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Sustainability by Default - Nudging Sustainable Product Choices in Customer Customization

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I hope you enjoy reading this study.

Petra Tilleman

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Abstract

Sustainable consumption is a topic of growing importance in today's society, but although consumers generally consider sustainability as important, sustainable consumption is still quite low. Therefore, it would be beneficial for our society and easy for organizations if it would be possible to nudge consumers into choosing the sustainable option more often by just designing the choice architecture of a buying situation in a particular way.

The aim of this study was to investigate whether it is possible to nudge consumers into choosing the sustainable option more often by designing the choice architecture of the customization tool in a particular way. More specific, selecting the more sustainable option by default and placing the more sustainable option on the dominant side of consumers, thereby following their mental representation. This gives managers the means to persuade their consumers to choose the more sustainable option more often and therefore, contribute to increase sustainable consumption in society as a whole.

An online experiment was done among 216 students at Radboud University in Nijmegen, the Netherlands. Results indicated that none of the manipulative versions were significant. People do not choose the sustainable option more often when it is the default, nor when it is placed on their dominant side, nor when it is both the default and placed on the dominant side. General interest in sustainability does have a positive influence on the number of times the sustainable option is chosen. Therefore, organizations should include information about the sustainability of various options in their customization tool to increase sustainable consumption.

The discussion indicates that the default might not be interpreted in a way that has an impact on the decision making process. It appears that best way to ensure a realistic interpretation is to test the default in the field, thus a real customization tool instead of an experimental design which is part of an academic study. However, there is also a possibility that the default is not that effective in the customization setting in general as consumers already put in the extra effort to design a product themselves, while the default is powerful due to the fact that it is the option with the least effort. Furthermore, it appears that the dominant side is only used as indicator for valence when there are no other (rational or emotional) aspects to base the choice on. Therefore, aligning options with consumer's dominant side will probably not be an effective nudge in customer customization.

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1. Introduction

In our current society lots of attention is given to live healthy and in a sustainable way, organizations are under pressure to produce more sustainably, consumers become more aware of sustainable issues and governments try to increase both sustainable development and sustainable consumption. Recent research in the food context has proven that it is possible to nudge people into choosing healthier food by placing the healthy option to the left of the unhealthy option on the right, thereby following the consumer's mental representation (Romero & Biswas, 2016). This study will to a certain extent replicate these findings in the sustainable consumption setting. The buying situation under examination is customer customization. In this setting consumers actively choose their preferred components and organizations influence the design of the customization tool that offers these components. Therefore, organizations influence the design of the choice architecture, which can be used to nudge people into choosing the sustainable components more often. The main question of this study is:

“How should the choice architecture of a customer customization program be designed to nudge consumers into choosing the sustainable option more frequently?”

1.1 Sustainable consumption

Sustainable consumption is a topic of growing importance in today's society, it is included in United Nation's sustainable development goals (United Nations, 2017). Although consumers generally consider sustainability as important, sustainable consumption is still quite low (Vringer et al., 2017). Furthermore, United Nations even report an increase in domestic material consumption in the last years and suggest establishing influential norms for consumer behavior is necessary to fulfil the goal (United Nations, 2017). Therefore, organizations and governments are searching for methods to increase actual sustainable consumption. Vringer et al. (2017), found that moral considerations are more leading in sustainable consumption issues than social considerations, nevertheless social considerations are not completely absent. They suggest that, because of the moral dimension, less invasive instruments such as nudges may be very effective too and suggest for further research in this area. As this is what this study is focused on, this indicates academic relevance of this study.

A common method to persuade consumers to choose more sustainable options is to create awareness through marketing campaigns. However, there are still consumers who do not know or care enough about sustainability issues to actually alter their behavior. This is backed

up in construal level theory (Trope & Liberman, 2010) and by the model of consideration of future consequences (Strathman et al. 1994). This literature further describes the difficulties of convincing consumers to make choices that will only be beneficial for them in the future. Therefore, it would be beneficial for our society and easy for organizations if it would be possible to nudge consumers into choosing the sustainable option more often -rather than persuading them through marketing- by just designing the choice architecture of a buying situation in a particular way.

1.2 Customer customization & choice architecture

A growing number of organizations is discovering the value of letting consumers create their own unique products using the opportunities of big data (Spaulding & Perry, 2013). Customer customization is therefore even stated as one of the main drivers of the 'New Economy' (Keller, Apéria & Georgson, 2011). Buying situations in which consumers customize products according to their own needs and wants provide consumers with multiple steps in which they can composite their own product. This gives them the opportunity to choose more or less sustainable components. The design of toolkits for customization helps consumers to make their choices and plays a crucial role for determining the final outcome (Franke & Piller, 2003). However, how choice architecture needs to be designed to increase consumers choice for particular components in customer customization, is a research field not well explored yet. Which is in contrast to the extensive research on the choice architecture design of retail stores, shop layouts and other retailing environments (Franke & Piller, 2003).

This recent trend of customer customization is especially interesting in relation to nudging consumers to increase sustainable consumption, as consumers choose each component. Each component can be more or less sustainable regarding the raw materials used, the production process and transportation cost. All of which issues that organizations are not interested in explaining per component and the average consumer is also unlikely to put in the effort to read this detailed information for every component. Therefore, using recent findings in the food context (Romero & Biswas, 2016) to design the choice architecture of customization tools in such a way to nudge consumers into choosing the more sustainable components more often, could increase sustainable consumption.

There are in particular two interesting elements in the choice architecture design of customization toolkits: (1) The default option, the option that is standard pre-selected (Thaler

& Sunstein, 2009). The power of the default option has been proven in lots of contexts, for example automatic membership renewal, organ donations and saving programs (Johnson & Goldstein 2003; Thaler & Sunstein, 2009). And (2) the placement of the options. Romero and Biswas (2016) recently found that by displaying food in line with the mental representation of consumers, it is possible to nudge them in choosing the healthy option more often. The mental representation of food is related to the representation of magnitude -light and heavy meals- and is mentally represented from the left to the right (Kadosh et al., 2007). Therefore, by placing the healthy light option to the left of the unhealthy heavy meal increased the choice for the healthy option (Romero & Biswas, 2016). For sustainable consumption a mental representation based on magnitude is not directly applicable. However, Casasanto (2009) found a relation between preference for goods and the dominant side of people. When someone is right-handed there exist a preference for goods placed on the right and when someone is left-handed there exist a preference for goods placed on the left. This research indicates that this theory would hold regardless of the product. Therefore, the placement of the sustainable option on the dominant side of consumers is the second aspect of choice architecture researched in this study.

1.3 Objective & research question

The aim of this study is to investigate whether it is possible to nudge consumers into choosing the more sustainable option in a customer customization setting by designing the choice architecture of the customization tool in a particular way. More specific, selecting the more sustainable option by default and placing the more sustainable option on the dominant side of consumers. The current study builds on the extensive knowledge available on default options, the recent findings on choice architecture in the food context and the existing knowledge on the behavioral differences caused by right- versus left-dominance. Therefore, this study adds to the existing body of literature on nudging and choice architecture and relates right- versus left-dominance theory to the field of consumer behavior. Furthermore, this study intends to give more insights in how to design the choice architecture of customer customization tools, which is a field not well explored yet.

By meeting these objectives this study aims to provide managers with more insights in ways to influence the choice architecture of a customization tool. These insights provide them with the means to persuade their consumers to choose the more sustainable option more often and therefore contribute to increase sustainable consumption in society as a whole.

The following research question will be answered in this study:

Research question: *How should the choice architecture of a customer customization tool be designed to nudge consumers into choosing the sustainable option more frequently?*

As described, this research focuses on two specific aspects of choice architecture, which leads to the following sub-questions:

A. *Do more people choose the more sustainable option when it is the default option?*

B. *Do more people choose the more sustainable option when it is placed on their dominant side?*

1.4 Outline

In the following chapters of this master thesis the aspects mentioned will be further reviewed on literature in chapter 2: Theoretical background, the method that is used is explained in chapter 3: Methodology and the results are presented in chapter 4: Results. In chapter 5: Conclusion, discussion & recommendations the interpretation of the results, the conclusions, the answer on the research question, the discussion and the theoretical and managerial implications are presented. This master thesis concludes with the references and the appendixes.

2. Theoretical background

In this chapter the topics under consideration will be reviewed in literature. Firstly, the general topic –sustainability– will be discussed. Secondly, the buying situation in which the hypotheses will be tested –customer customization– and the choice architecture that is relevant within this buyer situation will be discussed. Furthermore, the topics of the sub-questions –the default and the dominant side– will each be discussed in their own section. Finally, the hypothesized relations will be presented in the conceptual model.

2.1 Sustainable consumption

Sustainable development is originally defined as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 41). There are three pillars of sustainability: environment, society and economy, all of which need to be considered to act in a sustainable way. Moreover, sustainability implies responsible and proactive decision making, innovation that minimizes negative impact and maintains balance between ecological resilience, economic prosperity, political justice and cultural vibrancy to ensure a desirable planet for all species now and in the future (Magee et al., 2013). In order to increase sustainable behavior worldwide, the United Nations formed a set of seventeen sustainable development goals, which are to be implemented and achieved in every country from the year 2016 to 2030 (United Nations, 2017).

Sustainable development is the organizing principle for meeting the sustainable development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. In order for organizations to successfully embrace sustainable development, sustainable consumption is needed as well. Although in an ideal situation sustainable developed products are the norm, the reality is that non-sustainable products are often cheaper and therefore more popular among consumers, causing dilemmas for organizations between sustainability and profit maximization. This motivated governments to introduce regulations, but there is still a gap between developing confirm regulations and truly acting sustainable. Therefore, an increase in sustainable consumption would create the demand necessary to persuade organizations to deliver more sustainable products.

Sustainable consumption in general has received quite some attention in literature. In the 90's the concept of skeptical green consumers (Shrum, McCarty & Lowrey, 1995; Zinkhan

& Carlson, 1995) gained attention. This concept indicated that consumers who value sustainability and behave accordingly –called green consumers– were skeptic towards sustainability claims of companies due to commotion on ‘green washing’ practices of certain companies. This concept made marketers question the best way to advertise their green products. However, recent findings indicate that in today’s society there is no relation between green consumers and advertising skepticism (Matthes & Wonneberger, 2016). Therefore, the ‘dilemma for marketers who desire to target the green consumer’ (Zinkhan & Carlson, 1995) appears to be far less severe than previously thought (Matthes & Wonneberger, 2016).

Thaler and Sunstein (2009) view the environment as an outcome of a global choice architecture system in which decisions are made by all kinds of actors. They formulate two major problems that contribute to environmental problems.

Firstly, incentives are not properly aligned, they explain this using the following statement “you do not pay extra if you cause more harm to the environment” (Thaler & Sunstein, 2009). This situation is referred to as ‘tragedy of the commons’ in system dynamics literature (Meadows, 2008).

Secondly, people don’t get feedback on the environmental consequences of their actions (Thaler & Sunstein, 2009). This lack of feedback on environmental consequences relates to construal level theory (Trope & Liberman, 2010), which indicates that the farther removed an object is from direct experience, for example in the future, the higher the level of construal of that object is and the more abstract the mental representation is. Sustainability is a typical example of a product with a lack of feedback, distant benefits –they lie in the future– and therefore of a high construal and an abstract mental representation. Which might be a reason why consumers do consider sustainability as important, but actual sustainable consumption is still relatively low (Vringer et al., 2017).

Another –complementary– theory used for explaining the difficulties in improving sustainable consumption is the Consideration of Future Consequences (CFC) theory (Strathman et al., 1994). Which indicates that peoples choices are determined by the extent to which they consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these outcomes. Furthermore, this theory has two underlying factors; individuals concern with immediate consequences and their concern with future consequences (Joireman et al., 2008). Moreover, levels of CFC-immediate are suggested to lead to increased temporal discounting (Joreman et al., 2008). Arnocky, Milfont, and Nicol (2013) examined this theory in the environmental concerns context and indicate that CFC-immediate predicts environmental concerns and behavior motivation. Therefore, associations between future time

perspective and sustainable behavior are driven by reduced immediate concerns. These theories indicate that sustainability –due to benefits that lie in the future– is perceived as psychologically distant. Fujita et al. (2008) further suggests that psychological distance may play an important role in attitude formation of a topic.

In conclusion, the discussed theories indicate that psychological distance could be one of the main reasons for the fact that consumers do consider sustainability as important, but actual sustainable consumption is still relatively low (Vringer et al., 2017). Therefore, literature indicates that the fact that an option is more sustainable is unlikely to be the major reason to choose that option due to the psychological distance of the topic sustainability in general. This study therefore investigates the possibilities of nudging consumers to choose the more sustainable option rather than only persuading them through advertising.

2.2 Choice architecture in customer customization

The buying situation under examination is the customer customization setting. Customer customization is a buying situation in which consumers have the ability to customize a product, to modify it according to their own individual requirements. Although customers personalize the standard version by customizing it to fit their requirements, personalization as a concept is something else. Personalization is done by a system and based on consumer data, the consumer does not actually has to do something. For example, the personal suggestions you receive on a shopping website are called customer personalization (Schade, 2016).

