Master Thesis

I Nudge You to Buy a Reusable Cup

The effect of nudging on consumers' purchase intention and willingness to pay

Author: Lilian Li

Student number: 562026

Supervisor: Drs. Anke Raeijmaekers

Co-reader: Drs. Suzanna J.Opree

Word count: 16.953

Media & Business

Erasmus School of History, Culture, and Communication

Erasmus University Rotterdam

June 2022

I Nudge You to Buy a Reusable Cup

The effect of nudging on consumers' purchase intention and willingness to pay

ABSTRACT

The usage of single-use plastic cups leaves a negative impact on the environment, from the production using increasing gas emissions to the toxic disposal into soil and ocean. Approximately 50% of all plastic items are discarded after using them only once (Rummel et al., 2016). Current consumption patterns require changes due to increased attention toward environmental issues. To help the situation, there is an urgent need to understand consumers' willingness to change behavior. There has been a change in consumer demand regarding packaging since environmental concerns are at the top of their mind, which invariably drives business owners to improve their social responsibility initiatives. The repetition of information has allowed consumers to purchase more consciously. For instance, consumers could quickly adapt to the plastic bag charge by governments, and consumers are willing to pay higher prices for sustainable products. Companies such as Starbucks are using nudges to provide soft persuasion to make consumers behave more responsible. The nudges assist users during their decision-making process to act desirably. Therefore, this paper examines how nudging messages in advertising can influence consumers' purchase intention and willingness to pay. In particular, the beverage industry is facing challenges while the increased consumption and improper disposal of single-use cups continues.

A 2x3 between-subjects experimental survey design was conducted among 220 participants that visited one of the two bubble tea store locations in the Netherlands. The results have shown that environmental information, providing incentives, and a social norm nudge did not significantly change consumers' purchase intention and willingness to pay. It does not matter what type of reusable cup was presented to them since the effectiveness of the different types of nudging techniques were the same. This thesis contributes to behavioral studies regarding nudging effectiveness among consumers as well as optimizing environmentally friendly behavior. The thesis suggest that future research could experiment within a face-to-face setting where consumers must make instant decisions while ordering a drink at a beverage store. Additionally, researchers could use the nudging techniques for different contexts or products to understand the various behaviors and evaluations of other product types.

Keywords: *reusable cups, nudging, purchase intention, willingness to pay, environmental consciousness*

ACKNOWLEDGEMENTS

Finally, I can write the long-awaited last words of my thesis. It has been a crazy academic ride, and I cannot thank sufficiently all the people who made this year as easy as possible. Although I met most of my classmates through Zoom due to the COVID situation, it was a pleasure to learn together with you, and most importantly, from you.

First, I wish to share my sincere appreciation to my thesis supervisor Anke Raeijmaekers for the continuous support and motivation to keep me on track. Her feedback and wise words were extremely valuable throughout the process of completing this thesis. Thank you for ensuring I kept my focus on the subject without letting my eagerness win to do too much and think too complex.

Secondly, I would like to share my gratitude to my parents, who have made it possible for me to complete my academic years. Their support kept me motivated throughout my studies in Maastricht, Utrecht, and Rotterdam.

Thirdly, I would like to thank my business partners, Vivian Deng and Emmy Hu, for keeping an eye out on the business while I was focussing on my thesis till the late evenings. Without them, I would not be able to combine a master track with entrepreneurship.

Last but not least, I also want to acknowledge my boyfriend, Waiman Tang, for his understanding of my stress outbursts during the last couple of months. I want to thank him for the active encouragement when I wanted to give up and for comfort when I needed it the most.

Lilian Li
Maastricht, June 2022

Table of Contents

1. Introduction

The following chapter serves as the study's introduction, starting with the background information on the trend of reusable packaging. This is then followed by the problem statement and research question of the study. The chapter concludes with an outline of the thesis structure.

1.1   Rise of Environmental Concern on Packaging

Most global plastic production practices are applied for food packaging (Ritschel, 2018) since plastic is often chosen due to its low costs, low density, and the ideal material to easily transport products to consumers (Verhese et al., 2015). Plastic is used mainly as single-use plastic or disposables (Chen et al., 2021) and consists primarily of packaging products such as bags, straws, containers, cups, or cutlery. Single-use plastic is one of the main contributors to harming marine life and releasing greenhouse gas (Mucientes et al., 2019; Rummel et al., 2016). Subsequently, companies are drastically changing their perspectives toward environmentally friendly production and consumption (Verghese & Lewis, 2007). Meanwhile, consumers are also changing their consumption patterns and adopting environmentally friendly behaviors to live more consciously (Babutsidze & Chai, 2018). From governmental perspective, a solution to pursue a sustainable practice is to offer quality reusable options for consumers. For instance, public perception studies demonstrate that the introduction of plastic bag charges has shown increasing consumer recycling behaviors (Luís et al., 2020; Martinho et al., 2017). Moreover, the beverage industry is also engaging consumers to choose more sustainable options. A growing environmentally friendly trend is the 'bring-your-own,' where consumers use their own packaging to consume foods and drinks to reduce the waste of single-use packaging. If they do not have container, they can easily purchase one at the store (Furze, 2021). Companies like Starbucks started selling recyclable and compostable cups already (Wang et al., 2022). Howecer, encouraging consumers to choose this option would involve changing consumer behavior towards a more sustainable way of consuming beverages, which is a crucial challenge (Forrest & Kearns, 2001).

Switching to paper cups can reduce the environmental footprint by up to 40% but, reusable cups are even more environmentally friendly (Forteinis, 2020). Hence, decision- and policymakers are placing measures to promote environmentally friendly approaches. A sustainability and consumer behavior report by Deloitte (2021) found that consumers mostly show their commitment to the environment by avoiding single-use plastics. In addition, research increasingly focuses on the re-use phenomena and the creation of socially desirable product features (Numata & Managi, 2012). While marketing efforts can be implemented to increase sales, the inclusion of nudging strategies can help influence consumer behavior. Hence, marketers and psychologists have researched and experimented with nudging, which can be perceived as deliberately manipulating consumers towards a more favorable behavior and is often used to encourage environmentally-friendly behaviors (Thaler, 2009).

1.2   *The Role of Nudging*

Generally, the use of nudging embraces the freedom of consumer choices since it does not restrict any behavior through enforced methods (Sunstein, 2017). Nudging techniques which are also called 'hidden forms of persuasion' and 'smart default options' (Smith et al., 2013), are implemented to provoke desired purchasing behavior by making it more attractive and easier for consumers and have been used in the context of sustainable consumption (Lehner et al., 2016). For example, it is used in the food sector to direct consumers to choose green labels while making sustainable dining choices (Vandenbroele et al., 2019). Policymakers use nudges to regulate the environmental behaviors of citizens using information disclosure, warnings, social norms, or default options (Sunstein, 2021). Although appliances are still a challenge for businesses, nudge marketing can help peruse environmental goals and operate more socially responsibly. Advertising techniques can implement nudging strategies as it is seen as a type of information provision (Ekelund et al., 1995) that provides continuous appeals to goals, self-concepts, and positive perceptions toward the product or service (Scarabis et al., 2006).

The effectiveness of nudging is dependent on different factors. For instance, Nguyen et al. (2018) referred to the model of Theory of Planned Behavior (TPB) by Azjen (1991). They explained that it is an effective predictor of consumers' social and behavioral intention of being environmentally friendly. The TPB model demonstrates that behvioral intention is influenced by three factors: attitude, which refers to the evaluation of performing a behavior; subjective norms, which are based on perceived social pressure; and perceived behavioral control, which denotes one's perception of how easy it is to perform the behavior (de Groot & Steg, 2007). For some, the promotion of environmentally conscious behavior is evoked when others are doing the same due to the general social norms in society (Schultz, 2002). For others, changing behavior to comply with environmentally friendly norms should include a higher pay-off to perform environmentally-friendly behavior. Similarly, Levey (2019) explained that nudging does not bypass our capacity to reason. Promoted reasons are often unconsciously recognized or responded to by consumers, which in turn may alter behavior. Levey (2019) further illustrated that the 'nudger' gives a recommended salient choice to the 'nudgee' that is set as the default choice. Thus, advertising information can provide a tempting recommendation for consumers to engage with without consciously knowing.

1.3   *Problem Statement and Research Questions*

The United Nations Environment Program estimates that 50% of all plastic items are disposed of after only using it once (The United Nations Environment Program, 2018). Less informed consumers are often influenced by a party with proprietary information (Li et al., 2021). According to Zhang et al. (2020), a company should enhance the clarity of information and connection with consumers when the goal is to improve the continuity of sustainable operations. The European Parliament demanded companies to increase the reuse share to 10% by 2030 (Coelho et al., 2020).

Especially in the food and beverages industry, the importance of waste reduction strategies is recognized due to intensified consumer demand for sustainable options. In line with the consumer demand and the European Parliament requirements, manufacturers have produced different types of refillable and reusable containers (Ferrara & Plourde, 2003). This offers a more sustainable alternative to single-use packaging (Sujeetha et al., 2020) and has resulted from initiatives from stores such as providing single-use packaging for on-the-go food and beverages.

The Global Sustainability study of 2021 revealed a global shift in how consumers view sustainability and the willingness to pay for sustainable products and services (Kucher & Partner, 2021). While this approaches the topic of consumer perspective on sustainable consumption through reusable cups in beverage stores, this study also incorporates the role of purchase intention and willingness to pay. Willingness to pay and purchase intention go hand in hand since the cost is a major factor in how consumers perceive the overall quality of a product. However, it is also linked to personal values such as their level of environmental consciousness during the buying process (Oliver & Rosen, 2010). Environmental values are powerful predictors of several consumer actions, which could encourage their willingness to engage in actions that are unharmful to the environment (Oliver & Rosen, 2010). Past research has shown that environmental consciousness is not immediately leading to environmentally friendly consumerism and consciousness does not necessarily lead to purchasing environmentally friendly products, but it does lead to other behaviors related to sustainable consumerism (Hojnik et al., 2019). For example, environmental knowledge influences purchasing behavior and consumers' perceived sense of environmental responsibility (Lin & Syrgabayeva, 2016). Nudging has been used frequently to encourage consumers' environmentally friendly consumerism (Sunstein, 2021), although not often applied in a physical setting such as from a business to a consumer setting (Lehner et al., 2016). Thus, this fragmented empirical evidence has shown a gap between consumers' environmental consciousness, purchase intention, and willingness to pay.

Against this background, to understand consumer perceptions of reusable packaging, this study aims to investigate the phenomena through different nudging techniques to stimulate consumers to make the right choices. Environmental consciousness is incorporated as the moderator in this research to examine if the level of consciousness influences the purchasing intention and willingness to pay. The following research question can help uncover the outcomes of the statements mentioned above:

Which nudging technique is most effective in advertisements about reusable cups in beverage stores, and to what extent does environmental consciousness play a role in consumers' purchase intention and willingness to pay?

1.4 *Choice of method and design*

The research question will be answered through a theoretical framework developed from an extensive literature review. Additionally, the literature review directs to suitable hypotheses that will be tested using a quantitative research design. More specifically, a 2x3 between-subjects experimental survey design is conducted to explore the different types of design and materials of the reusable cups and the various nudging techniques. This will be captured on Qualtrics within physical bubble tea stores in the Netherlands. Consumers are randomly assigned to one of the six conditions that are followed by a set of questions about their purchase intention, willingness to pay, and environmental consciousness. These are measured using scales from scholars and analyzed in an online statistical software called SPSS. After data cleaning, the software will help conduct specific analyses such as independent samples t-tests and analysis of (co)variance.

1.5 *Societal Relevance*

This thesis contributes to society in three fundamental ways. Firstly, Corporate Social Responsibility (CSR) efforts have significantly increased their relevance in the food and beverages industry in recent years (Poore & Nemecek, 2018). Companies are drastically changing their strategies to satisfy the expectations of stakeholders from an environmental point of view. In particular, it has shown positive consumer satisfaction that increases company performance (Edmans, 2011). Secondly, consumers demand more sustainable and natural materials due to increased environmental concerns regarding waste from packaging materials. The different nudging techniques can help better understand consumer perspectives and advertising effectiveness that contribute to sustainable consumption. Thirdly, the research experiments with nudges can be of great value for governments and policymakers. Changing consumer behavior towards more sustainable living is in their best interest since food and beverage packaging is revealed to have a significant carbon footprint on our climate (Mucientes et al., 2019). Global food production and packaging account for 26% of global greenhouse gas emissions (Munesue et al., 2014). Thus, the promotion of reusable food packaging can reduce these emissions to protect our world's ecosystem.

1.6 *Academic Relevance*

The results of this study will also be valuable for environmentalists and behavioral scientists as they can learn from the findings how consumers are influenced to take steps toward sustainable consumption. Especially since research has shown that consumers are demonstrating resistance to marketing initiatives due to concerns around the unethical distribution of information (Sheth & Sisodia, 2007). For instance, consumers are looking for a justification for increased pricing (Pirsch et al., 2007). Hence this study can be of interest to marketing scholars by enabling them to break the threshold of hard advertising techniques and influence consumers through nudging.

Additionally, this research contributes to new literature with regards to nudging strategies of two types of materials for reusable cups. This research aims to use insights from existing literature and explore if these insights are applicable in the field of the food and beverages industry. This is needed since much research evolves around the general effectiveness of sustainable consumption behaviors through nudging (Lehner et al., 2016), while research about nudging in specific sectors is still limited. Both purchase intention and willingness to pay are extensively researched in the field of sustainability, such as environmentally friendly product consumption (Nguyen et al., 2021), the use of renewable energy (Nazir & Tian, 2022), hotel visitors' towel consumption (Kang et al., 2012) and sustainable food choices (Kovacs & Keresztes, 2022). Hence, this study contributes to the specific beverage industry as it might have different implications concerning nudging strategies toward environmentally friendly consumption.

Moreover, the concept of nudging consumers has demonstrated its effectiveness (Schultz, 2002) but is never tested regarding reusable cup buying behavior. Reusing and bringing reusable cups instead of using single-use cups can have a tremendous positive impact on the environment. Byerly et al. (2018) mentioned that there is limited nudging research based on experimental methodological designs tested in settings where consumers make real choices. Thus, the promotion of reusable cups and the effectiveness of nudging techniques bring a renewed perspective to existing literature. Many articles focus on the technological philosophy of particular environmentally friendly behavior, such as Ertz et al. (2016). Their study perceived environmentally friendly behavior as multi-dimensional, including contextual factors such as attitude, personality or brand likability. To our knowledge, little research dives deeper into the more practical aspects of changing behavior in a physical setting.

1.7 *Thesis Overview*

Following the introduction, the research question of interest will continue with a theoretical framework in chapter two that examines the most critical concepts in the field of interest which result into a conceptual model that presents the hypotheses. Chapter three includes the methodology, which highlights the chosen design, sampling method, and procedure. Next, chapter four elaborates on the results of the statistical analysis. Finally, chapter five discusses the results, the answer to the research question, limitations, and further research suggestions in the field of study.

2   Theoretical Framework and Hypothesis Developments

The second chapter discusses the most relevant concepts, behavioral control, environmental consciousness, and nudging. Moreover, hypotheses will be grounded throughout the theoretical framework, followed by a conceptual model.

2.1   *The Rise of the Reusable Cup Trend*

Obtaining a competitive advantage is often done through implementing environmental sustainability practices in a company (Millette et al., 2019). By providing value to multiple stakeholders, a company can yield a significant profit (Porter, 2011). Plastic pollution is one of civil society and policymakers' most relevant environmental issues (Rambonnet et al., 2019). Many food suppliers use disposable single-use packaging for its durability, cost-efficiency, and ease of production (Viera et al., 2020). However, they are used for a very short time and are discarded shortly after using them only once. Therefore, the paradigm shifted from a linear model of consumer consumption to disposal to consumer attention toward sustainable practices (Ghisellini et al., 2016). Changing the linear to a circular model of consumption, is introduced though reusable food savers, containers, and boxes for temporary food storage (Razza et al., 2009).

In contrast to single-use plastic, reusable product packaging has an extended lifecycle after purchasing by repeatedly retaining the item's purpose (Numata & Managi, 2012). Reusing is an activity that increases an item's lifespan (Allegrini et al., 2015) and is one of the most critical strategies for long-term sustainability based on waste reduction (Block et al., 2016). According to Accorsi et al. (2014), reusable food containers have a lifespan of 50 uses. A downside to these reusable options is the high demand for manufacturing resources and transportation initiatives to supply reusable alternatives compared to single-use options (Chase & Hampole, 2010). Besides, for many retailers and consumers, reusing is still not mainstream since consumer usage habits are challenging to break. According to behavioral psychology studies, behavioral change can be achieved if the behavior seems "highly automated" using minimal deliberation or cognitive effort with a low awareness for it to become a habit (Jackson, 2005). Since habits are learned sequences of acts, they can be encouraged through two main factors suggested by Janssen & Jager (2003), which are the repetition and the reinforcement of the action. However, companies have little control. For instance, consumers may forget to take their reusable bottles again (Kunamaneni et al., 2019). Research has indicated that consumers were able to easily adapt to the plastic bag charge by governments, making consumers keep foldable bags in handbags or cars (Thomas et al., 2019). Yet, it could be different for other products. Another research concluded that the repetition of advertising about pro-environmental behavior had decreased food waste in households significantly (Borg et al., 2020). Thus, it proves the ability to change individual behavior to some extent based on behavior controlling techniques.

2.2   *Purchase Intention and Willingness to Pay for Environmentally Friendly Products*

Environmentally friendly products are identified as items that can improve the condition of the natural environment and can reduce the harmful effects of production (Ottoman et al., 2006). Moreover, the products do not cause dangerous effects on humans or animals and should not leave excessive waste or drain high amounts of energy (Block et al., 2016). Purchasing an environmentally friendly product helps reduce the overall destructive impact on the environment (d'souza et al., 2007). However, aside from the production practices, other factors are considered before purchasing. Different product properties and characteristics play an important role when buying a product, such as appearance, functionality, brand appeal, pleasure, materials used, environmental impact, or safety (Van Loo et al., 2014). How consumers evaluate the product can be measured using the level of purchase intention from an academic perspective. Purchase intention is defined as consumer behavior inclined towards future purchases (Dodds et al., 1991). It refers to the properties of product attributes for consumers to make purchase evaluations (Ajzen & Fishbein, 1980). Through symbolic meanings, product designers effectively incorporate the product's functional characteristics with the design for a sustainable look (Hosseinpour et al., 2015).

Past research concludes that there is a shift in consumer preferences to accept higher prices for sustainable products since consumers realize that their purchasing decisions impact the worlds' ecosystem (Laroche et al., 2001). It is also true that sustainable products are slightly higher priced than conventional products (Ritter et al., 2015). Understanding consumers' willingness to pay for environmentally friendly products can help understand opinions and attributes needed for purchasing. The highest amount of money a consumer is willing to give is the consumer's willingness to pay (Festa-Bianchet, 2012). Different factors can influence this level, such as product category or socio-demographics (Yiridoe et al., 2005). Bonti and Yiridoe (2006) argue that most consumers are unwilling to pay for a premium product when the price increase is more than 10-20% depending on the product type. For instance, consumers are willing to pay premium prices for sustainable products such as bottles of milk (Neill & Williams, 2016), wine (Abraben et al., 2017), and chocolate bars (Vecchio & Annuziata, 2015).

Similarly, Biswas's (2016) research findings showed a positive relationship between consumers' willingness to pay for environmentally friendly products and consumer environmental awareness and consciousness. In addition, the product should not lack any attributes that a regular product should contain (Tsen et al., 2006). Therefore, willingness to pay is a crucial assessment step after purchase intention to truly understand the consumers' maximum amount of money willing to spend on environmentally friendly products. The amount willing to pay is also an estimate that provides insights into how much consumers value the products' attributes.

Aside from the practical purposes of reusable cups, packaging design characteristics such as color (Becker et al., 2011), material type, and size (Van Dam, 1996) contribute to consumers' evoked willingness to pay and initial purchase of the product. In the context of this research, depending on the

product's material, consumers can already show a preference. For example, a silicone rubber around the edge indicates that the cup can ensure a tight close or the color of the cup can be associated with environmentally friendly attributes (Lim et al., 2020). The properties of this container may affect how the drink is experienced during consumption, which is considered for the purchase intention and willingness to pay for the cup. According to McDaniel and Baker (1977), the crispiness and flavor of potato chips should be reflected through the bag's packaging. Another research from Kishna and Morrin (2008), demonstrates that the quality and material of a cup influence the perceived quality of plain water. Also, Pechey et al. (2016) showed that the size of glasses for wine selling affected wine sales while keeping the same proportions. This indicates that the product's design containing food or drinks places human experiences at the core of its practices (Dunne, 2011). Thus, the importance of the material type should be included in the research to measure the consumers' purchasing intention and willingness to pay.

