"Don't bother me with your information!"

The Effect of Information Framing on Purchase Behavior in the Context of Plastic-free Grocery Shopping

Bachelor thesis by

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Abstract

The production of plastic but also plastic waste leaves behind an ecological footprint. A significant amount of plastic waste comes from our daily groceries. As a possible solution to the issue of plastic waste, plastic-free supermarkets open their doors.

To contribute to this solution approach, the purpose of this research was to investigate how plastic-free supermarkets can motivate people to do plastic-free grocery shopping. Therefore, it was tested whether gain or loss framed information is more effective to increase consumers' willingness to do plastic-free grocery shopping. It was further tested, if the effect of information framing on the purchase behavior is moderated by consumers' regulatory focus. To understand and measure consumers' purchase behavior, this research is based on the theory of planned behavior.

In order to answer the underlying research question and to test related hypotheses, an online experiment in form of a combined survey was conducted. The sample ($N = 171$) was gathered by means of snowball sampling. It consisted of 44 male and 127 female participants aging between 18 and 62. The sample was divided into two intervention groups and one control group. Participants of the intervention groups received either loss or gain framed information related to plastic-free grocery shopping. The participants' regulatory focus as well as the variables specified in the theory of planned behavior were measured.

Although no significant results were found, it is assumed that the provision of information does not affect people's purchase behavior in the context of plastic-free grocery shopping, but that the availability and increased visibility of opportunities to buy plastic-free groceries would do so.

Keywords: Plastic-free grocery shopping, information framing, regulatory focus theory, theory of planned behavior

Pictures showing streams of plastic floating in the sea and animals being trapped in plastic bags or stifled because they ate the little pieces of plastic swimming in the water are omnipresent within media. Researchers found that in 2010 up to 12,7 Mt of plastic waste produced in offshore regions arrived in the ocean (Jambeck et al., 2015). This non-biodegradable plastic flood in the marine environment negatively influences "the oceans, wildlife, and, potentially, humans" (Jambeck et al., 2015, p. 768). Besides that, due to CO2 emission the production of plastic leaves an ecological footprint outside the water (Dorgan, Lehermeier, Palade, & Cicero, 2001). Furthermore, Emblem (2012) stresses that the scarcity of oil, which is used for the production of plastic, will have a problematic effect on future generations. The major purchases of plastic resins are used for the production of packaging (Jambeck et al., 2015). In turn, the majority of packaging waste derives from the supply chain of food products (Beitzen-Heineke, Balta-Ozkan, & Reefke, 2016). Correspondingly, one can conclude that a major amount of plastic waste is produced due to daily grocery shopping.

Existing approaches, such as a cooperation between the 'Waste and Resources Action Program' and the grocery sector in the UK, successfully aim to reduce plastic waste by developing "solutions across the whole supply chain" (Emblem, 2012, p. 80). Moreover, Lehmann (2011) argues that the responsibility of the producer increases, which results in the implementation of a variety of new products that require less packaging, and which do not end up as waste at the end of its life cycle or which are made of recycled waste. However, the industry is no longer seen as being the only responsible for the issue of plastic but also the consumer itself (Lehmann, 2011; Reese & Junge, 2017). Correspondingly, due to the increasing awareness of the climate change, attitudes changed and the concept of 'zero waste', which is questioning the common belief that waste cannot be avoided, became prominent (Lehmann, 2011). One aspect of the zero-waste lifestyle is

the avoidance of plastic while grocery shopping. Correspondingly, more and more plastic-free supermarkets open and 'normal' supermarkets offer their customers to bring their own boxes and bags for vegetables, meat, and cheese (Beitzen-Heineke, Balta-Ozkan, & Reefke, 2016; Flatley, 2019). However, as Reese and Junge (2017) emphasize, plastic avoidance that is performed by individuals only contributes to significant effects if many take part. Taking the numbers stated before, it becomes clear that still major amounts of plastic waste could be avoided if the entire population would reduce its plastic consumption in daily life.

In order to contribute to a solution approach for the problem of plastic waste that occurs due to grocery shopping, this research investigates how to convince people to avoid plastic consumption while grocery shopping. To narrow down the broad possibilities to influence consumer purchase behavior, it is examined how framing of information could increase consumer intentions to engage in plastic-free shopping. Specifically, it will be compared whether loss or gain framed information has a more effective influence on the desired behavior in the context of plastic-free grocery shopping. Loss framed information implies negative wordings communicating the negative consequences of producing plastic waste. In contrast, gain framed information means that people will be informed about the positive consequences of buying plastic-free products by using positive connoted words (Septianto, Northey, & Dolan, 2019). Research has demonstrated that negative information framing is more likely to lead to the behavior in favor than positive information framing (Meyerowitz & Chaiken, 1987).

To understand the underlying mechanism of the effect of information framing on purchase behavior, this research is also based on the theory of planned behavior. The theory of planned behavior states that behavioral intention, which precedes the actual behavior, is determined by people's attitude towards the behavior, the subjective norm,

and the perceived behavioral control to perform the behavior (Vermeir & Verbeeke, 2008). Consequently, the central question in this thesis is: *"To what extend does loss and gain framing of information affect the purchase behavior in the context of plastic-free grocery shopping as predicted by the theory of planned behavior?"*.

Loss framing might not be equally effective for every person. According to the regulatory focus theory, people's sensitivity towards either success or failure determines their preference for either gain or loss framed messages (Higgins et. al., 2001). Correspondingly, a second research question is: *"To what extend does the effect of loss and gain framing of information on the purchase behavior in the context of plastic-free grocery shopping differ for people being prevention-focused and people being promotion-focused?"*.

This research has an important practical relevance since its overarching goal is to give advice to plastic-free supermarkets on how they can motivate consumers to buy plastic-free groceries. Thus, this research does not only refer to a growing market but also contributes to a promising solution approach for the grand challenge of plastic waste. Although the issue of plastic waste became increasingly prominent, only few studies have been found that tackle the issue of plastic waste that occurs due to grocery shopping.