The current study is focused on customer customization, the buying situation that provides consumers with the tools to create their own unique product. Customer customization has recently been given more attention due to the growing technological developments that enhance the possibilities of in particular mass customization. Furthermore, customization toolkits provide the consumer himself with the means to do the trial-and-error experimentation and deliver immediate feedback on the potential outcome of a design idea. Therefore, von Hippel and Katz (2002) indicate that customer customization offers a solution to the current market in which consumer's needs and wants often change faster than organizations can innovate. These benefits and its growing popularity have ensured the inclusion of customer customization as one of the main drivers of the 'New Economy' according to Keller, Apéria, and Georgson (2011).

Furthermore, empirical studies by Franke and Piller (2004) and Schreier (2006) indicate that the user's willingness to pay for self-designed products can be much higher than for the

standard products. Franke and Schreier (2010) further examined the willingness to pay more for customization and found that this relation is not only determined by a good fit of the consumer's personal requirements, but also by the enjoyment they experienced during the process. They therefore suggest organizations to design their toolkits in such a way to ensure the process creates a positive 'mood' for the consumer, this positivity is indicated to be transferred to the assessment of the product value. Franke and Piller (2003) also suggest that the design of customization toolkits helps consumers to make their choices and plays a crucial role for determining the final outcome. These findings are in line with the findings of Huffman and Kahn (1998) who indicate that the information should be presented in a clear way, preferably by presenting the choices in groups per attribute. Further research in the way these options should be presented and thus how the choice architecture should be designed, is however limited. Which is in contrast to the extensive research on the choice architecture design of retail stores, shop layouts and other retailing environments (Franke & Piller, 2003).

The choice architecture of a customer customization tool involves the presentation of the customization options and the way they are designed. This involves in particular the order in which the options are presented, the presence or absence of a default option and which option is selected by default. The choice architecture influences consumers' psychological expectations, which in turn influences behavior. "Take for example the choice architecture of a door with large handholds, clearly designed for pulling. Even though it included the tag 'push', most people will still pull it due to the mental cue to 'pull' we receive from the large handholds" (Thaler & Sunstein, 2009). Thaler and Sunstein (2009) state that no choice is ever presented in a completely neutral way, by nudging it is possible to present choices in a certain way to influence consumers to choose a particular option. Literature on customization has primarily focused on the software necessary to provide it (Kuo, 2013; Ong, Lin & Nee, 2004). The layout of how the options should be presented in that software –the choice architecture– which influences consumers' choice, has to the best of knowledge not been researched (Franke & Piller, 2003). For customer customization tools there are in particular two parts of the choice architecture that can be influenced in a way that is expected to influence consumer choice: the inclusion of a default option and the order in which options are presented.

2.3 The default

The first aspect of choice architecture in customer customization that will be examined is the default. The default is the option that is standard pre-selected (Thaler & Sunstein, 2009).

Defaults are often unavoidable in the sense that for any node of a choice architecture system, there must be an associated rule that determines what happens to the decision maker if he/she does nothing. When nothing is selected the system either selects the default option or forces the decision maker to choose at that instance to move on in the process (Thaler & Sunstein, 2009).

Many organization and other actors have discovered the power of the default. There are studies on defaults within the contexts of insurances (Johnson et al., 1993); selection of internet privacy policies (Bellman et al., 2001); the original settings of your computer and other digital devices (Thaler & Sunstein, 2009); consent to receive e-mail marketing (Johnson, Bellman & Lohse, 2002) and the level of pension savings (Madrian & Shea, 2001; Sunstein, 2002), all these studies indicate significant effects of the use of a default, often with substantial financial consequences.

Perhaps the most outstanding example is donor registration. Johnson and Goldstein (2003) found that 85 per cent of the Americans approve organ donations, but only 28 per cent of those actually granted permission by signing a donor card. Furthermore, European countries that have the default as being a donor have registered donor rates of around 98 per cent and European countries that do not have that default only have registered donor rates around 10 per cent (Johnson & Goldstein, 2003). One of the countries without a donor registration default is The Netherlands, in order to get the inhabitants to register themselves, the government introduced an annual donor week, with an extensive marketing campaign. Over a period of 10 years the number of donors increased by less than 1 million, in total about 30 per cent of the population has now registered their choice of either being a donor or not. The relative ineffectiveness caused the country to take on the examples of other European countries and in early 2018 a new law was accepted which introduced registration as a donor by default (Rijksoverheid, 2018).

Johnson and Goldstein (2003) explain the power of defaults using three ways in which defaults influence choice: Firstly, the decision maker might believe that defaults are suggestions and therefore recommendations of the organization. Secondly, making a decision takes effort, while people tend to choose the option which costs the least effort (Samuelson & Zeckhauser, 1988). Thirdly, defaults often represent the status quo and according to reference-dependent theory of consumer choice, this default as reference for the status quo creates a sense of loss aversion when choosing an alternative (Tversky & Kahneman, 1991). Carroll et al. (2005) examined the limits of the power of the default and find that instead of a default, an active decision making regime is optimal in cases where preferences strongly differ.

In conclusion, the literature suggests that a well-chosen default nudges consumers into choosing the option selected by default more often. The power of the default has already been examined in lots of different contexts, this study will further add to the extensive body of research by exploring the possibilities of nudging by using a default in the sustainability context. It is expected that the positive results found in the majority of the past studies will hold in the sustainable context as well, this leads to the following hypothesis.

Hypothesis 1: *More people choose the sustainable option when it is presented as the default.*

2.4 Mental representation

The second aspect of the choice architecture under examination is the placement of the options in a customization tool. Romero and Biswas (2016) found that it is possible to nudge consumers to choose healthier foods by following a natural mental representation when laterally displaying food options. In the setting which is congruent with the consumer's mental representation, healthy food on the left of the unhealthy option on the right, the healthy option was chosen significantly more. These results are in line with research on the spatial representation of magnitude, which states that people mentally map increases in magnitude such as physical size, time or numerical values from left to right (Kadosh et al., 2007; Fias & Fischer, 2004; Ishihara et al., 2008, Chae & Hoegg, 2013). In this situation the healthy option is much lighter on the stomach and therefore of lower magnitude than the unhealthy option and therefore placed on the left (Romero & Biswas, 2016). The visual option in line with the mental map of the consumer improves mental processing power and therefore increase the chance of that option being chosen. The underlying mental representation of magnitude is also in line with the study of Chae & Hoegg (2013) who state that cultures that read from left to right have the spatial representation of time whereby past is visualized on the left and the future is visualized on the right. This indicates that results of previous mentioned studies would change if the participants are from a culture that does not read from left to right. However, all these studies are related to magnitude. The current study is focused on sustainable consumption, which does not seem to be directly related to magnitude.

Van Beek, Antonides and Handgraaf (2013) found that both immediate and future consequences should be taken into account when examining food preferences, as these two dimensions of time orientation predict different types of behavior. Furthermore, immediate and future consequences also relate back to construal level theory (Trope & Liberman, 2010). Van Beek, Antonides and Handgraaf (2016) indicate that construal level partially explains the

differential relations between consideration of immediate and future consequences and eating preferences. In the topic of sustainability, what is considered ‘good’ and what is considered ‘bad’ might be related to construal level theory. The short term consequences of sustainable consumption are often higher costs, the long term consequences are concepts like a better world to live in. However, the consumer might not even see the positive effects in his/her own lifetime. Therefore, sustainability in general appears to be a psychological distant topic, with a high level of construal and a more abstract mental representation.

Casasanto (2009) related the mental representation of something good and something bad to being right or left-handed. His study indicates that a person who is right-handed holds a mental representation of placing items with positive valence –something ‘good’– to the right and items with negative valence –something ‘bad’– to the left, while left-handed people do the exact opposite. Therefore, it is a possibility that items placed on the right are also likely to be perceived as something ‘good’ and better than the option presented on the left, given a person is right-handed. Furthermore, Kong (2013) found that right-handers are faster in indicating the valence of words or faces when they were presented on the right then when they were presented on the left, while left-handers had the exact opposite. This also indicates that people associate positive valence with their dominant side. Zhao et al. (2016) studied the impact of the dominant side in selecting faces and also found that right-handed people tended to like the person presented on the right better than the exact same presented on the left, while left-handed people liked to person presented on the left better than the one placed on the right. This further indicates the impact of the dominant side on perceived valance.

Following a mental representation of items based on their magnitude does not seem directly applicable to sustainable products. Moreover, sustainability is a rather abstract concept and in general sustainable products are not related to magnitude. However, the placement of items on either the ‘good’ dominant side or the ‘bad’ alternative side could be an effective method to increase consumption of any product, including sustainable products. This study will therefore test if the findings of Casasanto (2009), Kong (2013) and Zhao et al. (2016) can be applied in a consumer behavior setting, in particular in nudging consumers to choose the more sustainable option in a customer customization setting. This leads to the following hypothesis:

Hypothesis 2: *Right-handed people choose the sustainable option more often when it is placed on the right side.*

The focus of hypothesis 2 is on right-handed people as the majority of the people is right-handed. As the split between left- and right-handedness is not the only thing studied in this research the sample would not be generalizable for the population if equal groups of right and left-handed people would be created. Therefore, it is decided to focus the hypothesis on the vast majority: people that are right-handed. When collecting data there will not be any pre-selection based on right- or left-handedness. However, it will be included in the questionnaire and used as a control variable in the analysis.

2.5 The conceptual model

The relationship under discussion is the relation between the design of the choice architecture of a customer customization tool and the consumer's choice for more sustainable components in the customer customization setting. As described in the previous sections, two aspects of the choice architecture of a customer customization tool will be examined: (1) the influence of selecting the more sustainable option by default and (2) the influence of placing the more sustainable option on consumer's dominant side. These relations are presented in the conceptual model in Figure 1.

Figure 1: Conceptual Model

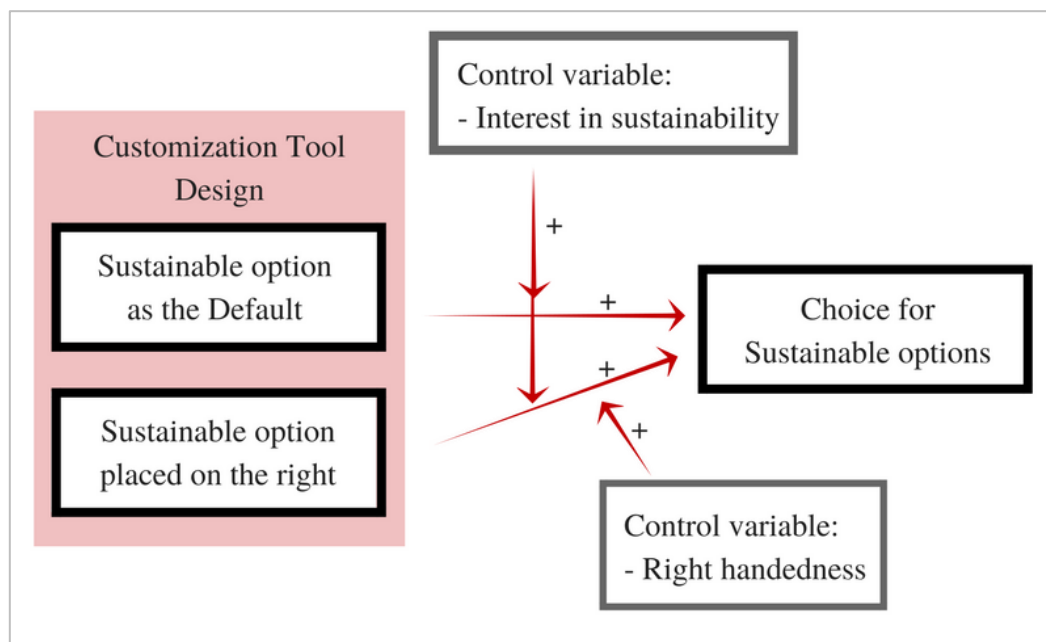


Figure 1 presents the two aspects under examination as two causal relationships. It is expected that both selecting the more sustainable option by default and placing the sustainable option on the dominant side of consumers, will individually have a positive effect on the sustainable option being chosen. As described in the previous sections, the default option has already been researched and proved to be powerful in a high variety of contexts. Therefore, there is a great body of literature that gives indication to expect that the default will prove its power again in the sustainability context. The placement on the dominant side theory is to the best of knowledge not been tested in a buying situation before, it is therefore interesting to see if this theory will hold in this setting and can be used to influence buying situations.

As discussed, for both relations a positive effect on the choice for the more sustainable option is expected. Combining the effects in one manipulation would create a situation where the choice architecture includes both selecting the sustainable option by default and placing the sustainable option on the right. It is expected that including both options would therefore create a synergizing effect, this leads to the following hypothesis.