According to research, it is mentioned that carbon savings are achieved after 21 uses compared to disposable cups (Lewis et al., 2021). However, the study did not consider the material used to produce the reusable cup. On the one hand, plastics are seemed to be the best option due to their lightweight, durability, and cost-effectiveness. On the other hand, plastic waste causes harmful impacts on the environment (Jiang et al., 2020). Producers have opted for sustainable options that achieve the same purpose, such as the brand Circular &Co, which developed the first reusable cup made from six used paper cups. Starbucks has collaborated with the company to build upon Starbucks' sustainability commitments and aspirations to become more sustainable (Starbucks Corporation, 2020). The cup is dishwasher safe, 100% recyclable and made from durable materials. Thus, in line with consumers being more aware of making sustainable choices that could leave a smaller environmental impact, it can be assumed that consumers prefer to purchase a reusable cup that is circular. Hojnik et al. (2019) also express that there is need for evidence to support the purchase intention and willingness to pay for specific types of eco-products. Based on the above discussion, these constructs are applied to the reusable cup context in two different materials. Therefore, the following hypotheses are proposed:

H1a. *Consumers who perceive the circular, environmentally friendly reusable cup have a higher purchase intention than customers who perceive the plastic reusable cup*
H1b. *Consumers who perceive the circular, environmentally friendly reusable cup are willing to pay more than customers who perceive the plastic reusable cup*

2.3   *Environmental Consciousness*

One major factor that contributes to the choice of purchasing a reusable cup is the consumers' environmental consciousness which is described as the degree of awareness to solve environmental problems and is the driver of sustainable behavior (Moon et al., 2016; Severo et al.,

2019). Recent studies discovered that the moderating variable of environmental consciousness should considered to understand the purchase intention and actual buying behavior (Bulut et al., 2021; Kautish et al., 2019). Environmental consciousness is a good predictor of purchasing sustainable products (Koening-lewis et al., 2014) and refers to the psychological factors that determine consumers' willingness to engage in pro-environmental behaviors (Zelezny & Schultz, 2000) and the actions taken to possibly minimize adverse effects on the environment (Kollmuss & Agyeman, 2002). An environmentally conscious person is a socially responsible consumer who pays attention to buying products that do not leave environmental consequences (Murphy et al., 1978). Other scholars argue that the extent of environmental consciousness depend on the perceived threats like the level of risk associated with behavior (Grieshop & Stiles, 1989). Since environmental considerations are gaining more popularity in society, it also directly influences consumer decision-making processes. For instance, the consumers are intensively seeking information to educate themselves and criticize the source or information (Oates et al., 2008). Consumers are even demanding companies produce products in an environmentally friendly way (Fisher et al., 2012). Empirical research introduces environmental consciousness through different factors based on personal traits such as knowledge, values, attitudes, and emotional involvement (Kollmuss & Agyeman, 2002).

Furthermore, environmental consciousness and environmentally friendly behavior fit the theoretical model Theory of Planned Behavior (TPB) and suggests that consumers are willing to purchase environmentally friendly products due to attitudes, human values, norms, and behavioral control (Unsworth et al., 2013). The TPB has been used in many industries, such as sustainable waste recycling practices (Ramayah et al., 2012), green purchasing behavior (Wang et al., 2016), and the intention to adopt sustainable energy (Srivastava & Mahendar, 2018). This is mainly done due to Paço and Reis (2012), who argued that environmentally conscious customers are more likely to be cautious about their own actions and behavior. However, the severity of the outcome of not choosing to perform environmentally-friendly behaviors influences the motivation, which in turn affects consumers' decision-making process (Corraliza & Berenguer, 2000). For instance, people tend to be more willing to participate when the behavior is easily adaptable and easy to realize (Bamberg & Möser, 2007).

Similarly, according to Young et al. (2010) and Bansel and Roth (2000), consumers who care about the environment reflect it on their purchase intention. Other researchers have found positive links between environmental consciousness and environmentally friendly purchase intentions (Wang et al., 2019; Zelezny et al., 2000). As an example, the study by Kang et al. (2012) about hotel visitors shows that consumers with high environmental consciousness have the intention to stay in sustainable hotels and are willing to pay more to do so. Additionally, it seems that consumers who have a high level of environmental consciousness prefer to buy a sustainable car as opposed to consumers who have a lower level of environmental consciousness (Heffner et al., 2007).

On the one hand, business experts have perceived that consumers are unwilling to change consumption behavior or pay more for alternatives when it comes to the product packaging (Gong et al., 2020). On the other hand, previous research indicates that higher environmental knowledge and environmental consciousness led to a greater willingness to pay (Lee, 2011). Therefore, environmental consciousness is included in the research as it is one of the critical predictors in the analysis and can be seen as a mental state research variable that may explain consumers' purchasing intention and willingness to pay. When making a purchase, consumers with a stronger sense of environmental issues accept higher prices for environmentally friendly products (Laroche et al., 2001). In the context of beverages, it could resolve to other outcomes. Thus, in the context of purchasing reusable cups, we expect consumers with higher environmental consciousness to behave similarly using the following hypotheses:

H2a. Consumers with higher environmental consciousness are more likely to purchase reusable cups and are more likely to choose the circular, environmentally friendly reusable cup instead of the plastic reusable cup.

H2b. Consumers with higher environmental consciousness are willing to pay more for reusable cups and are willing to pay more for the circular, environmentally friendly reusable cup instead of the plastic reusable cup.

2.4   *The Concept of Nudging*

Behavioral studies have shed light on enhancing environmentally friendly behavior to understand attitudes and intention formation. For instance, Thaler (2009) proposed that nudges can "alter people's behavior in a predictable way without forbidding any options" (p. 6). In other words, establishing nudges allows one to make desired options the best option. Studies on nudging consumers to foster pro-environmentally conscious behavior show that social norms can significantly increase the use of sustainable alternatives (Loschelder et al., 2019). There have been both qualitative and quantitative systematic reviews carried out in the past. For example, the study by Egebark and Ekström (2016) showed that water reduction practices had been triggered using nudges, and Linder et al. (2018) have shown an increase in food waste recycling after consumers perceive nudges to direct them unconsciously. These studies, however, are restricted to certain contexts, often related to recycling behaviors or healthy consumption. The advantage is that nudges require little effort and are fast and easy to implement while preserving the freedom of one's choice (Thaler 2009). Similarly, Staddon et al. (2016)'s study argues that persuasive text effectively induces positive feelings and makes users feel personally responsible. This can be achieved by involving goal setting, social modeling, and prompts. Prompts are treatments that make the consumer understand through instructions, justification for actions, giving feedback, or offering rewards (Osbaldiston & Schott, 2012). With regards to the purchase intention and willingness to pay of reusable cups, this research uses different nudging messages to guide and foster consumers to make sustainable choices. The various messages are elaborated below.

2.4.1   Environmental Awareness Message

Environmental education is one way to improve the consumer purchase decision-making process. The provision of environmental education efforts can help reduce negative environmental behavior and raise awareness (Bamberg et al., 2015; Van Loo et al., 2017). Scholars have described prompting as one of the environmental information provisions in nudging. It uses non-personalized information to raise awareness (Wee et al., 2021). There are some contradictory results since some conclude that providing information may result in more knowledge but does not necessarily translate to behavioral change (Abrahamse et al., 2007). While others, like a study by Grankvist and Biel (2007), show that messages that negatively reflect environmental consequences create a stronger product preference and purchase intention. For instance, consumers would be more willing to purchase labeled products with lower carbon footprints (Grebitus et al., 2020). Two rationales support this perspective: (1) fostering concern for the environment and (2) empowering individuals with environmentally friendly knowledge. As Steg & Vlek (2009) noted, informing consumers about the consequences of their behavior can increase pro-environmental behaviors since new knowledge can change behavior. This study contributes to the literature on environmental nudging techniques by testing the effects of environmental information provision on purchase intention and willingness to pay in the context of reusable cups.

2.4.2   Incentive Message

It has been proven that voluntary behavior leads to better results (Attari et al., 2010), but the use of nudges from an incentivized approach has shown excellent results in many cases in fostering desired social behavior (Gneezy et al., 2011; Stern, 1999). A good example is the usage of incentivization for rewarding positive behavior introduced in the "mind space model" of Thaler (2009). Stern (1999) demonstrates that financial incentives are effective if the reward is perceived as beneficial for the consumer. It is also seen as more active and direct when receiving rewards. For instance, the platform Recyclebank provides rewards to users when engaging in environmentally friendly actions such as cutting water consumption or purchasing sustainable products (Hamari & Koivisto, 2015). Economic incentives such as financial rewards and discounts are motivating for consumers' monetary value (dellavigna & Pope, 2017). This method is often used in advertisements of energy companies that communicate energy-conservation programs with a focus on financial benefits for the consumers (Sovacool, 2014). The research in this field shows that it tends to break consumer patterns by making the alternative more attractive. However, when incentives are not substantial for the consumer, their effect is significantly lessened (Kinzig et al., 2013). Another potential drawback is that the desired behavior is short-lived since consumers are easily distracted (Christ et al., 2010). Furthermore, John et al. (2009) concluded that financial incentives could modify consumer habits of reusing reusable cups but should be further researched to better understand the mechanism and

effectiveness on consumers' purchase intention and willingness to pay. Hence, this study uses the incentive nudging approach to foster desired consumer behavior.

2.4.3   Social Norm Message

Researchers have also explored the role of peer pressure and social norm in marketing environmentally friendly products (Kautish et al., 2019). Most scholars argue that social modeling influences desired behavior based on what 'most people do' (Cialdini, 2003; Klöckner, 2013; Shultz et al., 2008; Thøgersen, 1999) because it follows general rules that are accepted by the public. Klöckner explains that the role of modeling is described as showing an example for people to aspire to or imitate. In other words, humans are highly influenced by social norms and learn to engage in specific behavior through others (Lehner et al., 2016). Although deviations of behavior mentioned do not have any legal consequences, it does impact how consumers feel by not complying with the normative behavior (Cialdini & Trost, 1998). Social norms seem to be most effective in changing behavior in the desired direction since we are likely to follow peers engaging in certain behaviors (Mortensen et al., 2017; Sunstein, 2021). Thherefre, there is great potential to significantly shape human behavior (Cialdini et al., 1991).

Additionally, Dorian & Wüstenhagen (2010) found that compared to giving information about environmental protection, social norm information can significantly enhance consumers' perception and values of a particular behavior. Their study among Swiss consumers has revealed that pricing can have barriers making consumers' willingness to pay is a good predictor of purchasing green electricity. Decreasing prices leads to more benefits for the consumer which result into a purchase. Another example, social norm nudges have proven to increases consumers' willingness to pay for healthy foods (Aldrovandi et al., 2015), persuade people to choose eco-friendly products, and reduces littering activities (Cialdini et al., 1990).

When utilizing social norm influences in communication activities, different approaches can be used that the underlying source can employ. Norms concerning what other people do are called descriptive social norms (Cialdini et al., 1990; Gillingham & Tsvetanov, 2018). It is described as what most people do (Cialdini et al., 1990). For instance, Goldstein et al. (2008) used descriptive social norms in hotel rooms to motivate consumers to participate in an environmentally-friendly initiative to save water by reusing hotel room towels. The results showed that the descriptive social norm appeals were most effective due to the wording of the social norms. To give another example, studies among children revealed an increase of 30% in fruit consumption through social norms (Schwartz, 2007). Yet, it is not evident how these findings would apply to sustainable, reusable cup purchasing. Thus, this study elaborates on this by incorporating social norms in one of the advertisements. It is fascinating to research since previous research has also indicated that further examination is needed to understand the effectiveness of social norms (Schultz et al., 2008). The literature above shows that social norms are the most appealing effects on individual behavior and thus, the nudges designed for

this study consist of the three methods described above to encourage consumers to purchase reusable cups and have an increased willingness to pay. The hypotheses are tested as follows:

H3a. *The social norm nudging message moderates the relationship between the type of cup and purchase intention, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.*

H3b. *The social norm nudging message moderates the relationship between the type of cup and willingness to pay, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.*

2.5   The Conceptual Framework

       The conceptual model of the current study is predicted in Figure 2.1, which includes all relevant variables. It explains the relationship between the independent variables on the dependent variables purchasing intention and willingness to pay. The independent variable has two different categories: one is a reusable cup made from plastic, and the second is produced using old paper cups and into a reusable circular cup. It is expected that the circular, environmentally friendly reusable cup is preferred over the plastic reusable cup. Two moderating variables are present in the study. The first moderator is the level of environmental consciousness, and the second moderator is divided into three different nudging messages on the advertisement. Consumers with high environmental consciousness are expected to show an increased purchase intention and willingness to pay. Lastly, the literature hypothesizes that the incentive nudging approach is the least effective, and the social norm nudging message is the most effective concerning the purchase intention and willingness to pay for reusable cups.

Figure 2.1

Conceptual framework of the research
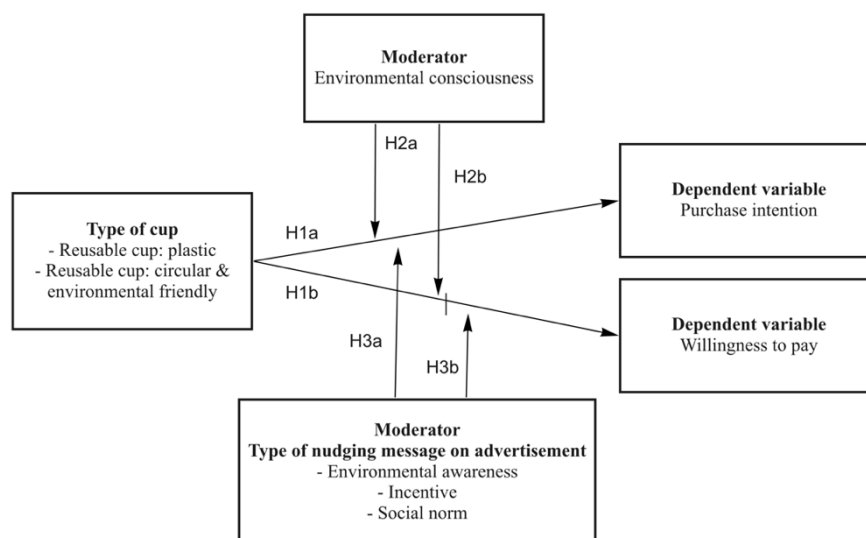
3   Methodology

This chapter makes explicit connections between the theory in the literature and the data collected for research. Based on the literature reviewed previously and the conceptual framework above, this section illustrates the research model applied to answer the research question using the three hypotheses previously stated. After describing the chosen design, sampling strategy, and data collection method, the manipulation and variables are explained in detail.

3.1   *Research Design*

This research consists of a quantitative research design to measure the effects of product nudging through advertising messages and how this affects purchase intention and willingness to pay. It also incorporates the level of environmental consciousness as the moderating variable in the relationship. The aim is to answer the following research question:

Which nudging technique is most effective in advertisements about reusable cups in beverage stores, and to what extent does environmental consciousness play a role in consumers' purchase intention and willingness to pay?

A quantitative research method is appropriate as it allows for intensive observing of general patterns and relations among different social factors using a statistical approach (Babbie, 2012). A online experiment is conducted using a survey design as it is an appropriate method to tackle the main objective of discovering the relationships of the variables (Punch, 2003). For this study, an experimental between-subject design is used in six conditions to manipulate conditions in which the effects of two independent variables can be analyzed on the dependent variables. A between-subject in a factorial 2x3 design is chosen where three different nudging messages are tested within high levels of isolation, which reduces the risk that respondents are influenced by the different manipulation effects (Charness et al., 2012). In other words, the isolation of variables allows to test causal relationships to predict phenomena from stimuli.

A between-subjects research design is beneficial since it reduces the chance that participants answer in line with the hypothesis thereby decreasing the probability of invalid conclusions (Charness et al., 2012). Table 3.1 shows the experimental design with the six groups.

Table 3.1

Experimental 2x3 factorial design with six experimental conditions

		Type of reusable cup	
		Reusable cup: transparent plastic	*Reusable cup: circular environmentally friendly material*
Nudging technique	*Environmental message*	*Condition 1:* 90% of all trash in the ocean is made from plastic	*Condition 2:* 90% of all trash in the ocean is made from plastic
	Incentive message	*Condition 3:* Bring this cup again for a €0.50 discount on your drink	*Condition 4:* Bring this cup again for a €0.50 discount on your drink
	Social norm message	*Condition 5:* 35% of our consumers bring their own reusable cup	*Condition 6:* 35% of our consumers bring their own reusable cup

3.2   *Sampling Strategy*

According to Field and Hole (2003), it is recommended to experiment on 10-20 respondents for each condition. However, 30 respondents are needed if using parametric tests in the study since less than 30 can give unreliable results (Field & Hole, 2003; Pallant, 2016). Therefore, following their argument with six conditions will bring it to a total of 30 x 6 = 180 participants in total ($N = 180$). Two physical stores, called Möge Tee, with on-the-go beverages, is the ideal place to recruit customers as they are the ones that are initially consuming the drinks in single-use plastic cups. The store approved the experimental design before conducting this thesis and is willing to participate. Customers are asked to voluntarily participate before ordering their drink in a physical tea store in Eindhoven or Maastricht in the Netherlands. The store setting is beneficial as the consumer is already at the store, planning to purchase a drink. Hence, the sample is a valid representation of the actual consumer. This is especially useful since this field study allows for a naturally occurring environment and creative treatment of behavior that are often difficult to observe through other methods (Gerber & Green, 2012). This study deploys a non-probability purposive sampling strategy as it includes a selected sample that is homogeneous. It has been proven that incentives boost response rates (Laguilles et al., 2011). Thus, the respondent receives a 15% discount on a drink of their choice after completing the survey.

3.3   *Data Collection Method*

Before experimenting, participants are well informed about the duration, procedure, and ethics. Respondents need to agree with the consent form, which explains that the experiment is entirely voluntary. Furthermore, consumers will be debriefed about the aim of the study after the

completion due to the possibility of biased responses. The language used for the experimental survey is English, as the stores indicated that more than 70% of their customers use the English language to order. The survey will be distributed through a link shared at the counter, which directed the customers to Qualtrics, where participants are randomly assigned to one of the six conditions. This tool is used due to its high level of customization and advanced features that promises a convenient way of gathering data. Qualtrics allows the allocation of participants to one of the six experimental conditions while maintaining a similar total number across all conditions. A total of six advertisements are created with different messages and types of cups on the advertisement. Each participant views one of these advertisements, and they all answered the same questions for the survey.

De Pelsmacker et al. (2005) explains that consumers tend to follow socially desirable answers to research while actual behavior is not measured properly (King & Bruner, 2000). To reduce this gap, effective evaluations are done by closely control the situations based on nearly actual behavioral consumption (De Pelsmacker et al., 2005). This could result in more realistic purchase situations where consumers can consider other personal factors.

3.4   *Operationalization*

The online questionnaire starts with general questions about the visit of the customer. Then asks consumers if they have purchased or gifted a reusable cup from the store. Afterwards, the participant will perceive the stimuli in one of the six conditions. Figure 3.1 shows the advertisements for the six conditions in the survey.

Figure 3.1

Conditions random treatment groups

| Condition 1 | Condition 2 | Condition 3 |

| Condition 4 | Condition 5 | Condition 6 |

All scales include a Likert scale and will be assessed based on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Researchers recommend a 5-point Likert scale since it reduces the frustration level while increasing the response rates and quality of the answer (Chyung et al., 2017). Moreover, it is readily comprehensible to respondents and enables them to express their views adequately (Wilson & Creswell, 1996). The complete questionnaire can be found in Appendix A.

Independent variable. All consumers perceive either the plastic reusable cup or the circular, environmentally friendly reusable cup. While the plastic cup is transparent and displayed as ''acrylic cup 700ml'', the circular cup is brown colored and made from old, disposed cups. This cup is displayed as ''sustainable, reusable cup made from disposable cups 700ml'' to indicate that the item is recycled and environmentally friendly. A label recycling icon is added to emphasize the circular production. Product design is closely linked to consumer understanding and perception of the sustainable developments of the product (Balconi et al., 2019). Thus, the manipulation is essential since consumers' product evaluation is affected by what is perceived in the advertisement and the associations made with environmentally friendly behavior.

Moderators. Two moderating variables are present in the study and are measured by strength.

Type nudging message. The type of nudging message provided in the advertisement interacts with the relation between the independent and dependent variables. The three messages are presented in Table 3.1 and are based on one of the framing effects by Levin et al. (1998) called the attribute-framing effects, which is used in a way to reflect on the product or situation positively or negatively. The nudge interventions are designed based on the theories from the literature. Messages include a numerical value in percentages to indicate the environmental severity, proportion of customers, or monetized reward. The text for the environmental message nudge is obtained from the World

Economic Forum (2018). The incentive message nudge includes a €0,50 discount on a drink that the bubble tea store is currently providing to customers who bring their own cup. The social norm nudge is based on the data from the bubble tea store but emphasized with an additional 20% to increase the low percentage for a more impresive interpretation.

