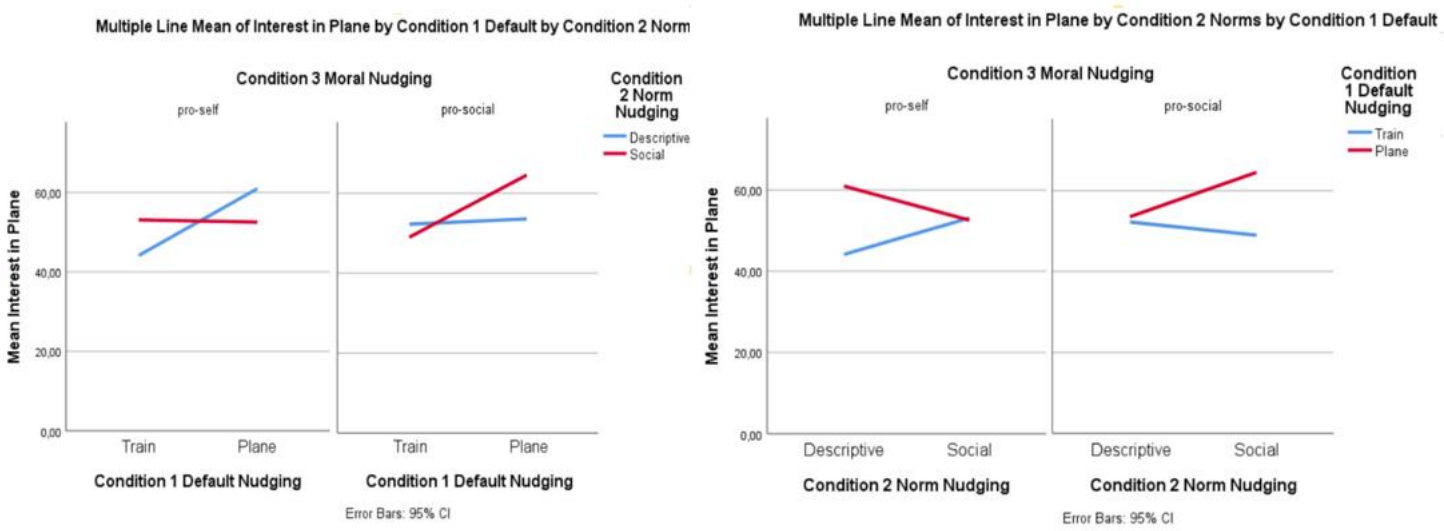


Figure 3. Interaction Effects Default Nudging and Norm Nudging on Moral Nudging

The same tests have been done when looking at the interaction effect between default nudging and moral nudging on different levels of norm nudging. The belonging plots of these interaction effects can be found in figure 4. The first focus in this interaction effect is on the level of descriptive norm nudges. The figure shows that the interest in the offered city trip by plane decreased when pro-social nudging is combined with a default plane option, whereas the interest rose when pro-social nudging is combined with the default train option. In addition, the figure also shows that the combinations also have the opposite effect. This is because the level of interest in the city trip rose when pro-self nudges were used together with default plane options. However, this interaction between default nudging and moral nudging on the level of descriptive norm nudging also did not turn out to be significant ($F(1,136) = 3.23$, $p = .07$). Furthermore, figure 4 also focussed on the social norm nudge. When focussing on the social norm, the interest in the city trip by plane rose when a pro-social nudge was used in combination with the default plane option. At the same time, it also shows that the interest drops when a pro-social nudge has been used together with a default train option. Nonetheless, again these interactions did not turn out to be significant ($F(1,136) = 3.06$, $p = .08$).

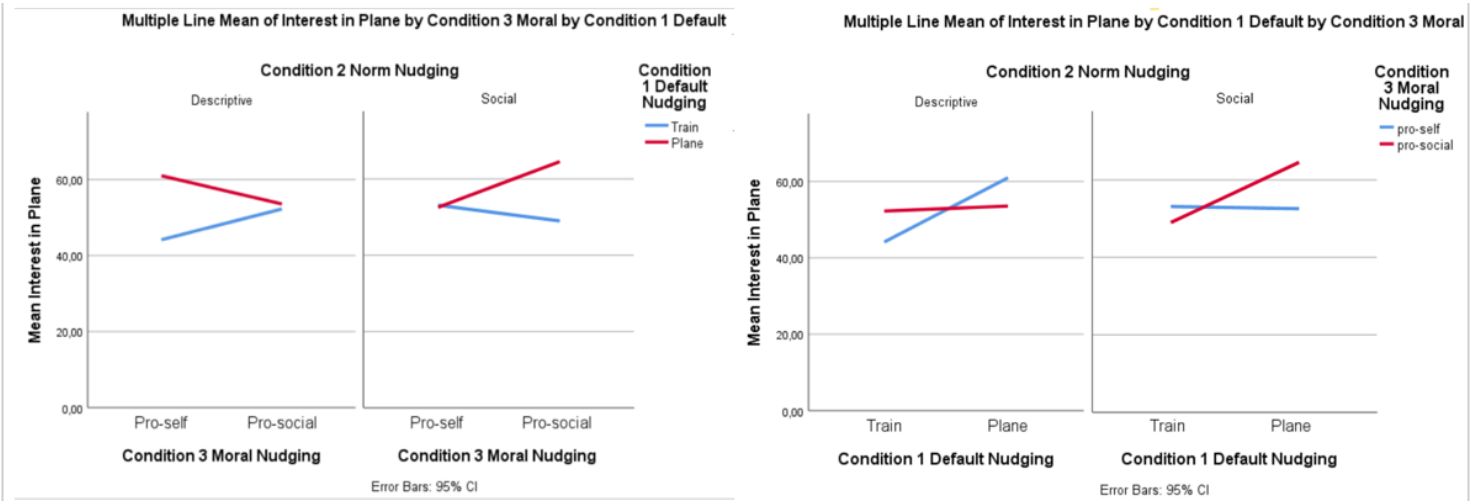


Figure 4. Interaction Effects Default Nudging and Moral Nudging on Norm Nudging

Last, another test has been done to find out whether norm nudging and moral nudging interact together when there are different levels of the default nudge. Figure 5 below shows the interaction plots that belong to this test. To start with when the default nudge type is the train, interest in the city trip by plane clearly rose when a combination between social norms and pro-self nudges have been used or when descriptive norms and pro-social nudges have been used. At the same time, the interest drops when social norms have been used together with pro-social nudges. However, also these interaction effects did not turn out to be significant ($F(1,123) = 1.31$, $p = .26$). Furthermore, the figure shows that when the default option is set on plane, the interest in the city trip by plane rises when social norms are used in combination with pro-social norms. However, the interest drops when social norms are used in combination with pro-self nudges and when descriptive norms are used with pro-social nudges. This interaction effect did turn out to be significant ($F(1,149) = 7.05$, $p < .01$).

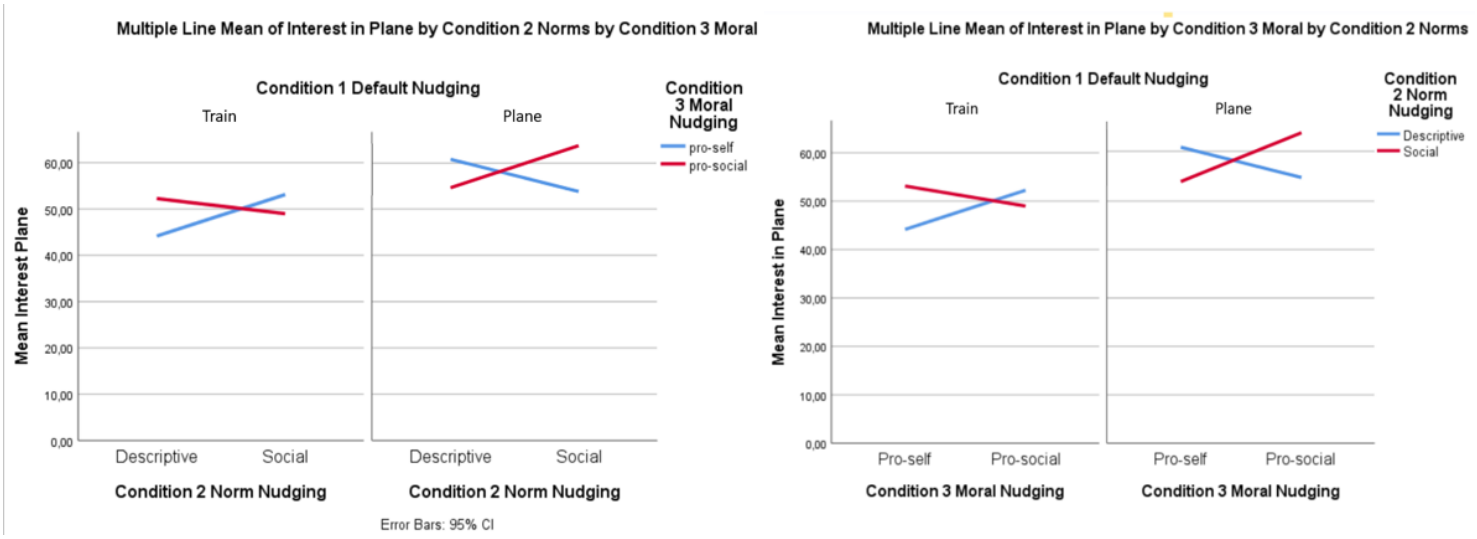


Figure 5. Interaction Effects Norm Nudging and Moral Nudging on Default Nudging

4.3 Prediction of Interest

In order to predict the level of interest in the offered city trip with different ways of transportation, two different multiple regression analyses have been conducted. The first multiple regression analysis has been performed with the level of interest in the city trip by train as the dependent variable. The second multiple regression analysis has been performed with the level of interest in the city trip by plane as the dependent variable. These analyses have been performed to find out whether background characteristics, attitudes, and nudge types predict the level of interest in the city trip. Both analyses have been performed in three blocks, which resulted in three different models. This has been done in order to see what the different variables explain in terms of interest in the city trips with different ways of transportation. Each model adds more variables and in this way, it will become clear whether the variables add to the explanation in the level of interest. This information can be drawn from the amount of variance each model explains. The first model consists of the predictor variables age, gender and educational level. Then, the second model added the variables that measured attitudes towards travelling by train and plane and the level of climate awareness. In the third model, also the three different nudge types have been added as predictors. The nudge types have been included as predictors because this will give insights into what the nudge types do in terms of interest in the city trips with different ways of transportation.