In addition to its practical importance, this research also has theoretical relevance. Although the theory of planned behavior is a popular and often investigated model, it rarely has been put in relation to the effect of information framing. Hence, due to the investigation of the effect of information framing on the various predictors for behavior stated in the theory of planned behavior, in-depth insight into the underlying mechanism of framing effect is given. On top of that, by considering people's regulatory focus, a not yet investigated model can be explored. Thus, a more comprehensive view on what influences behavior is provided by this research. In sum, not only in the practical context of plastic

avoidance but also in the context of theory research a dimension of novelty is added to the field of interest.

In the following paragraphs, theories and concepts relevant for this research are discussed and their interrelations are explored. Subsequently, the research design and instruments used in this study as well as the research sample and its underlying population are described. Moreover, the most important results relevant to answer the fundamental research questions are reported and, in consideration of potential limitations, discussed. Finally, a conclusion is drawn, and possible practical future implications and recommended future research are presented.

Theoretical framework

Information framing

According to Spangenberg and Lorek (2019), does the provision of information influence people's behavior. More precisely, due to the communication of facts and communication that triggers emotions consumers' knowledge and awareness can be increased which in turn enhances sustainable attitudes and results in behavioral change. Furthermore, insufficient information found to be the only explanation for the performance of a non-desired behavior, when assuming that behavior is rational. However, the way information effects behavior might depend on the type of information.

One approach that narrows down the broad possibilities to design change information is to investigate the effects of certain ways to frame information on purchase behavior. Correspondingly, Levin, Schnittjer and Thee (1988) mention, "the way which information is labeled or framed has been shown to affect a variety of judgments and decisions" (p. 520). Message framing, as it is often named in literature, is a concept that comes from the prospect theory developed by Kahneman and Tversky (1979), which explains how the same information may lead to different behavior when using different

wordings (Septianto et al., 2019). As message framing is, due to its persuasive impact, often intentionally applied, one can claim that it is a rhetorical technique used to change behavior (Seo & Park, 2018).

The most often mentioned framing methods are gain and loss framing, meaning that "framing manipulations can influence whether people encode information as gains or losses" (Meyerowitz & Chaiken, 1987, p. 501). Whereas within gain framing potential benefits are highlighted, loss framing implies the emphasize of costs (Septianto et al., 2019). Naletelich, Ketron and Spears (2019) stress that "positive emotions encourage approach-oriented behavior and signal continuance of said behavior" (p. 63). Seo and Park (2018) formulate sentences such as "Changing your password will allow you to safely protect your personal information" (p. 11), to gain frame information. In contrast, negative emotions are used to prevent people from harmful behaviors as they "indicate an undesirable state and signal to stop a behavior" (Naletelich et al., 2019, p. 63). A corresponding framed message would be "If you don't change your password, your personal information may be leaked" (Seo & Park, 2018, p. 11). Both of the sentences formulated by Seo and Park (2018) contain the same statement, but due to the different wording they are encoded differently.

Giving examples for the different effects of loss and gain framing, a research of Levin and Gaeth (1988), in which different wordings to advertise the same meat product were used, found that participants have been more in favor with those products that contained a gain framed label than with products which were labeled with loss framed information. The loss framed message states that the product contains "25% fat beef", whereas the gain framed product was marked to contain "75% lean meat". According to Seo and Park (2018) this outcome can be reasoned with the "attitudinal hypothesis" (p. 9), which says that if a message affects the recipient negatively, its behavior will be,

independently of the effectiveness of the communication and the usefulness of the message, contradicting to the intended behavior. In contrast, Meyerowitz and Chaiken (1987) report that a variety of studies conducted in different contexts support the assumption that loss associated framing has a higher persuasive impact than gain associated framing.

However, various authors distinguish between the effect of information framing in situations where people put high effort in processing the information and situations where people put low effort in processing the information (Block & Keller, 1995; Gleicher & Petty, 1992; Maheswaran & Meyer-Levy, 1990). Whereas the framing effect seems to disappear when people just skim information, the effect of negative framing is found to be higher, compared to positive information, when people read information carefully (Block & Keller, 1995). Correspondingly, a research of Maheswaran and Meyer-Levy (1990) in the context of cholesterol blood testing proves that negatively framed information has a greater effect on the desired behavioral change than positively framed information. This finding can be explained by the "concept of loss aversion" (Seo & Park, 2018, p. 9), which means that people tend to avoid a loss when deciding between obtaining gain or loss aversion because they perceive the loss to be greater than the expected gain. Similarly, according to the negative bias effect, losses are perceived to have a higher impact than gains (Meyerowitz & Chaiken, 1987).

Nonetheless, when disregarding the effort used to process information, disagreement among researchers about the effect of message framing exists. A reason for this disagreement might be, that the effect of message framing cannot be generalized among the whole population, since each individual might have different sensitivities to either loss or gain framed information. This assumption, which is part of the regulatory focus theory, will be explained in the next section.

Regulatory focus theory

The effect of the information framing is not the same for all people. According to the regulatory focus theory, it depends on the individual's sensitivity to either positive or negative outcomes, hence, people's regulatory focus. To be more detailed, it is stated that goal-oriented behavior is determined by two different motivational systems, namely promotion-focused and prevention-focused (Higgins et. al., 2001). Whether a human is rather prevention-focused than promotion-focused, or the other way around depends on three factors, namely their needs, their objectives and "the psychological situation that matter" (Brockner & Higgins, 2001, p. 37).