Environmental consciousness. Environmental consciousness is measured using two scales on a 5-point Likert scale (1 = strongly disagree, five = strongly agree). The first scale is obtained from Diekmann and Preisendörfer (2003), with nine items related to affective, conative, and cognitive components that reflect a general attitude towards environmentally-friendly efforts. For instance, these questions include: ''I am afraid when I think about environmental conditions for future generations'', ''The great majority of people do not act in an environmentally responsible way'', ''It is still true that politicians do much too little to protect the environment''. The second scale is the GREEN Consumer Values Scale by Haws et al. (2014) and includes six items ''to measure consumers' tendency to express environmental concern through consumption behaviors and assess their green consumption values'' (Bailey et al., 2018, p. 9). Cronbach's Alphas for the Environmental Consciousness Scale and the GREEN Consumer Value Scale are .72 and .89.

Dependent variables. For each condition, a different advertisement was presented. Two independent variables were measured.

Purchase intention. Participants' purchase intention (Putrevu & Lord, 1994) is measured by asking respondents questions that are assessed on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) using the following three statements: "It is very likely that I will buy this reusable cup'', ''I will purchase this reusable cup next time when I am ordering a drink'', ''I will definitely try this reusable cup''. The Cronbach's Alpha for purchase intention is .91 (Putrevu & Lord, 1994).

Willingness to pay. Participants will be asked how much they would pay on top of the price of a regular drink of 5 euros to receive the reusable cup. They can indicate a number in euros with two decimals on a slider type of question. Thus, this number is a continuous variable. One item is used that asks the following question: ''How much are you willing to pay on top of the five euros of the drink to receive the reusable cup you saw in the advertisement?''. This is added to the research as the willingness to pay question acts as the central input for price in a direct manner, which evoke greater price consciousness (Wertenbroch & Skiera, 2002). In addition, the 'on top' is asked as consumers initially visit the store for the drink in a single-use cup but now have a chance to upgrade to a reusable cup.

Control variables. Control variables are added to the survey to avoid possible biasing effects on the outcome of the analysis. Firstly, the location a consumer visited can reveal the impact of the consumer's dependent variable. Consumers in Maastricht can have different values on pricing due to spendable income. For instance, the average income in Maastricht is €26.300 per year, while people

living in Eindhoven have an average income of €28.400 (Alle Cijfers, 2022). Thus, demographical questions are taken into consideration and controlled through randomization checks. Secondly, a consumer who already has a reusable cup could give other answers for the purchase intention and willingness to pay. This is due to their experience and knowledge of the products' pricing and quality.

Demographical questions. At the company's request, the survey also seeks basic information about respondents that allow an overview of current and potential customers. The information includes participants' gender, age, and educational information.

Confounding variable. A confounding variable can be related to the dependent variable. It is used to control for factors that cannot be randomized.

Attitude Toward the Ad. Aside from general questions, the participant's advertisement perception is considered and added as a covariate. The participant should give an overall opinion about the advertisement using the attitude toward the ad scale by Pollay & Mittal (1993) based on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The respondent answers the following three statements: ''Overall, I consider the advertisement as good'', ''My general opinion of this advertisement is unfavorable (reversed)'' and ''Overall, I like this advertisement''. Cronbach's Alpha for attitude toward the ad are .93.

Manipulation checks. There are two manipulation checks present in the study. The test includes a manipulation screening trap question to increase the validity of the research (Thomas & Clifford, 2017). This question is regarding the advertisements' content, which respondents needed to answer the correct answer to continue the survey. Furthermore, in the middle of the survey, respondents were faced with an attention check question that needed to be answered correctly to be included in the research. Table 3.2 gives an overview of all the constructs used in the survey.

Table 3.2

Measurements of constructs

Construct	Item	Measure	Source
Dependent variables			
Purchase intention (PI)	PI1	It is very likely that I will buy this reusable cup	(Putrevu & Lord, 1994)
	PI2	I will purchase this reusable cup next time when I am ordering a drink	
	PI3	I will definitely try this cup	
Willingness to pay (WTP)	WTP1	Indicate the amount in euros using the slider	
Moderating variables			
Environmental consciousness (EC)	EC1	I am afraid when I think about the environmental conditions for future generations	Diekmann & Preisendörfer (2003)
	EC2	If we continue our current style of living, we are approaching an environmental disaster	

	EC3	Watching TV or reading in the newspaper about environmental problems, I am often embarrassed and angry	
	EC4	The great majority of people do not act in an environmentally responsible way	
	EC5	There are limits of economic growth which the industrialized world has already reached or will reach very soon	
	EC6*	In my opinion, environmental problems are greatly exaggerated by proponents of the environmental movement	
	EC7	It is true that politicians do much too little to protect the environment	
	EC8	To protect the environment, we all should be willing to reduce our current standard of living	
	EC9	Environmental protection measures should be carried out, even if this reduces the number of jobs in the economy	
GREEN Consumer Value Scale (GS)	GS1	It is important to me that the products I use do not harm the environment	Haws et al. (2014)
	GS2	I am willing to be inconvenienced in order to take actions that are more environmentally friendly	
	GS3	I consider the potential environmental impact of my actions when making many of my decisions	
	GS4	My purchase habits are affected by my concern for our environment	
	GS5	I am concerned about wasting the resources of our planet	
	GS6	I would describe myself as environmentally responsible	
	GS_AC	Please select 'Strongly disagree'	
Control Variables			
Attitude Toward the Ad (ATA)	ATA1	Overall, I consider the advertisement as good	Pollay & Mittal (1993)
	ATA2*	My general opinion of this advertisement is unfavourable	
	ATA3	Overall, I like this advertisement	

*Negatively keyed items

3.5   *Validity and Reliability*

Before we continue, it is valuable to mention the validity of the measurement scales. Validity concerns whether the construct is truly measuring the behavior that fits the conceptual model (Cronbach & Meehl, 1955) and is considered in the research as evaluative judgments are made on the inferences of assessment results. These inferences are the hypotheses developed using empirical evidence and tested using valid scales by scholars. Hence, the research contains constructs that have either statistical Cronbach's Alpha that is meaningful and serves the purpose of the assessment or a measurement construct that can be expressed in statistical values like the variable willingness to pay. Additionally, the construct environmental consciousness is measured using two scales, which allows the research to follow a combined overall environmental consciousness after the reliability tests in the results section.

Furthermore, reliability is considered within this research as it reflects consistency and replicability over time. Given the nature of this study, a field survey design could have possible confounding results. Thus, the research was conducted over a longer period, including different days of the week and two locations, to gain a broader sample. In addition, to achieve a reliable sample, the research incorporates a manipulation check, reversed keyed items, and an attention check. This increases the likelihood of a reliable sample. It is essential to mention that a between-subjects experiment combines the power of randomization with deliberately added manipulations in a natural setting, making it more externally valid than laboratory research.

Although it is unfeasible for a field experiment to include all confounding variables related to the study, one confounding variable was considered in the research to ensure valid results. The covariate attitude toward the ad by Pollay and Mittal (1993) is added to the study to ensure the internal validity of the research. If not done, the results may not reflect the relationship between the independent and dependent variables.

3.6   *Pre-test*

Two weeks before the actual experiment, a pre-test survey was created to test if there were any implications within the survey. The design of the advertisements was tested among a sample of 10 people to ensure the differentiation of the different treatments, and all ten people were asked to provide personal feedback. Following the pre-test and corresponding qualitative feedback, the survey was updated with one additional manipulation check, changes in the readability, and the flow of the questionnaire to improve the clarity of the assignment. Moreover, the ability to skip questions was removed to ensure complete surveys for the analysis. No other major issues were discovered in this phase. The final survey can be found in Appendix A.

3.7   <u>Data Measurement Procedure</u>

Firstly, the data will be prepared for analysis. Then reliability tests are performed for the scales used in the thesis. Secondly, to measure if there is a significant effect of the independent variable on the dependent variables, purchase intention and willingness to pay, independent t-tests were conducted. A two-way ANOVA will determine whether the relationship is moderated by environmental consciousness. For the third hypothesis, ANOVA is used to compare the type of nudging message on the reusable cups. Lastly, the confounding variable attitude toward the ad is measured using two-way ANCOVA to test for the possible effects in the relationships for both purchase intention and willingness to pay. The next chapter will dive deeper into the data analysis of the tests.

4   Analysis and Results

In this chapter, the collected data of the experiment are analyzed. After ten days of experimenting, hypothesis tests are performed. First, the data preparation process is explained, then a randomization check is conducted, and descriptive results are summarised. After that, the reliability of the measurement constructs is examined. Lastly, the hypotheses are tested, and additional analyses are performed. The tool to perform the statistical analysis is IBM SPSS.

4.1   *Data Preparation*

A total of 332 participants initially took part in the experiment and agreed with the terms and conditions of the survey between the 4th of May and the 14th of May 2022. Unnecessary information of all responses, such as IP addresses, was removed to remain anonymity among answers. There are three clusters of data extracted from the data. Firstly, respondents with missing data ($n = 31$) were removed from the dataset. Most participants filled in half since each question was required to continue further questions. Thus, the imputation approach only includes complete cases used in SPSS, as Hair et al. (2018) explained. Secondly, incorrect attention check answers ($n = 48$) and participants that have answered incorrectly for the manipulation question ($n = 33$) are removed from the dataset since it can be assumed that these respondents did not read the instructions carefully (Meyvis et al., 2017). After the removal of these participants, a total of 220 remained and are useful for statistical analysis. No other respondents were deleted from the data as no outliers were detected. Moreover, the number of respondents set in the methodology was met as more than 30 participants were present in each condition (Pallant, 2016). Before starting, negatively worded items are reversed in SPSS.

4.2   *Randomization Checks*

Within this section, some randomization checks are performed on the control variables to avoid possible biasing outcomes within the analysis. Randomization checks are performed for the two different store visitors, consumers who already have a reusable cup, gender, and age. This will be done to ensure the effect on the dependent variables (purchase intention and willingness to pay) is distributed equally throughout the six conditions.,

The distribution of the two different locations, Maastricht and Eindhoven, can be found in Appendix B, Table 1. A Chi-square test was conducted to test whether respondents were equally distributed among the conditions (Appendix B, Table 2,3,4). The results showed that there is no significant difference in the store visited (c^2 (5, $N = 220$) = 6.105, $p = 0.296$), respondents that already have a reusable cup (c^2 (5, $N = 220$) = 5.759, $p = 0.330$) and gender (c^2 (15, $N = 220$) = 14.006, $p = 0.525$) among the different conditions. The average age is 23.7 and a one-way ANOVA was conducted to test if age was equally distributed among the six conditions to make sure that it would not influence the results.

First, the Levene's test was included to see if the assumption of homogeneity of variances is met. The test showed that the variance for age were not equal (F (5,214) = 1668, p = 0.144). The ANOVA test showed no significant differences in age across the six conditions (F (5,214) = 1.148, p = 0.336). Thus, randomization was successful, and distribution amongst six conditions is balanced for further research.

4.3   *Descriptive Statistics and General Questions*

4.3.1   *4.2.1 Demographics*

While reviewing the answers after data cleaning, a total of 220 participants were included in the analysis. Approximately ¾ of the sample were females (n = 162, 73.6%). 1 out of 5 people (22.7%, n = 50) was males. The average age of the participants was 23.7 (SD = 5.03). The minimum age was 18, and the maximum was 45. The sample can be considered as an educated one where the majority had a Bachelor's degree or even higher education than that (Higher Vocational Education – 17.3%, University Bachelor's degree – 25.9%, University Master's degree – 15.5% and University PhD. Degree – 4.1%). 1 out of 4 had only finished a high school level education (27.3%, n = 60).

Approximately 3 out of every 10 participants (29.1%, n = 64) were full-time employed. One quarter (25.5%, n = 56) were part-time employers. Exactly 10% were either freelancers or self-employed persons. Interestingly, one in fifth participants were unemployed (20.9%, n = 46) during the time of the survey.

A way to assess the representativeness of the data is by analyzing social media data which shows a compatible population that engages online. Additionally, the top leads are from people aged between 18-24 (50.9%) and 25-34 (33.6%). Generally, the brand is more liked by females on Instagram (85.5%). Unfortunately, the store does not keep track of other the demographical data besides social media from customers. Table 4.1 presents the socio-demographic characteristics of the study sample.

Table 4.1

Socio-demographic characteristics of the sample

Variable	Frequency	Percent
Gender		
Male	50	22.7
Female	162	73.6
Non-binary/third gender	2	.9
Prefer not to say	6	2.7
Age	23.7 (M)	5.03 (SD)
Education level		
No schooling completed	3	1.4
Primary school	4	1.8
High school	60	27.3
Intermediate Trade/technical/vocational training (MBO)	15	6.8
Higher Vocational Education (HBO) – Bachelor's degree	38	17.3
University – Bachelor's degree	57	25.9
University – Master's degree	34	15.5
University – Ph.D. Degree	9	4.1
Employment status		
Employed full-time	64	29.1
Employed part-time	56	25.5
Freelance / Contractor	12	5.5
Self-employed	10	4.5
Unemployed	46	20.9
Prefer not to disclose	14	6.4
Other	18	8.2

4.3.2   General Questions

At request of the stores, the survey incorporated five general questions about the visit to the store and reusable cup behavior. The data showed that more than half of the participants visited the store in Maastricht (52.7%, $n = 116$). One-third of the participants have visited the store for the first time (33.6%, $n = 74$), and one out of four participants visit the store once or twice a year (18.2%, $n = 40$). 31 participants (14.1%) are loyal customers that visit the store four or more times a month. Four questions were asked to see if consumers have and use reusable cups. If the answers were 'Yes,' the respondent continued with the second question. There were only 34 (15.5%) participants who had a reusable cup, one third (35.3%, $n = 12$) of them would bring the cup sometimes to have refilled at the store. Only three participants (8.8%) who have a reusable cup indicated that they would bring the cup constantly when they visited the store. Lastly, the participants with a reusable cup were asked if they had a branded Möge Tee reusable cup from the store, either purchased or gifted. According to the

data, 13 participants (37.1%) already own the cup. Only two participants (15.4%) would bring the cup at all times for a refill.

4.4   *Reliability of the Measurement Scales*

The following section will test the reliability of purchase intention, environmental consciousness scale, and GREEN consumer value scales. This is essential before conducting the hypothesis to check if the scales obtained from previous researchers show consistency and if there are underlying dimensions in the multi-scale items. Pallant (2016) suggests that Cronbach Alpha values above 0.70 are acceptable for research.

As in Table 4.2, two variables, namely purchase intention (Cronbach's Alpha = .82) and environmental consciousness (Cronbach's Alpha = .83), had acceptable Alpha values. Hence, those two variables were considered reliable. However, both attitude toward the ad (Cronbach's Alpha = .46) and GREEN consumer value scale (Cronbach's Alpha = .58) variables had questionable reliability. But removing two items, namely attitude towards the ad item 2 (reversed) and GREEN scale items 1 and 2 from both the scales resulted in significant improvements in reliability, with attitude toward the ad value increasing to .80 from .46 and GREEN scale increased to .58 from .73. Hence, ATA2_R, GS1 and GS2 were removed from the further analysis to achieve reliability.

Furthermore, environmental consciousness was reliable, removing reversed coded item EC6_R improved the scale reliability to .89 from .83. Although it's not a huge amount, it indicates that EC6_R might affect the factorial validity of the scale. However, due to this small amount, EC6_R is kept for further research.

Table 4.2

Reliability of scales

Scale	Number of items	Cronbach's Alpha value	Item/s to delete	Cronbach's Alpha after deletion
Attitude Toward the Ad (ATA)	3	.455	1	.798
Purchase Intention (PI)	3	.822	-	-
Environmental Consciousness Scale (EC)	9	.834	-	-
GREEN Consumer Value Scale (GS)	6	.576	2, 1	.728

4.4.1   *Summated Scale of Environmental Consciousness and GREEN Consumer Value Scale*

After the reliability tests, the items GS1 and GS2 were removed for further analysis as the items do not improve the reliability of the scales. Since both environmental consciousness scale and GREEN consumer value scale measure the same construct of overall environmental consciousness, it allows employing robust statistical testing procedures. Hence, the 13 items, EC1, EC2, EC3, EC4,

EC5, EC6_R, EC7, EC8, EC9, GS3, GS4, GS5, and GS6, were merged into one summated scale of measurement for measuring the overall environmental consciousness. A summated scale allows rating scales to be placed on a continuum of the variable measured. A reliability test is performed to perceive if the summated scale is valid. A Cronbach's Alpha of .84 shows that the summated scale is reliable.

Table 4.3

Reliability analysis for summated scale environmental consciousness

Item	*Environmental Consciousness*
EC1	0.66
EC2	0.64
EC3	0.63
EC4	0.55
EC5	0.57
EC6_R	0.04
EC7	0.55
EC8	0.63
EC9	0.52
GS3	0.58
GS4	0.55
GS5	0.34
GS6	0.37
R^2	0.93
Cronbach's α	0.84

4.5   *Hypotheses Testing*

After the reliability analysis, the summated scale of environmental consciousness is used for further research. A total of three hypotheses will be tested. After, the confounding variable using ANCOVA will be performed among all other variables in this research.

4.5.1   *Hypothesis 1*

H1a. *Consumers who perceive the circular, environmentally friendly reusable cup have a higher purchase intention than customers who perceive the plastic reusable cup*

An independent sample t-test was conducted to see whether there is a difference in purchase intention between circular, environmentally friendly reusable cups ($M = 3.18$, $SD = 0.99$) and reusable plastic cups ($M = 3.18$, $SD = 1.13$). Before conducting the analysis, assumptions need to be met. Both groups were almost equally distributed (transparent plastic cup 48.2%, $n = 106$, circular environmentally friendly cup 51.8%, $n = 114$). The assumption 'equality of variances' was tested using Levene's test. F-test indicated that there is no significant difference in variance among the two groups ($F = 2.527$, $p = 0.113$). Hence t-test with equal variances assumed was used. T-test indicated

that there is no significant difference between the two groups (t (218) = 0.057, p = 0.955). This means that regardless of the way consumers perceive reusable cup types, their purchase intention will be the same. Thus, we reject H1a.

H1b. *Consumers who perceive the circular, environmentally friendly reusable cup are willing to pay more than customers who perceive the plastic reusable cup*

An independent sample t-test was conducted to see whether there is a difference in willingness to pay between circular, environmentally friendly reusable cups (M = 7.94, SD = 9.38) and reusable plastic cups (M = 6.78, SD = 7.04). The assumption 'equality of variances' was tested using Levene's test. F-test indicated that there is no significant difference in variance between the two groups (F = 3.100, p = 0.080). Hence t-test with equal variances assumed was used. As assumptions are already met, the analysis continued. The t-test indicated no significant difference between the two groups (t (217) = 1.025, p = 0.306). This means that regardless of the way consumers perceive reusable cup types, their WTP will be the same. Thus, we reject H1b.

4.5.2 Hypothesis 2

H2a. *Consumers with higher environmental consciousness are more likely to purchase reusable cups and are more likely the choose the circular, environmentally friendly reusable cup instead of the plastic reusable cup.*

A two-way ANOVA was conducted to test the above hypothesis. But before conducting the analysis, the summated scale of environmental consciousness was split into two groups using the median split to create groups with low environmental consciousness and high environmental consciousness (low EC: n = 128 and high EC: n = 92). Additionally, the following assumptions were checked. We check if our dependent variable is approximately normally distributed for each category of the independent variable. Both categories of 'environmental consciousness' variable (low EC – W (128) = .954, $p < 0.001$), high EC (W (92) = 937, $p < 0.01$) didn't distribute normally distribute in 'purchase intention' scores. Also, both categories of type of cup variable (circular environmentally friendly reusable cup – W (114) = 0.961, p = 0.002, transparent plastic reusable cup – W (106) = 0.959, p = 0.002) did not distribute normally in 'purchase intention' scores. However, since ANOVA performs well under non-normal data, the analysis can proceed with a robust test against the violation of the normality assumption. Since the Cronbach's Alpha level of 0.05 was found, the 'homogeneity of variance' assumption was met (Levene's statistic (3, 216) = 2.00, p = 0.115). Since the assumptions were met, the test was carried out.

ANOVA indicated that the type of cup has no effect on purchase intention, F (1, 216) = 0.146, p = 0.716. However, environmental consciousness had a significant effect on purchase intention, F (1, 216) = 5.13, $p < 0.05$. In other words, regardless of the cup type, consumers with an environmental consciousness above the median (M = 3.05, SD = 0.93) have a higher PI compared to

consumers with environmental consciousness below the median ($M = 3.37$, $SD = 0.11$). Furthermore, the interaction effect was insignificant, $F (1, 216) = 0.944$, $p = 0.332$. This means that environmental consciousness does not moderate the relationship between cup types and purchase intention. Based on this evidence, we reject H2a.