4.3.1 Interest City Trip by Train

First, the multiple regression analysis with the level of interest in the city trip by train as the dependent variable has been conducted. Table 6 below gives an overview of the model summaries of the three different models.

Table 6

Model Summaries for Multiple Regression Analysis Interest Train

Model	R	R^2	Adjusted R^2	F	Significance
1	.04	.00	-.01	.15	.93
2	.47	.22	.19	9.38	.00
3	.48	.23	.19	7.12	.00

The overview of the model summaries shows that the first model, with only the background characteristics as variables, is not significant and does not explain variance of the model. The overview

does show that the second and third model are significant ($p < .01$). The third model explains the most variance ($R^2 = .23$). Nonetheless, the variance that this model explains only differs slightly from the variation that is explained in the second model ($R^2 = .22$). This means that the addition of the nudge types in the third model only plays a minor role in the explanation of variance. However, the third model explains most significant variance in the level of interest in the city trip by train ($F(11,268) = 7.12$, $p < .05$, $R^2 = .23$, R^2 adjusted = .19). Therefore, the multiple regression analysis has been performed with model three, which means that all the variables have been included. The results of the analysis are presented in table 7 on the next page.

The analysis showed that the attitude people have towards travelling by train during a city trip within Europe significantly adds to the explanation of interest in the city trip by train ($p < .01$). Next to that, also the level of climate awareness significantly added to the explanation of interest in the city trip by train ($p = .04$). This means that the level of interest the participants had in the city trip by train was influenced by their already existing attitudes towards travelling by train during a city trip within Europe. Next to that, their level of interest in travelling by train was also influenced by the way that the participants are aware of the climate and what they think of climate issues.

Table 7

Multiple Regression Analysis Interest Train

Predictor	Standardized Beta	b	t	df	*p*
Constant		-8.42	-.53	279	.60
Age	.07	.14	1.27	279	.21
Gender	-.05	-2.39	-.79	279	.43
Educational level	-.02	-.37	-.3	279	.77
Attitude train	.12	3.66	1.56	279	.12
Attitude plane	-.08	-2.41	-1.19	279	.23
Attitude train city trip	.3	10.2	4.31	279	.00
Attitude plane city trip	.03	1.07	.49	279	.62
Climate awareness	.13	4.78	2.08	279	.04
Default nudge	.02	1.11	.41	279	.68
Norm nudge	.09	4.56	1.68	279	.10
Moral nudge	.02	1.01	.37	279	.71

4.3.2 Interest City Trip by Plane

Another multiple regression analysis has been conducted with interest in the city trip by plane as the dependent variable. Table 8 below gives an overview of the model summaries of the three different models.

Table 8

Model Summaries for Multiple Regression Analysis Interest Plane

Model	R	R^2	Adjusted R^2	F	Significance
1	.06	.00	-.01	.31	.82
2	.31	.09	.06	3.08	.00
3	.37	.13	.10	3.44	.00

The overview of this model summaries also shows that the first model is not significant and does not explain variance of the model. The overview does show that the second and third model are significant ($p < .01$). Again the third model explains the most variance ($R^2 = .13$). The variance explained by the second model is somewhat lower ($R^2 = .09$). This means that the addition of the nudge types in the third model plays a much bigger role in the explanation of variance for interest in the city trip by plane than it did for interest in the city trip by train. The third model explains a significant amount of the variance in the interest in city trip by plane ($F(12,267) = 3.44$, $p < .01$, $R^2 = .13$, R^2 adjusted = .10). Therefore, the multiple regression analysis has been performed with model three, which means that all the variables have been included. The results of the analysis are presented in table 9 below.

The table shows that the attitude of participants towards travelling by plane in general, as well as travelling by plane for a city trip within Europe both significantly added to the explanation of the level of interest in the city trip by plane. The values that belong to this are for attitude towards planes in general ($p = .05$) and attitude towards travelling by plane during a city trip within Europe ($p = .03$). Last, also the default nudges significantly added to the explanation of the level of interest in the city trip by plane ($p < .01$). This result corresponds with the results of the MANOVA test from tables 4 and 5. Both the MANOVA test and the regression analysis show that the presence of default nudges have an effect on the level of interest of the participants towards the city trip by plane.

Table 9

Multiple Regression Analysis Interest High Polluting Way of Transportation (the Plane)

Predictor	Standardized Beta	b	t	df	*p*
Constant		8.47	.48	279	.63
Age	.09	.19	1.54	279	.13
Gender	.03	1.5	.44	279	.66
Educational level	-.01	-.29	-.21	279	.84
Attitude train	-.04	-1.29	-.49	279	.62
Attitude plane	.15	4.56	2.01	279	.05
Attitude train city trip	.03	.98	.39	279	.71
Attitude plane city trip	.16	5.33	2.19	279	.03
Climate awareness	-.12	-4.69	-1.82	279	.07
Default nudge	.19	10.07	3.32	279	.00
Norm nudge	.07	3.47	1.14	279	.26
Moral nudge	.03	1.47	.48	279	.63

Looking back at the research model that was illustrated in the theoretical framework, effects were expected between all three different nudge types and the level of interest in a sustainable way of travelling. First of all, the default nudge showed a significant difference between the levels of train and plane default. When looking a step further, a significant effect was found between the default nudge and level of interest in the city trip by plane. This means that the default nudge has an effect on the level of interest that the participants had in the city trip with the highly polluting plane option. When the default is set on the plane, the interest in that trip by plane is also higher. However, when setting the default on train, the interest in the trip by train does not increase. Nevertheless, default nudging might not influence let people choose for a sustainable travel option, it does influence the interest people have in that option. Therefore, the first hypothesis can be partly confirmed, default nudging is partially effective in influencing people's interest in a sustainable way of transportation. However, no significant difference between the levels of norm nudging and moral nudging has been found. Applying social norm nudges or descriptive norm nudges does not influence people's interest in a sustainable way of transport. The same is true for applying pro-self or pro-social nudges. This means that hypotheses 2 and 3 are denied. However, an interaction effect was found in the three-way interaction, where norm nudging and moral nudging together interact on different levels of default nudging. This interaction effect wat only found when the default option was set on plane.

5. Discussion

For this study, an experiment was performed in order to find the effects of nudging on the level of interest in sustainable ways of transportation. Based on existing literature, three hypotheses have been formulated and the results of this study have been presented in the previous chapter. This chapter will further elaborate on the findings, the theoretical implications that belong to it, and the limitations of this study.

5.1 Main Findings

The findings of this study focussed on the effectiveness of the different nudges on people's interest in the city trip with either a low carbon or high polluting way of transportation. Only one of the three different nudge types showed to have an effect on people's interest in different ways of transportation: the default nudge. Default nudging only had an effect on the level of interest in the city trip by plane, not by train. Next to that, this level of interest was only significantly affected when a default plane option was included. This means that when travel agencies aim to sell trips by plane, it would be wise to include a default plane option in their offer. Most people will, in that case stick, to the default option and indeed visit their destination by plane. However, when a travel agency wants to offer trips by train, it does not help to set a default train option. Tourists will in that case not always go for the train option, but they are willing to look further for an alternative. At the same time, setting a default train option meant that the interest in flying decreases, but the interest in travelling by train does not increase. Norm nudging and moral nudging did not have an effect on the level of interest in the different ways of transportation. As norm nudging did not have an effect, there was no distinction to be made in the level of effectiveness between social norm nudges and descriptive norm nudges. Therefore, norm nudging does not contribute to people's interest in different ways of transportation. The same applies to moral nudging. Moral nudges also did not have a significant effect on people's interest in the city trip with different ways of transportation. This also means that there is no distinction between the appliance of pro-self or pro-social nudges.

However, a significant effect was found when the three different nudge types interact. A three-way interaction was found between default nudging, norm nudging, and moral nudging. These three nudge types combined do have an effect on the level of interest in the city trip by plane. This three-way interaction was an interaction between norm nudging and moral nudging on different levels of default nudging. Norm nudging and moral nudging together had an effect when the default was set on plane. This means that the level of interest in the city trip by plane rose when social norms were used in

combination with pro-social nudges when a default plane option was used. At the same time, the level of interest decreased when social norms were used together with pro-self nudges or when descriptive norms were used in combination with pro-social nudges. This is an interesting finding because these nudge types have not been applied together in similar studies before. It is also interesting because of the fact that norm nudges and moral nudges on their own do not have an effect, but when they are combined together on different default options, the nudges do contribute to the level of interest in different ways of transportation.