Promotion-focused people initially pay attention to future outcomes related to hopes, dreams and ambitions and aim to progress beyond the status quo. Thus, they are more willing to take a risk (Naletelich et al., 2019). Relating the concept 'promotion-focused' to the fundamental human needs, promotion-focused people will be more sensitive to needs that refer to "growth and development" (Brockner & Higgins, 2001, p. 37) than to those that relate to "safety, protection and security" (Brockner & Higgins, 2001, p. 37). In addition, it is described that promotion-focused people aim to fulfill goals related to the ideal self. The ideal self, in turn, is associated with the individuals "hopes, wishes, and aspiration" (Brockner & Higgins, 2001, p. 37). Correspondingly, they are more sensitive to the "absence and presence of positive outcomes" (Brockner & Higgins, 2001, p. 37).

In contrast, prevention-focused people are "more attuned to negative emotions because of their sensitivity to safety and risk" (Naletelich et al., 2019, p.63). Correspondingly, prevention-focused people are rather attuned to the fundamental needs of "safety, protection and security" (Brockner & Higgins, 2001, p. 37). Naletelich et al. (2019) further explain that prevention-focused people are afraid to fall below their status

quo. Hence, they relate their environment to threats and are sensitive to loss (Naletelich et al., 2019). Brockner and Higgins (2001) state that they are more attuned to the ought self, meaning that prevention-focused people are more concerned about "duties, obligations, and responsibilities" (Brockner & Higgins, 2001, p. 37) that are expected externally. Hence, they are more salient to the "absence and presence of negative outcomes" (Brockner & Higgins, 2001, p. 38).

The regulatory focus can differ between the chronological state, which describes the initial focus people generally hold, and the situational state, which depends on certain situations. However, Naletelich et al. (2019) define the chronological regulatory focus to be more dominant.

Taking these two possible sensitivities into account, it appears that the framing of information needs to match the regulatory focus of the consumers to effectively influence their attitude towards plastic-free grocery shopping and in turn their purchase behavior. In other words, a regulatory fit is required. According to Naletelich et al. (2019), a "regulatory fit is an enhanced state emerging from the alignment of regulatory focus and goal pursuit strategies, such that the tactics used to approach a goal sustains one's motivational orientation and results in enhanced persuasion and behavior change" (p. 62). Thus, when the information helps to maintain the regulatory goal of the communication activity, a fit will be achieved which consequentially results into a greater intention to do plastic-free grocery shopping (Naletelich et al., 2019).

According to Haws, Dholakai and Bearden (2010), "the regulatory focus theory is increasingly used in consumer research to explain a wide range of consumer phenomena" (p. 967) and therefore assumed to be useful to predict purchase behavior in the context of plastic-free grocery shopping.

Theory of planned behavior

To understand the underlying mechanism of the effect information framing on behavior, the theory of planned behavior serves a promising model that implies various possible antecedence that form a certain behavior. Hence, Vermeir and Verbeeke (2008) stress that the theory of planned behavior is proven to be a useful approach when developing behavioral change interventions such as information campaigns. Furthermore, when reviewing literature related to purchase behavior, it becomes evident that the theory of planned behavior is an omnipresent concept.

The theory determines that humans are rational and describes the linear relation between individuals' intention to perform a certain behavior, its determinants and the actual behavior (Spangenberg & Lorek, 2019; see Figure 1). According to the theory of planned behavior, behavioral intention and in turn the actual behavior is determined by the variables "attitude towards the behavior, subjective norm and perceived behavioral control" (Vermeir & Verbeeke, 2008, p. 543). According to Jones, Sinclair, Rhodes, and Courneya (2004), these determinants are independent. Contradicting, Kalafatis, Polland, East, and Tsogas (1999) state that the three determinants are not independent but influenced by certain beliefs. Although these beliefs are described to create a better understanding of the predictors that lead to a certain behavior, they are not investigated in this research, as it would exceed its scope.

The attitude towards a behavior occurs on the basis of the evaluation of the expected outcome of the behavior and how desirable it will be (Jones et al., 2004). Accordingly, a related belief is the 'outcome belief' (Kalafatis et al., 1999). In the case of this research, an attitude that leads to the intention to do plastic-free grocery shopping includes the belief that plastic-free grocery shopping has desirable consequences for the environment or the own health.

In turn, the 'normative belief' determines the subjective norm, which is "about whether particular referents think the respondent should or should not do the action in question" (Kalafatis et al., 1999, p. 444). Therefore, the social pressure the acting person perceives related to the behavior in question influences its behavioral intention (Jones et al., 2004). Assuming for example that most people in your environment decrease plastic consumption and might even actively try to convince you the act similarly, the behavioral intention to go to a plastic-free supermarket rather than a normal supermarket would increase.

Finally, the perceived behavioral control relates to the "ability to perform an intention" (Spangenberg & Lorek, 2019, p. 1072). It is determined by the 'control belief', which results from the evaluation of the power and access that is needed to perform the behavior (Kalafatis et al., 1999) and the perceived complexity of the behavior (Jones et al., 2004) compared to the own resources. Correspondingly, the perceived behavioral control is based on internal control factors, including "skills, abilities, power of will [and] compulsions" (Sparks, Guthrie and Shepherd, 1997, p. 419), and external difficulty factors, including "time, opportunity [and] dependency on others" (Sparks et al., 1997, p. 419). Different to the other two determinants, the perceived behavioral control does not only show a relation to the behavioral intention but also a direct relation to the actual behavior. Kalafatis et al. (1999) argue that the believe of lacking resources prevents people from the development of a strong behavioral intention. In the context of plastic-free grocery shopping people might determine whether a plastic-free shop is in the neighborhood, whether one is able to carry all boxes needed to fill the grocery in, or whether plastic-free products are affordable. Hence, the individual's resources and opportunities required to perform the behavior are evaluated (Spangenberg & Lorek, 2019).