Hypothesis 3: *The combination of selecting the sustainable option by default and placing the sustainable option on the right has a synergizing effect on the choice for the sustainable option.*

Figure 1 presents the two main control variables: right-handedness and general interest in sustainability. The first one is needed to actually figure out which side is the dominant side of a participant and correctly test hypothesis 2. The second control variable that is presented in the conceptual model is the general interest in sustainability, which is expected to moderate both causal relations. When someone is already interested in sustainability, choosing the sustainable option will already be on top of mind in the decision process. Therefore, it is expected that general interest in sustainability increases the influence of the two nudging methods as it will be in line with consumers regular thinking process.

Hypothesis 4: *General interest in sustainability positively moderates the effect of both the use of the sustainable option as the default and placing the sustainable option on the right.*

3. Methodology

In this chapter the method of research for the current study will be discussed in detail. Firstly, the method will be introduced, then the sample and method of data collection will be described. This is followed by a description of the content used to measure the proposed relations. Furthermore, the data analysis procedure will be explained and this chapter concludes with the limitations and ethical considerations.

3.1 Method

The goal of this study was to find out if it is possible to nudge consumers into choosing the sustainable option more often in the context of customer customization. To test the hypotheses purposed in chapter 2 a situation was needed which allowed to analyze the effect of selecting the sustainable option by default versus no default and a design with the sustainable option placed on the right versus random placement. Therefore, a method was needed that allowed to test each of the causal relationships and analyze the differences in consumer behavior of the participants in each of these situations. The research method that fits these requirements best is an experimental research method (Field, 2013).

The buyer situation under discussion is customer customization. This recent trend has got more attention due to the extensive possibilities of online customization tools in which consumers can customize their own personalized products (Spaulding & Perry, 2013). This study should therefore replicate an online customization tool that consumers would use in reality and have different versions to analyze the different outcomes of each of the designs. The most realistic option was to actually have multiple versions of a real customization tool online. However, this would require a collaboration with a large company that already uses a customization tool. Unfortunately, within the timespan of this study it was not possible to establish such a collaboration. Furthermore, such a situation would strongly have limited the insight in participants per situation which would minimize the opportunities for analysis.

Therefore, the method used was an online experiment. Four different versions were created; each with the same set of questions to be used as control variables and a recreated customization tool designed to fit each of the following situations:

1. The situation with the sustainable option selected by default.
2. The situation with the placement of the sustainable option on the right.
3. The situation that combines both manipulations.

4. The situation that has no manipulation.

The first three situations represent the first three hypotheses presented in chapter 2, the fourth hypothesis is tested with control variables and therefore not an experimental situation. The fourth situation is the natural situation without any manipulation, this provides the opportunity to compare the groups with a manipulation to the natural situation. Therefore, it was possible to determine if the groups differ significantly and in which of the groups the sustainable option was chosen most often and is therefore the most effective to nudge consumers into consuming more sustainably.

3.2 Sample

As the chosen method was an experiment, it is necessary to achieve homogeneous groups to be able to do the statistical analysis and draw valid conclusions from comparing the different situations. As there was no panel available, the best way to assure homogeneity is for the researcher to collect participants in a specific place. Therefore, the sample was drawn out of students from the Radboud University. There are two methods of data collection, manipulating the independent variable using different or the same entities (Field, 2013). There is no desire to see differences over time, therefore using the same entities for each of the manipulations is not necessary nor desirable for this study and different entities were used. This setting is called an independent experimental design (Field, 2013).

Social media was used to spread the online experiment in the form of a questionnaire to students of the Radboud University. Furthermore, each of the faculty buildings of the Radboud University in Nijmegen were visited by the researcher to collect respondents in person. Students could fill in the questionnaire on a laptop or tablet provided by the researcher or open the link via USB sticks on their own laptops or type over the link from small pieces of the paper to fill in the questionnaire on their smartphone. Students that were present in the common areas were approached and asked to fill in the questionnaire at that moment by providing the devices. When they indicated that they did not have time to participate, a piece of paper with the link on it was given so they could fill it in later. Furthermore, the researcher also gave away pieces of paper with the link to students waiting at the university's bus stop. As an extra motivation small chocolate bars were handed out to all participants.

Unsystematic variation was minimized by collecting data only from students at Radboud University and while they were present in common areas at Radboud University. Therefore, the participants themselves and the context in which they are asked to participate were strongly

aligned. This method cannot avoid creating some unsystematic variation due to the different types of the day in which the participants participate and the way in which they were recruited (Field, 2013). However, in terms of the nature of this experiment this is not expected to have much influence on the outcome.

Each group in an experiment should have at least 30 participants to perform the required statistical analyzes (Hair et al., 2014) and preferably a minimum of 50 per group (Field, 2013). Therefore, the minimum sample for this study with four groups was 120 valid participants and the aim was to collect 200 participants. The combination of methods resulted in 223 participants, after reduction the number remained at 216 valid participants.

3.3 Content description

The experiment had to recreate a customer customization setting which is meaningful for the participants –students– and fits with each of the manipulations. As described the customer customization setting will be recreated and is therefore a fictive situation. The most popular customized products based on sales figures are t-shirts, phone cases, greeting cards and mugs (Mylchreest, 2017). However, these products are limited in options as they just provide the opportunity to add a personal photo and text and therefore do not hold options that can be more or less sustainable. Therefore, it is necessary to consider more complex products that consist of more distinctive parts that actually hold differences in sustainability in the way the raw materials of each of the options are produced or transported. Cars are a well-known example, when you buy a new car you can choose the exact color, rims, interior and features that you want. However, the target group of this study are students at the Radboud University in the Netherlands, who usually do not have experience in purchasing a new car. A product is needed that fits the case and is familiar among students. Therefore, customized sneakers were considered. This is a product which is familiar among students –they might have used the exact customization tool before–, the material options differ in sustainability and the color of the shoes could be used for the mental representation. However, this option was declined as a successful fit between the sustainability of the options (materials) and the possibilities to create the mental representation (colors) could not be found. This option would thus not have been able to answer the research question.

Therefore, it was decided to use a familiar product that can consist of components that differ in sustainability, but that is not used commonly for customization at this moment. Moreover, the online questionnaire could now be presented as a test to measure if there is

interest for a customization version of the product. Finally, the product chosen for this study is shampoo. Participants were asked to compose their own shampoo by choosing ingredients from sets of options and finally choosing the packaging. As Huffman and Kahn (1998) stated that consumers prefer to pick elements out of a set of options with similar attributes and most customization tools today follow this method as well, the options were presented in sets with similar benefits. Therefore, each ingredient was presented with an image and a description of a few words stating the benefits it provides. By reading the short description and looking at the image, the participant could identify the sustainable option. Furthermore, there were no highly visible tags included which suggest an option is a more sustainable choice as this would have interfered with the purpose of this study: to investigate the effects of nudging on sustainable consumer choices. The comparison of the effect of nudging in the sustainability context and the inclusion of tags that state that options are sustainable are beyond the scope of this study. For the same reason there were no price indications for the presented components.

3.3.1 Manipulation design

This section provides the motivation for the manipulation design presented in Appendix 1. As the effect of placing an option left or right was tested, it was necessary to present the different options horizontally. This had some practical implications; the number of options you can present next to each other on a phone screen is limited. Therefore, the maximum number of options that can be presented in each set was three. Three is also desired over two options as this leaves room for an option that is in the middle and therefore not related to a dominant side. When only two options would be presented the ‘neutral’ manipulation would automatically have the sustainable option on the negative side, which could potentially have biased the results. Furthermore, in each set of three there could only be one sustainable option as there is only one position on the right. Therefore, the following sets of ingredients were created out of which the participant had to select one each time.

1. Mineral oil – Parabens – Argan oil. This set accompanies ingredients that deliver a basic care. Mineral oil is said to protect the hair and make it shine, it has been argued to suffocate the scalp but the quality used today is considered safe (Wolf et al., 2016). However, mineral oil is a chemical substance that includes the mineral petroleum. Therefore, it includes an unrenewable raw material which makes mineral oil unsustainable (Dubinski, 2013). Parabens are often included in shampoo for their strong antibacterial properties. However, parabens are chemical and when they are washed down the drain and enter the environment in large quantities they negatively influence nature (Li et al., 2015). Furthermore, parabens are

argued to have negative effects on the health of people as well, although there is no strong evidence for these statements. Argan oil is a natural product that is stated to increase the strength of the hair and helps prevent split ends (Del Campo, Zhang & Wakeford, 2017). Argan oil is therefore the sustainable option in the first set.

2. Keratin – Collagen – Aloe Vera. This set of ingredients is focused on creating volume and the prevention of hair loss. Both keratin and collagen are proteins that naturally appear in our bodies, when used in cosmetics it is derived from animals. Keratin is said to create volume and stimulate hair growth, collagen is said to create volume and strong hair. Aloe Vera is a natural product derived from the aloe plant that can prevent hair loss (Lourith and Kanlayavattanakul, 2013). As natural products from plants are more sustainable than animal derived products, Aloe Vera is thus the more sustainable option in this set of ingredients.

3. Lavender – Summer – Intense. This set of ingredients represent the smell of the shampoo. Lavender has a relaxing scent which reduces stress and can therefore help fight hair loss (Hay, Jamieson & Ormerod, 1998). ‘Summer vibes’ and ‘Intense’ are the names of two fictive mixtures of fragrances. The impact of fragrances on the environment is relatively small, but the use of unsustainable raw materials and the chemical processes needed does make a composed fragrance less sustainable than using natural ingredients only (Kulke, 2015). As lavender is a natural product, it is the more sustainable option in this set of ingredients.

4. Regular shampoo – Dry shampoo. This set determines the type of shampoo. Regular shampoo is used with water and therefore in the shower. In general reducing the time we spend in the shower would benefit the environment a lot, therefore dry shampoo is more sustainable (Unilever, 2018). Furthermore, regular shampoo includes chemical ingredients to make the shampoo foam. These can be biodegradable versions but can also be surfactants, which can pollute soil and water (Popenda & Włodarczyk-Makula, 2015). Therefore, dry shampoo is the sustainable option in this set.

5. Shower foam: Travel size – Regular – Bar soap | Dry shampoo: Spray – Powder. The last set out of which the participant has to choose determines the packaging of the shampoo. A point of difficulty was that the packaging is highly different for regular shampoo than it is for dry shampoo. Therefore, the last question the participant had to answer in the experiment part of the questionnaire, was determined by the answer for question four. Dry shampoo is either offered as a spray in an aerosol can or as a powder. Although new technologies are focused in compressing the substance to reduce packaging size and therefore make the cans relatively more sustainable, aerosol cans are still polluting (Unilever, 2018). Therefore, avoiding the cans altogether would be much more sustainable, which is possible by using

powder forms. For the ease of this experiment the packaging of the powder form is stated to be eco-friendly. As there does not exist a third form of dry shampoo this set also has only two options. The non-sustainable packaging options for shower foam are travel sized plastic bottles and regular plastic bottles. The sustainable option for regular shampoo was bar shampoo, which does not need a plastic container as it is not a liquid. Bar shampoo is argued to be one of the most sustainable forms of shampoo, as it can have zero waste when it also has 100 per cent biodegradable ingredients.

3.3.2 Outline of the experimental process

The precise online experiment including the informational texts, the correct formulation and answer possibilities of the questions and the manipulations, are presented in Appendix 1. This section provides the description and argumentation for the chosen outline.

Firstly, the experiment started with an introduction to thank the participant for his/her time, to inform him/her what is expected in this experiment and to ensure the participant that the research will be handled in an ethical matter. Then the first question was if the participant is right- or left-handed. This question was very important as it is a necessary question to answer hypothesis 2. In the unfortunate scenario that participants would not have completed the survey, it is convenient that the most important questions are asked first.

Secondly, the actual experiment followed, the participant had to choose the preferred ingredients, fragrance, form and packaging out of a set of options. The options were presented with an image and a short description by stating a couple of catch words that described the benefits of each ingredient. In the versions that had the sustainable option by default this option was pre-selected in each row. In the versions that had the sustainable option on the dominant side, it was each time presented on the right as the majority of the people is right-handed. In the other manipulations the sustainable option was presented either in the middle or on the left.

Thirdly, the questions on general interest for sustainability followed. To measure general interest in sustainability two scales are used, one focused on the attitude towards sustainability and one focused on actual sustainable behavior. To measure the participants attitude towards sustainability the five point Likert scale –Strongly disagree to Strongly agree– of Bohlen, Schlegelmilch and Diamantopoulos (1993) is used. They selected 20 items to measure attitude towards sustainability, which are divided in four factors. It was not considered necessary to use this entire set to have a relevant control variable, as the broad set of items also focusses on, for example, political preferences related to sustainability which is not directly relevant in the current study. Therefore, only the items that belong to factor four were used in

the questionnaire. This factor was considered the most relevant for the current study as it accompanies the attitude towards the effect that one, as an individual, may have on the environment. To measure sustainable purchase behavior the seven point Likert scale –Strongly disagree to Strongly agree– of Matthes and Wonneberger (2014) is used. This scale was composed from items introduced in two other studies (Roberts, 1996; Shrum, McCarty & Lowrey, 1995) and is proven to be valid.