Furthermore, the regression analysis predicted what other factors were relevant when explaining what people think of going on a city trip by train or by plane. The attitude that people have towards travelling by train during a city trip within Europe explains a part of the level of interest in the offered city trip by train. This means that when people have a positive attitude towards travelling by train, the level of interest in this city trip by train rose when people had a positive attitude towards going on a city trip by train. The same is true for the opposite when the trip was offered by train and people had a negative attitude towards travelling by train for a city trip, the level of interest declined. Another factor that contributed to the level of interest in the city trip by train was the level of climate awareness. This means that when people are concerned about the climate they reacted more positively to travelling by train. When looking at the factors that contributed to the explanation of interest in the city trip by plane, both general attitude towards flying and flying for a city trip within Europe turned out to contribute. This means that when people were negative about flying, the level of interest in the offered city trip by plane was also more negative and the other way around. Furthermore, the default nudge again turned out to contribute to the level of interest in the city trip by plane, which was also a result of the MANOVA test.

In sum, the findings showed mixed results regarding the effectiveness of nudging in the context of interest in more sustainable ways of transportation. First, the default nudge turned out to be effective to influence people's level of interest in flying to the destination. However, default nudging does not contribute to the level of interest in sustainable ways of transportation. Next to that, norm nudging and moral nudging do not contribute to the level of interest in different ways of transportation, but these nudge types together do interact when the default option is set on plane. However, as the regression analyses showed, other factors played a role in the explanation of people's level of interest in the different ways of transportation. The attitudes that people had towards travelling by train or travelling by plane, and the level of climate awareness all had a significant effect on the level of interest. Therefore, participants could have focussed on their existing attitudes towards the ways of transportation and based their answers solely on their attitudes. In that case, the attitude towards travelling by train could have a major effect on people's level of interest, instead of the nudges.

5.2 Implications

This paragraph will focus on the theoretical and practical implications of this study. The theoretical implications focus on the contribution of this study to the literature and the practical implications will discuss how nudging can be put into practice.

5.2.1 Theoretical Implications

To start, this research suggests that nudging is not the "miracle approach" as it is described many times in the literature. This study aimed to achieve more sustainable behaviour in terms of choosing to travel by train instead of plane. This study concluded that default nudging is working, but only when it comes to the interest in the highly polluting plane option. Letting people choose for a sustainable way of transportation did not turn out to be effective when using nudges. However, there are many more different types of nudges that could be applied to this context. Therefore, this study still considers nudging as an approach that could be of importance in the field of sustainable tourism.

The first nudge type that was applied in this study was default nudging. Literature showed many examples where default nudging has proven to be effective, also in terms of sustainable choices. However, this type of nudging was not tested in the context of tourism and sustainable transport choices. Nonetheless, literature made suggestions that default nudging would also be applicable in other fields because in general people tend to stick to the pre-selected option (Paunov et al., 2019). This study showed that people do not always stick to the option that is selected for them. When the default was set on the preferable sustainable train option, in general, the respondents did not always stick to that option, they were also interested in the city trip by plane. However, when the default option was the plane, people tended to stick to this option. Therefore, default nudging does influence people's level of interest, but not for both cases. In order to achieve the aim of more sustainable behaviours, the default option does show that the interest in the plane decreases, but on the other hand, the interest in the train does not increase. This means that default nudging is therefore not very effective in the context of sustainable behaviours. This is a new insight that this study contributed because so far only a few studies research the effectiveness of nudging in relation to sustainability behaviour (Lehner et al., 2016). This study agrees with the literature that setting defaults can be helpful in letting people choose the preferred option. Nonetheless, in order to achieve sustainable behaviour, this study does not agree that default nudging is effective.

Furthermore, norm nudging was the second type of nudging that has been applied in this study. The results showed no significant effect of norm nudging on people's level of interest in a mode of transport.

No effect was found for social norms, neither for descriptive norms. However, different studies did show that descriptive norms are effective in changing behaviour (Czaikowski et al., 2019), but applying social norms would be even more effective (Bicchieri & Dimant, 2019). These norm nudges did have the condition that the desired behaviour should be interdependent and depending on social expectations (Bicchieri & Dimant, 2019). This study was based on the assumption that the behaviour to travel in a sustainable way was interdependent and depending on the opinion of others. However, as this study did not find effects, the desired behaviour, in this case, might not have been relying on social expectations. As the experiment was in an online environment, people's choices were not seen or judged by others, therefore, social expectations of others might not have played a role in people's choices. Moreover, social norms and descriptive norms are very much alike. Literature does argue that despite the fact that they are rather similar, social norms would be more effective than descriptive norms. However, there is a possibility that due to the similarity of the two types, no effects have been found in the effectiveness between the two.

Last, moral nudging has been applied to the experiment of this study. Previous studies showed that a distinction could be made between pro-self and pro-social nudges and that pro-self nudges would be more effective (Hagman et al., 2015). This is due to the fact that pro-self nudges focus on the benefits for the individual, whereas pro-social nudges focus on benefits for society. As the choice for a transport mode is an individual choice, pro-self nudges would be more suitable. However, also for this nudge type, no significant effect was found. During this study, the desired behaviour was a pro-environmental and pro-social behaviour. However, the choice that needed to be made was an individual choice. Individual interests can in the case of this study been in conflict with the public interest, and moreover can be seen as a social problem instead of a private problem. Therefore, the nudges that have been applied to this study might not have been strong enough to influence behaviour. The pro-self nudge focussed on saving travel time for an individual. This nudge could also have been framed in a different way such as saving money, more comfort, etc. The time-saving nudge might not have been decisive. This research therefore suggests that framing is very important in moral nudging. In all, despite the fact that previous research has found the effectiveness of moral nudges, moral nudging on its own did not turn out to have an effect on people's level of interest in sustainable travelling.

5.2.2 Practical Implications

This study showed that default nudging is partly effective in letting people stick to the option that is pre-selected. However, to achieve sustainable behaviour, this does not always work. It was shown that when the default was set on train, people would still look for alternative options and not always stick to

travelling by train. However, when the default was set on plane, people tended to stick to this option. Therefore, when travel agencies are interested in selling trips including a flight, they should include a default plane option in their advertisements. But, when travel agencies are interested in selling more sustainable trips by train, including a default train option is not effective. Nonetheless, it was shown that whether a train or a plane default was added in the advertisement, the interest in the city trip by train was higher. Therefore, in order to increase the interest in travelling by train towards a destination, travel agencies should still include a default train option. Tourists will be a lot more interested in travelling by train when this option is pre-selected. It may not be the case that tourists will always actually travel by train, but in order to make them interested in the first place, placing a default nudge in the advertisements is wise.

This study aimed to make the tourism sector more sustainable by focussing solely on different ways of transportation. However, there are more ways in which the tourism sector could be made more sustainable. Sustainability in tourism can be achieved by different ways of transportation, but also by declining the production of waste, lessening the laundry, eating more local food, etc. Setting default options is relatively easy in the online world. However, in order to achieve sustainability by for example eating more local food, supermarkets can place the local products in certain places in the shop. Next to that, what could also be an option in the tourism sector, is providing a website for the visitors of a hotel for example on which they can choose what food they would like to eat. In that case, local food can be set as the default by pre-selecting this. In that way, tourists will be more inclined to eat local food. There are many more ways in which default options could be used to achieve more sustainable tourism. This study therefore also recommends using default options whenever possible in order to achieve more sustainability.

Last, this study also showed that the level of climate awareness of people has an effect on people's interest when it comes to travelling by train. The level of interest in travelling by train increased when people were more aware of climate change. As governments are more and more focusing on sustainability and want to work against climate change, especially related to the amount of carbon dioxide emissions, this study advises governments to focus more on making citizens aware of the climate. The government is an institution that is usually trusted by its citizens. Therefore, the government should focus on informing people about the climate, what is happening and what they can do in order to be more sustainable. Next to that, this study advises the government to collaborate with booking agencies. Together, they can apply default nudges, as this research proved that there is a small effect here. Furthermore, more tests need to be done to find out what kind of nudges would also contribute to people's choices and interest. Norm nudges and moral nudges have proven to be effective

in previous research but did not turn out to be effective on its own in this study. However, an interaction effect was found between the two based on different levels of default nudging.

5.3 Limitations of Study and Suggestions Future Research

Although this study contributes to the knowledge of nudging and its effectiveness, limitations should be acknowledged when interpreting the results of this study. First of all, the sample concerns some limitations. After reduction of the cases that were not useable for this study, the final sample size consisted of 280 participants. These participants were spread out over eight different conditions, which led to an average of 38.5 participants per condition. This sample size is enough to provide results about, but for further research, the study might be performed again with a bigger sample size in order to improve the reliability of the results. Furthermore, a convenience sample was used to find the participants for this study. This led to a relatively young participant group and a majority of females participating. Therefore, when a replication of this study would be done in the future, a more equal distribution of gender and age should be used to increase the possibility to generalise the findings. The generalisability is also a limitation for this whole study, despite the distribution of the population. The results of this experiment cannot be generalised to a wider context. Nudging can be useful for influencing behaviour in certain contexts, but this does not imply that it would work in other contexts as well. Human behaviour and factors that influence that behaviour is never the same and very context-dependent.