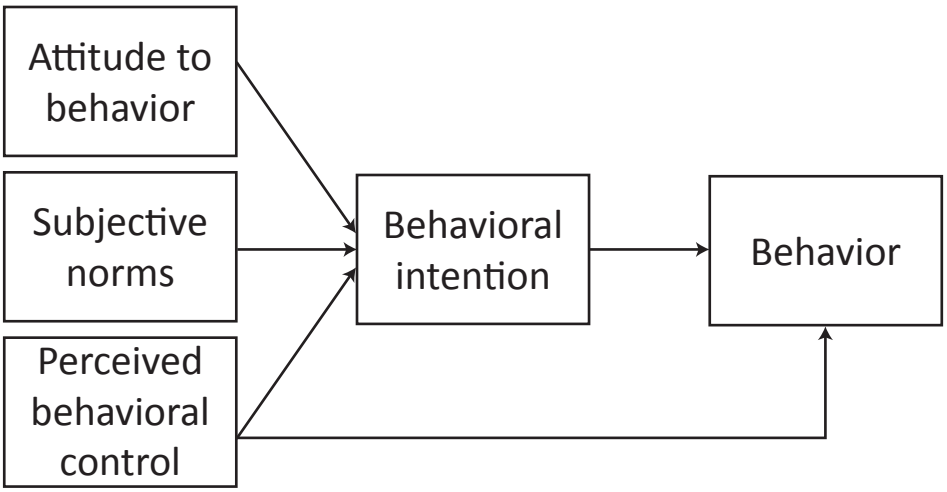

Figure 1: Model of the theory of planned behavior. Adapted from Madden, Ellen and Ajzen (1992)

Assumed interrelation of information framing, the regulatory focus theory, and the theory of planned behavior.

Based on the above elaborated findings in literature, it is assumed that the theory of planned behavior, message framing, and the regulatory focus theory are interrelated. Spangenberg and Lorek (2019) state for example that attitudes can be changed due to an increased awareness which in turn is affected by the provision of information. In the context of this research this means that the provision of information about the consequences of plastic waste that occurs due to daily grocery shopping might influence the evaluation of the expected outcome of plastic-free grocery shopping. In other words, the provision of information might increase people's awareness, that plastic harms the environment and the own health. Correspondingly, after evaluating the outcomes of plastic-free grocery shopping, one might come to the conclusion that the reduction of plastic consumption will positively affect one's life and in turn one's attitude towards plastic-free grocery shopping might be changed positively. Hence, it is indicated that the

provision of information has a relation towards the variable 'attitude' of the theory of planned behavior.

No evidence has been found in literature that indicates whether the provision of information, and corresponding information framing, influences also the variables 'subjective norm' and 'perceived behavioral control'. However, in this research it is assumed that the provision of information does not influence those two variables. First of all, factual information about the consequences do not entail whether other people also perform the behavior in question. Furthermore, the opinions of related people are not indicated. Hence, no cues are given related to the subjective norm. Likewise, no cues are related to the behavioral control. To be explicit, it is not indicated where plastic-free shopping is possible, and what is required to do so. Hence, based on the given information, receivers cannot evaluate whether their resources and abilities match the requirements to perform the behavior in question.

Consequently, in this research it is assumed that the provision of information only affects the variable 'attitude' within the theory of planned behavior (see Figure 2) and the following corresponding hypotheses will be tested:

Hypothesis 1: The provision of information affects people's attitude towards plastic-free grocery shopping.

Hypothesis 2: The provision of information does not affect people's subjective norm towards plastic-free grocery shopping.

Hypothesis 3: The provision of information does not affect people's perceived behavioral control to perform plastic-free grocery shopping.

Going more in-depth, the provision of information can be split up into different ways information is framed and in turn what affect such information framing has on the variables defined in the theory of planned behavior. In this research the effects of gain and

loss framing are investigated. As previously stated, several studies explore the effect of information framing on behavior. When not considering the effort used to process information, findings about the effect of information framing vary. However, since it is expected that people will carefully read information related to sustainability, the following hypothesis has been formulated:

Hypothesis 4: People who received loss framed information will have a higher intention to do plastic-free grocery shopping than people who received gain framed information.

Furthermore, taking the regulatory focus theory into account, whether people are more attuned to either loss or gain framed information might depend on their regulatory focus. Hence, people's regulatory focus might work as a moderator that influences the effect of information framing on the variable 'attitude' (see Figure 2). As discussed earlier, people are either prevention- or promotion-focused, whereas prevention-focused people are expected to be more attuned to expected negative outcomes and promotion-focused people to expected positive outcomes. Under consideration of this evidence from literature, the following hypotheses have been formulated:

Hypothesis 5: The effect of gain framed information on attitude will increase the higher the level of being promotion-focused is.

Hypothesis 6: The effect of loss framed information on attitude will increase the higher the level of being prevention-focused is.

When considering the stated assumed interrelations of the theory of planned behavior, information framing, and the regulatory focused theory, the following model, which will be investigated within this research, can be drawn (see Figure 2):