Furthermore, after the two sets of scales to measure sustainability, two set of scales on customization followed. The first is the ‘delta benefit’ scale, a seven point Likert scale – Strongly disagree to Strongly agree– by Frank, Keinz and Steger (2009). This scale measured the perceived superiority of a customized product over a standard version and thereby the perceived relevance of –in this case– customized shampoo. It was considered to be interesting to combine the perceptions of customization and sustainability, to see if participants feel that customizing a product yourself provides more insight in the sustainability of the components. However, as far as concerned there did not yet exist a scale to exactly measure this phenomenon. Therefore, three items were asked to measure the perceived impact of customization on sustainable choice making. This was asked on a seven point Likert scale, as this is consistent with the previous question and therefore increases the ease by which participants filled in the questionnaire.

Finally, the last part consisted of some demographic questions, in which participants were asked about their: age, gender, level of education, study direction and their native language. As the participants are students gathered at the Radboud University in Nijmegen the level of education was asked in terms of the program students are currently following. This question thus only accompanied the different levels of education offered at Radboud University and the ‘other, namely ...’ category to still make sure everyone is able to fill in the survey. Furthermore, study direction was divided according to the various faculties of Radboud University. As Chae and Hoegg (2013) found a relation between reading from left-to-right or right-to-left and mental representation, native language was included.

The experiment ended with a page indicating that all questions had been answered and to thank the participant for his/her time and effort to help in this study. The order of the questions was chosen because it starts with the most important part, the manipulation. In the unfortunate scenario that a participant would not have finished the questionnaire it is convenient that the most important data was asked first.

3.4 Pre-test

Before collecting the participants a pre-test was done. A group of people gathered through the researcher's private network was asked to fill in the questionnaire and provide feedback on the way they interpreted the questions. The test involved three master students in management, four bachelor students from the faculties of Management (HBO), Biology, Arts and Social sciences (HBO) and a middle aged HBO graduate. The participants were chosen for their various backgrounds, as this enables the researcher to find out if the questions are understandable for students from all faculties. Furthermore, all participants were Dutch and only the master students followed an English program, thus it has also been discussed if the fact that the questionnaire is in English caused any misunderstandings. The discussions with participations led to minor changes in formulation and the inclusion of a short introduction before a set of questions. Two participants stated on beforehand that they did not consider themselves very skilled in the English language. However, none of the participants experienced problems with interpreting the questions and statements.

3.5 Data analysis procedure

The analysis starts with a basic analysis of the data. There is looked at the sample sizes of each group, the number of missings and whether they are missing at random, the distribution and a general analysis of the answers given on each question. Furthermore, it is necessary to have homogeneous groups across the four manipulations to be able to compare the results and draw conclusions. Therefore, Levene's test of equality of error variances is used to check for homogeneousness (Field, 2013). These first steps are necessary to get familiar with the data set and test if it is allowed to use the desired statistical method.

To test the hypotheses, the outcome of the four manipulation groups needed to be compared. The statistical method designed for comparing group means for multiple groups is the ANOVA analysis. For the ANOVA analysis there has to be one dependent metrical variable and one or more independent categorical variables with two or more levels (Field, 2013). The dependent variable is 'the sustainable choice score', the number of times a participant choose the sustainable option. This was not a variable that is asked directly in the research and therefore it needed to be composed out of the results from the experiment. Moreover, the five questions of the experiment result in a figure from 0 to 5 indicating the number of times the sustainable option was chosen, this composed variable is of metric measurement level. The independent

variables are the different manipulative versions that will be compared, this variable is of categorical level. The same analysis can be used to check for the control variables.

Furthermore, if results of the ANOVA are significant a post-hoc analysis should be used to further analyze the differences among groups. For the situations where ANOVA is non-significant, a linear regression analysis has been used to further analyze the differences among groups. To perform a linear regression analysis variables of metric measurement level are required (Field, 2013). Therefore, the categorical variables were dummified before inclusion in the regression model. A split file has been used to control for right-handedness and further examine the differences between participants with different dominant sides.

Finally, some of the results required an individual analysis of relations between specific variables. Therefore, Pearson correlations were used to examine these direct relationships.

3.6 Limitations & ethics

In this section the limitations of the described research method are discussed as well as the way in which ethics have been taken into account. The choice for an online experiment does not allow for full control over all elements that can be of influence, which does is desirable in an experiment. However, the situation that is replicated is online in reality and the lay-out has been recreated as best as possible. The online setting is thus closer to reality as an laboratorial setting would be. To achieve homogenous groups it was necessary to focus on a very specific target group –students of Radboud University in Nijmegen– this can have an impact on the generalizability of the study. However, previous studies on nudging have not reported differences among types of people, the impact on the generalizability is therefore not expected to be high for the topic of this study.

The participants were asked if they want to participate in the research, furthermore it was notified that it was possible for the participant to close the online experiment and therefore step out of the study at any preferred time. Therefore, voluntary participation was assured. As the experiment was online, the participant was not exposed to a physical experimental setting, the questions asked were not psychological challenging nor possibly offensive and the answers the participant gave remained anonymous. Therefore, it was assured that no harm would come to the participant and confidentiality has been taken into account.

Participants were informed about what was expected of them by participating in the study and that their answers will only be used –in an anonymous way– to write a master thesis. It has to be admitted that consumers were not fully informed about the goal of the master thesis

itself. As the participant answered questions about their preferred ingredients for shampoo, but the actual goal was to test whether various designs can nudge consumers into making more sustainable choices. However, this was necessary as this research could not have resulted in valid conclusions if the participants were completely informed about this aspect.

4. Results

In this chapter the results of this study will be presented. Firstly, the general results are discussed, providing an overview of the answers given by the participants per question. Secondly, hypotheses are tested using statistical analysis. Finally, tests that are not directly related to one of the hypotheses, but still provided results worth mentioning are presented.

4.1 Descriptives

In this section the general results are discussed per question. In most tables there is a differentiation between the different versions of the questionnaire to enable comparison of the different manipulative settings. Each version represents the following manipulation:

1. The situation with the sustainable option selected by default.
2. The situation with the placement of the sustainable option on the right.
3. The situation that combines both manipulations.
4. The situation that has no manipulation.

As described, participants were gathered at the Radboud University to ensure homogeneous groups, this has a large impact on the demographics of participants. In Table 1 it is visible that each manipulation has over 50 participants with a total of 216 participants. Bachelor students are a vast majority in this study (71 per cent), which is logical as 65 per cent of all students at Radboud University are bachelor students (Radboud University, 2018). The slightly higher percentage found in this study is probably influenced by the fact that bachelor programs on average have more contact hours than master and PhD programs. Therefore, bachelor students are also the group most likely to be present in general areas on campus. The high number of bachelor students probably influences the rather low mean age (21.5). Half of the participants are following a program at the faculty of management, although management is a large faculty, the number is influenced by the personal network of the researcher within this faculty. Furthermore, the faculty has a large number of open workplaces in which talking is allowed, the students found in these workplaces were most willing to fill in the questionnaire. When this variable is used as control variable in further analyzes it will be recoded in management and non-management students. The majority of the participants has Dutch as native language (81,4 per cent), which matches the fact that 20,5 per cent of the students at Radboud University is an international student (Radboud University, 2017). As expected a vast majority of the participants is right-handed (86,1 per cent).

Table 1: Demographics

	<i>Version 1</i>	<i>Version 2</i>	<i>Version 3</i>	<i>Version 4</i>	<i>Total</i>	<i>%</i>
<i>Total participants</i>	56	55	53	52	216	100
<i>Dominant side</i>						
<i>Right-handed</i>	47	48	44	47	186	86.1
<i>Left-handed</i>	9	7	9	5	30	13.9
<i>Gender</i>						
<i>Male</i>	25	23	25	20	93	43.3
<i>Female</i>	30	32	28	32	122	56.7
<i>Native language</i>						
<i>Dutch</i>	46	47	40	42	175	81.4
<i>Other*</i>	9	8	13	10	40	18.6
<i>Level of education</i>						
<i>Bachelor</i>	40	40	38	34	152	71.0
<i>Master</i>	13	14	9	14	50	23.4
<i>PHD</i>	-	-	1	1	2	0.9
<i>Other*</i>	2	1	4	3	10	4.7
<i>Faculty</i>						
<i>Arts</i>	9	7	8	9	33	15.5
<i>Philosophy, ...</i>	-	-	1	-	1	0.5
<i>Science</i>	6	6	2	6	20	9.9
<i>Medical sciences</i>	2	2	0	1	5	2.3
<i>Social sciences</i>	4	7	8	11	30	14.1
<i>Management</i>	33	31	30	24	118	55.4
<i>Law</i>	0	2	2	1	5	2.3
<i>Age</i>						
<i>Range</i>	18-26	17-27	17-29	16-27	16-29	
<i>Mean</i>	21.45	21.13	21.62	21.71	21.47	

* See appendix 2 for the answers given in the ‘other, namely...’ categories.

In Table 2 the answers of the experiment are presented. In each set of answer possibilities the first option is the sustainable option. For each participant a figure (the sustainable choice score) was calculated for the number of times the sustainable option was chosen in all five questions. The mean of this sustainable choice score within each version is presented at the bottom of the table. As a very large majority choose shower foam and regular shampoo bottles, it was suspected that these high influence questions might bias the sustainable choice score. Therefore, a second sustainable choice score has been calculated in which only the first three questions were used. This changes the range from 0-5 to 0-3, the means of both sustainable choice scores are presented in the last two rows of Table 2. The first sustainable choice score includes all questions asked in the experiment and has a mean of 1.37 [0= no sustainable choices, 5= only sustainable choices]. The mean of the second sustainable choice score is 1.21 [0=no sustainable choices, 3= only sustainable choices]. The change in range therefore causes a difference in interpretation.

Table 2: Experiment

	<i>Version 1</i>	<i>Version 2</i>	<i>Version 3</i>	<i>Version 4</i>	<i>Total</i>	<i>%</i>
<i>Total N. participants</i>	56	55	53	52	216	
<i>Q1 Ingredient 1</i>						
<i>Argan oil</i>	34	29	29	32	124	57.4
<i>Parabens</i>	12	6	5	7	30	13.9
<i>Mineral oil</i>	9	20	19	14	62	28.7
<i>Q2 Ingredient 2</i>						
<i>Aloe vera</i>	21	16	15	24	76	35.2
<i>Collagen</i>	15	19	25	18	77	35.6
<i>Keratin</i>	19	20	13	11	63	29.2
<i>Q3 Fragrance</i>						
<i>Lavender</i>	21	13	17	14	65	30.1
<i>Summer</i>	22	25	23	22	92	42.1
<i>Intense</i>	12	17	13	16	58	26.8
<i>Q4 Form</i>						
<i>Dry shampoo</i>	2	1	2	-	5	2.3
<i>Foam</i>	53	54	51	53	211	97.7
<i>Q5.1 Packaging</i>						
<i>Bar shampoo</i>	3	8	6	12	29	13.7
<i>Regular bottle</i>	49	45	42	38	174	82.5
<i>Travel set</i>	1	1	3	3	8	3.8
<i>Q5.2 Packaging</i>						
<i>Powder jar</i>	2	-	-	-	2	40
<i>Spray can</i>	-	1	2	-	3	60
<i>Mean sustainable choice score (range=0-5)</i>	1.48	1.22	1.26	1.52	1.37	
<i>Mean sustainable choice score 2 (range=0-3)</i>	1.30	1.09	1.15	1.31	1.21	

Finally, four sets of scale items were asked in the questionnaire. All items were included in one factor analysis to see if the proposed factor structure was actually found in the data. The Kaiser-Meyer-Olkin measure of sampling adequacy ($KMO=.829$) and Bartlett's Test of sphericity ($p=.000$) indicate that the data is adequate for factor analysis. The communalities of the variables are sufficient and rather high. One double loader was found for item 1 of the 'Attitude towards sustainable behavior' scale (3.20 & 5.10), given the minimal overlap it has been decided to leave the variable in the factor structure. As expected, four factors were extracted. In tables 3 to 6 the four factors are presented with their items, the mean of each item and the factor loading of each item. Furthermore, a reliability test (Cronbach's alpha) was done for each scale. For a scale to be reliable the Cronbach's alpha should have a value of .7 or higher, as this indicates that the variables indeed measure the same construct (Field, 2013). The Cronbach's alpha is given in the first line of each table between brackets, in the last row the mean score of the composed variable that represents the factor is presented as well.