Table 4.4

Relationship between type of cup and purchase intention with moderating effect of environmental consciousness

Environmental Consciousness	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANOVA			Multiple comparisons	
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*Cup Types*	*Environmental Consciousness*	*Interaction*	*Cup Types*	*Environmental Consciousness*
Low EC	70	3.01	0.13	58	3.09	0.14	0.133 ns	5.133*	0.944 ns	Nd	High>Low
High EC	44	3.47	0.14	48	3.28	0.15					

This table shows the differences in 'Purchase Intention' scores between type of cup based on 2-way (environmental consciousness and type of cup) ANOVA.

* p < 0.05; ns = not significant; nd: no significant differences

H2b. *Consumers with higher environmental consciousness are willing to pay more for reusable cups and are willing to pay more for the circular, environmentally friendly reusable cup instead of the plastic reusable cup.*

A two-way ANOVA was conducted to test the above hypothesis. But before conducting the analysis, the following assumptions were checked. We check if our dependent variable is approximately normally distributed for each category of the independent variable. Both categories of 'environmental consciousness' variable that is already split (high EC – $W (92) = 0.849$, $p < 0.001$, low EC – $W (127) = 0.617$, $p < 0.001$) and both categories of type of cup variable (circular environmentally friendly reusable cup – $W (113) = 0.623$, $p < 0.001$, transparent plastic reusable cup – $W (106) = 0.643$, $p < 0.001$) did not distribute normally in 'willingness to pay' scores. However, since ANOVA performs well under non-normal data, the analysis can proceed with a robust test against the violation of the normality assumption. We check if there is a 'homogeneity of variances'. At 0.01 Cronbach's Alpha level the 'homogeneity of variance' assumption tested using Levene's test was violated, ($F (3, 215) = 4.475$, $p < 0.01$). Since the assumptions were violated, the ANOVA with bootstrapping was carried out.

ANOVA indicated that the type of cup has no effect on willingness to pay, $F (1, 215) = 0.808$, $p = 0.370$. However, environmental consciousness had a borderline significant effect on willingness to pay at 1% significance level, $F (1, 215) = 2.68$, $p < 0.10$. In other words, regardless of the cup types, consumers with a lower environmental consciousness ($M = 8.14$, $SD = 0.74$) have a higher willingness to pay than consumers with higher environmental consciousness ($M = 6.28$, $SD =$

0.87). Furthermore, the interaction effect was insignificant, $F (1, 215) = 0.003$, $p = 0.954$. This means that environmental consciousness does not moderate the relationship between cup types and willingness to pay. Based on this evidence, we reject H2b.

Table 4.5

Relationship between type of cup and willingness to pay with moderating effect of environmental consciousness

Environmental Consciousness	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANOVA			Multiple comparisons	
	N	Mean	SD	N	Mean	SD	Cup Types	Environmental Consciousness	Interaction	Cup Types	Environmental Consciousness
Low EC	69	8.69	1.00	58	7.60	1.01	0.808 ns	2.678*	0.003 ns	Nd	Low>High
High EC	44	6.76	1.25	48	5.80	1.20					

This table shows the differences in 'Willingness to Pay' scores between the type of cup based on 2-way (environmental consciousness and type of cup) ANOVA.

* p < 0.10; ns = not significant; nd: no significant differences

4.5.3 Hypothesis 3

H3a. *The social norm nudging message moderates the relationship between the type of cup and purchase intention, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.*

All two categories of type of cup variable (circular environmentally friendly reusable cup – $W (114) = 0.961$, $p = .002$, transparent plastic reusable cup – $W (106) = 0.959$, $p = .002$) did not distribute normally in 'purchase intention' score. At 0.01 level of significance, one category of nudging variable was normally distributed (Incentive message – $W (75) = 0.956$, $p < 0.01$), but not in case of other two categories (Environmental message – $W (72) = 0.957$, $p = 0.015$, Social norm message – $W (73) = 0.963$, $p = 0.031$). However, since ANOVA performs well under non-normal data and the analysis can proceed with a robust test against the violation of normality assumption. The 'homogeneity of variance' assumption using Levene's statistic was also violated ($F (5, 214) = 4.85$, $p > .001$).

Since assumptions were violated, ANOVA with bootstrapping was conducted. ANOVA indicate that the interaction effect was insignificant, $F (2, 214) = 0.791$, $p = 0.455$. This means that the nudging technique does not moderate the relationship between cup types and purchase intention. Additionally, the type of cup ($F (1, 214) = 0.006$, $p = 0.943$) and nudging technique ($F (2, 214) = 0.568$, $p = 0.605$) does not influence purchase intention. From the analysis, it can be perceived that regardless of cup types, consumers have a similar level of purchase intention across different nudging techniques. Especially, for the circular, environmentally friendly reusable cup, consumers who perceived the social norm message ($M = 3.07$, $SD = 0.18$) have a similar level of purchase intention as

those who perceived the environmental awareness (*M* = 3.25, *SD* = 0.17) and those who perceived the incentive message (*M* = 3.23, *SD* = 0.17). Likewise, for transparent plastic reusable cup, consumers who perceived the social norm message (*M* = 3.21, *SD* = 0.18) have similar level of purchase intention as those who perceived the environmental awareness (*M* = 2.98, *SD* = 0.18) and those who perceived the incentive message (*M* = 3.32, *SD* = 0.18). As a result, H3a was rejected.

Table 4.6

Relationship between type of cup and purchase intention with moderating effect of environmental consciousness

Nudging Techniques	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANOVA			Multiple comparisons	
	N	*Mean*	*SD*	*N*	*Mean*	*SD*	*Cup Types*	*Nudging Techniques*	*Interaction*	*Cup Types*	*Nudging Techniques*
Environment Awareness	38	3.25	0.17	34	2.98	0.18	0.005 ns	0.503 ns	0.791 ns	Nd	Nd
Incentive	39	3.23	0.17	36	3.32	0.18					
Social Norm	37	3.07	0.18	36	3.21	0.16					

This table shows the differences in 'Purchase Intention' scores between the type of cup based on 2-way (environmental consciousness and type of cup) ANOVA.

* p < 0.05; ns = not significant; nd: no significant differences

H3b. *The social norm nudging message moderates the relationship between the type of cup and willingness to pay, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.*

All three categories of cup type variable (circular environmentally friendly reusable cup – *W* (113) = 0.623, *p* < 0.001, transparent plastic reusable cup – *W* (106) = 0.643, *p* < .001) did not distribute normally in 'willingness to pay' scores. Three categories nudging technique variable (Environmental message – *W* (72) = .657, *p* < .001, Social norm message – *W* (72) = .640, *p* = .000, Incentive message – *W* (75) = .640, *p* < .001) were also distributed non-normally. However, since ANOVA performs well under non-normal data and the analysis can proceed with a robust test against the violation of normality assumption. The 'homogeneity of variance' assumption using Levene's statistic was met (*F* (5, 213) = 1.22, *p* = 0.301).

Since assumptions were not violated, ANOVA was carried out. ANOVA indicated, type of cup (*F* (1, 213) = 1.070, *p* = 0.302) and nudging techniques (*F* (2, 213) = 0.291, *p* = 0.748) have no effect on willingness to pay. This means that willingness to pay does not change based on the nudging techniques or type of cup. Further, interaction effect was also insignificant, *F* (2, 213) = 0.066, *p* = 0.936. This means that the nudging techniques do not moderate the relationship between cup types and willingness to pay. From the analysis, it can be perceived that regardless of cup types, consumers have

a similar level of willingness to pay across different nudging techniques. Especially, for the circular, environmentally friendly reusable cup, consumers who perceived the social norm message ($M = 8.634$, $SD = 1.40$) have a similar level of willingness to pay as those who perceived the environmental awareness ($M = 7.17$, $SD = 1.36$) and those who perceived the incentive message ($M = 8.63$, $SD = 1.34$). Likewise, for the transparent plastic reusable cup, consumers who perceived the social norm message ($M = 6.88$, $SD = 1.40$) have a similar level of willingness to pay as those who perceived the environmental awareness ($M = 6.34$, $SD = 1.44$) and those who perceived the incentive message ($M = 7.10$, $SD = 1.40$). As a result, H3b was rejected.

Table 4.7

Relationship between type of cup and willingness to pay with moderating effect of nudging techniques

Nudging Techniques	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANOVA			Multiple comparisons	
	N	Mean	SD	N	Mean	SD	Cup Types	Nudging Techniques	Interaction	Cup Types	Nudging Techniques
Environment Awareness	38	7.17	1.36	34	6.34	1.44	1.070 ns	0.291 ns	0.066 ns	Nd	Nd
Incentive	39	8.04	1.34	36	7.10	1.40					
Social Norm	36	8.63	1.40	36	6.88	1.40					

This table shows the differences in 'Willingness to Pay' scores between type of cup based on 2-way (environmental consciousness and type of cup) ANOVA.

* $p < 0.05$; ns = not significant; nd: no significant differences

4.6   *Relationship between Type of Cup & Nudging Techniques and Purchase Intention, Controlling for Attitude Toward the Ad*

Aside from the hypothesis, a two-way between-subjects ANCOVA with 'type of cup' and 'nudging techniques' as independent variables, 'attitude toward the ad' as a covariate, and 'purchase intention' as the dependent variable were analyzed. First, the assumptions are checked. 'Homogeneity of variances' assumption was tested using Levene's statistic and was found to be violated, $F (5, 214) = 5.272$, $p < 0.001$. 'Linearity and homogeneity of regression slopes' assumptions were met when tested using a scatterplot between attitude toward the ad and purchase intention across each nudging techniques group and each type of cup (Appendix E, Figures 1 & 2). 'Homoscedasticity of errors variances' assumption tested using F-test for heteroskedasticity which was also met, $F (1,218) = 0.312$, $p = 0.577$. 'Scatterplot of Cook's distance values' shows no significant unusual points for any interaction groups of types of cups and nudging techniques (Appendix E, Figure 3). Then, 'Normality of residuals' assumption also met, $W (219) = 0.992$, $p = .294$. Since all assumptions are met, two-way between-subjects ANCOVA can be conducted.

ANCOVA indicated that after controlling for attitude toward the ad, type of cup has no effect on purchase intention, (F (1, 213) = 0.155, p = 0.694, partial η^2 = 0.001), as well as nudging techniques has no significant effect, (F (2, 213) = 0.222, p = 0.783, partial η^2 = 0.002). The interaction effect (types of cup * nudging techniques) was significant at 1%, F (2, 214) = 2.242, $p < 0.100$, partial η^2 = 0.023). This means that after controlling attitude toward the ad, nudging techniques does moderate the relationship between type of cup and purchase intention. In other words, for circular environmentally friendly reusable cup, environmental awareness message (M = 3.47, SD = 0.16) moderate the impact of type of cup on purchase intention, followed by social norm message (M = 3.09, SD = 0.16) and incentive message (M = 3.05, SD = 0.15). However, for transparent plastic reusable cup, incentive message (M = 3.25, SD = 0.16) moderate the impact of type of cup on purchase intention, followed by social norm message (M = 3.19, SD = 0.16), and environmental awareness message (M = 3.02, SD = 0.16).

Table 4.8

Nudging techniques as a moderator in the relationship between the type of cup and purchase intention (covariate: attitude toward ad)

Nudging Techniques	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANCOVA			Multiple comparisons	
	N	Mean	SD	N	Mean	SD	Cup Types	Nudging Techniques	Interaction	Cup Types	Nudging Techniques
Environmental Awareness	38	3.47	0.16	34	3.02	0.16	0.155 ns	0.222 ns	2.474*	Nd	Nd
Incentive	39	3.05	0.15	36	3.25	0.16					
Social Norm	37	3.09	0.16	36	3.19	0.16					

This table shows the differences in Purchase Intention scores between the type of cup based on 2-way (nudging techniques and type of cup) ANCOVA with a covariate of attitude towards the ad.

* $p < 0.10$; ns = not significant; nd: no significant differences

4.7 *Relationship between Type of Cup & Nudging Techniques and Willingness to Pay, Controlling for Attitude Toward the Ad*

Another two-way between-subjects ANCOVA method with 'type of cup' and 'nudging techniques' as independent variables, 'attitude toward the ad' as a covariate, and 'willingness to pay' as the dependent variable. First, the assumptions are checked. 'Homogeneity of variances' assumption tested using Levene's statistic was met, F (5, 213) = 1.066, p = 0.380. 'Linearity and homogeneity of regression slopes' assumptions were met when tested using a scatterplot between attitude toward the ad and willingness to pay across each nudging techniques group and each the type of cup (Appendix E, Figures 4 & 5). 'Homoscedasticity of errors variances' assumption tested using F-test for heteroskedasticity also met, F (1,217) = 2.480, p = 0.117. 'Scatterplot of Cook's distance values'

shows no significant unusual points for any interaction groups of types of cups and nudging techniques (Appendix E, Figure 6). 'Normality of residuals assumption' also met, $W(219) = 0.637$, $p < 0.001$. However, the robustness of ANCOVA to non-normal data prompted to carry out the analysis. Since all assumptions are met, two-way between-subjects ANCOVA can be conducted.

ANCOVA indicated that after controlling for attitude toward the ad, type of cup has no effect on willingness to pay, ($F(1, 212) = 1.160$, $p = 0.283$, partial $\eta^2 = 0.005$), as well as nudging techniques has no significant effect, ($F(2, 2112) = 0.178$, $p = 0.837$, partial $\eta^2 = 0.002$). The interaction effect (types of cup * nudging techniques) was not insignificant at 1%, $F(2, 212) = 0.067$, $p = 0.935$, partial $\eta^2 = 0.001$). This means that after controlling attitude toward the ad, nudging techniques does not moderate the relationship between type of cup and willingness to pay. In other words, regardless of cup types, consumers who perceived environmental awareness (circular environmentally friendly reusable cup $-M = 7.45$, $SD = 1.34$, transparent plastic reusable cup $-M = 6.38$, $SD = 1.44$) message has similar level of willingness to pay as for those who perceived incentive message (circular environmentally friendly reusable cup $-M = 7.82$, $SD = 1.36$, transparent plastic reusable cup $-M = 7.01$, $SD = 1.40$) and as also for those who perceived social norm message (circular environmentally friendly reusable cup $-M = 8.65$, $SD = 1.40$, transparent plastic reusable cup $-M = 6.86$, $SD = 1.40$).

Table 4.9

Nudging techniques as a moderator in the relationship between the type of cup and willingness to pay (covariate: attitude toward ad)

Nudging Techniques	Circular Environmentally Friendly Reusable Cup			Transparent Plastic Reusable Cup			2-way ANCOVA			Multiple comparisons	
	N	Mean	SD	N	Mean	SD	Cup Types	Nudging Techniques	Interaction	Cup Types	Nudging Techniques
Environmental Awareness	38	7.45	1.34	34	6.38	1.44	1.160 ns	0.178 ns	0.067 ns	Nd	Nd
Incentive	39	7.82	1.36	36	7.01	1.40					
Social Norm	37	8.65	1.40	36	6.86	1.40					

This table shows the differences in 'Willingness to Pay' scores between the type of cup based on 2-way (nudging techniques and the type of cup) ANCOVA with a covariate of attitude towards the ad.

* $p < 0.05$; ns = not significant; nd = no significant differences

4.7.1 Evaluations of the Hypotheses

Table 4.10

Summary of the main results

Hypothesis	Description	Result	Description
H1a	Consumers who perceive the circular, environmentally friendly reusable cup have a higher purchase intention than customers who perceive the plastic reusable cup	Rejected	Purchase intention is the same for both types of cups
H1b	Consumers who perceive the circular, environmentally friendly reusable cup are willing to pay more than customers who perceive the plastic reusable cup	Rejected	Willingness to pay is also the same for both types of cups
H2a	Consumers with higher environmental consciousness are more likely to purchase reusable cups and are more likely to choose the circular, environmentally friendly reusable cup instead of the plastic reusable cup.	Rejected	Only environmental consciousness is significant on purchase intention (Higher ->Higher); interaction term is insignificant
H2b	Consumers with higher environmental consciousness are willing to pay more for reusable cups and are willing to pay more for the circular, environmentally friendly reusable cup instead of the plastic reusable cup.	Rejected	Only environmental consciousness is significant on willingness to pay (Lower ->Higher); interaction term is insignificant
H3a	The social norm nudging message moderates the relationship between the type of cup and purchase intention, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.	Rejected	Purchase intention is the same for social norm nudging message, nudging message incentive message for both types
H3b	The social norm nudging message moderates the relationship between the type of cup and willingness to pay, and it even has a more positive influence than the nudging message regarding environmental awareness and even more than the incentive message.	Rejected	Willingness to pay is the same for social norm nudging message, nudging message incentive message for both types

5   Discussion

Within this chapter, the main results of the research will be discussed. Additionally, it provides relevant practical implications and limitations of this study. Finally, the chapter ends with suggestions for possible focus points in further research.

5.1   *Findings of the Main Analysis*

The first hypothesis was developed since it was assumed that consumers have different views on the reusable cup's material, design, and look. It was expected that consumers who perceived the circular, environmentally friendly reusable cup would have a higher purchase intention and willingness to pay. The circular cup was presented as 'made from disposable cups' with a recycle icon on the advertisement. The transparent cup was made from acrylic and is clear and transparent.

It is supported by research that the design of the product is dependent on consumers' purchase intention and willingness to pay (McDaniel & Baker, 1977; Kishna & Morrin, 2008) and that the color of the cup is associated with environmentally friendly attributes (Lim et al., 2020). However, the results of the hypothesis have shown that consumers' purchase intention and willingness to pay stay the same for both types of cups. Thus, it is true that consumers don't have a specific stronger preference when it comes to the two cup designs. The circular, environmentally friendly reusable cup has shown to have the exact same mean regarding consumers' purchase intention ($M = 3.18$). Moreover, the willingness to pay has shown that there is a little higher preference for the circular, environmentally friendly reusable cup ($M = 7.94$) than the reusable plastic cup ($M = 6.78$), but nothing substantial. Thus, the results showed no significant difference between the two types of cups. No matter which cup was presented in the advertisement in the conditions, consumers' purchase intention and willingness to pay were not significantly higher or lower.

The second hypothesis was developed with the expectation that consumers with a higher environmental consciousness would also have a higher purchase intention and willingness to pay. Environmental consciousness was added as the main predictor within the analysis. Environmentally conscious consumers would also have a higher purchase intention and willingness to pay when perceiving the circular recycled, reusable cup. One of the main factors contributing to consumers' decision-making process is environmental consciousness (Koening-lewis et al., 2014). Environmentally conscious consumers feel more responsible for the environmental consequences when buying products (Murphy et al., 1978). Hence, these consumers would be willing to purchase something that helps the environment. The reusable cups can be returned to the store and refilled instead of ordering drinks in single-use plastic cups. The cup design is also considered as the circular reusable cup is brown and made from recycled materials. In contrast to the transparent plastic reusable cup, the circular reusable cup is brown colored, which is perceived as more environmentally friendly.

The analysis uses the summated scale of the environmental consciousness scale and GREEN consumer value scale, as mentioned in the reliability test. Environmental consciousness was split into two groups using the median split, showing that 128 respondents have a low level of environmental consciousness, and 92 respondents have a high level of environmental consciousness. The results showed that consumers with higher environmental consciousness have a higher purchase intention than consumers below the median. However, the insignificant interaction effect shows that environmental consciousness does not moderate the relationship between cup types and purchase intention. For willingness to pay, the contrary was found. Low environmental consciousness had a significant effect on willingness to pay. Meaning, it was found that low environmental consciousness leads to higher willingness to pay. Hence, the hypotheses were rejected. It should be noted that ANOVA was chosen for the analysis, but the normal distribution and homogeneity of variance assumptions were violated. Although the analysis proceeds with ANOVA with bootstrapping, it could have impacted the result as bootstrapping needs relatively large samples to work sufficiently well (Deng et al., 2013).

The third hypothesis includes the analysis of the three nudging messages based on the theory around nudging by Thaler (2009). The literature has focused on the concept as it has proven its effectiveness in various fields (Egebard & Ekstöm, 2016; Goldstein et al., 2008; Osbaldiston & Schott, 2012). Staddon et al. (2016) explain that persuasive text is a form of nudging that can be implemented to induce positive feelings. Moreover, social or peer pressure is the best way to market environmentally friendly products (Kautish et al., 2019). The hypothesis proposed that the social norm nudge would substantially influence consumers' purchase intention and willingness to pay since social norms highly influence humans and what 'other people do' (Cialdini, 2003). It was researched that the most effective cause is that humans like to follow others (Goldstein et al., 2008). Results have shown that purchase intention and willingness to pay do not change based on the nudging technique that was presented in the advertisement. The type of nudging technique does not moderate the relationship between purchase intention and willingness to pay. From the analysis, it can be perceived that consumers' willingness to pay is the highest among those who perceived the social norm nudge, but it did not yield a significant result. Lastly, consumers who perceive the transparent plastic reusable cup with an incentive nudge message have the highest purchase intention. There are only minor variances between the types of nudging techniques and the dependent variable. Thus, the third hypothesis is also rejected.