Furthermore, another limitation of this study is the fact that it is not clear whether the participants paid enough attention to the advertisement or not. The participants were asked to read the advertisement well, but there was no check whether they actually did comply with this or not. The only nudge that turned out to have an effect was the default nudge. The default nudge was the nudge that was also visually present in the advertisement. As this distinction between train or plane was more visible in the advertisement than the other nudges, this could have been taken into consideration, whereas the other nudges were not. Participants could therefore have checked the advertisement for the destination, price, mode of transport, and not have taken the rest into consideration. Another finding that contributes to this way of reasoning is the fact that the attitude towards travelling by train for a city trip within Europe had a considerably big effect on people's interest. As this plays a much bigger role than the nudges that have been applied, it could again be the case that the advertisement has not been given enough attention. Therefore, for future replications of this study, it should also be tested whether the participants have actually paid attention to the advertisement.

A final limitation of this research is the fact that only one destination was offered. Despite the fact that participants were asked to imagine they were planning a city trip to London, but the only thing left was the decision between the different arrangements, participants could have answered the questions based on their attitude towards the destination. When the participants felt negative towards going on a city trip towards London, they might have filled in the questions based on that feeling. Questions regarding their interest in the city trip might therefore have been affected solely by their attitude towards the destination itself. Therefore, in similar studies, it would be useful to also include questions concerning their feelings towards the destination itself or offer multiple destinations. Moreover, as the COVID-19 pandemic is the current situation, participants also might have answered in a different way than they would normally do. Although it was asked to imagine a world without the COVID-19 virus, a world where travelling was normal, people still might have answered in a different way than they would normally do. In the back of their minds, they might feel hesitant towards travelling by train or plane during these times.

5.4 Conclusion

This study aimed to answer the question to what extent nudging is effective in letting tourists make sustainable travel choices and what the most efficient nudge would look like. An answer to this research question would fill the gap of the exploration of applying nudges within tourism, especially related to flying behaviour. This study found that default nudging is partly effective in achieving sustainable behaviour. When the default is set on an unsustainable option, the interest in that both the sustainable as well as the unsustainable option is high. However, when the default is set on the sustainable option, the interest in the sustainable option does not increase. Furthermore, the default option also showed that when the interest in the unsustainable option decreases, this does not mean that the interest in the sustainable option increases. On the other hand, norm nudging and moral nudging did not turn out to be effective when sustainable travel behaviour is the goal. However, in the three-way interaction, it was found that norm nudging and moral nudging together interact on different levels of default nudging. Most of the times people respond more to social norms instead of descriptive norms and normally pro-self nudges are more effective compared to pro-social ones. This was not the case in this research, but different formulations and different contexts might lead to different results. All in all, the most efficient nudge to reach sustainable travel behaviour is the default nudge. This is in line with existing theory and literature about default nudging. However, nudging may not be the wonder approach that leads to sustainable tourism. Nevertheless, the increase in the level of interest in more sustainable choices could be reached with the help of nudging. Therefore, default nudging is of importance to reach sustainability within tourism.

Reference List

Allcott, H., & Mullainathan, S. (2010). Behaviour and energy policy. *Science, 327*(5970), 1204–1205. https://doi.org/10.1126/science.1180775

Amelung, B., Nicholls, S., & Viner, D. (2007). Implications of global climate change for tourism flows and seasonality. *Journal of Travel Research*, *45*(3), 285–296. https://doi.org/10.1177/0047287506295937

Anderson, L. W. (1981). *Affective characteristics in the schools*. Boston, MA: Allyn & Bacon.

Araña, J. E., & León, C. J. (2016). Are tourists animal spirits? Evidence from a field experiment exploring the use of non-market based interventions advocating sustainable tourism. *Journal of Sustainable Tourism*, *24*(3), 430–445. https://doi.org/10.1080/09669582.2015.1101128

Avineri, E., & Goodwin, P. (2010). Individual behaviour change: Evidence in transport and public health. London, United Kingdom: The Department for Transport.

Benartzi, S., & Lehrer, J. (2015). *The smarter screen: Surprising ways to influence and improve online behavior.* New York, NY: Penguin.

Capraro, V., Jagfeld, G., Klein, R., Mul, M., & Van De Pol, I. (2019). Increasing altruistic and cooperative behaviour with simple moral nudges. *Scientific reports*, *9*(1), 1-11.

Cialdini, R. B. (1984). *Influence: the psychology of persuasion*. New York, NY: Quill William Morrow.

Cohen, J. (1992). Statistical power analysis. *Current directions in psychological science*, *1*(3), 98-101.

Cooper, C. (2012). *Essentials of tourism*. Harlow, England: Financial Times Prentice Hall.

Czajkowski, M., Zagórska, K., & Hanley, N. (2019). Social norm nudging and preferences for household recycling. *Resource and Energy Economics*, *58*, 101–110. https://doi.org/10.1016/j.reseneeco.2019.07.004

De Jong, M. D., Harkink, K. M., & Barth, S. (2018). Making green stuff? Effects of corporate greenwashing on consumers. *Journal of business and technical communication*, *32*(1), 77-112.

Dixit, M. and Belwal, R. and Singh, G. (2006). Online tourism and travel (analyzing trends from marketing perspective). *Skyline Business School Journal, 3*(1), 89-99.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of marketing research*, *28*(3), 307-319.

Eijgelaar, E., Nawijn, J., Barten, C., Okuhn, L., & Dijkstra, L. (2016). Consumer attitudes and preferences on holiday carbon footprint information in the Netherlands. *Journal of Sustainable Tourism, 24*(3), 398-411.

Eurostar. (2019). CO2-uitstoot berekening. Retrieved 19 March 2020, from https://www.eurostar.com/nl-nl/co2-uitstoot-berekening

Eurostat. (2019). Transport statistics introduced - statistics explained. Retrieved 15 January 2020, from https://ec.europa.eu/eurostat/statisticsexplained/index.php/Transport_statistics_introduced Transport_statistics

Font, X., & McCabe, S. (2017). Sustainability and marketing in tourism: its contexts, paradoxes, approaches, challenges and potential. *Journal of Sustainable Tourism*, *25*(7), 869–883. https://doi.org/10.1080/09669582.2017.1301721

Gao, L., & Bai, X. (2014). Online consumer behaviour and its relationship to website atmospheric induced flow: Insights into online travel agencies in China. *Journal of Retailing and Consumer Services, 21*(4), 653- 665. https://doi.org/10.1016/j.jretconser.2014.01.001

Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, *35*(3), 472 482. https://doi.org/10.1086/586910

Hall, C. M. (2013). Framing behavioural approaches to understanding and governing sustainable tourism consumption: beyond neoliberalism, "nudging" and "green growth"? *Journal of Sustainable Tourism*, *21*(7), 1091–1109. https://doi.org/10.1080/09669582.2013.815764

Hagman, W., Andersson, D., Västfjäll, D., & Tinghög, G. (2015). Public views on policies involving nudges. *Review of philosophy and psychology*, *6*(3), 439-453. https://doi.org/10.1007/s13164015-0263-2

Hares, A., Dickinson, J., & Wilkes, K. (2010). Climate change and the air travel decisions of UK tourists. *Journal of Transport Geography, 18*(3), 466-473. https://doi.org/10.1016/j.jtrangeo.2009.06.018

Higham, J., Cohen, S. A., Cavaliere, C. T., Reis, A., & Finkler, W. (2016). Climate change, tourist air travel and radical emissions reduction. *Journal of Cleaner Production*, *111*, 336–347. https://doi.org/10.1016/j.jclepro.2014.10.100

Iacus, S. M., Natale, F., Santamaria, C., Spyratos, S., & Vespe, M. (2020). Estimating and projecting air passenger traffic during the COVID-19 coronavirus outbreak and its socio-economic impact. *Safety Science*, *129*, 1–11. https://doi.org/10.1016/j.ssci.2020.104791

John, P., Smith, G., & Stoker, G. (2009). Nudge nudge, think think: two strategies for changing civic behaviour. *The Political Quarterly*, *80*(3), 361–371.

Krockow, E. M. (2018, September 27). How many decisions do we make each day? Retrieved from https://www.psychologytoday.com/us/blog/stretching-theory/201809/how-many-decisions do-we-make-each-day

Le Quéré, C., Jackson, R. B., Jones, M. W., Smith, A. J., Abernethy, S., Andrew, R. M., ... & Friedlingstein, P. (2020). Temporary reduction in daily global CO 2 emissions during the COVID-19 forced confinement. *Nature Climate Change*, 1-7.

Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging – a promising tool for sustainable consumption behaviour? *Journal of Cleaner Production*, *134*, 166–177. https://doi.org/10.1016/j.jclepro.2015.11.086

Luna-Nevarez, C., & Hyman, M. R. (2012). Common practices in destination website design. *Journal of destination marketing & management*, *1*(1-2), 94-106. https://doi.org/10.1016/j.jdmm.2012.08.002

Mirsch, T., Lehrer, C., & Jung, R. (2017). Digital nudging: Altering user behavior in digital environments. *Proceedings of the 13th international conference of Wirtschafsinformatik,* 634 648.

Mont, O., Lehner, M., & Heiskanen, E. (2014). *Nudging a tool for sustainable behaviour?*. The Swedish Environmental Protection Agency. Report 6643.