Table 3: Factor analysis – attitude towards sustainable behavior

<i>Scale items (a=.575)</i>	<i>Mean</i>	<i>Factor loading</i>
1. Everyone is personally responsible for protecting the environment in their everyday life	4.01	.510
2. Each of us, as individuals, can make a contribution to environmental protection	4.26	.696
3. If all of us, individually, made a contribution to environmental protection, it would have a significant effect	4.34	.819
Composed	4.20	

1 = Strongly disagree / 2 = Disagree / 3 = Neither agree nor disagree / 4 = Agree / 5 = Strongly agree

Table 4: Factor analysis – sustainable purchase behavior

<i>Scale items (a=.811)</i>	<i>Mean</i>	<i>Factor loading</i>
1. I make a special effort to buy products in biodegradable packages	3.58	.832
2. I would switch from my usual brand and buy environmentally safe cleaning products, even if I had to give up some cleaning effectiveness	3.93	.687
3. I have switched products for ecological reasons	3.60	.819
4. When I have a choice between two equal products, I purchase the one less harmful to the environment	5.11	.618
Composed	3.69	

1 = Strongly disagree / 2 = Disagree / 3 = Somewhat disagree / 4 = Neither agree nor disagree / 5 = Somewhat agree / 6 = Agree / 7 = Strongly agree

Table 3 presents the scale about participant's attitude towards sustainability, which is measured with a five point Likert scale. The Cronbach's Alpha could not be improved and also dropped further when the small double loader (item 1) would be dropped. The Cronbach's Alpha for this set is low, indicating that the items might not be measuring the same concept. Therefore, this scale cannot be used in further analysis.

Table 4 presents the scale about the sustainable purchase behavior of participants, which is measured with a seven point Likert scale. The original Cronbach's Alpha ($a = .789$) could be improved by deleting item four. As this item also had the lowest factor loading and a deviant mean score, it has been deleted and it is presented in grey in Table 4. As this set does have a sufficiently high Cronbach's alpha this scale is applicable to use as composed variable in further analysis.

Table 5: Factor analysis – Likability of customization

<i>Scale items (a=.924)</i>	<i>Mean</i>	<i>Factor loading</i>
<i>Compared to standard shampoo, customized shampoo would ...:</i>		
1. Better satisfy my requirements	5.07	.848
2. Better meet my personal preferences	5.33	.857
3. More likely be the best solution for me	4.89	.881
4. More likely be what I really want	5.10	.905
5. More likely fit my image of a perfect shampoo	5.12	.830
Composed	5.10	
<i>1 = Strongly disagree / 2 = Disagree / 3 = Somewhat disagree / 4 = Neither agree nor disagree / 5 = Somewhat agree / 6 = Agree / 7 = Strongly agree</i>		

Table 6: Factor analysis – Sustainable behavior in customization

<i>Scale items (a=.753)</i>	<i>Mean</i>	<i>Factor loading</i>
1. Customization provides more insights in the sustainability of the different components of a product	4.98	.786
2. Customized products could increase sustainable purchase behavior	4.97	.788
3. I am more likely to choose sustainable components and therefore create a more sustainable product when I customize the product myself	5.09	.770
Composed	5.01	
<i>1 = Strongly disagree / 2 = Disagree / 3 = Somewhat disagree / 4 = Neither agree nor disagree / 5 = Somewhat agree / 6 = Agree / 7 = Strongly agree</i>		

Table 5 presents the scale on participant's likability of customer customization in general, which is measured with a seven point Likert scale. The Cronbach's Alpha is high and could not be further improved. This scale could therefore be used in further analysis.

Table 6 presents the scale on participant's opinion about the relation between customization and insight in the sustainable components of a product. The Cronbach's alpha of this scale is sufficient and could not be improved. This scale could therefore be used in further analysis.

4.2 The test of the hypotheses

In this section the hypotheses will be tested. As the results of the first hypotheses influence the later hypotheses, they will be discussed in chronological order with both the results and acceptance or rejection of the hypothesis. The four hypotheses of this study are:

H1. More people choose the sustainable option when it is presented as the default.

- H2. Right-handed people choose the sustainable option more often when it is placed on the right side.
- H3. The combination of selecting the sustainable option by default and placing the sustainable option on the right has a synergizing effect on the choice for the sustainable option.
- H4. General interest in sustainability positively moderates the effect of both the use of the sustainable option as the default and placing the sustainable option on the right.

To answer the hypotheses the version is compared with the sustainable choice score. For this analysis equal groups are a requirement. In Table 1 the demographics are visible per group and appear to be equally distributed. Furthermore, Levene's test of homogeneity of variances was non-significant ($F=.35, p=.790$) which means that the groups are indeed equal and the ANOVA analysis is allowed. The ANOVA ($F(3,212) = 1.19, p=.314$) was non-significant, indicating that the manipulation a participant had did not have an impact on the sustainable choice score.

A linear regression was conducted to examine the possibility that only one of the manipulations is significantly different from the neutral setting (version 4). The VIF values were between 1 and 2 which is below critical value 10 this indicates that there is no multicollinearity and linear regression is allowed. The explained variance of this model was very low ($R^2=.003$). Firstly, the use of the sustainable option as a default (version 1) was not significantly different from the neutral version ($t= -.19, p=.850$). Secondly, the placement of the sustainable option on consumers dominant side (version 2) was also not significantly different from the neutral version ($t= -1.53, p=.129$). Finally, the combination of the default and right placement (version 3) was also not significantly different from the neutral version ($t= -1.18, p= .202$).

The same series of tests were conducted using the second sustainable choice score, which only includes the first three questions of the experiment. Levene's test of homogeneity of variances was non-significant ($F=.41, p=.746$), indicating that groups are equal and the use of the ANOVA analysis is allowed. The ANOVA was again non-significant ($F(3,212)=.91, p=.440$). Therefore, the second sustainable choice score did not improve the results. Furthermore, the linear regression with the second sustainable choice score ($R^2= -.001$) did not improve the results either.

After conducting these tests it has to be concluded that no significant results have been found in support of hypothesis 1. Therefore, hypothesis 1 is rejected, selecting the sustainable option by default does not increase consumer's choice for the sustainable option.

For hypothesis 2 more tests are conducted to control for right-handedness. The direct influence of the variable right- versus left-handedness on the sustainable choice score was tested by conducting an ANOVA. The Levene's test of homogeneity of variances is significant ($F=9.28, p=.003$), indicating groups are not equal. This can be expected as group sizes of right- and left-handed participants are very different. The ANOVA was conducted using the Welch statistic to control for the fact that the data used for this test is not homoscedastic. This test indicates a significant relation between right- and left-handedness and the sustainable choice score (*Welch's* $F(1, 52.30) = 4.30, p=.043$).

A split file was created to compare the relation between the version and the sustainable choice score separately for right- and left-handed participants. Levene's test of homogeneity of variances was non-significant for both right-handed ($F=1.31, p=.255$) and left-handed participants ($F=2.00, p=.169$), which means that the groups are equal and the ANOVA analysis is allowed. The results of this ANOVA are presented in Table 7.

The results presented in Table 7 indicate that no significant relation between the manipulation and the sustainable choice score has been found in either of the two groups. This test was re-conducted with the second composed sustainable choice score, which did not improve the results either (Right: $F(3,128)=1.14, p=.334$, Left: $F(2,36)=.48, p=.699$).

Table 7: ANOVA - split file
The influence of the manipulation on the sustainable choice score

		<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
<i>Right-handed</i>	Between groups	3	4.38	1.49	1.31	.273
	Within groups	182	202.75	1.11		
	Total	185	207.12			
<i>Left-handed</i>	Between groups	3	1.06	.35	.67	.578
	Within groups	26	13.64	.53		
	Total	29	14.70			

Dependent variable: Sustainable choice score, Factor: version

$p < .05$

Furthermore, the data was examined per version by conducting a linear regression using the split file, presented in Table 8. The VIF values are between 1 and 2 which is below the critical value of 10 which indicates that there is no multi-collinearity and linear regression is allowed. The residual plots cannot be interpreted due to the dummies and the fact that each respondent only had one of the four versions. The results indicate that even when controlled for participant's dominant side, none of the versions cause a significantly different sustainable choice score then the neutral version.

Table 8: Linear regression - split file
The influence of the version on the sustainable choice score

		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
<i>Total</i>	Version 1	-.04	.20	-.02	-.19	.850
	Version 2	-.30	.20	-.13	-1.53	.129
	Version 3	-.26	.20	-.11	-1.28	.202
<i>Right-handed</i>	Version 1	.06	.22	.03	.29	.770
	Version 2	-.28	.22	-.12	-1.30	.195
	Version 3	-.26	.22	-.10	-1.17	.243
<i>Left-handed</i>	Version 1	-.51	.40	-.34	-1.27	.217
	Version 2	-.40	.42	-.24	-.94	.354
	Version 3	-.18	.40	-.12	-.44	.664

Dependent variable: Sustainable choice score, Reference category: version 4

Note: $R^2 = .005$ for right-handed, $R^2 = -.035$ for left-handed and $R^2 = .003$ for total data file

Note: $p < .05$

After conducting these tests it has to be concluded that no significant results have been found in support of hypothesis 2. Therefore, hypothesis 2 is rejected, placing the sustainable option on consumer's dominant side does not increase the choice for the sustainable option.

Hypothesis 3 purposes a synergizing effect when combining the two proposed manipulations, which has been done in version 3. In the results presented above it is clear that there are no significant differences between any of the manipulative versions on the sustainable choice score. Therefore, it has to be concluded that hypothesis 3 is rejected, selecting the sustainable option by default and placing it on the dominant side of consumers does not have a synergizing effect on the choice for the sustainable option.

Hypothesis 4 suggests a moderator effect of general sustainable interest on the relation of both nudges on the sustainable choice score. As the results above indicate that there is no significant relation between the different manipulations and the sustainable choice score, it is also impossible to find the moderator effect suggested in hypothesis 4. However, it is possible to test the direct effect of participant's interest in sustainability on the sustainable choice score.

As presented in section 4.1, one of the two scales that were used to measure general interest in sustainability does not have a sufficient reliability. Therefore, only the scale on sustainable purchase behavior is used in the following tests. A linear regression was conducted to test the effect of sustainable purchase behavior on the sustainable choice score. The test was conducted twice, once with the entire data file and once with the split file (right- versus left-handedness), the results of both tests are presented in Table 9. The total effect of sustainable

purchase behavior on the sustainable choice score is significant participants ($t= 6.29, p=.000$). The split file indicates that the effect of sustainable purchase behavior remains significant for right-handed participants ($t= 5.75, p=.000$), but is only significant at a 10 per cent significance level for left-handed participants ($t= 1.85, p=.075$).

Table 9: Linear regression – total + split file
The influence of sustainable purchase behavior on the sustainable choice score

		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
<i>Total</i>	Sustainable purchase behavior	.29	.05	.40	6.29	.000
<i>Right-handed</i>	Sustainable purchase behavior	.30	.05	.39	5.75	.000
<i>Left-handed</i>	Sustainable purchase behavior	.19	.10	.33	1.85	.075

Dependent variable: Sustainable choice score

Note: $R^2=.128$ for right-handed, $R^2=.028$ for left-handed and $R^2=.129$ for the total data file

Note: $p < .05$

To further examine the relation between right- versus left-handedness, sustainable purchase behavior and the sustainable choice score the correlations among these variables are analyzed. There is a significant correlation between right- versus left-handedness and sustainable purchase behavior ($r=-.23, p=.001$). There is also a significant correlation between sustainable purchase behavior and the sustainable choice score ($r=.37, p=.000$). But there is no direct relation between right- versus left-handedness and the sustainable choice score ($r=-.11, p=.118$).

The results lead to the conclusion that hypothesis 4 can be partially accepted. There was no relation between the manipulative versions (the nudges) and the sustainable choice score, thus the suggested moderator effect of sustainable interest cannot be found. However, there does exist a direct effect of the variable used to measure general interest in sustainability (sustainable purchase behavior) on the sustainable choice score.

4.3 Post-hoc

In this section the tests that have been done which are not directly related to one of the hypothesis are presented. These are included as they might be helpful in explaining the previously found results or might reveal other interesting relations.

In Table 10 the demographics of participants have been used in the regression analysis, again both with the total data file and the split file. The VIF values are between 1 and 2 which is below the critical value of 10 which indicates that there is no multi-collinearity. The residual plots do not show a clear pattern, indicating that linearity may be assumed. Therefore, the most

important assumptions have been met and linear regression is allowed. The results of the total data file indicate a significant relation between participant's native language (Dutch versus other) and the sustainable choice score ($t=2.46$, $p=.015$). However, when examining this relation in the split file, the relation only remains significant for right-handed participants (right: $t=2.18$, $p=.015$, left: $t=1.56$, $p=.133$). The results of the total data file also indicate a significant relation between the faculty the participants are studying in (Management vs 'other') and the sustainable choice score ($t=-2.07$, $p=.040$). However, this relation is only significant at a 10 per cent significance level for right-handed participants ($t=-1.85$, $p=.065$) and non-significant for left-handed participants ($t=1.14$, $p=.889$). The gender of participants is not a significant predictor of the sustainable choice score in either of the data sets.