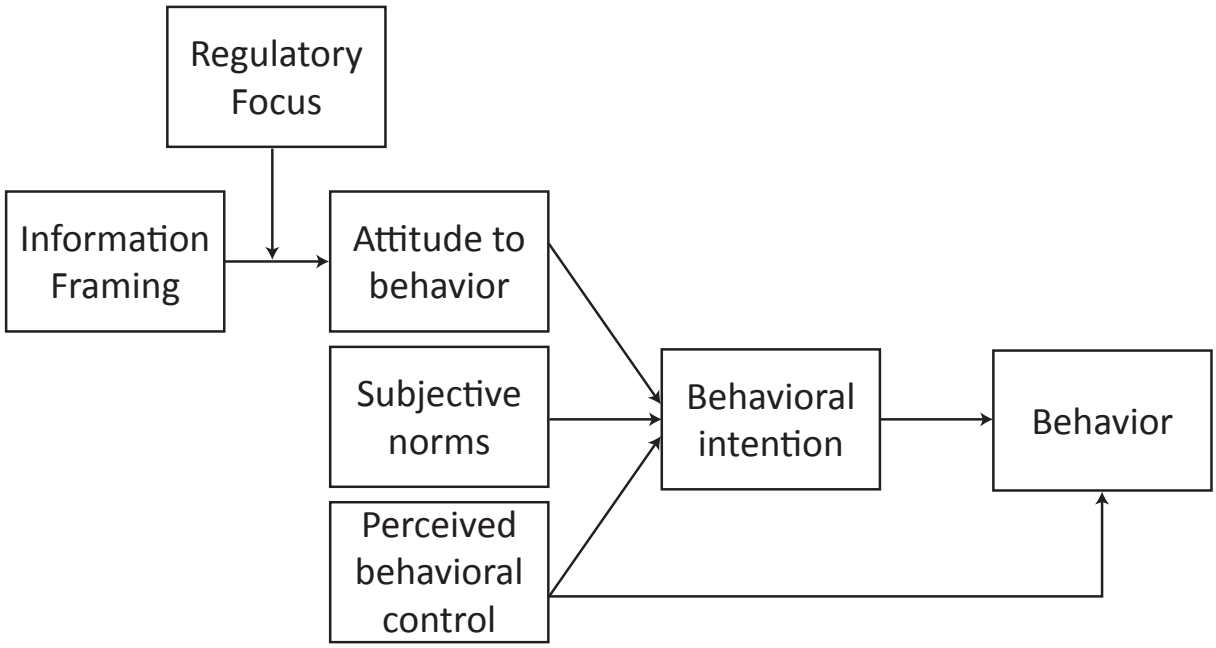

Figure 2. Assumed interrelation of information framing, regulatory focus, and the theory of planned behavior.

Method

Design

In order to answer the previously stated research question optimally, an appropriate research design to gather relevant input was developed. A 3x1 between-subject design was used. One independent variable was the type of information framing, whereas it was divided into no information, gain framed information and loss framed information. A further independent variable was the regulatory focus, which was split into level of prevention-focus and level of promotion-focus. The dependent variables, namely, attitude, subjective norm, perceived behavioral control, behavioral intention, and behavior, resulted from the theory of planned behavior.

For the purpose of gathering data to investigate the effect of information framing on people's purchase behavior in the context of plastic-free shopping, an online experiment was conducted in a survey format. Following the definition from Granello and

Wheaton (2004), this means that "participants are given access information to enter the survey website, they complete the form online and click on a 'submit' button when they completed it" (p. 388). In this research, the online survey was designed, and data was collected by using the software 'Qualtrics'. The method was used because of several advantages that fit the context of this research. Online experiments, for example, allow to reach a large sample size within a large geographical radius (Evans & Mathur, 2005) and within a small period of time (Granello & Wheaton, 2004). Framed information about the consequences of plastic consumption due to grocery shopping where provided to examine the effect of information framing on purchase behavior in the context of plastic-free grocery shopping.

Participants

Population. As indicated above, this research aims to investigate possibilities to increase people's willingness to reduce plastic waste while grocery shopping. Accordingly, the population this research project related to was narrowed down to citizens that do daily grocery shopping. Furthermore, to give the research a tangible context, it is conducted for a fictive plastic-free supermarket located in Münster, a German city close to the boarder of the Netherlands. Consequently, the population was further narrowed down to citizens from Germany and the Netherlands.

It was expected that young adults start routinely do grocery shopping when they leave their parents' home and live on their own. According to a study from 2017, Germans leave their parents' home with an average age of 23.7. In the Netherlands the average age for moving out is 23.6 (Statista Research Department, 2019). Therefore, the population this research related to consisted of German and Dutch adults between 23 and 80 years.

The age limit of 80 was set since most care-dependent people in Germany, who in turn do not do grocery shopping on their own, are between 80 and 85 years old (Radtke, 2019).

After conducting a power analysis, it was aimed to select a sample of about 270 participants being part of the described population to successfully answering the research questions.

Sample. In total 216 participants responded to the survey. However, one participant did not agree to the terms of condition and was therefore excluded. 15 participants indicated to not live in the Netherlands or Germany, which was also an exclusion criterion. In addition, after evaluating a manipulation test, the score of 14 participants resulted to be four or below four. Since people were believed to have carefully read the provided information if they have chosen at least more than the half possible answer option correctly, only those participants were included in the research that score at least 5. Furthermore, 15 people who responded to all survey questions in less than four minutes were excluded as they were expected to have not carefully processed the survey.

After eliminating the above-mentioned participants, the final research sample consisted of 171 adults and young adults that were expected to do their grocery shopping independently. 44 participants of the sample were male and 127 were female. The age within this sample ranged from 18 to 62 years, with a median value of 27 (M = 28.72, SD = 9.05). Although, it was planned to only include participants being between 23 and 80 years old, also younger participants have been included. Since, the survey was mostly spread among students who already left their parents' home and as the majority was above 23 it was not expected that the inclusion of younger participants would bias the result. The majority of the participants lived in Germany, namely 86.5 percent (n = 148). Only 13.5 percent (n = 23) of the participants lived in the Netherlands. Most participants knew the concept of plastic-free shopping but never bought something at a plastic-free

supermarket (n = 68). Another major part had no experiences with plastic-free supermarkets (n = 60). Some participants had experiences with grocery shopping at plastic-free supermarkets but usually go to normal supermarkets (n = 36). Only few participants usually went to plastic-free supermarkets (n = 7).