5.2   *Confounding Variable Attitude Toward the Ad*

A confounding variable was taken into consideration in this study. It looked at the relationship between the type of cup, nudging techniques, and either purchase intention or willingness to pay to see if it is controlled by attitude toward the ad. Results show that when the attitude toward the ad is controlled, the nudging technique moderates the relationship between the types of cups and purchase

intention making attitude toward the ad influence the relationship. However, the nudging technique does not moderate the relationship when controlling for attitude toward the ad with the dependent variable willingness to pay and type of cup. It is essential to mention that other variables could influence the relationship that has nothing to do with environmentally friendly behaviors since it has been argued that being environmentally friendly is not enough for a product to be bought as consumers show the importance of product functionality (Auger et al., 2008).

5.3   *Practical Implications of the Manipulation*

Even though participants answered the manipulation and attention check questions correctly, there were no significant differences found among the sample. The cause of the insignificance could involve several reasons. First of all, each conditions' advertising design itself can potentially cause some problems. Some consumers could have focused on the advertisement text while not on the cup presented or the other way around. To be precise, the circular, environmentally friendly cup may not be interpreted properly as the text and material were not easily visible by the consumer due to the blue-colored holder around the circular environmentally friendluy cup. Besides, the clear plastic cup contained a matcha drink inside since a photo of an empty cup would not be visible in the advertisement. The matcha color was very vibrant and can influence consumers' purchase intention and willingness to pay since they might not like the drink or color. According to the Möge Tee company statistics in the ordering system, almost 3,4% of all orders include a matcha drink. Thus, the favourability of the color and flavor impact the outcome.

The nudges in each condition were chosen based on research about the effectiveness of each type of nudging technique. However, literature did not show how specific values such as the social norm nudge, including the text '35% of our customers bring back their own reusable cup' could have made an impressive impact on the consumer. Perhaps increasing the values would emphasize the message. Moreover, Kinzig et al. (2013) explained that when the reward is not perceived as substantial, which was in this case only €0.50 for the incentive advertisement, the idea to buy a reusable cup could be lessened. Therefore, it can be concluded that the manipulation might not have affected the participants as it was expected.

Furthermore, consumers' likability or preference of one cup over the other does not mean the consumer noticed the environmentally friendly choice he or she has made. Other confounding variables could influence the outcome of the research. As mentioned by White et al., 2019, behavioral change toward sustainability is challenging, especially when the consequences are not tangible or when it does not have a direct influence on the consumer. Behavioural change can be achieved if the behavior seems "highly automated" using minimal effort (Jackson, 2005).

5.4   *Academic Contributions*

This study has contributed to literature about nudging techniques using advertisements in the beverage industry. Most studies have focused on sustainable energy, cars, hotels, and eating behaviors. Loschelder et al. (2019) explain that we fail to solve the acute environmental problem and continue with our lives with on-the-go single-use cups to date. Other researchers focused on inspiring behavioral changes in an environmentally friendly way through nudging (Steg & Vlek, 2009). Despite the current awareness of sustainable habits and purchasing behaviors, only a few studies have addressed using reusable cups within physical beverage stores (Poortinga & Witaker, 2018). It is recommended that companies should operate more sustainably and consider new models for business that encourage sustainable consumption (Kotler et al., 2010). However, in practice, consumers encounter an attitude-behavior gap (Park & Lin, 2018). Although Starbucks is using marketing techniques to encourage consumers to purchase reusable cups for refills, it is still not a human norm to bring a reusable cup. This is supported as behavioral change can be achieved if the behavior seems "highly automated" using minimal deliberation or cognitive effort with a low awareness for it to become a habit (Jackson, 2005). We can see a change in the behavior of consumers recycling plastic bags due to government policy (Luís et al., 2020), and retailers could provide a discount when bringing reusable cups (Harrison, 2019). However, purchasing reusable cups and bringing them to the store is still challenging to adapt to. Besides, there is a discrepancy between what consumers say and do, making it challenging for companies and policymakers to increase sustainable consumption (Johnstone & Tan, 2014).

In contrast to Osbaldiston and Schott (2012), who argue that nudges effectively persuade consumers to make environmentally-friendly choices, this research has discovered that the nudging techniques don't show significant changes in purchase intention and willingness to pay in the field of beverages stores. Other factors might have taken an essential role in consumers considering purchasing reusable cups. Hence, this research is rather explorative and has proven that further research is needed.

5.5   *Limitations and Future Research*

Next to the academic contributions, several limitations must be addressed before the end of the research. Although this research accounted for the confounding variable attitude toward the ad, it seems that there are other factors as well. Aside from just the nudging message, other factors could have influenced the strength and effectiveness of nudging, such as attitude towards the design aesthetics or perceived quality of the reusable cup. For instance, Marchiori et al. (2017) explain that strong emotions might limit the effectiveness of a nudge. Emotions are hard to measure at the start of a study. In the context of the experiment, the sample of the study consists of consumers who were initially planning to purchase a drink. Thus, emotions could have played a role if consumers were thirty or in a hurry to purchase a drink.

Furthermore, due to the nature of the experiment, the location, and the incentive of a 15% discount, consumers might feel the need to pressure through the survey without paying close and critical attention. Despite the response rate of 332 participants, the manipulation and attention check allowed to cut the data to $N = 220$. Although this method uses independent groups that avoid carryover effects, a larger sample is recommended for a better and more accurate result. For future research, it is recommended to peruse a complete field experiment instead of an experimental survey design as the advantage is the natural face-to-face setting with a staff member. For example, the staff might ask the participant to purchase the reusable cup using the different nudging messages. This could influence the actual purchasing decision of customers.

Moreover, exact pricing was not included in the survey, but consumers could indicate their willingness to pay for the reusable cup on top of the price of a regular drink. This was done to be able to focus on the other variables that came after viewing the reusable cup advertisement. Some participants might have already known the actual pricing of the cup, which was €12,50 in-store. Some could have used this price as a reference. It is recommended to focus on pricing as an indicator of consumer willingness to pay through a better perspective. For example, the advertisement could not give consumers the full product experience to evaluate the attributes of the cups. Thus, researchera might place physical products at the store to reference the quality, design, and overall perception of the product.

Within this study, the product chosen were two types of reusable cups. Consumers' attitudes to reuse behavior or specific barriers are not measured in the research due to the scope of the study as well as the small sample size of the experiment as it is easier to have significant results with more participants (Wilson Van Voorhis & Morgan, 2007). Therefore, this research might not be able to draw reliable conclusions based on the few variables in the analysis. Consequently, it is recommended to include either more different types of products or specialize in every aspect of a customer journey and decision-making factors.

6   Bibliography

Abraben, L. A., Grogan, K. A., & Gao, Z. (2017). Organic price premium or penalty? A comparative

   market analysis of organic wines from Tuscany. *Food Policy*, *69*, 154–165.

   https://doi.org/10.1016/j.foodpol.2017.04.005

Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2007). The effect of tailored information, goal

   setting, and tailored feedback on household energy use, energy-related behaviors, and

   behavioral antecedents. *Journal of Environmental Psychology*, *27*(4), 265–276.

   https://doi.org/10.1016/j.jenvp.2007.08.002

Accorsi, R., Manzini, R., & Maranesi, F. (2014). A decision-support system for the design and

   management of warehousing systems. *Computers in Industry*, *65*(1), 175–186.

   https://doi.org/10.1016/j.compind.2013.08.007

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision

   Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-t

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. *Englewood

   Cliffs, NJ: Prentice-Hall.*

Aldrovandi, S., Brown, G. D. A., & Wood, A. M. (2015). Social norms and rank-based nudging:

   Changing willingness to pay for healthy food. *Journal of Experimental Psychology: Applied*,

   21(3), 242–254. https://doi.org/10.1037/xap0000048

Allegrini, J., Orehounig, K., Mavromatidis, G., Ruesch, F., Dorer, V., & Evins, R. (2015). A review of

   modelling approaches and tools for the simulation of district-scale energy systems. *Renewable

   and Sustainable Energy Reviews*, *52*, 1391–1404. https://doi.org/10.1016/j.rser.2015.07.123

Attari, S. Z., DeKay, M. L., Davidson, C. I., & Bruine De Bruin, W. (2010). Public perceptions of

   energy consumption and savings. *Proceedings of the National Academy of Sciences*, *107*(37),

   16054–16059. https://doi.org/10.1073/pnas.1001509107

Auger, P., Devinney, T. M., Louviere, J. J., & Burke, P. F. (2008). Do social product features have

   value to consumers? *International Journal of Research in Marketing*, *25*(3), 183–191.

   https://doi.org/10.1016/j.ijresmar.2008.03.005

Babbie, E. R. (2012). *The Practice of Social Research* (13th ed.). Wadworth Publishing.

Babutsidze, Z., & Chai, A. (2018). Look at me saving the planet! The imitation of visible green

behavior and its impact on the climate value-action gap. *Ecological Economics*, *146*, 290–303.

https://doi.org/10.1016/j.ecolecon.2017.10.017

Bailey, A. A., Mishra, A. S., & Tiamiyu, M. F. (2018). Application of GREEN scale to understanding

US consumer response to green marketing communications. *Psychology & Marketing*, *35*(11),

863–875. https://doi.org/10.1002/mar.21140

Balconi, M., Sebastiani, R., & Angioletti, L. (2019). A neuroscientific approach to explore consumers'

intentions towards sustainability within the luxury fashion industry. *Sustainability*, *11*(18).

https://doi.org/10.3390/su11185105

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-

analysis of psycho-social determinants of pro-environmental behaviour. *Journal of*

Environmental Psychology, *27*(1), 14–25. https://doi.org/10.1016/j.jenvp.2006.12.002

Bamberg, S., Rees, J., & Seebauer, S. (2015). Collective climate action: Determinants of participation

intention in community-based pro-environmental initiatives. *Journal of Environmental*

Psychology, *43*, 155–165. https://doi.org/10.1016/j.jenvp.2015.06.006

Bansal, P., & Roth, K. (2000). Why companies go green: A model of ecological responsiveness.

Academy of Management Journal, *43*(4), 717–736. https://doi.org/10.5465/1556363

Becker, L., van Rompay, T. J., Schifferstein, H. N., & Galetzka, M. (2011). Tough package, strong

taste: The influence of packaging design on taste impressions and product evaluations. *Food*

Quality and Preference, *22*(1), 17–23. https://doi.org/10.1016/j.foodqual.2010.06.007

Biswas, A. (2016). A study of consumers' willingness to pay for green products. *Journal of Advanced*

Management Science, 211–215. https://doi.org/10.12720/joams.4.3.211-215

Block, L. G., Keller, P. A., Vallen, B., Williamson, S., Birau, M. M., Grinstein, A., Haws, K. L.,

LaBarge, M. C., Lamberton, C., Moore, E. S., Moscato, E. M., Reczek, R. W., & Tangari, A.

H. (2016). The squander sequence: Understanding food waste at each stage of the consumer

decision-making process. *Journal of Public Policy & Marketing*, *35*(2), 292–304.

https://doi.org/10.1509/jppm.15.132

Borg, K., Curtis, J., & Lindsay, J. (2020). Social norms and plastic avoidance: Testing the theory of normative social behaviour on an environmental behaviour. *Journal of Consumer Behaviour*, *19*(6), 594–607. https://doi.org/10.1002/cb.1842

Bulut, C., Nazli, M., Aydin, E., & Haque, A. U. (2021). The effect of environmental concern on conscious green consumption of post-millennials: The moderating role of greenwashing perceptions. *Young Consumers*, *22*(2), 306–319. https://doi.org/10.1108/yc-10-2020-1241

Byerly, H., Balmford, A., Ferraro, P. J., Hammond Wagner, C., Palchak, E., Polasky, S., Ricketts, T. H., Schwartz, A. J., & Fisher, B. (2018). Nudging pro-environmental behavior: Evidence and opportunities. *Frontiers in Ecology and the Environment*, *16*(3), 159–168. https://doi.org/10.1002/fee.1777

Charness, G., Gneezy, U., & Kuhn, M. A. (2012). Experimental methods: Between-subject and within-subject design. *Journal of Economic Behavior & Organization*, *81*(1), 1–8. https://doi.org/10.1016/j.jebo.2011.08.009

Chase, M., & Hampole, N. (2010). *Building Long Term Solutions: Retail Shopping Bag Impacts and Options*. BSR.

Chen, H. L., Nath, T. K., Chong, S., Foo, V., Gibbins, C., & Lechner, A. M. (2021). The plastic waste problem in Malaysia: management, recycling, and disposal of local and global plastic waste. *SN Applied Sciences*, *3*(4). https://doi.org/10.1007/s42452-021-04234-y

Christ, O., Hewstone, M., Tausch, N., Wagner, U., Voci, A., Hughes, J., & Cairns, E. (2010). Direct contact as a moderator of extended contact effects: Cross-Sectional and longitudinal impact on outgroup attitudes, behavioral intentions, and attitude certainty. *Personality and Social Psychology Bulletin*, *36*(12), 1662–1674. https://doi.org/10.1177/0146167210386969

Chyung, S. Y. Y., Roberts, K., Swanson, I., & Hankinson, A. (2017). Evidence-Based survey design: The use of a midpoint on the Likert scale. *Performance Improvement*, *56*(10), 15–23. https://doi.org/10.1002/pfi.21727

Cialdini, R. B. (1998). Social influence: Social norms, conformity, and compliance. In M. R. Trost (Ed.), *The handbook of social psychology* (pp. 151–192). McGraw-Hill Education.

Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, *12*(4), 105–109. https://doi.org/10.1111/1467-8721.01242

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, *58*(6), 1015–1026. https://doi.org/10.1037/0022-3514.58.6.1015

Coelho, P. M., Corona, B., ten Klooster, R., & Worrell, E. (2020). Sustainability of reusable packaging–Current situation and trends. *Resources, Conservation & Recycling: X*, *6*, 100037. https://doi.org/10.1016/j.rcrx.2020.100037

Corraliza, J. A., & Berenguer, J. (2000). Environmental values, beliefs, and actions. *Environment and Behavior*, *32*(6), 832–848. https://doi.org/10.1177/00139160021972829

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin*, *52*(4), 281–302. https://doi.org/10.1037/h0040957

de Groot, J. I., & Steg, L. (2007). Value orientations and environmental beliefs in five countries. *Journal of Cross-Cultural Psychology*, *38*(3), 318–332. https://doi.org/10.1177/0022022107300278

de Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for Fair-Trade coffee. *Journal of Consumer Affairs*, *39*(2), 363–385. https://doi.org/10.1111/j.1745-6606.2005.00019.x

DellaVigna, S., & Pope, D. (2017). What motivates effort? Evidence and expert forecasts. *The Review of Economic Studies*, *85*(2), 1029–1069. https://doi.org/10.1093/restud/rdx033

Deng, G., Lu, C., Su, L., Tieu, A., Yu, H., & Liu, X. (2013). Investigation of sample size effect on the deformation heterogeneity and texture development during equal channel angular pressing. *Computational Materials Science*, *74*, 75–85. https://doi.org/10.1016/j.commatsci.2013.03.007

Diekmann, A., & Preisendörfer, P. (2003). Green and Greenback. *Rationality and Society*, *15*(4), 441–472. https://doi.org/10.1177/1043463103154002

do Paço, A. M. F., & Reis, R. (2012). Factors affecting skepticism toward green advertising. *Journal of Advertising*, *41*(4), 147–155. https://doi.org/10.1080/00913367.2012.10672463

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, *28*(3), 307–319. https://doi.org/10.1177/002224379102800305

D'Souza, C., Taghian, M., Lamb, P., & Peretiatko, R. (2007). Green decisions: Demographics and consumer understanding of environmental labels. *International Journal of Consumer Studies*, *31*(4), 371–376. https://doi.org/10.1111/j.1470-6431.2006.00567.x

Dunne, D. (2018). Implementing design thinking in organizations: an exploratory study. *Journal of Organization Design*, *7*(1). https://doi.org/10.1186/s41469-018-0040-7

Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, *26*(4), 1–19. https://doi.org/10.5465/amp.2012.0046

Egebark, J., & Ekström, M. (2016). Can indifference make the world greener? *Journal of Environmental Economics and Management*, *76*, 1–13. https://doi.org/10.1016/j.jeem.2015.11.004

Ekelund, R. B., Mixon, F. G., & Ressler, R. W. (1995). Advertising and information. *Journal of Economic Studies*, *22*(2), 33–43. https://doi.org/10.1108/01443589510086970

Ertz, M., Karakas, F., & Sarigöllü, E. (2016). Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *Journal of Business Research*, *69*(10), 3971–3980. https://doi.org/10.1016/j.jbusres.2016.06.010

Festa-Bianchet, M. (2012). Rarity, willingness to pay and conservation. *Animal Conservation*, *15*(1), 12–13. https://doi.org/10.1111/j.1469-1795.2011.00518.x

Field, A., & Hole, G. (2003). *How to Design & Report Experiments*. SAGE Publications.

Fisher, C., Bashyal, S., & Bachman, B. (2012). Demographic impacts on environmentally friendly purchase behaviors. *Journal of Targeting, Measurement and Analysis for Marketing*, *20*(3–4), 172–184. https://doi.org/10.1057/jt.2012.13

Forrest, R., & Kearns, A. (2001). Social cohesion, social capital and the neighbourhood. *Urban Studies*, *38*(12), 2125–2143. https://doi.org/10.1080/00420980120087081

Furze, C. (2021, November 5). *Save the planet and get cheaper coffee every day*. ChronicleLive. https://www.chroniclelive.co.uk/news/uk-news/reusable-cup-greggs-starbucks-costa-22069369

Gerber, A. S., & Green, D. P. (2009). Field experiments and natural experiments. *Oxford Handbooks Online*. https://doi.org/10.1093/oxfordhb/9780199286546.003.0015

Geueke, B., Groh, K., & Muncke, J. (2018). Food packaging in the circular economy: Overview of chemical safety aspects for commonly used materials. *Journal of Cleaner Production*, *193*, 491–505. https://doi.org/10.1016/j.jclepro.2018.05.005

Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, *114*, 11–32. https://doi.org/10.1016/j.jclepro.2015.09.007

Gillingham, K., & Tsvetanov, T. (2018). Nudging energy efficiency audits: Evidence from a field experiment. *Journal of Environmental Economics and Management*, *90*, 303–316. https://doi.org/10.1016/j.jeem.2018.06.009

Gneezy, U., Meier, S., & Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of Economic Perspectives*, *25*(4), 191–210. https://doi.org/10.1257/jep.25.4.191

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

Grankvist, G., & Biel, A. (2007). The impact of environmental information on professional purchasers' choice of products. *Business Strategy and the Environment*, *16*(6), 421–429. https://doi.org/10.1002/bse.565

Grebitus, C., Roscoe, R. D., van Loo, E. J., & Kula, I. (2020). Sustainable bottled water: How nudging and Internet Search affect consumers' choices. *Journal of Cleaner Production*, *267*, 121930. https://doi.org/10.1016/j.jclepro.2020.121930

Grieshop, J. I., & Stiles, M. C. (1989). Risk and home-pesticide users. *Environment and Behavior*, *21*(6), 699–716. https://doi.org/10.1177/0013916589216003

Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). *Multivariate Data Analysis* (8th ed.).

    Cengage India.

Hamari, J., & Koivisto, J. (2015). "Working out for likes": An empirical study on social influence in

    exercise gamification. *Computers in Human Behavior*, *50*, 333–347.

    https://doi.org/10.1016/j.chb.2015.04.018

Harrison, O. (2019, April 22). *These spots give discounts for bringing your own bowls, cups & bags*.

    Refinery29. https://www.refinery29.com/en-us/reusable-cup-bag-bowl-discounts

Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014). Seeing the world through GREEN-tinted

    glasses: Green consumption values and responses to environmentally friendly products.