Table 10: Linear regression – total + split file
The influence of demographics on the sustainable choice score

		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
<i>Total</i>	Dutch vs 'other'	.44	.18	.17	2.46	.015
	Male vs female	.22	.14	.11	1.57	.118
	Management vs 'other'	-.29	.14	-.14	-2.07	.040
<i>Right-handed</i>	Dutch vs 'other'	.43	.20	.16	2.18	.031
	Male vs female	.20	.16	.09	1.26	.208
	Management vs 'other'	-.29	.16	-.14	-1.85	.065
<i>Left-handed</i>	Dutch vs 'other'	.57	.37	.31	1.55	.133
	Male vs female	.23	.27	.16	.85	.402
	Management vs 'other'	-.05	.33	-.03	-.14	.889

Dependent variable: Sustainable choice score

Note: $R^2=.052$ for right-handed, $R^2=.048$ for left-handed and $R^2=.064$ for the total data file

Note: $p < .05$

To see if the two other scales 'likability of customization' and 'sustainability in customization' have an impact on the sustainable choice score, a linear regression is conducted and presented in Table 11. The VIF values are between 1 and 2, which is below the critical value of 10, which indicates that there is no multi-collinearity. The residual plots do not show a clear pattern, indicating that linearity may be assumed. Therefore, the most important assumptions have been met and linear regression is allowed. The likability of customization does not have a significant impact on the sustainable choice score ($t=-.19$, $p=.850$). The extent to which participants believes customization could lead to more sustainable choices does have a significant impact on the sustainable choice score ($t=3.06$, $p=.003$). However, this significant effect only holds for right-handed participants in the split file regression (right: $t=1.97$, $p=.003$, left: $t=.57$, $p=.575$).

Table 11: Linear regression – total + split file
The influence of likability of customization & Sustainable behavior in customization on the sustainable choice score.

		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
<i>Total</i>	Likability customization	-.01	.06	-.01	-.19	.850
	Sustainable behavior in customization	.21	.07	.28	3.06	.003
<i>Right-handed</i>	Likability customization	.00	.07	.00	.05	.958
	Sustainable behavior in customization	.23	.08	.23	1.97	.003
<i>Left-handed</i>	Likability customization	-.08	.12	-.15	-.66	.514
	Sustainable behavior in customization	.07	.13	.13	.57	.575

Dependent variable: Sustainable choice score

Note: $R^2=.041$ for right-handed, $R^2= -.054$ for left-handed and $R^2=.036$ for total data file

Note: $p < .05$

To analyze the explained variance of the model, another regression analysis was conducted including all variables that had a significant effect on the sustainable choice score in previous analyses, which is presented in Table 12. The VIF values are between 1 and 2 which is below the critical value of 10 which indicates that there is no multi-collinearity. The residual plots do not show a clear pattern, indicating that linearity may be assumed. Therefore, the most important assumptions have been met and linear regression is allowed. As right- versus left-handedness had an effect on the sustainable choice score, this variable is not only used to split the file but also included as an independent variable in the total file. This combination of variables resulted in the highest explained variance found in this study so far ($R^2=.163$). Consistent with previous results, the relations found in the total data set remain significant for right-handed participants but not for left-handed participants.

Although each variable was significant in a previous analysis, only native language (Dutch versus other) and sustainable purchase behavior remain significant predictors of the sustainable choice score. The correlations of these three variables have been analyzed to control if native language might appear significant due to an existing correlation with sustainable purchase behavior. Native language only correlates with the sustainable choice score itself ($r=.20$, $p=.003$). Therefore, this effect is not caused by a relation with sustainable purchase behavior. In section 4.2 the correlation between right- versus left-handedness, sustainable purchase behavior and the sustainable choice score was already examined. This indicated that right- versus left-handedness only correlated with sustainable purchase behavior, but not with the sustainable choice score itself, which explains the direct relation found in the ANOVA. The

same analysis was done to examine why the remaining variables in Table 12 are non-significant while they were significant in prior analysis. Sustainable purchase behavior and the sustainable choice score are significantly correlated ($r=.37, p=.000$). The faculty the participants study in (management vs other) is significantly correlated to both sustainable purchase behavior ($r=-.28, p=.000$) and the sustainable choice score ($r=.20, p=.003$). Sustainable behavior in customization is also significantly correlated to both sustainable purchase behavior ($r=.38, p=.000$) and the sustainable choice score ($r=.21, p=.002$). Therefore, the variables that are correlated with sustainable purchase behavior lose their significant effect on the sustainable choice score when they are combined in one regression with sustainable purchase behavior.

Table 12: Linear regression – total + split file
Combined influence of variables that were significant in previous tests on the sustainable choice score

		<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
<i>Total</i>	Dutch vs ‘other’	.37	.17	.14	2.19	.029
	Management vs ‘other’	-.13	.14	-.06	-.92	.357
	Sustainable purchase behavior	.26	.06	.31	4.41	.000
	Sustainable behavior in customization	.07	.06	.08	1.13	.260
	Right- vs left-handedness	-.09	.19	-.03	-.44	.659
<i>Right-handed</i>	Dutch vs ‘other’	.38	.18	.14	2.03	.044
	Management vs ‘other’	-.11	.15	-.05	-.72	.470
	Sustainable purchase behavior	.27	.06	.22	4.24	.000
	Sustainable behavior in customization	.10	.07	.10	1.41	.160
<i>Left-handed</i>	Dutch vs ‘other’	.40	.40	.22	1.00	.326
	Management vs ‘other’	-.10	.32	-.06	-.31	.763
	Sustainable purchase behavior	.17	.14	.29	1.20	.242
	Sustainable behavior in customization	-.06	.13	-.10	-.43	.672

Dependent variable: Sustainable choice score

Note: $R^2=.162$ for right-handed, $R^2=.040$ for left-handed and $R^2=.163$ for the total data file

Note: $p < .05$

To further examine the relations found the descriptives of the demographic variables were examined. Dutch participants made less sustainable choices ($M(175)=1.27$) then participants with another native language ($M(40)=1.80$). Participants from the management faculty had a lower score on sustainable purchase behavior ($M(118)=3.72$) and made less sustainable choices ($M(118)=1.18$) then participants from other faculties did (sustainable purchase behavior: $M(95)=4.43$, sustainable choice score $M(95)=1.59$).

5. Conclusion, discussion & recommendations

In this chapter, the results presented in chapter 4 will be discussed. Firstly, the conclusions will be presented, including an overview of the hypotheses, the most important results and the answer on the research question. Secondly, the discussion in which the results are related to theory in an attempt to find an explanation for the results that occurred. This chapter will conclude with the recommendations, which are divided in directions for further research and managerial implications.

5.1 Conclusions

The research question of this study is: *‘How should the choice architecture of a customer customization tool be designed to nudge consumers into choosing the sustainable option more frequently?’* To specify ‘choice architecture’, the two designs that fit the two nudges used in this study are presented in the following two sub-questions.

- A.** *Do more people choose the more sustainable option when it is presented as the default?*
- B.** *Do more people choose the more sustainable option when it is placed on their dominant side?*

To answer the sub-questions and the research question, four hypotheses were tested. These are presented in Table 13 including whether they are confirmed or rejected.

Table 13: Overview of the hypotheses tested

H1. More people choose the sustainable option when it is presented as the default.	Rejected
H2. Right-handed people choose the sustainable option more often when it is placed on the right side.	Rejected
H3. The combination of selecting the sustainable option by default and placing the sustainable option on the right has a synergizing effect on the choice for the sustainable option.	Rejected
H4. General interest in sustainability positively moderates the effect of both the use of the sustainable option as the default and placing the sustainable option on the right.	Partly confirmed

The results provided no support for the first three hypotheses, since none of the manipulative versions were significantly different from the other versions. The numeric results, presented in Table 2, even indicated that the control group (version 4) had the highest mean sustainable choice score. Therefore, the conclusion has to be made that both sub-questions could not be confirmed. People do not choose the more sustainable option more often when it is the default, nor when it is placed on their dominant side, nor when it is both the default and placed on the dominant side. The last hypothesis could not be confirmed as it suggests a moderator effect of ‘interest in sustainability’ on the relation between both nudges and ‘the sustainable choice score’. However, the direct effect of ‘interest in sustainability’ on ‘the sustainable choice score’ was significant. Therefore, it can be concluded that people who are generally interested in sustainability choose the more sustainable options more often. Therefore, hypothesis 4 is partly confirmed.

Two scales were used to measure sustainable interest: the set of variables belonging to the factor ‘attitude towards sustainability’ (Bohlen, Schlegelmilch & Diamantopoulos, 1993) and the set of variables belonging to the ‘sustainable purchase behavior’ scale by Matthes and Wonneberger (2014), which was composed from items introduced in two other studies (Roberts, 1996; Shrum, McCarty & Lowrey, 1995). Although the ‘attitude towards sustainability’ scale proved to be valid in other studies, the Cronbach’s alpha ($\alpha=.575$) indicated that the scale was not reliable and thus could not be used in this particular study. Therefore, only the ‘sustainable purchase behavior’ scale ($\alpha=.811$) could be used to measure general interest in sustainability. The items had a mean score between ‘somewhat disagree’ and ‘neither disagree nor agree’, indicating that the participant on average does not purchase very sustainable. The deleted item – ‘When I have a choice between two equal products, I purchase the one less harmful to the environment’ – had a mean score of ‘somewhat agree’. This indicates that participants at the moment do not put in a lot of effort to purchase sustainable, but do intent to choose sustainable when they are confronted with two options that are equal on all other aspects.

The ‘likability of customization’ scale by Frank, Keinz and Steger (2009) proved to be very reliable ($\alpha=.924$). Furthermore, the scale which was composed by the researcher herself on the extent to which customization provides insight in the sustainability of components, also proved to be reliable ($\alpha=.753$). On both scales the mean score was ‘somewhat agree’, indicating that participants feel that customized products are somewhat superior over regular products and that they somewhat agree that customization provides insight in the sustainability of components and could thus increase sustainable behavior.

Besides the manipulative versions and the sustainable purchase behavior scale, the demographic variables and the other scales were also used in regression analysis or ANOVA to test their effect on the sustainable choice score. The following items provided significant results:

- Sustainable purchase behavior
- Native language (used as: Dutch versus ‘other’)
- Faculty (used as: Management versus ‘other’)
- Sustainable behavior in customization
- Right- versus left-handedness

These significant variables were combined in one linear regression analysis in Table 12, in which only ‘native language’ and ‘sustainable purchase behavior’ remained significant. When examining the correlations, it appeared that the variables were all correlated with ‘sustainable purchase behavior’, except for ‘native language’. Furthermore, the correlation each variable has with ‘sustainable purchase behavior’ is stronger than each one has with the sustainable choice score. Furthermore, the variable ‘right- versus left-handedness’ is not correlated with the sustainable choice score at all. More in depth, the results indicate that right-handed participants score significantly higher on ‘the sustainable choice score’.

This indicates that variables only appeared to be significant indicators of ‘the sustainable choice score’ due to the relation they had with ‘sustainable purchase behavior’. This could be explained by the theory that participants who already indicate to purchase sustainably are more intended to choose the sustainable option more often in this experiment. This could also explain the consistent pattern that appeared for most variables, relations that prove to be significant for the total data file only remained significant for right-handed participants.

The descriptives of the significant relations of demographic variables indicate the following. Management students scored lower on their sustainable purchase behavior and made less sustainable choices when compared with participants from other faculties. Furthermore, Dutch participants choose less sustainable components than participants with another native language, although their current sustainable purchase behavior did not differ. This indicates that the specific content of this experiment might have caused the participants with another native language to choose more sustainable. Possibly they might just prefer more natural components in their beauty products, which could be explained by their different cultural backgrounds.

Answer on the research question

The research question of this study was *'How should the choice architecture of a customer customization tool be designed to nudge consumers into choosing the sustainable option more frequently?'*. The results of this study indicate that selecting the sustainable option by default has no effect on the sustainable choices of consumers. Furthermore, the results of this study indicate that placing the sustainable option on the dominant side of consumers does not have an effect on the sustainable choices of consumers either.

The results of this study indicate that general interest in sustainability has a significant impact on the choice for the sustainable option. Although it is not a form of nudging, it can be concluded that the fact that an option is more sustainable should be mentioned when presenting the options in a customization tool in order to increase sustainable consumption

5.2 Discussion

In this section, the results found in this study will be discussed, as well as the limitations and their influence on the results. Firstly, the sample and the influence of the chosen product will be discussed. Secondly, a discussion on why the nudges have proven to be non-significant in this study is given. Finally, the post-hoc results will be discussed.

5.2.1 Research design

Firstly, this study was conducted among a specific group of consumers to ensure homogenous groups, namely, students at Radboud University Nijmegen. Although literature does not indicate differences among groups of people and the effects of nudging, the possibility that the same study would have different results when done among different people cannot be fully excluded.

Secondly, the product chosen for this experiment –customized shampoo– could have an impact on the results. It might be suggested that customized shampoo in general appeals more to women than men. However, the results indicate no significant differences between men and woman. Therefore, it is assumed that men might be less interested in customized shampoo in general, but results indicate that this is not of influence for this study.