NASA. (2019). Climate change evidence: How do we know? Retrieved on 28 November 2019, from https://climate.nasa.gov/evidence/

Ölander, F., & Thøgersen, J. (2014). Informing versus nudging in environmental policy. *Journal of Consumer Policy*, *37*(3), 341–356. https://doi.org/10.1007/s10603-014-9256-2

Paunov, Y., Wänke, M., & Vogel, T. (2019). Ethical defaults: which transparency components can increase the effectiveness of default nudges?. *Social Influence*, *14*(3-4), 104-116.

Schuckert, M., Liu, X., & Law, R. (2015). Hospitality and tourism online reviews: Recent trends and future directions. *Journal of Travel & Tourism Marketing*, *32*(5), 608–621. https://doi.org/10.1080/10548408.2014.933154

Strasdas, W. (2010). Carbon management in tourism – A smart strategy in response to climate change. *Trends and Issues in Global Tourism 2010*, 57–69. https://doi.org/10.1007/978-3-642 10829-7_8

Sugden, R. (2009). On nudging: A review of nudge: Improving decisions about health, wealth and happiness by Richard H. Thaler and Cass R. Sunstein. *International Journal of the Economics of Business*, *16*(3), 365–373. https://doi.org/10.1080/13571510903227064

Sunstein, C. R. (2014). Nudging: a very short guide. *Journal of Consumer Policy*, *37*(4), 583-588.

Thaler, R. and Sunstein, C. (2008). *Nudge: Improving decisions about health, wealth, and happiness.* London, United Kingdom: Yale University Press.

Tyers, R. (2018). Nudging the jetset to offset: voluntary carbon offsetting and the limits to nudging. *Journal of Sustainable Tourism*, *26*(10), 1668-1686.

United Nations. (2019, October 22). Climate change. Retrieved 29 December 2019, from https://www.un.org/sustainabledevelopment/climate-change/

UNWTO. (2019). Definition | Sustainable development of tourism. Retrieved 28 November 2019, from https://sdt.unwto.org/content/about-us-5

UNWTO. (2019). FAQ - Climate Change and Tourism | Sustainable development of tourism. Retrieved 29 November 2019, from https://sdt.unwto.org/content/faq-climate-change-and-tourism

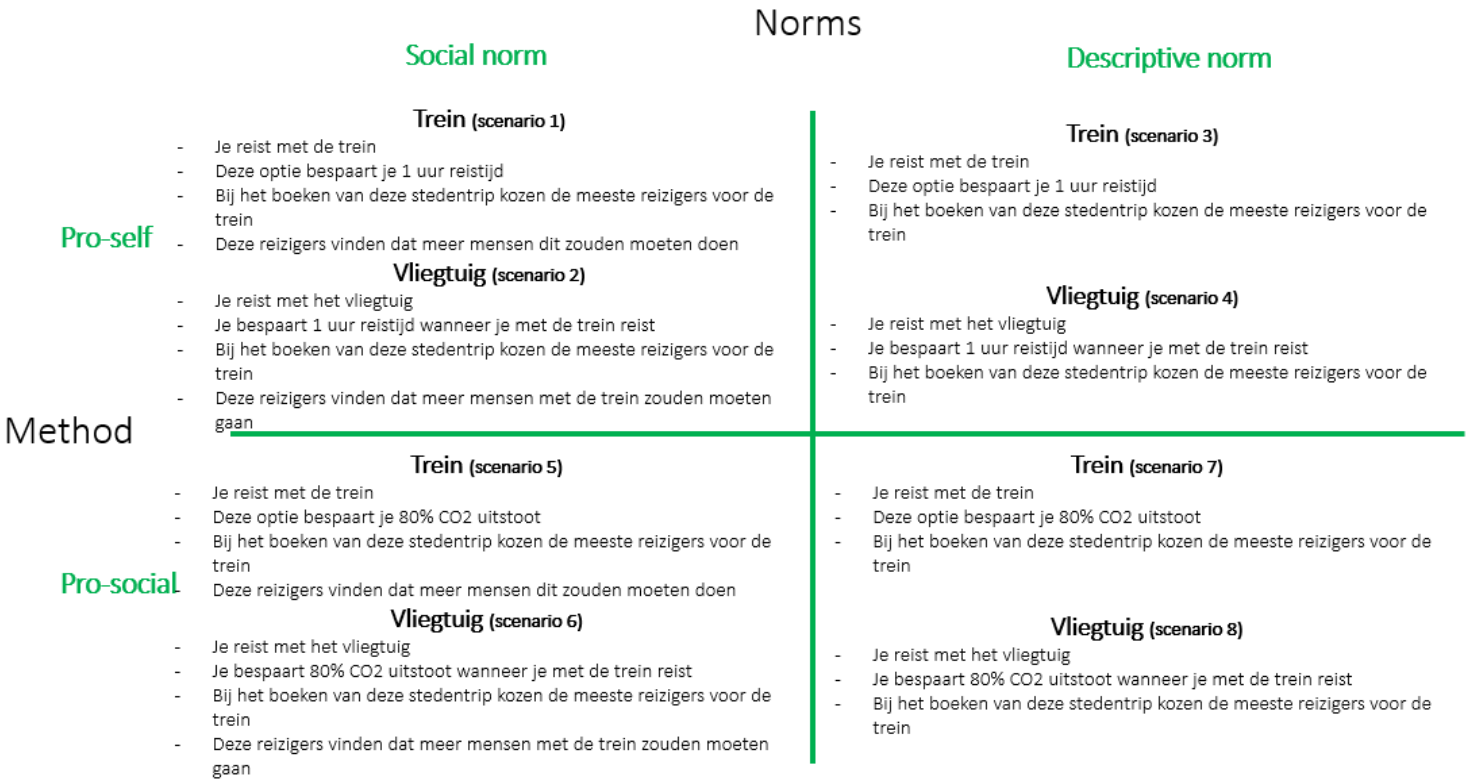
Weinmann, M., Schneider, C., & vom Brocke, J. (2016). Digital nudging. *Business & Information Systems Engineering*, *58*(6), 433–436. https://doi.org/10.1007/s12599-016-0453-1

World Travel & Tourism Council. (2019). Home. Retrieved 30 December 2019, from https://www.wttc.org/

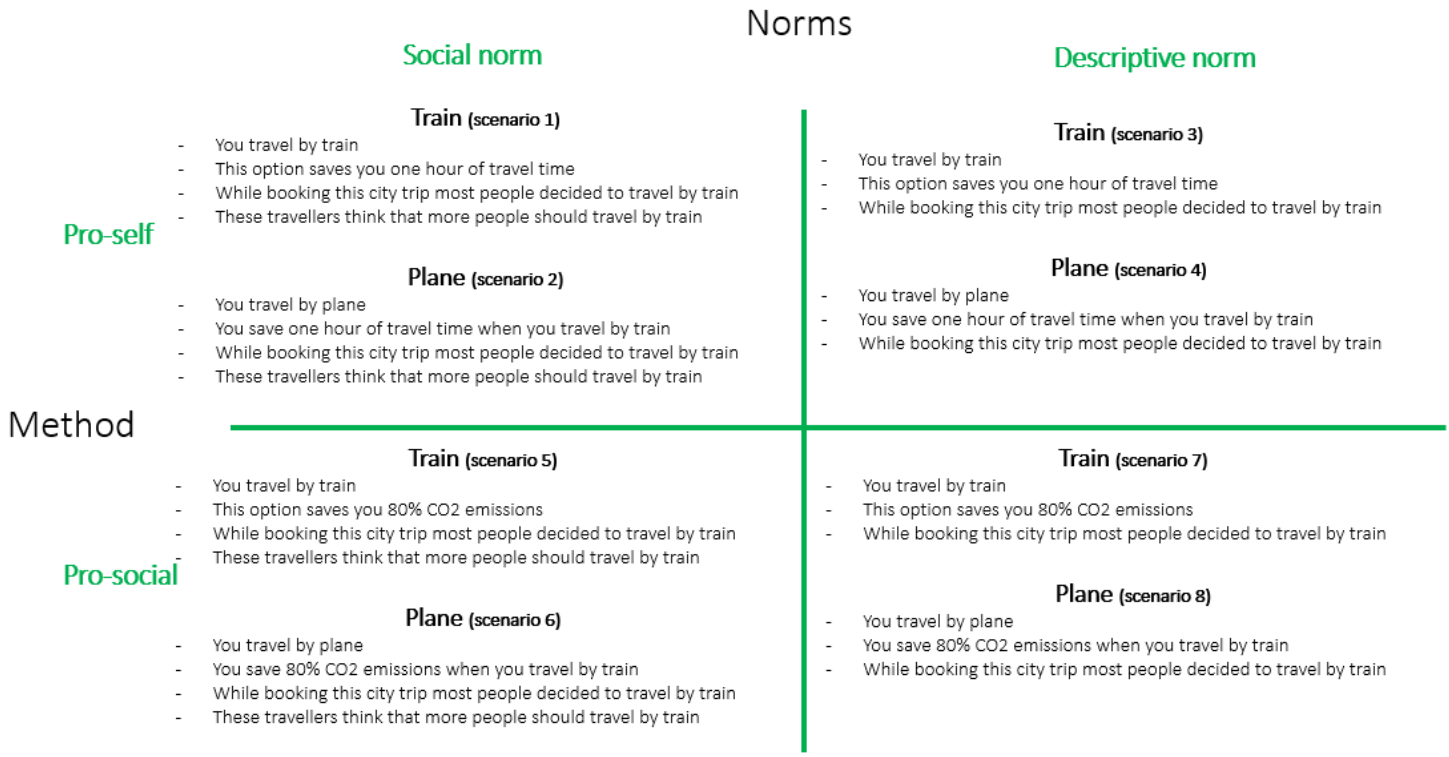
Appendices

Appendix A

In this appendix an overview of the nudges that have been used in the online experiment is given. The nudges are in Dutch because the participant target group were Dutch citizens. The translation of the overview is presented beneath the originally used Dutch version.