    Journal of Consumer Psychology, *24*(3), 336–354. https://doi.org/10.1016/j.jcps.2013.11.002

Heffner, R. R., Kurani, K. S., & Turrentine, T. S. (2007). Symbolism in California's early market for

    hybrid electric vehicles. *Transportation Research Part D: Transport and Environment*, *12*(6),

    396–413. https://doi.org/10.1016/j.trd.2007.04.003

Hojnik, J., Ruzzier, M., & Konečnik Ruzzier, M. (2019). Transition towards sustainability: Adoption

    of Eco-Products among consumers. *Sustainability*, *11*(16), 4308.

    https://doi.org/10.3390/su11164308

Hosseinpour, A., Peng, Q., & Gu, P. (2015). A benchmark-based method for sustainable product

    design. *Benchmarking: An International Journal*, *22*(4), 643–664. https://doi.org/10.1108/bij-

    09-2014-0092

Ioannou, A., Tussyadiah, I., Miller, G., Li, S., & Weick, M. (2021). Privacy nudges for disclosure of

    personal information: A systematic literature review and meta-analysis. *PLOS ONE*, *16*(8),

    e0256822. https://doi.org/10.1371/journal.pone.0256822

Jackson, T. (2008). Live better by consuming less?: Is there a "Double dividend" in sustainable

    consumption? *Journal of Industrial Ecology*, *9*(1–2), 19–36.

    https://doi.org/10.1162/1088198054084734

Janssen, M. A., & Jager, W. (2003). Simulating market dynamics: Interactions between consumer

    psychology and social networks. *Artificial Life*, *9*(4), 343–356.

    https://doi.org/10.1162/106454603322694807

Jiang, B., Yu, J., & Liu, Y. (2020). The environmental impact of plastic waste. *Journal of Environmental & Earth Sciences*, *2*(2). https://doi.org/10.30564/jees.v2i2.2340

John, P., Smith, G., & Stoker, G. (2009). Nudge nudge, think think: Two strategies for changing civic behaviour. *Political Quarterly*, *80*(3), 361–370. https://doi.org/10.1111/j.1467-923x.2009.02001.x

Johnstone, M. L., & Tan, L. P. (2014). Exploring the gap between consumers' green rhetoric and purchasing behaviour. *Journal of Business Ethics*, *132*(2), 311–328. https://doi.org/10.1007/s10551-014-2316-3

Kang, K. H., Stein, L., Heo, C. Y., & Lee, S. (2012). Consumers' willingness to pay for green initiatives of the hotel industry. *International Journal of Hospitality Management*, *31*(2), 564–572. https://doi.org/10.1016/j.ijhm.2011.08.001

Kautish, P., Paul, J., & Sharma, R. (2019). The moderating influence of environmental consciousness and recycling intentions on green purchase behavior. *Journal of Cleaner Production*, *228*, 1425–1436. https://doi.org/10.1016/j.jclepro.2019.04.389

King, M. F., & Bruner, G. C. (2000). Social desirability bias: A neglected aspect of validity testing. *Psychology and Marketing*, *17*(2), 79–103. https://doi.org/10.1002/(sici)1520-6793(200002)

Kinzig, A. P., Ehrlich, P. R., Alston, L. J., Arrow, K., Barrett, S., Buchman, T. G., Daily, G. C., Levin, B., Levin, S., Oppenheimer, M., Ostrom, E., & Saari, D. (2013). Social norms and global environmental challenges: The complex interaction of behaviors, values, and policy. *BioScience*, *63*(3), 164–175. https://doi.org/10.1525/bio.2013.63.3.5

Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour—A meta-analysis. *Global Environmental Change*, *23*(5), 1028–1038. https://doi.org/10.1016/j.gloenvcha.2013.05.014

Koenig-Lewis, N., Palmer, A., Dermody, J., & Urbye, A. (2014). Consumers' evaluations of ecological packaging – Rational and emotional approaches. *Journal of Environmental Psychology*, *37*, 94–105. https://doi.org/10.1016/j.jenvp.2013.11.009

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, *8*(3), 239–260. https://doi.org/10.1080/13504620220145401

Kotler, P., Kartajaya, H., & Setiawan, I. (2018). Marketing 3.0: From products to customers to the human spirit. *Marketing Wisdom*, 139–156. https://doi.org/10.1007/978-981-10-7724-1_10

Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. *Sustainability*, *14*(7), 4338. https://doi.org/10.3390/su14074338

Krishna, A., & Morrin, M. (2008). Does touch affect taste? The perceptual transfer of product container haptic cues. *Journal of Consumer Research*, *34*(6), 807–818. https://doi.org/10.1086/523286

Kunamaneni, S., Jassi, S., & Hoang, D. (2019). Promoting reuse behaviour: Challenges and strategies for repeat purchase, low-involvement products. *Sustainable Production and Consumption*, *20*, 253–272. https://doi.org/10.1016/j.spc.2019.07.001

Kutcher & Partner. (2021, October). *Global Sustainability Study 2021*.

Laguilles, J. S., Williams, E. A., & Saunders, D. B. (2010). Can lottery incentives boost web survey response rates? Findings from four experiments. *Research in Higher Education*, *52*(5), 537–553. https://doi.org/10.1007/s11162-010-9203-2

Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, *18*(6), 503–520. https://doi.org/10.1108/eum0000000006155

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

Levy, N. (2019). Nudge, nudge, wink, wink: Nudging is giving reasons. *Ergo, an Open Access Journal of Philosophy*, *6*(20201214). https://doi.org/10.3998/ergo.12405314.0006.010

Lewis, Y., Gower, A., & Notten, P. (2021). *Single-use beverage cups and their alternatives*. UN Environment program.

Lim, H., Kim, H. S., Qazi, R., Kwon, Y., Jeong, J., & Yeo, W. (2019). Advanced soft materials, sensor integrations, and applications of wearable flexible hybrid electronics in healthcare, energy, and environment. *Advanced Materials*, *32*(15). https://doi.org/10.1002/adma.201901924

Lin, C. Y., & Syrgabayeva, D. (2016). Mechanism of environmental concern on intention to pay more for renewable energy: Application to a developing country. *Asia Pacific Management Review*, *21*(3), 125–134. https://doi.org/10.1016/j.apmrv.2016.01.001

Linder, N., Lindahl, T., & Borgström, S. (2018). Using behavioural insights to promote food waste recycling in urban Households—Evidence from a longitudinal field experiment. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.00352

Litvine, D., & Wüstenhagen, R. (2011). Helping "Light green" consumers walk the talk: Results of a behavioural intervention survey in the Swiss electricity market. *Ecological Economics*, *70*(3), 462–474. https://doi.org/10.1016/j.ecolecon.2010.10.005

Loschelder, D. D., Siepelmeyer, H., Fischer, D., & Rubel, J. A. (2019). Dynamic norms drive sustainable consumption: Norm-based nudging helps café customers to avoid disposable to-go-cups. *Journal of Economic Psychology*, *75*, 102146. https://doi.org/10.1016/j.joep.2019.02.002

Luís, S., Roseta-Palma, C., Matos, M., Lima, M. L., & Sousa, C. (2020). Psychosocial and economic impacts of a charge in lightweight plastic carrier bags in Portugal: Keep calm and carry on? *Resources, Conservation and Recycling*, *161*, 104962. https://doi.org/10.1016/j.resconrec.2020.104962

Marchiori, D. R., Adriaanse, M. A., & de Ridder, D. T. (2017). Unresolved questions in nudging research: Putting the psychology back in nudging. *Social and Personality Psychology Compass*, *11*(1). https://doi.org/10.1111/spc3.12297

Martinho, G., Magalhães, D., & Pires, A. (2017). Consumer behavior with respect to the consumption and recycling of smartphones and tablets: An exploratory study in Portugal. *Journal of Cleaner Production*, *156*, 147–158. https://doi.org/10.1016/j.jclepro.2017.04.039

McDaniel, C., & Baker, R. C. (1977). Convenience food packaging and the perception of product quality. *Journal of Marketing*, *41*(4), 57. https://doi.org/10.2307/1250234

Meyvis, T., & van Osselaer, S. M. J. (2017). Increasing the power of your study by increasing the

        effect size. *Journal of Consumer Research*, *44*(5), 1157–1173.

        https://doi.org/10.1093/jcr/ucx110

Millette, S., Williams, E., & Hull, C. E. (2019). Materials flow analysis in support of circular economy

        development: Plastics in trinidad and tobago. *SSRN Electronic Journal*.

        https://doi.org/10.2139/ssrn.3463783

Moon, K., Brewer, T. D., Januchowski-Hartley, S. R., Adams, V. M., & Blackman, D. A. (2016). A

        guideline to improve qualitative social science publishing in ecology and conservation

        journals. *Ecology and Society*, *21*(3). https://doi.org/10.5751/es-08663-210317

Mortensen, C. R., Neel, R., Cialdini, R. B., Jaeger, C. M., Jacobson, R. P., & Ringel, M. M. (2017).

        Trending norms: A lever for encouraging behaviors performed by the minority. *Social

        Psychological and Personality Science*, *10*(2), 201–210.

        https://doi.org/10.1177/1948550617734615

Mucientes, G., & Queiroz, N. (2019). Presence of plastic debris and retained fishing hooks in oceanic

        sharks. *Marine Pollution Bulletin*, *143*, 6–11. https://doi.org/10.1016/j.marpolbul.2019.04.028

Munesue, Y., Masui, T., & Fushima, T. (2014). The effects of reducing food losses and food waste on

        global food insecurity, natural resources, and greenhouse gas emissions. *Environmental

        Economics and Policy Studies*, *17*(1), 43–77. https://doi.org/10.1007/s10018-014-0083-0

Murphy, P. E., Laczniak, G. R., & Lusch, R. F. (1978). Ethical guidelines for business and social

        marketing. *Journal of the Academy of Marketing Science*, *6*(3), 195–205.

        https://doi.org/10.1007/bf02729785

Nazir, M., & Tian, J. (2022). The influence of consumers' purchase intention factors on willingness to

        pay for renewable energy; mediating effect of attitude. *Frontiers in Energy Research*, *10*.

        https://doi.org/10.3389/fenrg.2022.837007

Neill, C. L., & Williams, R. B. (2016). Consumer preference for alternative milk packaging: the case

        of an inferred environmental attribute, PR. *Journal of Agricultural and Applied Economics*,

        48(3), 241–256. https://doi.org/10.1017/aae.2016.17

Nguyen, A. T., Yến-Khanh, N., & Thuan, N. H. (2021). Consumers' purchase intention and willingness to pay for eco-friendly packaging in Vietnam. *Sustainable Packaging*, 289–323. https://doi.org/10.1007/978-981-16-4609-6_11

Nguyen, H. V., Nguyen, C. H., & Hoang, T. T. B. (2018). Green consumption: Closing the intention-behavior gap. *Sustainable Development*, *27*(1), 118–129. https://doi.org/10.1002/sd.1875

Numata, D., & Managi, S. (2012). Demand for refilled reusable products. *Environmental Economics and Policy Studies*, *14*(4), 421–436. https://doi.org/10.1007/s10018-012-0037-3

Oates, C., McDonald, S., Alevizou, P., Hwang, K., Young, W., & McMorland, L. (2008). Marketing sustainability: Use of information sources and degrees of voluntary simplicity. *Journal of Marketing Communications*, *14*(5), 351–365. https://doi.org/10.1080/13527260701869148

Oliver, J. D., & Rosen, D. E. (2010). Applying the environmental propensity framework: A segmented approach to hybrid electric vehicle marketing strategies. *Journal of Marketing Theory and Practice*, *18*(4), 377–393. https://doi.org/10.2753/mtp1069-6679180405

Osbaldiston, R., & Schott, J. P. (2011). Environmental sustainability and behavioral science. *Environment and Behavior*, *44*(2), 257–299. https://doi.org/10.1177/0013916511402673

Ottman, J. A., Stafford, E. R., & Hartman, C. L. (2006). Avoiding green marketing myopia: Ways to improve consumer appeal for environmentally preferable products. *Environment: Science and Policy for Sustainable Development*, *48*(5), 22–36. https://doi.org/10.3200/envt.48.5.22-36

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). Open University Press.

Pechey, R., & Monsivais, P. (2016). Socioeconomic inequalities in the healthiness of food choices: Exploring the contributions of food expenditures. *Preventive Medicine*, *88*, 203–209. https://doi.org/10.1016/j.ypmed.2016.04.012

Pirsch, J., Gupta, S., & Grau, S. L. (2007). A framework for understanding corporate social responsibility programs as a continuum: An exploratory study. *Journal of Business Ethics*, *70*(2), 125–140. https://doi.org/10.1007/s10551-006-9100-y

Pollay, R. W., & Mittal, B. (1993). Here's the beef: Factors, determinants, and segments in consumer criticism of advertising. *Journal of Marketing*, *57*(3). https://doi.org/10.2307/1251857

Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and

    consumers. *Science*, *360*(6392), 987–992. https://doi.org/10.1126/science.aaq0216

Poortinga, W., & Whitaker, L. (2018). Promoting the use of reusable coffee cups through

    environmental messaging, the provision of alternatives and financial incentives. *Sustainability*,

    10(3), 873. https://doi.org/10.3390/su10030873

Porter, M. E. (2011). *Competitive Advantage of Nations: Creating and Sustaining Superior*

    Performance. Free Press.

Punch, K. (2003). *Survey Research*. Londen: SAGE Publications.

Putrevu, S., & Lord, K. R. (1994). Comparative and noncomparative advertising: Attitudinal effects

    under cognitive and affective involvement conditions. *Journal of Advertising*, *23*(2), 77–91.

    https://doi.org/10.1080/00913367.1994.10673443

Ramayah, T., Lee, J. W. C., & Lim, S. (2012). Sustaining the environment through recycling: An

    empirical study. *Journal of Environmental Management*, *102*, 141–147.

    https://doi.org/10.1016/j.jenvman.2012.02.025

Rambonnet, L., Vink, S. C., Land-Zandstra, A. M., & Bosker, T. (2019). Making citizen science

    count: Best practices and challenges of citizen science projects on plastics in aquatic

    environments. *Marine Pollution Bulletin*, *145*, 271–277.

    https://doi.org/10.1016/j.marpolbul.2019.05.056

Razza, F., Fieschi, M., Innocenti, F. D., & Bastioli, C. (2009). Compostable cutlery and waste

    management: An LCA approach. *Waste Management*, *29*(4), 1424–1433.

    https://doi.org/10.1016/j.wasman.2008.08.021

Ritschel, C. (2018, April 18). *Why is plastic bad for the environment and how much is in the ocean?*

    The Independent. https://www.independent.co.uk/life-style/plastic-bad-environment-why-

    ocean-pollution-how-much-single-use-facts-recycling-a8309311.html

Ritter, G. M., Borchardt, M., Vaccaro, G. L., Pereira, G. M., & Almeida, F. (2015). Motivations for

    promoting the consumption of green products in an emerging country: Exploring attitudes of

    Brazilian consumers. *Journal of Cleaner Production*, *106*, 507–520.

    https://doi.org/10.1016/j.jclepro.2014.11.066

Rummel, C. D., Löder, M. G., Fricke, N. F., Lang, T., Griebeler, E. M., Janke, M., & Gerdts, G. (2016). Plastic ingestion by pelagic and demersal fish from the North Sea and Baltic Sea. *Marine Pollution Bulletin*, *102*(1), 134–141. https://doi.org/10.1016/j.marpolbul.2015.11.043

Scarabis, M., Florack, A., & Gosejohann, S. (2006). When consumers follow their feelings: The impact of affective or cognitive focus on the basis of consumers' choice. *Psychology and Marketing*, *23*(12), 1015–1034. https://doi.org/10.1002/mar.20144

Schultz, P. W. (2002). Inclusion with nature: The psychology of Human-Nature relations. *Psychology of Sustainable Development*, 61–78. https://doi.org/10.1007/978-1-4615-0995-0_4

Schultz, W. P., Khazian, A. M., & Zaleski, A. C. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, *3*(1), 4–23. https://doi.org/10.1080/15534510701755614

Schwartz, M. B. (2007). The influence of a verbal prompt on school lunch fruit consumption: A pilot study. *International Journal of Behavioral Nutrition and Physical Activity*, *4*(1). https://doi.org/10.1186/1479-5868-4-6

Severo, E., Guimarães, J., Dellarmelin, M., & Ribeiro, R. (2019). The influence of social networks on environmental awareness and the social responsibility of generations. *Brazilian Business Review*, *16*(5), 500–518. https://doi.org/10.15728/bbr.2019.16.5.5

Sheth, J. N., & Sisodia, R. S. (2007). Raising Marketing's Aspirations. *Journal of Public Policy & Marketing*, *26*(1), 141–143. https://doi.org/10.1509/jppm.26.1.141

Smith, N. C., Goldstein, D. G., & Johnson, E. J. (2013). Choice without awareness: Ethical and policy implications of defaults. *Journal of Public Policy & Marketing*, *32*(2), 159–172. https://doi.org/10.1509/jppm.10.114

Sovacool, B. K. (2014). What are we doing here? Analyzing fifteen years of energy scholarship and proposing a social science research agenda. *Energy Research & Social Science*, *1*, 1–29. https://doi.org/10.1016/j.erss.2014.02.003

Srivastava, C., & Mahendar, G. (2018). Intention to adopt sustainable energy : Applying the theory of planned behaviour framework. *Indian Journal of Marketing*, *49*(10), 20. https://doi.org/10.17010/ijom/2018/v48/i10/132325

Staddon, S. C., Cycil, C., Goulden, M., Leygue, C., & Spence, A. (2016). Intervening to change behaviour and save energy in the workplace: A systematic review of available evidence. *Energy Research & Social Science*, *17*, 30–51. https://doi.org/10.1016/j.erss.2016.03.027

Starbucks Corporation. (2020, January 21). *Starbucks showcases innovation for growth and a more connected and sustainable future at 2022 annual meeting of shareholders*. Starbucks Stories. https://stories.starbucks.com/press/2020/starbucks-commits-to-a-resource-positive-future/

Stern, P. C. (1999). Information, incentives, and pro-environmental consumer behavior. *Journal of Consumer Policy*, *22*(4), 461–478. https://doi.org/10.1023/a:1006211709570

Sunstein, C. R. (2021). *Liars: Falsehoods and Free Speech in an Age of Deception (Inalienable Rights)* (1st ed.). Oxford University Press.

Sunstein, C. R., Reisch, L. A., & Rauber, J. (2017). A worldwide consensus on nudging? Not quite, but almost. *Regulation & Governance*, *12*(1), 3–22. https://doi.org/10.1111/rego.12161

Sustainability & Consumer Behaviour 2021. (2021). Deloitte United Kingdom. Retrieved May 23, 2022, from https://www2.deloitte.com/uk/en/pages/consumer-business/articles/sustainable-consumer.html

Sujeetha, A. P., Meenatchi, R., Patricia, P., & Negi, A. (2020). Effect of vacuum packaging on quality of pomegranate arils during storage. *Current Journal of Applied Science and Technology*, 40–46. https://doi.org/10.9734/cjast/2020/v39i3831094

Tabachnick, B., & Fidell, L. (2018). *Using multivariate statistics* (7th ed.). Pearson.

Thaler, R. H. (2009). *Nudge: Improving Decisions about Health, Wealth and Happiness* (1st Edition). Penguin Books.

The United Nations Environment Program. (2018). *Mapping of Global Plastics Value Chain and Plastics Losses to the Environment: With a Particular Focus on Marine Environment*. United Nations Environment.

Thøgersen, J. (1999). Spillover processes in the development of a sustainable consumption pattern. *Journal of Economic Psychology*, *20*(1), 53–81. https://doi.org/10.1016/s0167-4870(98)00043-9

Thomas, G. O., Sautkina, E., Poortinga, W., Wolstenholme, E., & Whitmarsh, L. (2019). The English plastic bag charge changed behavior and increased support for other charges to reduce plastic waste. *Frontiers in Psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.00266

Thomas, K. A., & Clifford, S. (2017). Validity and Mechanical Turk: An assessment of exclusion methods and interactive experiments. *Computers in Human Behavior*, *77*, 184–197. https://doi.org/10.1016/j.chb.2017.08.038

Tsen, C. H., Pang, G., Hasan, H., & Buncha, M. (2006). Going green: A study of consumers' willingness to pay for green products in Kota Kinabalu. *International Journal of Business and Society*, *7*, 40–54.