Furthermore, the alternative product for this study was customized sneakers. In this scenario the mental representation would have been a logical order of colors instead of right-versus left-handedness and the default would have been to leave that part of the shoe white. Therefore, the white option would have been a fictional sustainable option, which would have

made it impossible to find an answer to the research question. If this scenario would have been used, the results for mental representation would have been different and non-comparable with the current study, since instead of the dominant side the order of colors would have been used. The default would have been tested in a similar way. However, it is not expected that this would have resulted in a different conclusion, since the way a default is interpreted in an online questionnaire in general appears to have the biggest influence on the outcome. In the following section the effects of the default are further discussed.

5.2.2 The default

As described in section 2.3, the default has proven to be effective in a variety of situations. (Johnson et al., 1993; Bellman et al., 2001; Thaler & Sunstein, 2009; Johnson, Bellman & Lohse, 2002; Madrian & Shea, 2001; Sunstein, 2002; Johnson and Goldstein, 2003) Therefore, it was expected that the power of the default would also hold in this experiment. However, the results did not indicate any support for the hypothesis. Therefore, the default did not prove to be a successful method to nudge the participants of this study into choosing the sustainable option more often. This section therefore focusses on the reason why the default did not hold in this experiment.

Johnson and Goldstein (2003) explain the power of the default by defining three ways in which defaults influence choice. These three influences might give insight in why the default did not prove its power in the situation created for this experiment and are discussed below.

Firstly, “The decision maker might believe that defaults are suggestions and therefore recommendations of the organization” (Johnson & Goldstein, 2003, p.1338). In the questionnaire, no real organization was mentioned and the default is thus probably not interpreted as a recommendation of an organization. Furthermore, two participants approached the researcher to ask if something technical went wrong as a part of their questionnaire had pre-selected answer possibilities (the defaults). Therefore, using a default in a questionnaire might have confused the participants. In a real customization tool, a pre-selected option is more common and would probably not be confusing and might indeed be interpreted as a recommendation. This indicates that in order to measure this way of influencing choice, a real customization tool is needed.

Secondly, “Making a decision takes effort, where accepting the default is effortless” (Johnson & Goldstein, 2003, p.1338). Moreover, people often tend to choose the option which costs the least effort (Samuelson & Zeckhauser, 1988). This source of influence might not be

applicable for customer customization in general. For example, to register as a donor takes time and effort and therefore, more people are a donor when everyone who does nothing is a donor by default instead of the default of not being a donor (Johnson & Goldstein, 2003). In customization, the consumer already chooses to take the time to personally design a product instead of choosing from the regular product line. Therefore, the default does not really decrease the amount of effort invested by the consumer. This might be the reason why this form of influence did not work in this study and might in general be less effective in customization.

Thirdly, “Defaults often represent the existing state or status quo, and change usually involves a trade-off. Psychologists have shown that losses loom larger than the equivalent gains, a phenomenon known as loss aversion” (Johnson & Goldstein, 2003, p.1338). Moreover, according to reference-dependent theory of consumer choice, the default creates a sense of loss aversion when choosing an alternative (Tversky & Kahneman, 1991). Just as the first point of influence, the default option in the questionnaire could have confused the participants. Therefore, they probably did not interpret it as the status quo. Another possibility is that the sense of loss aversion did not appear due to the fact that the experiment did not end with the participant actually receiving their composed product, which might have caused a lack of involvement.

However, if this lack of involvement would be part of the problem, this would be in favor of the second point of influence. Less involvement would decrease the effort participants are willing to spend and therefore the selection of the default would increase according to the second point of influence (Johnson & Goldstein, 2003). However, the default was not selected often and it thus appears that the problem is not caused by a lack of involvement, but rather by the interpretation of the default as something else than an indication for the status quo.

In conclusion, the three ways in which a default influences the decision making process (Johnson & Goldstein, 2003), did not appear to be of much influence in this experiment. The discussion suggests the default might not be that effective in a customization setting in general and that the default might be misinterpreted in the experiment used in this study. However, it might be possible that the two ways of influencing choice that were most likely misinterpreted in the experiment would be of influence in a real customization tool. After this discussion it appears that the ways in which a default influences choice might be stronger than suggested so far. When this is indeed the reason of the ineffectiveness of the default in this study, this gives more power to the three ways of influence suggested by Johnson and Goldstein (2003).

Furthermore, this study is not the first to mention possible limitations of the default. Carroll et al. (2005) examined the limits of the power of the default and indicate that instead of a default, an active decision-making regime is optimal in cases where preferences strongly differ. In this study, the preferences did strongly differ in the first three questions, but it did not in the last set on form and packaging (see Table 2). This is why it was decided to use two composed sustainable choice scores, the one including all questions and the one with only the first three. Both scores had non-significant results. This result indicates that differing preferences are not the cause for the default to have no effect in this study.

However, it should be mentioned that the sustainable default in the last questions was not the option that the majority preferred. This could be the reason why the results of this study are not in line with the reasoning of Carroll et al. (2005) mentioned above, as Carroll et al. (2005) indicate that the choice desired by the majority would be selected by default.

The theory of Carroll et al. (2005) is in line with the reasoning that the default might not be that applicable in the customization setting in general. Since it can be expected that the preferences of consumers who choose customization instead of an option from the regular product line will defer, an active decision making regime would fit best.

5.2.3 Mental representation

The second form of nudging under examination is placing items in line with the mental representation of consumers. In section 2.4 multiple ways of using the mental representation were discussed. The chosen method –placing the sustainable option on the dominant side– was to the best of knowledge not yet examined in a consumer behavior setting. It was expected that the relationship between valence and someone's dominant side found in prior research, would further extend to preference for something placed on the dominant side. However, no significant relation that indicates an effect of placing something on the dominant side has been found in this study. Furthermore, placing the sustainable option on the dominant side even had the lowest mean sustainable choice score of all four manipulations (see Table 2).

The results indicate that people might associate positive things with their dominant side (Casasanto, 2009; Kong, 2013), but do not perceive something more positively when placed at their dominant side. Therefore, this study indicates that this relation only works in one way. However, Zhao et al. (2016) did find that the exact same item or person is perceived more positively when it is placed on the dominant side. Therefore, the differences in the results compared to those of Zhao et al. (2016) might be caused by the fact that this study used items that were already different. Therefore, they had multiple aspects on which they could be

compared, beyond the side on which they are presented. This theory indicates that options are only perceived more positive due to the side on which they are presented when there are no other possibilities to compare the items with. This indicates that the dominant side is only used as indicator for valence when there are no other aspects to base the choice on.

Although placing an item on the dominant side had no significant effect on the sustainable choice score, significant differences between right- and left-handed participants were found. To the best of knowledge there are no indications for a relation between someone's dominant side and specific preferences for general topics. After examining the correlations between variables, it appeared that the strong relation between right-handed participants and 'sustainable purchase behavior', causes the differences among right- and left-handed consumers. Furthermore, the initial relationship between 'sustainable purchase behavior' and the sustainable choice score is more likely to positively influence the relationship of each variable with the sustainable choice score.

There is still one unanswered question: why does this initial relation between right- or left-handedness and sustainable purchase behavior exist? To the best of knowledge, there is no theory that explains this relation. However, right- and left-handed participants are difficult to compare due to the large difference in sample sizes (left-handed=13.9 per cent, $N=30$). The group of left-handed participants does not meet the minimal required sample size for the analyses used of 50 per group (Field, 2013). Due to this small sample size of left-handed participants, the estimates of error are potentially unreliable (Springate, 2011). This means that there is a large change that it is a coincidence that the left-handed participants in this experiment appear to behave significantly less sustainable.

In conclusion, the existing knowledge combined with the results of this study indicate that the dominant side is only used as indicator for valence when there are no other (rational or emotional) aspects to base the choice on. Furthermore, the dominant side appears to be a predictor of sustainable purchase behavior, which is probably caused by the unreliability due to the small number of left-handed participants. This relation explains the significant influence that the dominant side had on the effect of other variables on the sustainable choice score. The direct effect of sustainable purchase behavior on the sustainable choice score indicates that participants that in general consider sustainability more in their purchase behavior also choose the sustainable option more often.

5.3 Recommendations

In this section, several recommendations are presented. Firstly, the contribution of this study to the existing knowledge and the directions for further research will be discussed. Secondly, the practical contribution of this study will be discussed by presenting the managerial implications.

5.3.1 Directions for further research

The results of this study add to the existing knowledge in various academic fields. It mainly contributes in reporting the boundaries of existing theories. This helps defining the theory and making it more practical.

Firstly, this study intended to add to the existing knowledge on how to design a customization tool. Although it is beneficial to know which nudges will probably not have added value when included in a customization tool, there is still more research needed to find out which elements should be included in a customization tool. Therefore, the way a customization tool should be designed both in general as specifically to increase sustainable consumption, is still an area that requires further research.

Secondly, this study adds to the existing literature on the use of defaults by presenting its limitations. In the discussion it is suggested that the three ways of influence (Johnson & Goldstein, 2003) have a stronger effect on the power of the default than purposed before, they might be criteria for success. Therefore, the precise effects of the ways of influence in different situations are an interesting area for further research. Furthermore, it appears that the online experiment did not recreate a real customer customization situation well enough for the default to influence choice in the exact same way as it would in reality, it confused participants instead. This probably caused the default to have a non-significant effect in this study. To ensure the exact same interpretation of the default in reality, further research should carefully consider the ways of influence and make sure not to have the same bias. The best way to ensure a setting which is close to reality might be to use a real online customization tool in collaboration with an organization. However, this does limit analysis possibilities as no information about the consumers (the ‘participants’) can be gathered. Therefore, this method is undesirable for scientific research but will be discussed further in the managerial implications.

Thirdly, this study adds to the existing body of literature on right- versus left-dominance and perceived valence. To the best of knowledge, this has been one of the first attempts in relating right- versus left-dominance to consumer behavior. In the discussion about perceived

valence and the dominant side, it is proposed that people place positive things on their dominant side (Casasanto, 2009; Kong, 2013), but only perceive something on their dominant side as positive when both options are the same (Zhao et al., 2016). Therefore, it is suggested that dominant side is only used as an indicator for valence when there are no other aspects available to compare the options with. Further research could further examine this theory.

Moreover, right- versus left-dominance and the perception of valence was in this study used as participant's mental representation and resulted to be non-significant. Further research could try other forms of mental representation to test if other useful nudges might exist to increase sustainable consumption. When more studies are done on other forms of nudging, it is also relevant to compare results with traditional ways used to increase sustainable consumption (e.g. advertising). Moreover, researchers should control for these traditional ways by labelling some of the options as sustainable in one version and have nudges as well as a natural situation in other versions. Therefore, a comparison can be made between either promoting that an option is sustainable and nudging consumers into choosing it.

Furthermore, the sample used for this study was a specific consumer group. As discussed in section 5.1, there is a possibility that the same study would have different results when done among different people. Therefore, when researchers intent to replicate this study a different sample could be considered to test the external validity of both studies.

Finally, although the 'attitude towards sustainability' scale (Bohlen , Schlegelmilch & Diamantopoulos, 1993) was cited in literature, it was not a reliable scale for this study. Therefore, this scale should not be used in further research about this topic. Furthermore, as a scale that linked customer customization to insight in sustainable choices did not exist, a new scale was composed by the researcher herself and proven to be reliable in this study. Therefore, further research that combines the fields of customer customization and sustainability are advised to use this scale.

5.3.2 Managerial implications

The managerial objective of this study was to provide managers with more insights in ways to influence the choice architecture of a customization tool. Most published studies on customer customization focus on the technical and organizational implications needed to build the customer customization tool and make profit with it. This study adds to the still limited knowledge on how to design the tool itself. The various ways in which managers can use the results of this study are discussed in this section.

Firstly, selecting the sustainable option by default was not a significant nudge in this study. It appeared that the three ways of influence (Johnson & Goldstein, 2003) are only interpreted in the right way in reality, not in an experimental setting. To test this theory, organizations can experiment with the default in their existing customization tools. It is possible to launch different versions of a webpage and analyze the clicks of visitors on each of them in Google Analytics. As no further information is gathered about the visitors, this is not a desirable method for academic research. It is however beneficial for organizations, as all of their visitors are (potential) customers. Organizations can therefore have different versions of the customization tool online and see which options are chosen most often in each version. If one of the versions includes a default, they can see for themselves if the default is also unsuccessful in reality.

Furthermore, prior research argued that the design of a toolkit plays a crucial role for the final outcome (Franke & Piller, 2003), just as the enjoyment one receives from the process and the mood in which they are (Franke & Schreier, 2010). Moreover, Huffman and Kan (1998) indicated that the information should be presented in a clear way, preferably by presenting the choices in groups per attribute. When options are indeed presented per set, the sets that are left unopened can remain at the (sustainable) default. This is a relative easy way to test if the default could work for a specific organization. The fact that this will in that case be tested in a real situation instead of an experimental setting will ensure that the three ways of influence will work as well as possible for any customization setting. This real-life test is needed to be able to conclude that the default is indeed useless as a nudge to increase sustainable consumption in customer customization.