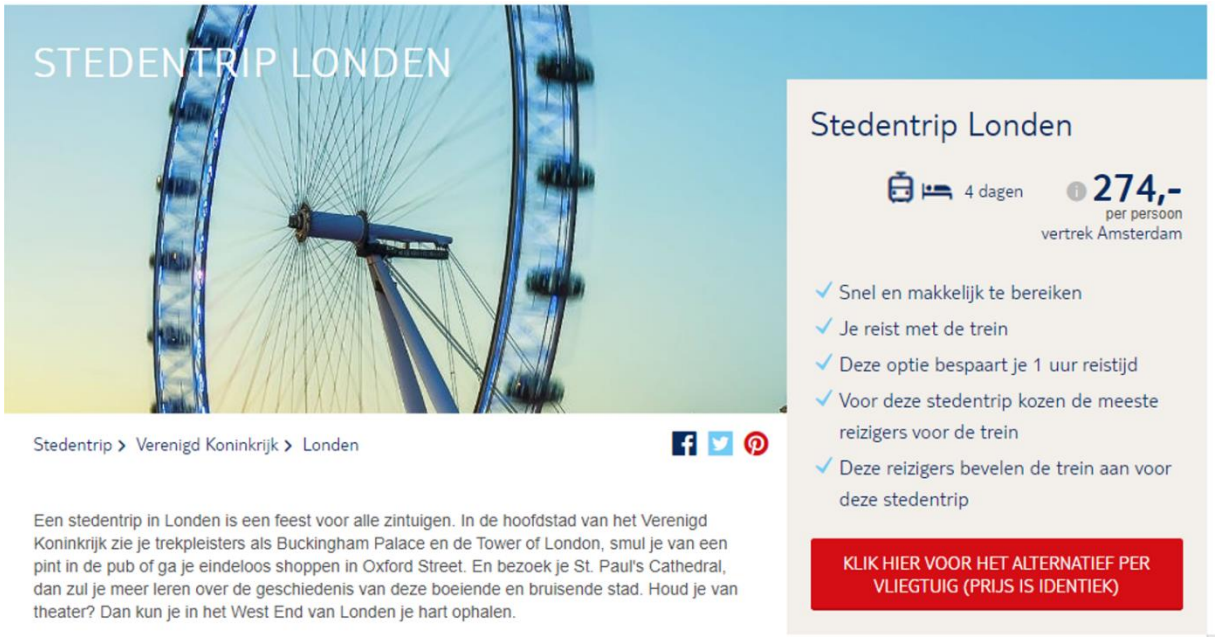
Appendix A1: Overview of the different nudges in Dutch



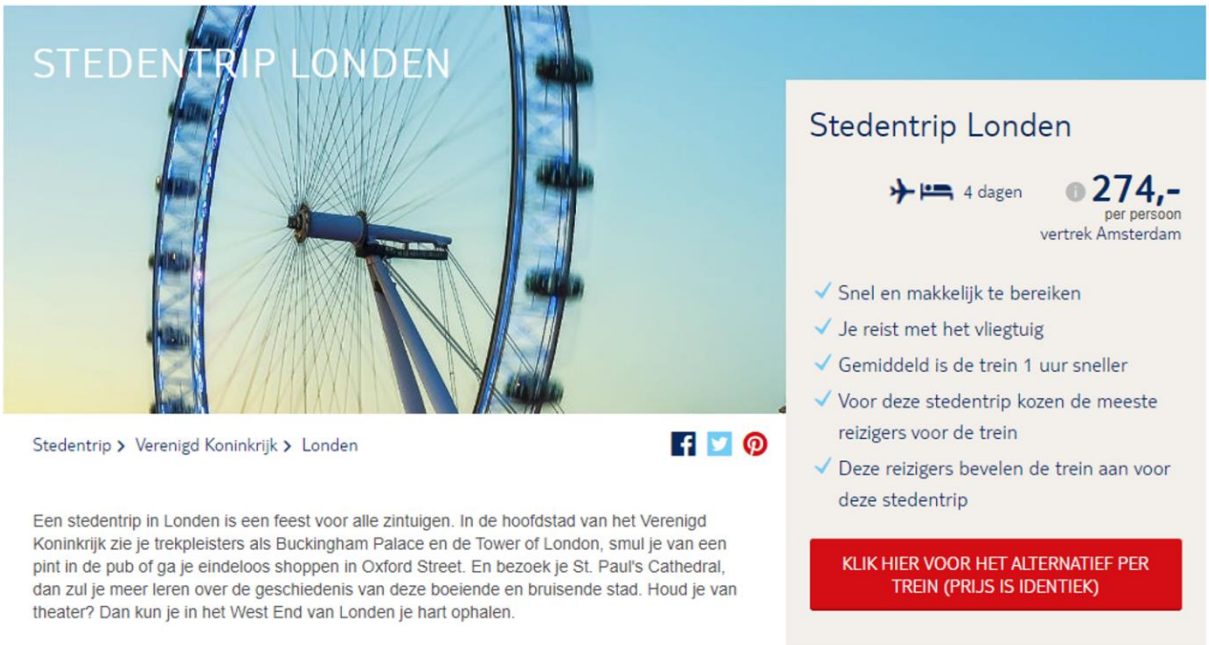
Appendix A2: Overview of the different nudges in English

Appendix B

In this appendix the advertisements of the eight scenarios of the online experiment is presented. The advertisements are again in Dutch, but a translation of the nudges that have been put in the advertisements can be found in appendix A.