Unsworth, K. L., Dmitrieva, A., & Adriasola, E. (2012). Changing behaviour: Increasing the effectiveness of workplace interventions in creating pro-environmental behaviour change. *Journal of Organizational Behavior*, *34*(2), 211–229. https://doi.org/10.1002/job.1837

van Dam, Y. K., & Apeldoorn, P. A. C. (1996). Sustainable marketing. *Journal of Macromarketing*, *16*(2), 45–56. https://doi.org/10.1177/027614679601600204

van Loo, E. J., Caputo, V., Nayga, R. M., Seo, H. S., Zhang, B., & Verbeke, W. (2015). Sustainability labels on coffee: Consumer preferences, willingness-to-pay and visual attention to attributes. *Ecological Economics*, *118*, 215–225. https://doi.org/10.1016/j.ecolecon.2015.07.011

Vecchio, R., & Annunziata, A. (2015). Willingness-to-pay for sustainability-labelled chocolate: An experimental auction approach. *Journal of Cleaner Production*, *86*, 335–342. https://doi.org/10.1016/j.jclepro.2014.08.006

Verghese, K., & Lewis, H. (2007). Environmental innovation in industrial packaging: a supply chain approach. *International Journal of Production Research*, *45*(18–19), 4381–4401. https://doi.org/10.1080/00207540701450211

Verghese, K., Lewis, H., Lockrey, S., & Williams, H. (2015). Packaging's role in minimizing food loss and waste across the supply chain. *Packaging Technology and Science*, *28*(7), 603–620. https://doi.org/10.1002/pts.2127

Viera, J. S., Marques, M. R., Nazareth, M. C., Jimenez, P. C., & Castro, T. B. (2020). On replacing single-use plastic with so-called biodegradable ones: The case with straws. *Environmental Science & Policy*, *106*, 177–181. https://doi.org/10.1016/j.envsci.2020.02.007

Wang, Y., Dargusch, P., & Hill, G. (2022). How do world-renowned coffee companies manage carbon emissions? A case study of Starbucks. *Advances in Environmental and Engineering Research*, *3*(2), 1. https://doi.org/10.21926/aeer.2202015

Wang, Y., Li, Y., Zhang, J., & Su, X. (2019). How impacting factors affect Chinese green purchasing behavior based on Fuzzy Cognitive Maps. *Journal of Cleaner Production*, *240*, 118199. https://doi.org/10.1016/j.jclepro.2019.118199

Wee, S. C., Choong, W. W., & Low, S. T. (2021). Can "Nudging" play a role to promote Pro-Environmental behaviour? *Environmental Challenges*, *5*, 100364. https://doi.org/10.1016/j.envc.2021.100364

Wertenbroch, K., & Skiera, B. (2002). Measuring consumers' willingness to pay at the point of purchase. *Journal of Marketing Research*, *39*(2), 228–241. https://doi.org/10.1509/jmkr.39.2.228.19086

Wilson, R. D., & Creswell, J. W. (1996). Research design: Qualitative and quantitative approaches. *Journal of Marketing Research*, *33*(2), 252. https://doi.org/10.2307/3152153

Wilson Van Voorhis, C. R., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample sizes. *Tutorials in Quantitative Methods for Psychology*, *3*(2), 43–50. https://doi.org/10.20982/tqmp.03.2.p043

World Economic Forum. (2018, June 8). *Around 90% of all river-borne plastic that ends up in the ocean comes from just 10 rivers*. https://www.weforum.org/agenda/2018/06/90-of-plastic-polluting-our-oceans-comes-from-just-10-rivers/

Yiridoe, E. K., Bonti-Ankomah, S., & Martin, R. C. (2005). Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renewable Agriculture and Food Systems*, *20*(4), 193–205. https://doi.org/10.1079/raf2005113

Young, W., Hwang, K., McDonald, S., & Oates, C. J. (2009). Sustainable consumption: green

consumer behaviour when purchasing products. *Sustainable Development*, n/a.

https://doi.org/10.1002/sd.394

Zelezny, L. C., & Schultz, P. W. (2000). Psychology of promoting environmentalism: Promoting

environmentalism. *Journal of Social Issues*, *56*(3), 365–371. https://doi.org/10.1111/0022-

4537.00172

Zhang, F., Wu, X., Tang, C. S., Feng, T., & Dai, Y. (2020). Evolution of operations management

research: From managing flows to building capabilities. *Production and Operations*

Management, *29*(10), 2219–2229. https://doi.org/10.1111/poms.13231

7 Appendix

Appendix A: Survey Design

Erasmus University Rotterdam

Hi there,

Thank you for participating in this study!
We appreciate your time and effort to help us conduct this research where we will take a closer look at your behavior and experience at Möge Tee. It will only take 8 - 10 minutes of your time.

After finishing the survey, you will receive a 15% discount code on an item of your choice

Please note that all answers will be treated anonymously and will only be used for the purpose of this study by a student of Easmus University Rotterdam.

In case of any questions or if you want to discuss the topic, please do not hesitate to contact us via **info@mogetee.nl** or email the researcher

at **562026ll@eur.nl**

By clicking on the 'agree' button indicates that:
- You have read the above information
- You voluntary agree to participate
- You are above 18 years old
- You have a good level of English

○ Agree

→

**Erasmus
University
Rotterdam**

Which store did you visit?

- ◉ Maastricht
- ◯ Eindhoven

How often do you visit Möge Tee? (Maastricht or Eindhoven)

- ◯ This is my first time visiting Möge Tee
- ◯ Once or twice a year
- ◯ Once a month
- ◯ 2-3 times a month
- ◯ 4+ times a month

[←]   [→]

**Erasmus
University
Rotterdam**

Do you have a reusable cup to bring on the go?

- ◯ Yes
- ◯ No

[←]   [→]

**Erasmus
University
Rotterdam**

Please view the following advertisement. The questions that follow are related to this advertisement.

Randomly assigned to one of the six conditions

Condition 1   Condition 2   Condition 3

Condition 5   Condition 5   Condition 6

**Erasmus
University
Rotterdam**

Please indicate what you saw on the advertisement.
The advertisement involved information about ...
If you are unsure, please go back to take a look again.

○ ... an environmental issue

○ ... how other consumers are behaving

○ ... a discount if you bring your own cup

[Go Back]   [Next]

**Erasmus
University
Rotterdam**

The following questions are regarding the advertisement you have seen.
You can go back to the previous pages to view the advertisement again.

Please indicate how much you (dis)agree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Overall, I consider the advertisement as good	○	○	○	○	○
My general opinion of this advertisement is unfavourable	○	○	○	○	○
Overall, I like this advertisement	○	○	○	○	○

[Go Back]   [Next]

Erasmus University Rotterdam

The following questions are regarding the product you have seen in the advertisement.
You can go back to the previous pages to view the advertisement again.

Please indicate how much you agree or disagree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is very likely that I will buy this reusable cup	○	○	○	○	○
I will purchase this reusable cup next time when I am ordering a drink	○	○	○	○	○
I will definitely try this reusable cup	○	○	○	○	○

Go Back   Next

Erasmus University Rotterdam

A regular bubble milk tea is 5 euros without the reusable cup.

How much are you willing to pay **on top of this price** to receive the reusable cup you saw on the advertisement?
Use the slider to indicate the amount in euros.

You can go back to the previous pages to view the advertisement again.

0	5	10	15	20	25	30	35	40	45	50

Price in euros

Go Back   Next

**Erasmus
University
Rotterdam**

The following questions are regarding your environmental consciousness.

Please indicate how much you (dis)agree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I am afraid when I think about the environmental conditions for future generations	○	○	○	○	○
If we continue our current style of living, we are approaching an environmental disaster	○	○	○	○	○
Watching TV or reading in the newspaper about environmental problems, I am often embarrassed and angry	○	○	○	○	○
The great majority of people do not act in an environmentally responsible way	○	○	○	○	○
There are limits of economic growth which the industrialized world has already reached or will reach very soon	○	○	○	○	○
In my opinion, environmental problems are greatly exaggerated by proponents of the environmental movement	○	○	○	○	○
It is true that politicians do much too little to protect the environment	○	○	○	○	○
To protect the environment, we all should be willing to reduce our current standard of living	○	○	○	○	○
Environmental protection measures should be carried out, even if this reduces the number of jobs in the economy	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is important to me that the products I use do not harm the environment	○	○	○	○	○
I am willing to be inconvenienced in order to take actions that are more environmentally friendly	○	○	○	○	○
I consider the potential environmental impact of my actions when making many of my decisions	○	○	○	○	○
My purchase habits are affected by my concern for our environment	○	○	○	○	○
I am concerned about wasting the resources of our planet	○	○	○	○	○
I would describe myself as environmentally responsible	○	○	○	○	○
Please select 'strongly disagree'	○	○	○	○	○

**Erasmus
University
Rotterdam**

General questions:

What is your gender?

○ Male

○ Female

○ Non-binary / third gender

○ Prefer not to say

What is your age?

[⌄]

What is the highest degree or level of school you have completed?
If currently enrolled, highest degree received.

○ No schooling completed

○ Primary school

○ High school

○ Intermediate Trade/technical/vocational training (MBO)

○ Higher Vocational Education (HBO) - Bachelor's degree

○ University - Bachelor's degree

○ University - Master's degree

○ University - PhD. Degree

What is your current employment status?

○ Employed full-time

○ Employed part-time

○ Freelance / Contractor

○ Self-employed

○ Unemployed

○ Retired

○ Prefer not to disclose

○ Other (please specify)

Erasmus University Rotterdam

Thank you again for participating in this survey.
Your response has been recorded.

If you are at the store you can show the staff this screen **at the counter for a 15% discount on a drink of your choice!**

The actual purpose of this experiment is to investigate if there are effects between the types of reusable cups and the different nudging techniques on buying intention and willingness to pay more.
If you have any further questions or comments regarding the survey, please contact us on info@mogetee.nl

<u>*Appendix B: Results Randomization Check*</u>

Table 1

Descriptive statistics results from store and conditions

		Which store did you visit?		Total
		Maastricht	*Eindhoven*	
Condition	*Trans - Environmental*	18	16	34
	Circ - Environmental	24	14	38
	Trans - Incentive	18	18	36
	Circ - Incentive	20	19	39
	Trans - Social norm	22	14	36
	Circ - Social norm	14	23	37
Total		116	104	220

Table 2

Chi-square test for store visited and conditions

	Value	*Df*	*Asymptotic Significance (2-sided)*
Pearson Chi-Square	6.105[a]	5	.296
Likelihood Ratio	6.155	5	.291
Linear-by-Linear Association	1.460	1	.227
N of Valid Cases	220		

A. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.07.

Table 3

Descriptive statistics results reusable cup and conditions

			Do you have a reusable cup to bring on the go?		
			Yes	*No*	*Total*
Condition	*Trans - Environmental*	*Count*	6	28	34
		Expected Count	5.3	28.7	34.0
	Circ - Environmental	*Count*	2	36	38
		Expected Count	5.9	32.1	38.0
	Trans - Incentive	*Count*	8	28	36
		Expected Count	5.6	30.4	36.0
	Circ - Incentive	*Count*	5	34	39
		Expected Count	6.0	33.0	39.0
	Trans - Social norm	*Count*	5	31	36
		Expected Count	5.6	30.4	36.0
	Circ - Social norm	*Count*	8	29	37
		Expected Count	5.7	31.3	37.0
Total		*Count*	34	186	220

Expected Count 34.0		186.0	220.0

Table 4

Chi-square test for reusable cups and conditions

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.759[a]	5	.330
Likelihood Ratio	6.412	5	.268
Linear-by-Linear Association	.606	1	.436
N of Valid Cases	220		

A. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.25.

Table 5

Descriptive statistics gender & conditions

			What is your gender?				
			Male	Female	Non-binary / third gender	Prefer not to say	Total
Condition	Trans - Environmental	Count	9	22	0	3	34
		Expected Count	7.7	25.0	.3	.9	34.0
	Circ - Environmental	Count	9	29	0	0	38
		Expected Count	8.6	28.0	.3	1.0	38.0
	Trans - Incentive	Count	8	25	1	2	36
		Expected Count	8.2	26.5	.3	1.0	36.0
	Circ - Incentive	Count	9	30	0	0	39
		Expected Count	8.9	28.7	.4	1.1	39.0
	Trans - Social norm	Count	7	29	0	0	36
		Expected Count	8.2	26.5	.3	1.0	36.0
	Circ - Social norm	Count	8	27	1	1	37
		Expected Count	8.4	27.2	.3	1.0	37.0
Total		Count	50	162	2	6	220
		Expected Count	50.0	162.0	2.0	6.0	220.0

Table 6

Chi-square test gender and conditions

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.006[a]	15	.525
Likelihood Ratio	15.500	15	.416
Linear-by-Linear Association	.080	1	.777
N of Valid Cases	220		

A. 12 cells (50.0%) have expected count less than 5. The minimum expected count is .31.

Table 7

Descriptive statistics for age per condition

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	Upper Bound	Minimum	Maximum
Trans - Environmental	34	25.50	6.383	1.095	23.27	27.73	18	45
Circ - Environmental	38	23.24	3.709	.602	22.02	24.46	19	37
Trans - Incentive	36	23.83	5.079	.847	22.11	25.55	18	43
Circ - Incentive	39	23.51	4.806	.770	21.95	25.07	18	37
Trans - Social norm	36	23.33	4.697	.783	21.74	24.92	18	37
Circ - Social norm	37	22.97	5.241	.862	21.23	24.72	18	40
Total	220	23.70	5.029	.339	23.04	24.37	18	45

Table 8

One way ANOVA for age

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	144.710	5	28.942	1.148	.336
Within Groups	5395.085	214	25.211		
Total	5539.795	219			

Appendix C: Hypothesis Testing

Table 1

Tests of normality purchase intention

	EC_L_H	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*Df*	*Sig.*	*Statistic*	*Df*	*Sig.*
Pin	*Low*	0.086	128	0.021	0.954	128	0.000
	High	0.159	92	0.000	0.937	92	0.000

Note. A. Lilliefors Significance Correction

Table 2

Tests of normality purchase intention

	Type of reusable cup	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*Df*	*Sig.*	*Statistic*	*Df*	*Sig.*
Pin	*Circular environmentally friendly reusable cup*	0.119	114	0.000	0.961	114	0.002
	Transparent plastic reusable cup	0.098	106	0.014	0.959	106	0.002

A. Lilliefors Significance Correction

Table 3

Tests of normality purchase intention

	Nudging technique	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	*Sig.*	*Statistic*	*df*	*Sig.*
PI	*Environmental message*	0.146	72	0.001	0.957	72	0.015
	Incentive message	0.135	75	0.002	0.956	75	0.010
	Social norm message	0.092	73	0.200[*]	0.963	73	0.031

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 4

Levene's Test of Equality of Error Variances purchase intention

		Levene Statistic	Df1	Df2	Sig.
PIn	*Based on Mean*	2.000	3	216	0.115
	Based on Median	1.983	3	216	0.117
	Based on Median and with adjusted df	1.983	3	211.224	0.118
	Based on trimmed mean	2.043	3	216	0.109

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

A. Dependent variable: pin

B. Design: Intercept + typeofrecup + EC_L_H + typeofrecup * EC_L_H

Table 5

Independent samples t-test

		Levene's Test for Equality of Variances		T-test for Equality of Means						95% Confidence Interval of the Difference	
		F	*Sig.*	*T*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*		*Lower*	*Upper*
PIn	*Equal variances assumed*	2.527	0.113	0.057	218	.955	0.00811	0.14277		-0.27327	0.28949
	Equal variances not assumed			0.057	209.626	.955	0.00811	0.14343		-0.27465	0.29087

Figure 1

Mean bar-chart of purchase intention by type of reusable cup
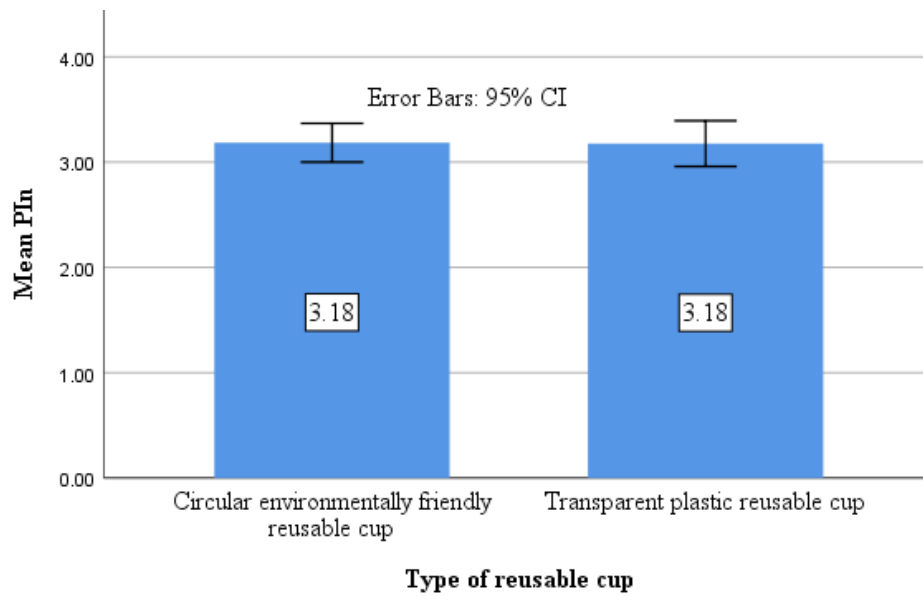
Table 6

Test of normality

	EC_L_H	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
WTPn	Low	0.249	127	0.000	0.617	127	0.000
	High	0.141	92	0.000	0.649	92	0.000

Note. A. Lilliefors Significance Correction

Table 7

Test of normality

	Type of reusable cup	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
WTPn	Circular environmentally friendly reusable cup	0.229	113	0.000	0.623	113	0.000
	Transparent plastic reusable cup	0.213	106	0.000	0.643	106	0.000

A. Lilliefors Significance Correction

Table 8

Test of normality

	Nudging technique	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	Df	Sig.
WTPn	Environmental message	0.218	72	0.000	0.657	72	0.000
	Incentive message	0.258	75	0.000	0.586	75	0.000
	Social norm message	0.246	70	0.000	0.640	70	0.000

*. This is a lower bound of the true significance.

A. Lilliefors Significance Correction

Table 9

Levene's Test of Equality of Error Variances

|		Levene Statistic	Df1	Df2	Sig.
WTPn	Based on Mean	1.220	5	213	0.301
	Based on Median	0.756	5	213	0.582
	Based on Median and with adjusted df	0.756	5	176.267	0.582
	Based on trimmed mean	0.932	5	213	0.481

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

A. Dependent variable: wtpn

B. Design: Intercept + typeofrecup + EC_L_H + typeofrecup * EC_L_H

Table 10

Independent samples t-test

		Levene's Test for Equality of Variances		T-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	*Sig.*	*T*	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*Lower*	*Upper*
WTPn	Equal variances assumed	*23.100*	*0.080*	1.025	217	.306	1.155	1.126	-1.065	3.375
	Equal variances not assumed			1.035	207.131	.306	1.155	1.116	-1.046	3.355

Figure 2

Mean bar-chart of willingness to pay and type of reusable cup
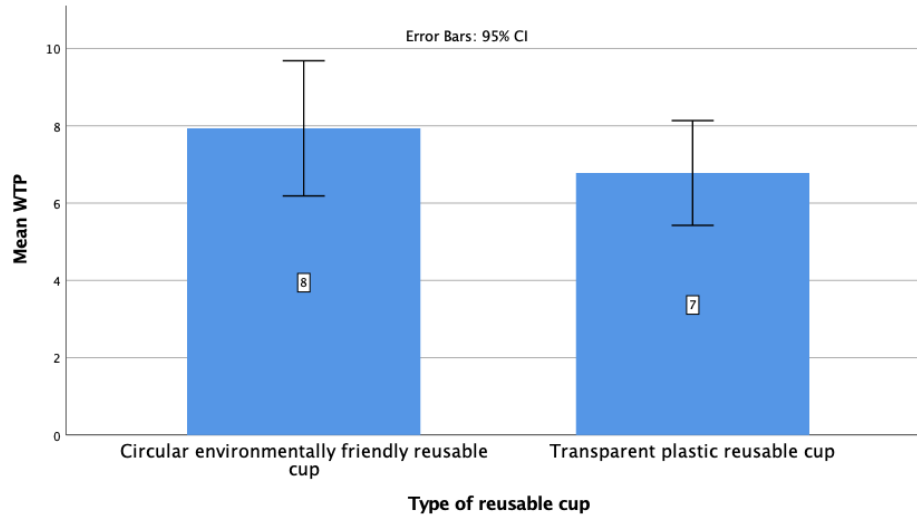
Table 11

Tests of between-subjects effects of purchase intention

Dependent Variable: PIn

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	6.751[a]	3	2.250	2.048	.108	.028	6.144	.521
Intercept	2197.074	1	2197.074	1999.701	.000	.903	1999.701	1.000
typeofrecup	.146	1	.146	.133	.716	.001	.133	.065
SUM_EC_L_H	5.640	1	5.640	5.133	.024	.023	5.133	.616
*typeofrecup * SUM_EC_L_H*	1.037	1	1.037	.944	.332	.004	.944	.162
Error	237.319	216	1.099					

Total	2469.222	220					
Corrected Total	244.070	219					

a. R Squared = .028 (Adjusted R Squared = .014)

b. Computed using alpha = .05

Table 12

Descriptive statistics purchase intention

Dependent Variable: PIn

Type of reusable cup	SUM_EC_L_H	*Mean*	*Std. Deviation*	*N*
Circular environmentally friendly reusable cup	Low EC	3.0048	1.02700	70
	High EC	3.4697	.86660	44
	Total	3.1842	.99071	114
Transparent plastic reusable cup	Low EC	3.0920	1.20556	58
	High EC	3.2778	1.02529	48
	Total	3.1761	1.12613	106
Total	Low EC	3.0443	1.10781	128
	High EC	3.3696	.95242	92
	Total	3.1803	1.05569	220