Secondly, the results and discussion did not provide an indication that placing a specific option on the dominant side increases the choice for that option in the customer customization setting. Therefore, organizations are not advised to invest time and effort in aligning a customer customization with the dominant side of consumers.

Finally, participants indicated that they believe that customization increases insight in the sustainability of components and that this could therefore increase sustainable behavior. Moreover, consumers who are interested in sustainability in general choose the more sustainable option more often. When designing a customization tool, it is thus advised to include information about the sustainable aspects of the various components. The organization can therefore contribute to increase sustainable consumption in society as a whole.

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Appendixes

Appendix 1: Outline of the experiment

Introduction

Hi,

Thank you for your interest in this study! This study is part of my master in Marketing at Radboud University. Your participation in this questionnaire is very much appreciated and will bring me one-step closer to my Master's degree.

In this short questionnaire (+/- 6 minutes) you will customize your own shampoo by choosing your preferred ingredients and packaging. This is followed by some statements and this questionnaire will end with demographics.

Your answers will only be used for my thesis and will be treated anonymously. Participation in this study is voluntary and you can withdraw at any time.

Thanks again!

Petra Tilleman

Start questionnaire

- Are you right- or left-handed?

In case you use both hands, choose the one that you feel is slightly more dominant.

0 Right

0 Left

The experiment

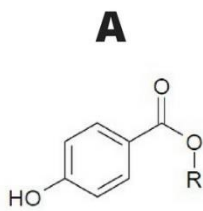
In the following questions you will customize your own shampoo. For each set an image is presented with the options and their benefits, below each image you can select your preferred option.

NOTE: a randomizer is inserted in the questionnaire program to randomly present one of the four manipulations and ensure they are presented evenly.



Manipulation 1 (default)

Ingredients



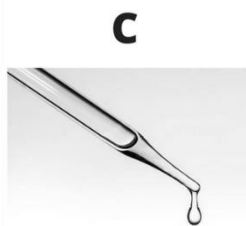
Parabens

Anti Bacterial



Argan Oil

Strength &
Prevents Split
Ends



Mineral Oil

Protection
& Shine

Which of the ingredients presented above would you prefer?

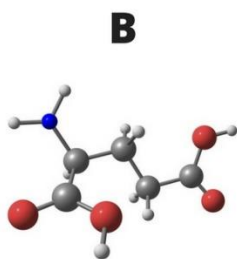
- ☐ A. Parabens
- ☒ B. Argan Oil
- ☐ C. Mineral Oil

Ingredients



Aloe Vera

Shine &
Stimulates
Hair Growth



Collagen

Volume &
Strength



Keratin

Volume &
Stimulates
Hair growth

Which of the ingredients presented above would you prefer?

- ☒ A. Aloe Vera
- ☐ B. Collagen
- ☐ C. Keratin

Fragrance

A



Summer

Mixture of fresh
summer scenses

B



Lavender

Relaxing aroma,
reduces stress

C



Intense

Mixture of warm
summer night
scenses

Which of the fragrances presented above would you prefer? (*Fragrance = geur*)

- ☐ A. Summer
- ☒ B. Lavender
- ☐ C. Intense

Form

A



Dry Shampoo

No water
needed

B



Shower Foam

Regular shampoo

Which type of shampoo would you prefer?

- ☒ A. Dry shampoo
- ☐ B. Shower foam

NOTE: A logic function is inserted to show this question when 'Dry shampoo' is selected.

Packaging

A



Powder

Eco-friendly Jar

B



Spray

Convenient
Spray Can

Which packaging would you prefer?

- ☒ A. Powder
- ☐ B. Spray

NOTE: A logic function is inserted to show this question when 'Shower foam' is selected.

Packaging

A



Regular

Plastic Bottle

B



Bar Soap

Zero waste bar
shampoo

C



Travel Size


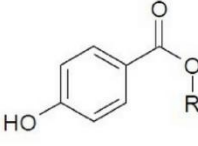

Set of small
plastic bottles

Which packaging would you prefer?

- ☐ A. Regular bottle
- ☒ B. Bar shampoo
- ☐ C. Set of travel sized bottles

Manipulation 2 (right placing)

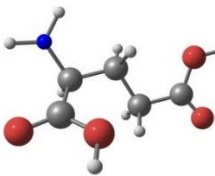


Ingredients

A	B	C
		
Mineral Oil Protection & Shine	Parabens Anti Bacterial	Argan Oil Strength & Prevents Split Ends

Which of the ingredients presented above would you prefer?

- ☐ A. Mineral Oil
- ☐ B. Parabens
- ☐ C. Argan Oil

Ingredients

A	B	C
		
Collagen Volume & Strength	Keratin Volume & Stimulates Hair Growth	Aloe Vera Shine & Stimulates Hair Growth

Which of the ingredients presented above would you prefer?

- ☐ A. Collagen
- ☐ B. Keratin
- ☐ C. Aloe Vera

Fragrance

A



Summer

Mixture of fresh
summer scences

B



Intense

Mixture of warm
summer night
scences

C



Lavender

Relaxing aroma,
reduces stress

Which of the fragrances presented above would you prefer? (*Fragrance = geur*)

- ☐ A. Summer
- ☐ B. Intense
- ☐ C. Lavender

Form

A



Shower Foam

Regular shampoo

B



Dry Shampoo

No water
needed

Which type of shampoo would you prefer?

- ☐ A. Shower foam
- ☐ B. Dry shampoo

NOTE: A logic function is inserted to show this question when 'Dry shampoo' is selected.

Packaging

A



Spray

Convenient
Spray Can

B



Powder

Eco-friendly Jar

Which packaging would you prefer?

- ☐ A. Spray
- ☐ B. Powder

NOTE: A logic function is inserted to show this question when 'Shower foam' is selected.

Packaging

A



Travel Size

Set of small
plastic bottles

B



Regular

Plastic Bottle

C



Bar Soap


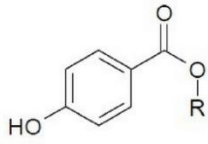

Zero waste bar
shampoo

Which packaging would you prefer?

- ☐ A. Set of travel sized bottles
- ☐ B. Regular
- ☐ C. Bar shampoo

Manipulation 3 (both)

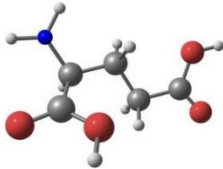


Ingredients

A	B	C
		
Mineral Oil Protection & Shine	Parabens Anti Bacterial	Argan Oil Strength & Prevents Split Ends

Which of the ingredients presented above would you prefer?

- ☐ A. Mineral Oil
- ☐ B. Parabens
- ☒ C. Argan Oil

Ingredients

A	B	C
		
Collagen Volume & Strength	Keratin Volume & Stimulates Hair Growth	Aloe Vera Shine & Stimulates Hair Growth

Which of the ingredients presented above would you prefer?

- ☐ A. Collagen
- ☐ B. Keratin
- ☒ C. Aloe Vera

Fragrance

A



Summer

Mixture of fresh
summer scences

B



Intense

Mixture of warm
summer night
scences

C



Lavender

Relaxing aroma,
reduces stress

Which of the fragrances presented above would you prefer? (*Fragrance = geur*)

- ☐ A. Summer
- ☐ B. Intense
- ☒ C. Lavender

Form

A



Shower Foam

Regular shampoo

B



Dry Shampoo

No water
needed

Which type of shampoo would you prefer?

- ☐ A. Shower foam
- ☒ B. Dry shampoo

NOTE: A logic function is inserted to show this question when 'Dry shampoo' is selected.

Packaging

A



Spray

Convenient
Spray Can

B



Powder

Eco-friendly Jar

Which packaging would you prefer?

- ☐ A. Spray
- ☒ B. Powder

NOTE: A logic function is inserted to show this question when 'Shower foam' is selected.

Packaging

A



Travel Size

Set of small
plastic bottles

B



Regular

Plastic Bottle

C



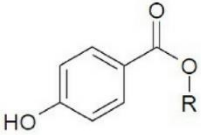


Bar Soap

Zero waste bar
shampoo

Which packaging would you prefer?


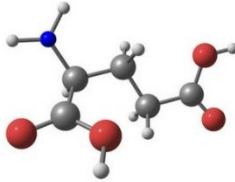

- ☐ A. Set of travel sized bottles
- ☐ B. Regular
- ☒ C. Bar shampoo

Manipulation 4 (none)

Ingredients		
A	B	C
		
Parabens	Argan Oil	Mineral Oil
Anti Bacterial	Strength & Prevents Split Ends	Protection & Shine

Which of the ingredients presented above would you prefer?

- ☐ A. Parabens
- ☐ B. Argan Oil
- ☐ C. Mineral Oil

Ingredients		
A	B	C
		
Aloe Vera	Collagen	Keratin
Shine & Stimulates Hair Growth	Volume & Strength	Volume & Stimulates Hair growth

Which of the ingredients presented above would you prefer?

- ☐ A. Aloe Vera
- ☐ B. Collagen
- ☐ C. Keratin

Fragrance

A



Summer

Mixture of fresh
summer scenses

B



Lavender

Relaxing aroma,
reduces stress

C



Intense

Mixture of warm
summer night
scenses

Which of the fragrances presented above would you prefer? (*Fragrance = geur*)

- ☐ A. Summer
- ☐ B. Lavender
- ☐ C. Intense

Form

A



Dry Shampoo

No water
needed

B



Shower Foam

Regular shampoo

Which type of shampoo would you prefer?

- ☐ A. Dry shampoo
- ☐ B. Shower foam

NOTE: A logic function is inserted to show this question when 'Dry shampoo' is selected.

Packaging

A



Powder

Eco-friendly Jar

B



Spray

Convenient
Spray Can

Which packaging would you prefer?

- ☐ A. Powder
- ☐ B. Spray

NOTE: A logic function is inserted to show this question when 'Shower foam' is selected.

Packaging

A



Regular

Plastic Bottle

B



Bar Soap

Zero waste bar
shampoo

C



Travel Size

Set of small
plastic bottles

Which packaging would you prefer?

- ☐ A. Regular bottle
- ☐ B. Bar shampoo
- ☐ C. Set of travel sized bottles

Sustainability

To what extent do you agree with the following statements?

Strongly disagree – Disagree – Neither agree nor disagree – Agree – Strongly agree

- Everyone is personally responsible for protecting the environment in their everyday life
- Each of us, as individuals, can make a contribution to environmental protection
- If all of us, individually, made a contribution to environmental protection, it would have a significant effect

To what extent do you agree with the following statements?

Strongly disagree – Disagree – Somewhat disagree – Neither agree nor disagree – Somewhat agree – Agree – Strongly agree

- I make a special effort to buy products in biodegradable packages
- I would switch from my usual brand and buy environmentally safe cleaning products, even if I had to give up some cleaning effectiveness
- I have switched products for ecological reasons
- When I have a choice between two equal products, I purchase the one less harmful to the environment

Customization

The following statements are about customized products, like you composed your own shampoo in the beginning of this questionnaire.

Compared to standard shampoo, customized shampoo would ...:

Strongly disagree – Disagree – Somewhat disagree – Neither agree nor disagree – Somewhat agree – Agree – Strongly agree

- Better satisfy my requirements
- Better meet my personal preferences
- More likely be the best solution for me
- More likely be what I really want
- More likely fit my image of a perfect shampoo

To what extent do you agree with the following statements?

*Strongly disagree – Disagree – Somewhat disagree – Neither agree nor disagree –
Somewhat agree – Agree – Strongly agree*

- Customization provides more insights in the sustainability of the different components of a product
- Customized products could increase sustainable purchase behavior
- I am more likely to choose sustainable components and therefore create a more sustainable product when I customize the product myself

Demographics

- What is your first or native language?
.....
- Are you male or female?
0 Male
0 Female
- What is your age?
.....
- What level of education is the study program you are currently following?
If you are graduated, choose your highest completed level of education.
0 Bachelor (HBO/WO)
0 Master
0 PhD
0 Other, namely

- Which faculty mainly accompanies your study program?

If you are graduated, choose the field in which you did your studies.

0 Arts

0 Philosophy, Theology and Religious Studies

0 Science

0 Medical sciences

0 Social sciences

0 Management

0 Law

Conclusion

We thank you for your time spent taking this survey.

Your response has been recorded.

Appendix 2: Demographics

In this appendix the answers provided in the ‘other, namely..’ category are provided.

<i>Level of education, ‘other’ category</i>	<i>N</i>	<i>%</i>
High school*	3	1.4
MBO	1	0.5
Pre-master	5	2.3
Total	9	4.2

*1x HAVO, 1x VWO

<i>Native language, non-Dutch</i>	<i>N</i>	<i>%</i>
Afrikaans	1	0.5
Bulgarian	5	2.4
Chinese	2	0.9
English	4	1.9
German	16	6.5
Greek	1	0.5
Italian	7	3.4
Russian	1	0.5
Spanish	1	0.5
Turkish	3	1.5
Total	41	18.6