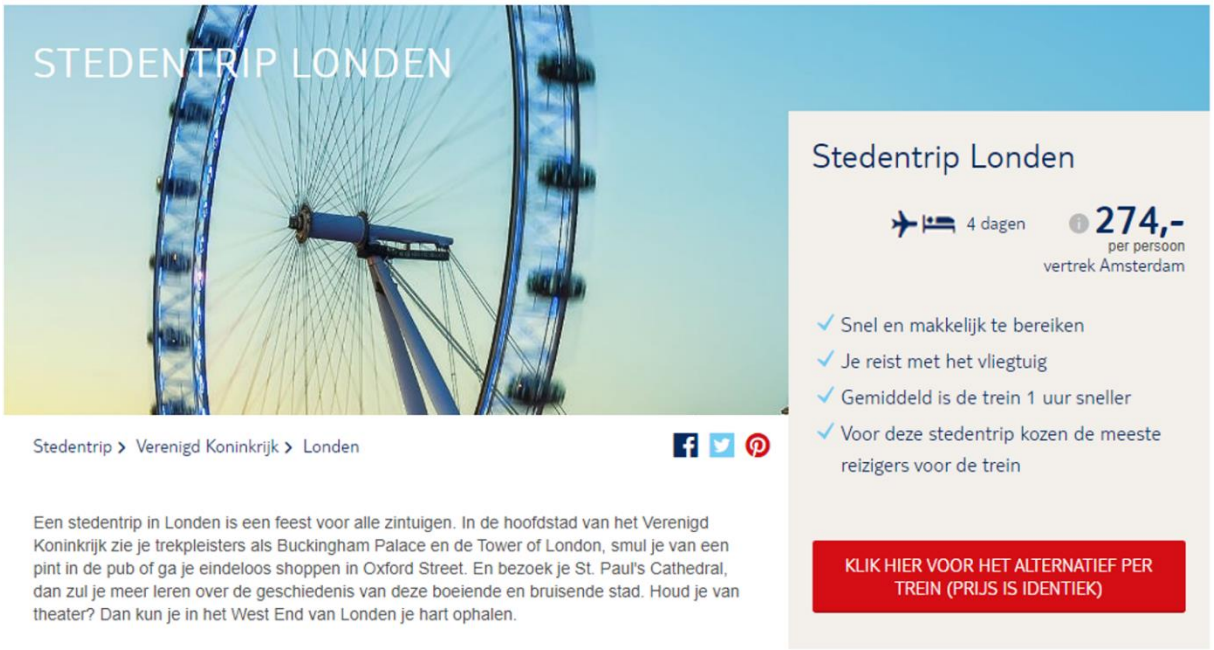


Appendix B1: scenario 1



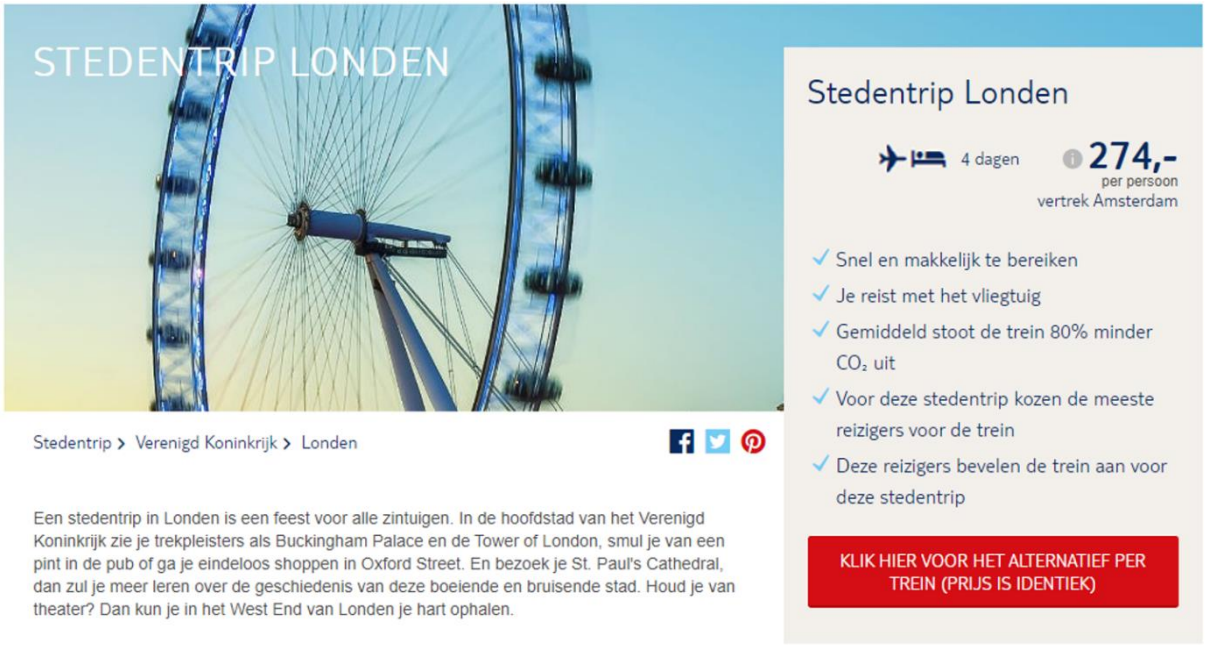
Appendix B2: scenario 2

Appendix B3: scenario 3

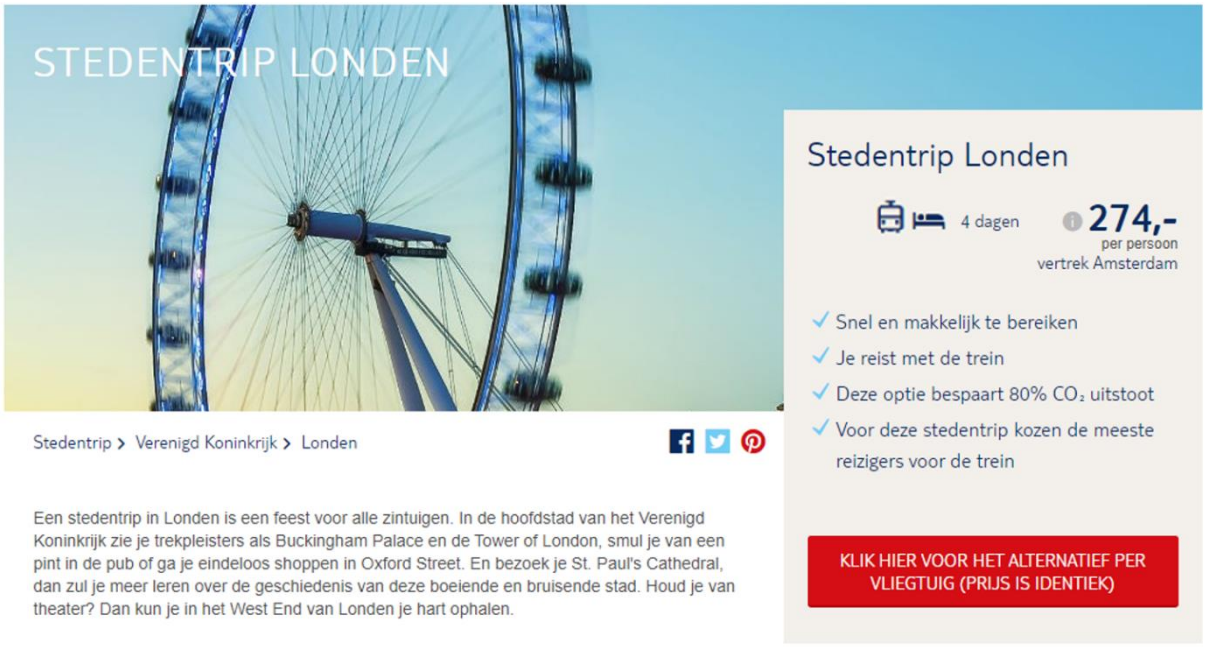


Appendix B4: scenario 4

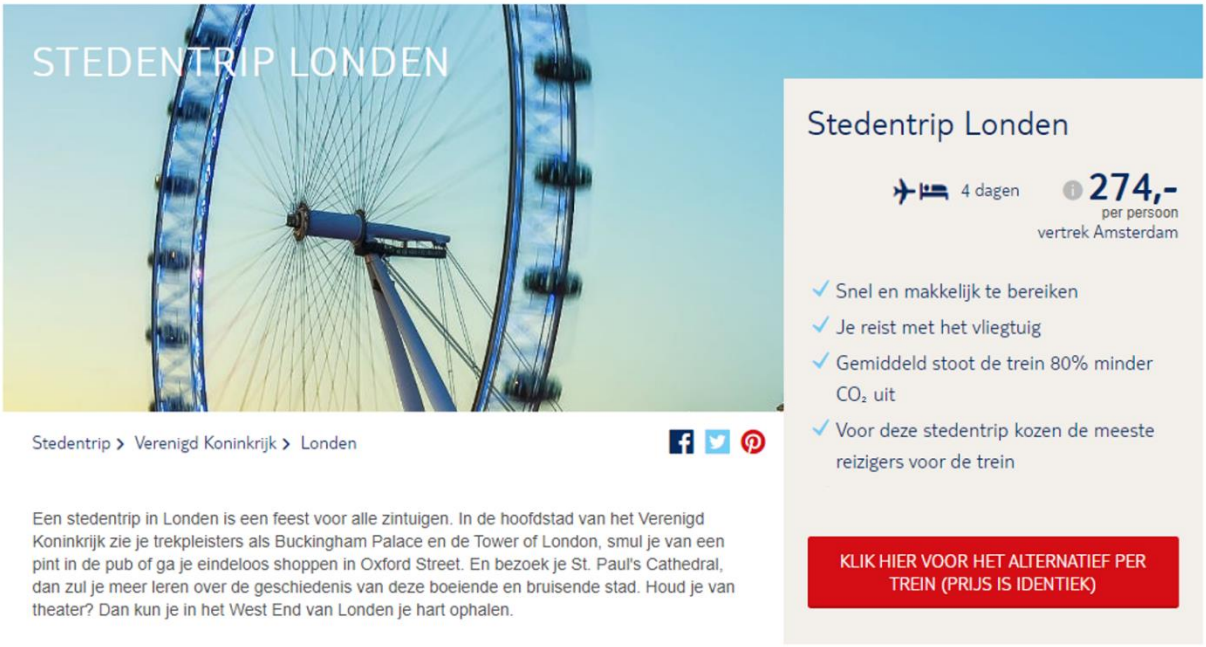
Appendix B5: scenario 5



Appendix B6: scenario 6



Appendix B7: scenario 7



Appendix B8: scenario 8

Appendix C

In this appendix the whole outline of the online experiment is given. Again, as the experiment was in Dutch, all questions are also in Dutch.

START OF SURVEY

BLOCK 1

Beste,

Mijn naam is Manon Nijhuis en ik ben een student van de Masteropleiding Communication Studies aan de Universiteit Twente. Ik ben momenteel bezig met het schrijven van mijn afstudeerscriptie. Ik onderzoek hiervoor reisarrangementen naar Londen en ben geïnteresseerd in hoe mensen deze arrangementen beoordelen. Om hier meer informatie over te krijgen, heb ik uw hulp hard nodig. Uw antwoorden dragen bij aan nieuwe wetenschappelijke inzichten met betrekking tot dit onderwerp.

Het meedoen aan dit onderzoek kost slechts 5 tot 10 minuten van uw tijd en is geheel anoniem. U kunt op elk gewenst moment stoppen met de enquête als u besluit toch niet meer mee te willen doen. Als u wel besluit om mee te doen, wilt u dan proberen de enquête in 1 sessie af te ronden. Het is technisch gezien helaas niet mogelijk om dit in fases te doen.

Als u vragen heeft of meer informatie wilt over het onderzoek, dan kunt u mij bereiken via: m.m.a.nijhuis@student.utwente.nl.

Ik hoop dat u mee wilt doen aan het onderzoek.
Alvast bedankt voor de genomen moeite, het wordt erg gewaardeerd!