Table 13

Tests of between-subjects effects of willingness to pay

Dependent Variable: WTPn

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	258.602[a]	3	86.201	1.246	.294	.017	3.739	.331
Intercept	11045.937	1	11045.937	159.714	.000	.426	159.714	1.000
typeofrecup	55.906	1	55.906	.808	.370	.004	.808	.146
SUM_EC_L_H	185.232	1	185.232	2.678	.103	.012	2.678	.371
typeofrecup * SUM_EC_L_H	.240	1	.240	.003	.953	.000	.003	.050
Error	14869.598	215	69.161					
Total	27048.526	219						
Corrected Total	15128.201	218						

a. R Squared = .017 (Adjusted R Squared = .003)

b. Computed using alpha = .05

Table 14

Descriptive statistics willingness to pay

Dependent Variable: WTPn

Type of reusable cup	SUM_EC_L_H		Statistic	Bias	Std. Error	Lower	Upper
					Bootstrap[a]		
						95% Confidence Interval	
Circular environmentally friendly reusable cup	Low EC	Mean	8.69	-.14	1.35	6.11	11.49
		Std. Deviation	11.229	-.448	2.071	6.332	14.483
		N	69	0	7	57	83
	High EC	Mean	6.76	.00	.80	5.27	8.42
		Std. Deviation	5.245	-.145	.822	3.532	6.704
		N	44	0	6	32	55
	Total	Mean	7.94	-.08	.88	6.28	9.63
		Std. Deviation	9.382	-.293	1.548	5.726	11.888
		N	113	0	8	99	128
Transparent plastic reusable cup	Low EC	Mean	7.60	.01	1.15	5.57	10.19
		Std. Deviation	8.793	-.245	2.033	4.371	12.448
		N	58	0	6	45	71
	High EC	Mean	5.80	.01	.56	4.77	6.90
		Std. Deviation	3.873	-.141	.820	2.423	5.333
		N	48	0	6	36	61
	Total	Mean	6.78	.01	.69	5.50	8.24
		Std. Deviation	7.035	-.134	1.438	3.955	9.711
		N	106	0	8	91	120
Total	Low EC	Mean	8.19	-.07	.93	6.38	10.03
		Std. Deviation	10.165	-.224	1.479	6.961	12.597
		N	127	0	7	112	141
	High EC	Mean	6.26	.01	.48	5.37	7.28
		Std. Deviation	4.580	-.077	.603	3.317	5.634
		N	92	0	7	78	107
	Total	Mean	7.38	-.03	.57	6.30	8.47
		Std. Deviation	8.330	-.141	1.091	5.920	10.171
		N	219	0	0	219	219

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 15

Tests of between-subjects purchase intention

Dependent Variable: PIn

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	2.836[a]	5	.567	.503	.774	.012	2.516	.186
Intercept	2217.172	1	2217.172	1966.865	.000	.902	1966.865	1.000
typeofrecup	.006	1	.006	.005	.943	.000	.005	.051
nudgtec	1.135	2	.568	.503	.605	.005	1.007	.132
typeofrecup * nudgtec	1.784	2	.892	.791	.455	.007	1.582	.184
Error	241.234	214	1.127					
Total	2469.222	220						
Corrected Total	244.070	219						

a. R Squared = .012 (Adjusted R Squared = -.011)

b. Computed using alpha = .05

Table 16

Descriptive statistics purchase intention

Dependent Variable: PIn

Type of reusable cup	Nudging technique		Statistic	Bias	Bootstrap[a] Std. Error	95% Confidence Interval Lower	Upper
Circular environmentally friendly reusable cup	Environmental message	Mean	3.2456	-.0001	.1072	3.0362	3.4696
		Std. Deviation	.66974	-.01817	.09515	.46853	.84573
		N	38	0	6	27	50
	Incentive message	Mean	3.2308	-.0079	.1760	2.8772	3.5640
		Std. Deviation	1.04337	-.01849	.09786	.82580	1.20899
		N	39	0	6	28	50
	Social norm message	Mean	3.0721	-.0042	.1986	2.6826	3.4390
		Std. Deviation	1.20476	-.01660	.10793	.96825	1.38237
		N	37	0	6	26	48
	Total	Mean	3.1842	-.0035	.0943	2.9908	3.3694
		Std. Deviation	.99071	-.00561	.06155	.85909	1.10987
		N	114	0	8	98	129
		Mean	2.9804	-.0059	.2153	2.5333	3.4047

Transparent plastic reusable cup	*Environmental message*	*Std. Deviation*	1.26049	-.02331	.10056	1.01731	1.42408
		N	34	0	5	23	44
	Incentive message	*Mean*	3.3241	.0027	.1921	2.9338	3.7070
		Std. Deviation	1.13105	-.02059	.11840	.87666	1.34487
		N	36	0	5	25	47
	Social norm message	*Mean*	3.2130	-.0003	.1630	2.8741	3.5252
		Std. Deviation	.98288	-.02007	.10961	.75555	1.16852
		N	36	0	5	26	48
	Total	*Mean*	3.1761	.0005	.1081	2.9657	3.3841
		Std. Deviation	1.12613	-.00704	.06191	.99829	1.23997
		N	106	0	8	91	122
Total	*Environmental message*	*Mean*	3.1204	-.0009	.1142	2.8860	3.3458
		Std. Deviation	.99499	-.01325	.07992	.81319	1.13679
		N	72	0	7	59	87
	Incentive message	*Mean*	3.2756	-.0028	.1269	3.0087	3.5143
		Std. Deviation	1.07995	-.00834	.07534	.92040	1.21992
		N	75	0	7	60	89
	Social norm message	*Mean*	3.1416	-.0015	.1287	2.9020	3.3857
		Std. Deviation	1.09561	-.00842	.07658	.92956	1.23289
		N	73	0	7	60	87
	Total	*Mean*	3.1803	-.0017	.0714	3.0380	3.3197
		Std. Deviation	1.05569	-.00297	.04499	.96000	1.14074
		N	220	0	0	220	220

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 17

Test of between-subjects willingness to pay

Dependent Variable: WTPn

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Corrected Model	123.965[a]	5	24.793	.352	.881	.008	1.760	.140
Intercept	11842.900	1	11842.900	168.122	.000	.441	168.122	1.000
nudgtec	40.977	2	20.489	.291	.748	.003	.582	.096
typeofrecup	75.367	1	75.367	1.070	.302	.005	1.070	.178
nudgtec * typeofrecup	9.260	2	4.630	.066	.936	.001	.131	.060
Error	15004.236	213	70.442					
Total	27048.526	219						
Corrected Total	15128.201	218						

a. R Squared = .008 (Adjusted R Squared = -.015)

b. Computed using alpha = .05

Table 18

Descriptive statistics willingness to pay

Dependent Variable: WTPn

Nudging technique	Type of reusable cup	Mean	Std. Deviation	N
Environmental message	Circular environmentally friendly reusable cup	7.17	8.396	38
	Transparent plastic reusable cup	6.34	5.328	34
	Total	6.78	7.078	72
Incentive message	Circular environmentally friendly reusable cup	8.04	9.109	39
	Transparent plastic reusable cup	7.10	9.411	36
	Total	7.59	9.205	75
Social norm message	Circular environmentally friendly reusable cup	8.63	10.766	36
	Transparent plastic reusable cup	6.88	5.731	36
	Total	7.76	8.609	72
Total	Circular environmentally friendly reusable cup	7.94	9.382	113
	Transparent plastic reusable cup	6.78	7.035	106
	Total	7.38	8.330	219

Table 1

Levene's Test of Equality of Error Variances

Levene Statistic	Df1	Df2	Sig.
5.272	5	214	0.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

A. Dependent variable: Pin

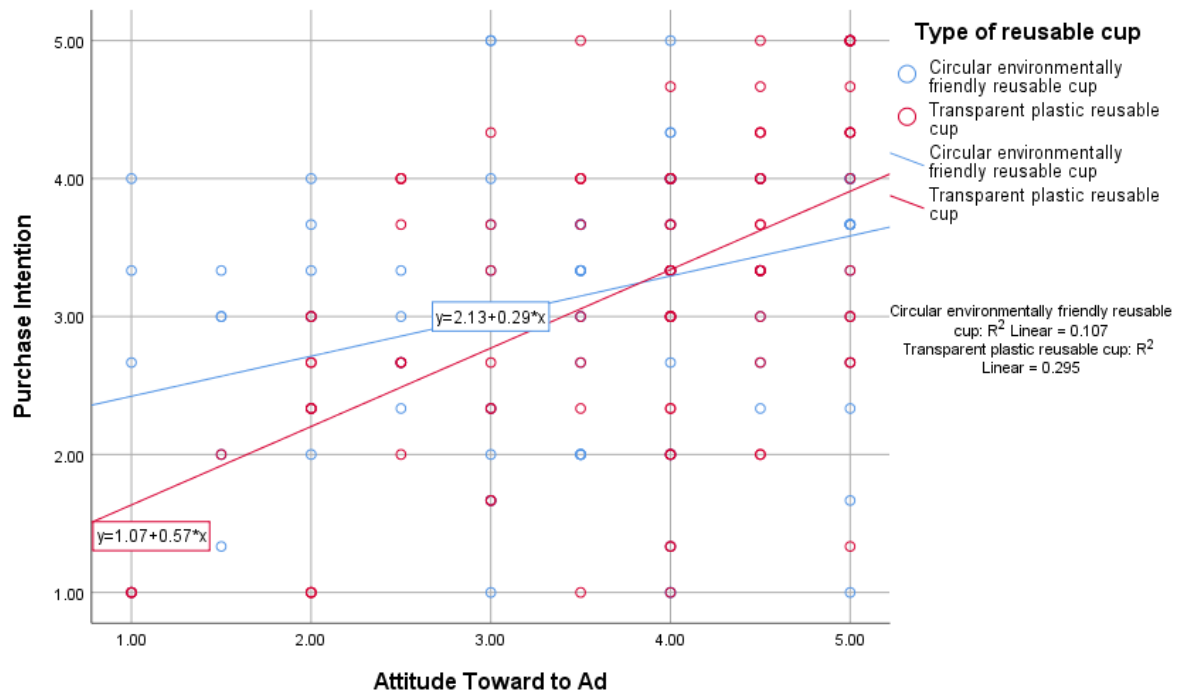B. Design: Intercept + atan + typeofcup + nudgtec + typeofcup * nudgtec

Table 2

F-Test for Heteroskedasticity

F	Df1	Df2	Sig.
0.312	1	218	0.577

Tests the null hypothesis that the variance of errors does not depend on the value of the independent variables.

A. Dependent variable: Pin

B. Design: Intercept + atan + typeofcup + nudgtec + typeofcup * nudgtec

Table 3

Test of normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Cook's Distance	0.237	220	0.000	0.711	220	0.000

A. Lilliefors Significance Correction

Figure 1

Homogeneity of regression slopes between purchase intention and attitude toward the ad across type
of cup

Figure 2

Homogeneity of regression slopes between purchase intention and attitude toward the ad across
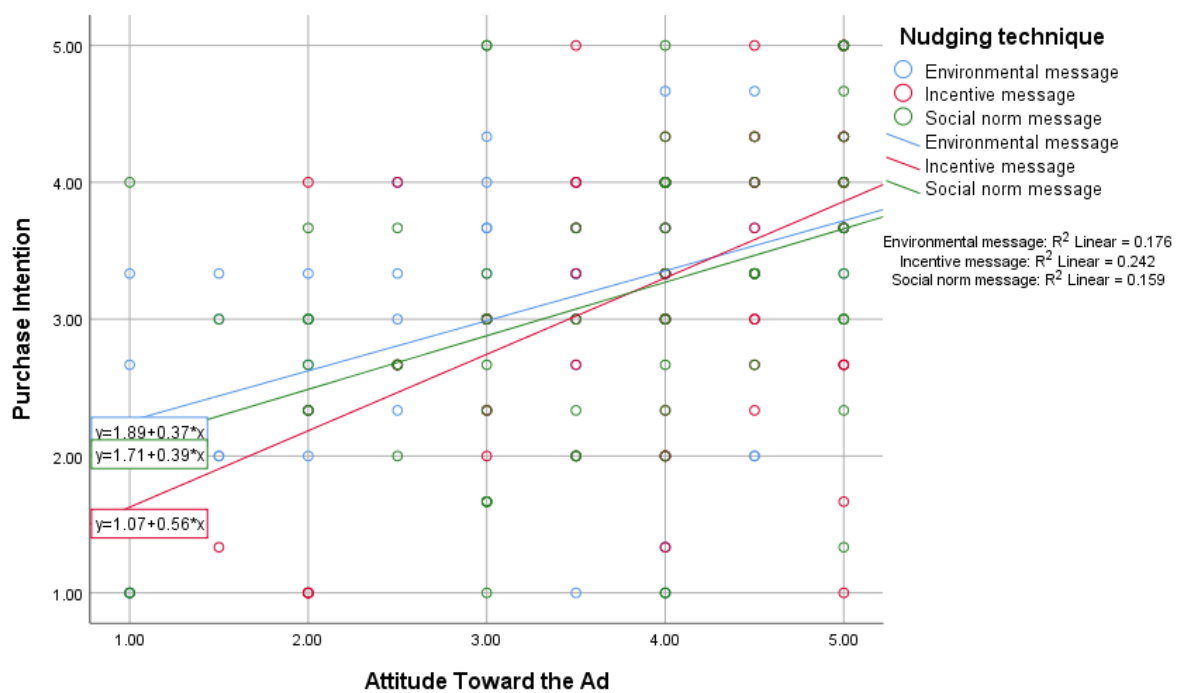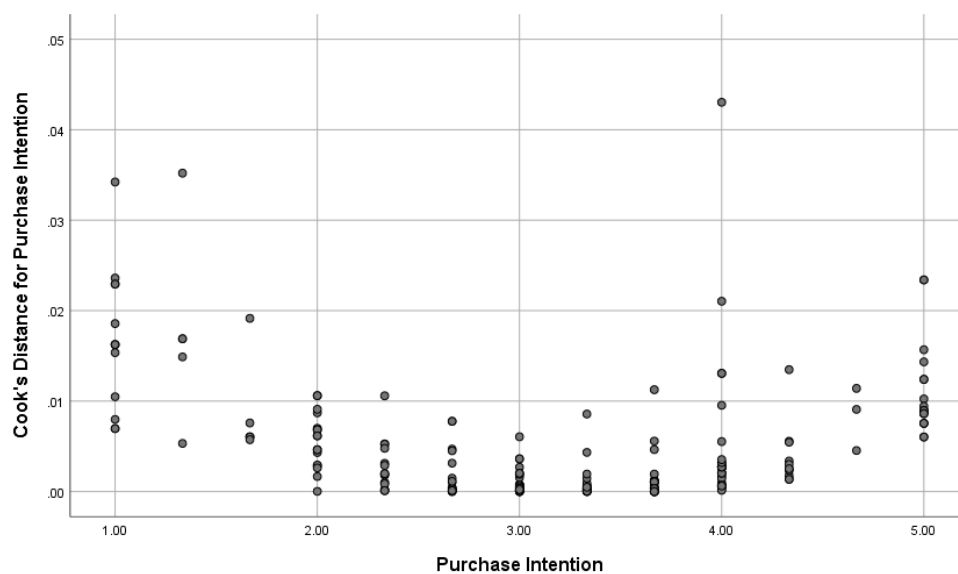*nudging techniques*

Figure 3

Scatterplot of Cook's Distance

Table 4

Levene's Test of Equality of Error Variances

Levene Statistic	Df1	Df2	Sig.
1.066	5	213	0.380

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

A. Dependent variable: wtpn

B. Design: Intercept + atan + typeofcup + nudgtec + typeofcup * nudgtec

Table 5

F-Test for Heteroskedasticity

F	Df1	Df2	Sig.
2.480	1	217	0.117

Tests the null hypothesis that the variance of errors does not depend on the value of the independent variables.

A. Dependent variable: wtpn

B. Design: Intercept + atan + typeofcup + nudgtec + typeofcup * nudgtec

Table 6

Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Cook's Distance	0.427	219	0.000	0.256	219	0.000

A. Lilliefors Significance Correction

Figure 4

Homogeneity of regression slopes between willingness to pay and attitude toward the ad across type of cup
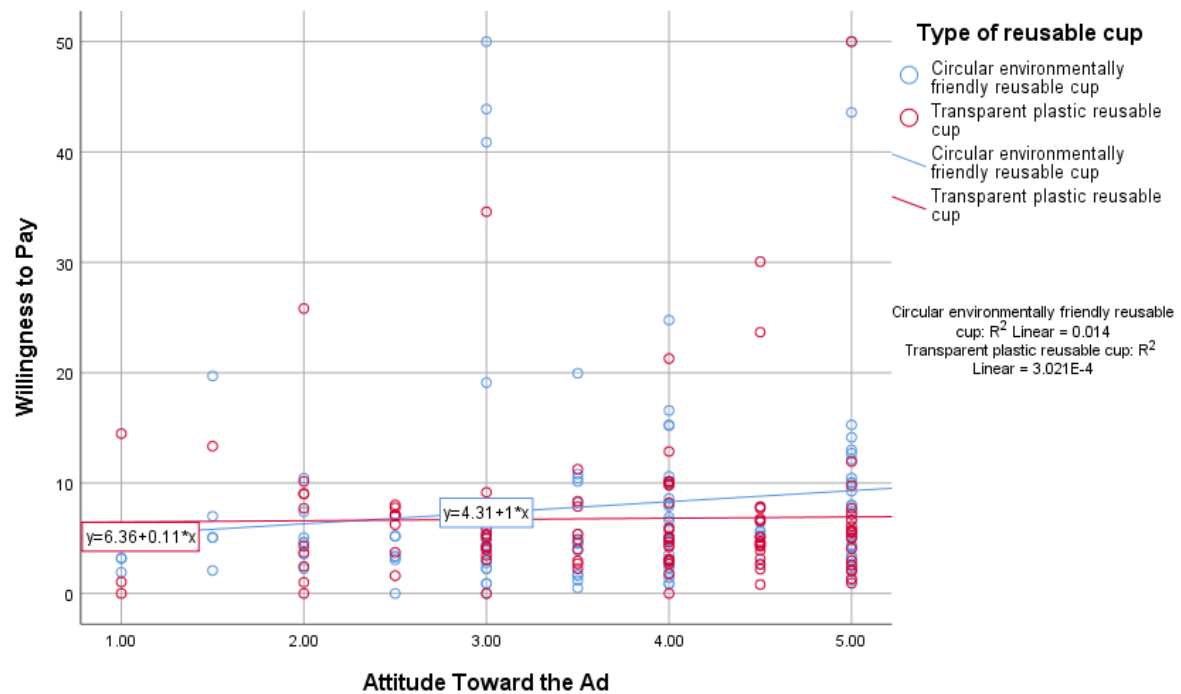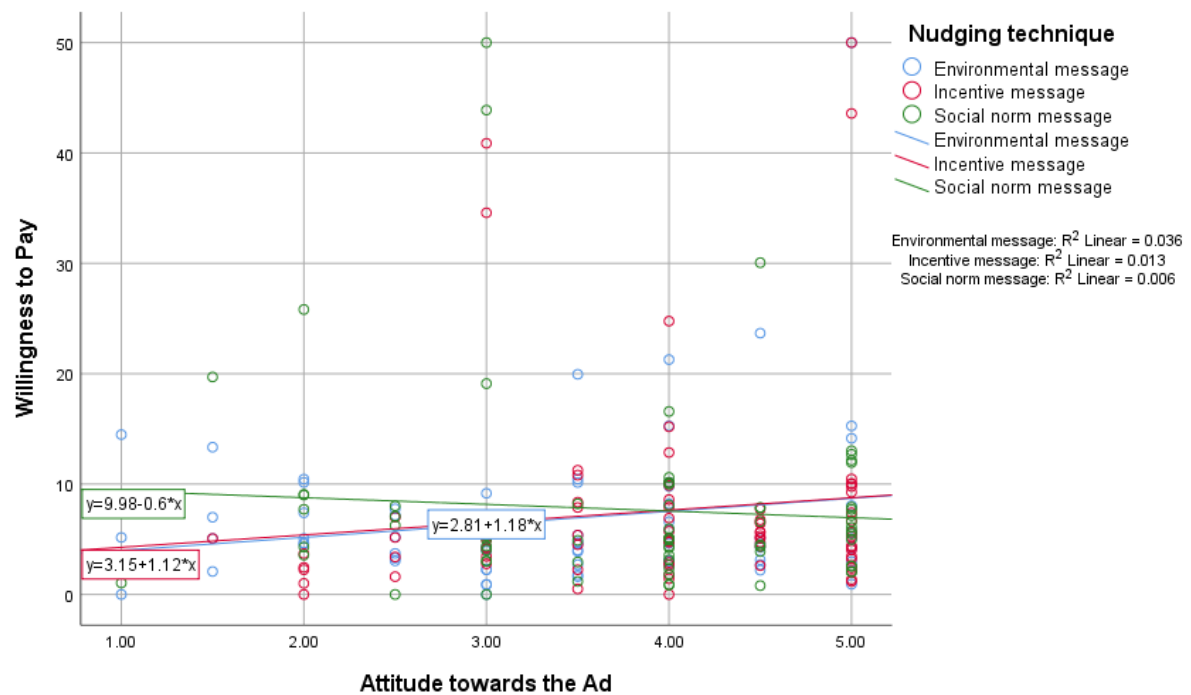
Figure 5

Homogeneity of regression slopes between willingness to pay and attitude toward the ad across nudging techniques

Figure 6

Scatterplot of Cook's Distance