In order to obtain a sufficient sample size, the sample was selected via the so-called snowball sampling. Hence, potential participants were approached via email and social media. They received a link to the questionnaire and were asked to share this link with others. Furthermore, the survey was published on SONA where students of the University of Twente were asked to participate in studies. To avoid personal biases, the participants were placed into the two experimental groups and one control group with an online random generator, ensuring a random assignment. Consequently, from the 171 participants whose data has been analyzed in this research, 73 participants were assigned to the control group and did not receive information about plastic-free grocery shopping, 58 participants received gain-framed information about plastic-free grocery shopping, and 40 participants received loss-framed information about plastic-free grocery shopping.

Procedure

Before participants filled out the survey, they received an informed consent form that explained the context of this study and actively asked for consent (see Appendix A). To avoid biased responses, this informed consent form was kept general, by not indicating that the participants' purchase intention was analyzed. After subjects agreed to participate in the research, it was asked for some demographics, namely age, gender, nationality, and education. Furthermore, participants were asked whether they hold experiences with plastic-free grocery shopping. To make sure that participants hold a common understanding of the term plastic-free grocery shopping, it was introduced by a short information text. For the following procedure participants were randomly assigned to one

of three condition groups – one control group that received no information and two intervention group whereas one received gain framed information and one loss framed information.

All subjects firstly responded to a questionnaire related to their regulatory focus. Whereas the control group was directly led to a second questionnaire related to the theory of planned behavior, the two intervention groups were first provided with either gain framed, or loss framed information about plastic-free grocery shopping, and then responded to the second questionnaire. Finally, the subjects were provided with a visual asking whether they would like to buy a zero-waste item for their next plastic-free shopping trip (see Appendix B). This visual, as well as the intervention contained a logo of a fictive plastic-free supermarket to make people think that they can buy an item from a real shop. Next, those participants that indicated to not want to buy a zero-waste item were asked for the reason, to further understand why people would not like to buy such an item. Finally, the subjects were provided with a debriefing stressing that the offer to buy a zero-waste item was fictive and explaining the complete aim of the research (see Appendix C).

Instruments

One instrument that was used in this research was a self-responding questionnaire which was a combination of two distinct questionnaires and a few additional demographics. Furthermore, a manipulation in form of framed textual information was designed. In the following sections, the research instruments will be described in the same order as they were presented to the participants in the research.

Regulatory focus questionnaire. The first questionnaire (see Appendix D) was related to the regulatory focus theory measuring the participants' "chronic regulatory focus" (Haws et al., 2010, p. 968). The used items came from the BIS/BAS scale developed by Carver and White (1994). Such as the original BIS/BAS survey the items

were in a Likert-scale format with a 4-point responds scale. The scale ranged from strongly disagree to strongly agree. No neutral respond was possible. By three steps, Carver and White (1994) "provide initial support for the idea that the BAS/BIS scale validly reflect individual differences in the sensitivity of the […] regulatory system" (p. 330). The three steps included the development and testing of items, the correlation of resulting scales to alternative measures, and the prediction of variables specified in the regulatory focus theory.

BIS refers to the "behavioral inhibition system (BIS), which is sensitive to negative outcomes" (Haws et al., 2010, p. 968). The survey included seven BIS items (1 to 7) measuring how concerned the respondents were about possible negative future outcomes ($\alpha = .74$). Related examples of such items were 'I worry about making mistakes.' and 'Even if something bad is about to happen to me, I rarely experience fear or nervousness.'. Hence, those items measured the respondent's level of being prevention-focused (Haws et al., 2010).

In turn, BAS refers to the "behavioral activation system (BAS), which is responsive to positive outcomes" (Haws et al., 2010, p. 968). Four BAS items (8 to 11) measured how much the respondents were excited about possible positive outcomes (e.g. "It would excite me to win a contest", $\alpha = .596$). Those items measured the promotion-focus (Haws et al., 2010). Both systems are mostly captured through emotions. However, the BAS system is mostly measured by affective factors, whereas the BIS system is emphasized by motivational factors (Haws et al., 2010).

To make sure that the result of this questionnaire, which indicates people's regulatory focus as an independent variable, would not be biased due to following research instruments, this survey was chosen to be the first questionnaire.

Intervention. In order to test what effect the framing of information on the customers' purchase behavior in the context of plastic-free grocery shopping has, two interventions were developed. To be more detailed, information about the consequences of plastic-free grocery shopping were either gain or loss framed. Gain framed information contained words and phrases, such as "protect", "save" and "remain the living space", which hold positive connotations (see Appendix E). In contrast, for loss framed information words that hold negative connotations, namely "damage", "pay money" and "harm", were used (see Appendix F). As mentioned above, this research was based on the assumption that the variable 'attitude' within the theory of planned behavior is affected by the provision of information. Therefore, the intervention mostly contained of statements that were related to the consequences of plastic reduction and production, which in turn was the basis for the evaluation of expected behavioral outcomes and therefore for the attitude formation.

The design of the intervention was inspired by various research studies that investigate the effect of loss and gain framing. For instance, Seo and Park (2018) used phrases such as "Changing your password will allow you to *safely protect* your personal information." (p. 63) and "If you don't change your password, your personal information may be *leaked*." (p.63) to highlight either gain or loss framing. Similarly, Septianto et al. (2019), gain framed information using words such as "benefits", "save" and "help". In contrast, they often used the word "costs" to stress losses.

Since the true effect of information framing can only be measured when people carefully read the information, a manipulation test was implemented in order to make sure that only people who carefully processed the information were included in the data analysis. Hence, after reading the information, people received a number of statements. They had than to choose those statements they read before. Within this manipulation test

five out of eight statements were correct. In the analysis, the participants' answers were evaluated. For each correct answer they received one point. Correspondingly, the maximum score a participant could reach was eight. To decrease the possibility that participants chose the right option by chance, more than half of their answers needed to be correct. Hence, the criterion to be included in the research was a minimum score of five. All participants who scored below five were excluded, since it was expected that they did not carefully read the provided information. Thus, by using this manipulation test, the validity of the research increased.