Vriendelijke groet,

Manon Nijhuis

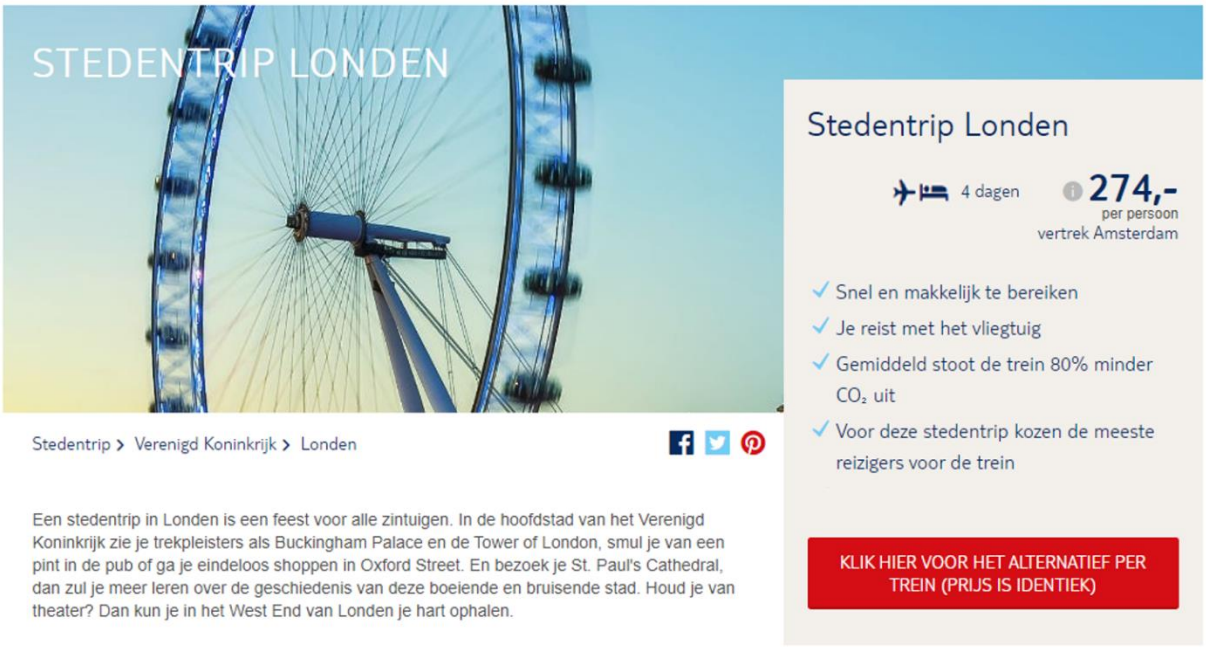
Wilt u meedoen aan dit onderzoek?

- o Ja
- o Nee

BLOCK 2

Beeld u in dat we in een tijd leven waar corona nog geen rol speelt en we geen anderhalve meter afstand hoeven te houden tot anderen om ons heen. We kunnen dus nog gewoon reizen door Europa zoals voorheen.

Stelt u zich vervolgens voor dat u op het punt staat om een stedentrip naar Londen te boeken. De volgende advertentie laat u een optie zien. Wilt u deze advertentie goed bekijken en de informatie over deze stedentrip lezen. Er volgen daarna enkele vragen over de advertentie.



BLOCK 3

Ga er bij het beantwoorden van de volgende vragen vanuit dat u al besloten heeft om naar Londen te gaan, maar alleen nog moet kiezen voor het arrangement.

U kunt de vragen beantwoorden door steeds een percentage tussen de 0 en 100 procent te kiezen. U kunt dat doen door de schuif van links naar rechts te bewegen.

0 10 20 30 40 50 60 70 80 90 100

In hoeverre bent u geïnteresseerd in deze stedentrip?

In hoeverre overweegt u het om deze stedentrip te boeken?

Hoe groot is de kans dat u deze stedentrip daadwerkelijk zou boeken?

Zoals u in de advertentie zag, is het ook mogelijk om dezelfde stedentrip met de trein te boeken voor dezelfde prijs. Geef bij de volgende vragen aan in hoeverre dit alternatief voor u interessant is.

0 10 20 30 40 50 60 70 80 90 100

In hoeverre bent u geïnteresseerd in het alternatief (per trein) van deze stedentrip?

In hoeverre overweegt u het om het alternatief (per trein) van deze stedentrip te boeken?

Hoe groot is de kans dat u het alternatief (per trein) van deze stedentrip daadwerkelijk zou boeken?

BLOCK 4

Er volgen nu een aantal algemene vragen.
Hoe belangrijk zijn deze vervoermiddelen in uw dagelijkse leven?

	Helemaal niet belangrijk	Niet belangrijk	Neutraal	Belangrijk	Heel belangrijk
Fiets	○	○	○	○	○
Auto	○	○	○	○	○
Bus, tram, metro	○	○	○	○	○
Trein	○	○	○	○	○
Vliegtuig	○	○	○	○	○

Hoe belangrijk zijn deze vervoermiddelen voor u tijdens vakanties en stedentrips binnen Europa?

	Helemaal niet belangrijk	Niet belangrijk	Neutraal	Belangrijk	Heel belangrijk
Fiets	○	○	○	○	○
Auto	○	○	○	○	○
Bus, tram, metro	○	○	○	○	○
Trein	○	○	○	○	○
Vliegtuig	○	○	○	○	○

Geef aan in hoeverre u het eens bent met de volgende stellingen:

	Helemaal niet mee eens	Niet mee eens	Neutraal	Mee eens	Helemaal mee eens
Ik vind reizen met de trein aantrekkelijk	○	○	○	○	○
Ik vind reizen met de trein comfortabel	○	○	○	○	○
Ik vind reizen met de trein ontspannend	○	○	○	○	○
Ik voel me veilig in de trein	○	○	○	○	○
Ik vind reizen met het vliegtuig aantrekkelijk	○	○	○	○	○
Ik vind reizen met het vliegtuig comfortabel	○	○	○	○	○
Ik vind reizen met het vliegtuig ontspannend	○	○	○	○	○
Ik voel me veilig in het vliegtuig	○	○	○	○	○

Geef aan wat het meest op u van toepassing is.

Met de trein reizen om op stedentrip binnen Europa te gaan vind ik:

Niet aantrekkelijk	○	○	○	○	○	Aantrekkelijk
Niet comfortabel	○	○	○	○	○	Comfortabel
Ingewikkeld	○	○	○	○	○	Eenvoudig
Onhandig	○	○	○	○	○	Handig
Duur	○	○	○	○	○	Goedkoop

Geef aan wat het meest op u van toepassing is.

Met het vliegtuig reizen om op stedentrip binnen Europa te gaan vind ik:

Niet aantrekkelijk	○	○	○	○	○	Aantrekkelijk
Niet comfortabel	○	○	○	○	○	Comfortabel
Ingewikkeld	○	○	○	○	○	Eenvoudig
Onhandig	○	○	○	○	○	Handig
Duur	○	○	○	○	○	Goedkoop

Geef aan in hoeverre u het eens bent met de volgende stellingen:

	Helemaal niet mee eens	Niet mee eens	Neutraal	Mee eens	Helemaal mee eens
Ik geef de voorkeur aan milieuvriendelijke producten	○	○	○	○	○
Ik geef de voorkeur aan bedrijven die op een milieuvriendelijke wijze produceren	○	○	○	○	○
Ik zie mezelf als een milieuvriendelijk persoon	○	○	○	○	○
Ik probeer zo milieuvriendelijk als mogelijk te zijn	○	○	○	○	○
Ik vind het milieu een belangrijk onderwerp om over na te denken	○	○	○	○	○
Ik denk dat er teveel ophef over het milieu is	○	○	○	○	○

BLOCK 5

Tot slot nog een aantal vragen over uzelf.

Wat is uw leeftijd?

Wat is uw geslacht?

- Man
- Vrouw
- Zeg ik liever niet

Wat is uw hoogst afgeronde opleidingsniveau?

- Geen opleiding/onvolledig basisonderwijs
- Basisschool
- Voortgezet onderwijs
- Middelbaar beroepsonderwijs (MBO)
- Hoger beroepsonderwijs (HBO)
- Universiteit / postdoctoraal

Heeft u nog eventuele opmerkingen of suggesties?

Als u interesse heeft in de resultaten van dit onderzoek, kunt u hieronder uw e-mailadres achterlaten. U ontvangt dan aan het eind van dit onderzoek een mail met een overzicht van de resultaten.

Dit was het einde van de enquête. Vergeet niet rechtsonder op het pijltje te klikken, zodat uw antwoorden worden opgeslagen. Bedankt voor uw deelname.

Appendix D

In this appendix, the constructs of the experiment are mentioned with the corresponding Cronbach's alphas. This appendix only includes the constructs that have not been mentioned in the report itself.

Two questions that measured attitudes towards travelling by train and plane for a city trip within Europe. These two questions have been created with the help of a bipolar scale. Both questions consisted of the same five items: attractiveness, comfort, easiness, handiness and price. Also, these scales are reliable: the items for the train had a Cronbach's alpha of .72 and for the plane .76.

Finally, participants were asked about their level of concern towards the climate and climate change. An existing scale that was proven to be a reliable scale to measure people's concern about the climate (De Jong, Harkink & Barth, 2018). This scale has also been based on a 5-point Likert scale and consisted of six items. The items are: "I prefer environmentally friendly products", "I prefer companies that produce in an environmentally friendly manner", "I see myself as an environmentally friendly person", "I try to be as environmentally friendly as possible", I consider the environment an important topic to think about", and "I think there is too much fuss about the environment" (De Jong et al., 2018). The climate scale has again proven to be reliable (six items, α = .83**).** Lastly, demographic information was asked about the participants including age, gender and educational level.