Theory of planned behavior questionnaire. The second questionnaire (see Appendix G) measured the predictors for behavior stated by the theory of planned behavior, namely attitude, subjective norm, perceived behavioral control, and behavioral intention.

The items used to measure the individual's attitude, subjective norm, and perceived behavioral control were adapted from a survey developed by Taylor and Todd (1995). They "generated the survey based on the procedures suggested by Ajzen and Fishbein (1980) and Ajzen (1985, 1991)" (Taylor & Todd, 1995, p. 611) and conducted two pilot tests. The items were adjusted according to the context of plastic-free grocery shopping. Although the original survey developed by Taylor and Todd also measures the variable behavioral intention, it was not possible to align those items with the nature of this research. Therefore, validated items that measure the participants' behavioral intention were adapted from the work of Venkatesh and Davis (2000) who in turn adapted them from Davis, Bagozzi and Warshaw (1989). In sum, nine items were used to measure determinants of the participants' purchase behavior in the context of plastic-free grocery shopping according to the theory of planned behavior. Correspondingly, respectively two items were used to measure attitude (e.g. "I have a positive attitude toward plastic-free

grocery shopping.", α = .80), subjective norm (e.g. "People who influence my decisions think that I should do plastic-free grocery shopping.", α = .88), and behavioral intention (e.g. "Assuming I have access to a plastic-free shop in my neighborhood, I intend to buy my grocery there.", α = .89). Furthermore, three items were used to measure the participants' perceived behavioral control (e.g. "It is doable for me to do plastic-free grocery shopping.", α = .55). However, in order to increase the calculated Cronbach's Alpha, the item 'If a plastic-free supermarket would be nearby in my neighborhood, the decision to do plastic-free grocery shopping is entirely up to me (and not up to others).' was excluded. Thus, the Cronbach's Alphas of the items was .75. The participants were asked to respond to those nine items on hand of a 5-point Likert-scale ranging from 'strongly disagree' to 'strongly agree'.

Although a debate about social desirability biases due to self-reported responses exists, it was found that only a minimal impact of social desirability on the theory of planned behavior model exists (Armitage & Conner, 1999; Beck & Ajzen, 1991; Sheeran & Orbell, 1996). Furthermore, since various studies that investigate the theory of planned behavior in different contexts are based on the used items, they are expected to be suitable for the aim of this research (see Alam & Sayuti, 2011; Davis, Bagozzi & Warshaw, 1989).

Analyses and results

Descriptive statistics

When investigating the participants' regulatory focus, the three condition groups did not differ from each other. As shown in Table 1, in all groups the level of being prevention-focused was higher than the level of being promotion-focused.

Table 1

Descriptive Statistics of the Regulatory Focus

	Promotion-focused[a]		Prevention-focused[a]	
Condition	*M*	*SD*	*M*	*SD*
Control	1.75	.41	2.78	.40
Gain Framing	1.71	.38	2.85	.40
Loss Framing	1.79	.41	2.86	.43

a) 4-point Likert scale (1=Totally disagree/ 4=Totally agree)

The most relevant dependent variables for this study were attitude, intention and behavior. Participants' attitude towards plastic-free grocery shopping increase from no information (M = 4.53, SD = 0.61) to loss framed information (M = 4.54, SD = 0.57) to gain framed information (M = 4.61, SD = 0.66). In contrast, the intention to do plastic-free grocery shopping increase from no information (M = 3.77, SD = 0.81) to gain framed information (M = 3.83, SD = 0.97) to loss framed information (M = 3.88, SD = 0.88). It is notable that both, the behavioral intention and the attitude towards plastic-free grocery shopping are higher in the intervention groups. When investigating the distribution of how many participants wanted to buy a zero-waste item, more participants decided to buy an item (n = 103) than to not buy one (n = 68). More precisely, the behavior, which was measured on hand of the willingness to buy a plastic-free item, was compared by the three conditions, no information, gain framed information and loss framed information. Within the group that received no information 57.5% (n = 42) of the participants wanted to buy a plastic-free item. Similarly, within the group that received gain framed information 58.6% (n = 34) of the participants wanted to by a plastic-free item. In contrast, in the group that received loss framed information, the highest percentage of participants (67.5%, n = 27) wanted to buy a plastic-free item.

Effect of information framing on attitude, subjective norm, and perceived behavioral control

To test hypotheses one to three, one-way ANOVAs were conducted to assess the effects of types of information on attitude towards plastic-free grocery shopping, subjective norm, and perceived behavioral control. An overview of the groups and the corresponding mean values per variable can be found in Table 3. Furthermore, in all three analyses the appearance of outliers, normal distribution and homogeneity of variance were tested. Only in the analysis of the effect of information framing on attitude one outlier was found, according to the inspection with a box-plot. However, since only one outlier was found, the analysis was continued as planned. The homogeneity of variance was given in all three cases (Levene's test, $p > .05$). However, data was not normally distributed for the groups (Shapiro-Wilk test, $p > .05$). All analyses showed that the three groups did not significantly differ from each other. Hence, attitude differed not statistically significant for the different types of information, $F(2, 168) = 0.33$, $p = .72$, $\eta^2 = .00$. Likewise, subjective norm differed not statistically significant for the different types of information, $F(2, 168) = 0.89$, $p = .41$, $\eta^2 = .01$. Finally, also perceived behavioral control differed not statistically significant for the different condition groups, $F(2, 168) = 0.54$, $p = .59$, $\eta^2 = .00$.

Table 3

Mean values of the variables attitude, subject norm, behavioral control, and behavioral intention per condition group.

	Subjective norm		Behavioral control		Attitude	
Condition	*M*	*SD*	*M*	*SD*	*M*	*SD*
Control	3.21	0.87	3.40	0.11	4.53	0.61
Gain framing	3.09	0.85	3.55	0.80	4.61	0.66
Loss framing	3.33	0.92	3.50	0.86	4.54	0.57

a) 5-point Likert scale (1=Totally disagree/ 5=Totally agree)

Differences in intention to do plastic-free grocery shopping between people who received gain framed information and people who received loss framed information

In order to test the second hypothesis, another one-way ANOVA was conducted to assess the effects of information framing on behavioral intention to perform plastic-free grocery shopping. No outlier, according to inspection with a box-plot, was found. Data was not normally distributed for the groups (Shapiro-Wilk test, $p > .05$) but there was homogeneity of variance (Levene's test, $p > .05$). However, the level of intention differed not statistically significant for the different types of information, $F(2, 168) = 0.21$, $p = .82$, $\eta^2 = .00$.

Moderation-effect of people's regulatory focus on the effect of information framing on attitude.

Finally, to test the hypothesis three and four, moderation analyses were performed using the PROCESS macro by Hayes (2018). Bootstrapping with 5000 samples together with heteroscedasticity consistent standard errors (Davidson & MacKinnon, 1993) were employed to compute the confidence intervals and inferential statistics. Effects were

deemed significant when the confidence interval did not include zero. It was analyzed whether the effect of information framing on attitude towards plastic-free grocery shopping is moderated by people's regulatory focus. Since the regulatory focus can be split up into the level of being prevention-focused and the level of being promotion-focused two distinct moderation analyses were performed.

Starting with analyzing whether the level of being prevention-focused moderates the effect of information framing on attitude, no moderation was found. Although the *p*-Value of the interaction effect between gain framing and level of prevention-focus was shown to be marginally significant the confidence interval contained zero and was therefore insignificant, b = -0.47, 95% CI [-1.008, .058], t = -1.76, p = .08. Similarly, the interaction effect between loss framing and level of prevention-focus resulted to be insignificant, b = -0.40, 95% CI [-0.977, 0.177], t = -1.37, p = .17.

Continuing with analyzing whether the level of being promotion-focused moderates the effect of information framing on attitude, again no moderation was found since the interaction effect between gain framing and level of promotion-focus was shown to be insignificant, b = 0.25, 95% CI [-0.302, .803], t = 0.90, p = .37. Similarly, the interaction effect between loss framing and level of promotion-focus resulted to be insignificant, b = 0.16, 95% CI [-0.434, 0.760], t = .54, p = .59.

Approval of the research model

Summarizing the results into the prior developed research model, none of the assumed interrelations of the three theories were confirmed (see Figure 7).

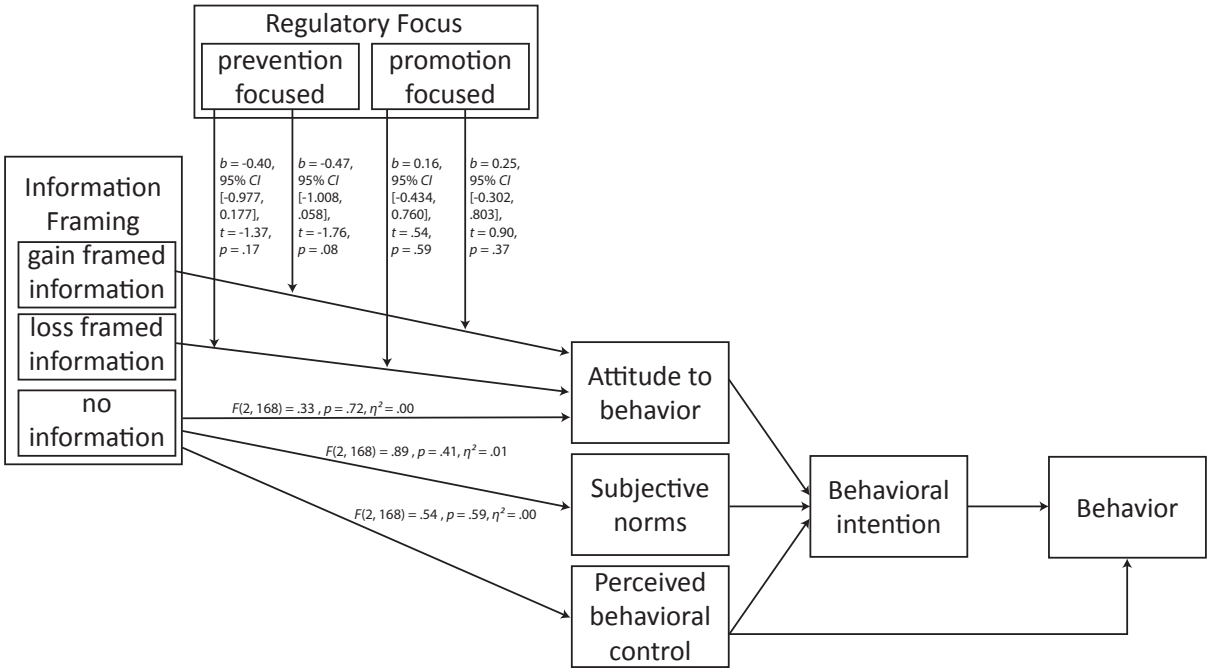

Figure 7. Research model indicating the results of the tested interrelations of the regulatory focus theory, information framing, and the theory of planned behavior

Additional results

In order to gain more in-depth understanding of people's purchase behavior in the context of plastic-free grocery shopping, further analyses were conducted that to not directly related to the prior formulated hypotheses and the research model. More precisely, the willingness to buy a zero-waste item and reasons participants gave for not buying a zero-waste item were analyzed and compared by the three condition groups and by the indicated experiences participants held with plastic-free grocery shopping prior this research. Detailed reports of the results can be found in Appendix H.

Discussion and conclusion

The study aimed to answer two overarching research questions. First, it was investigated whether loss and gain framed information affects people's purchase behavior in the context of plastic-free grocery shopping. Furthermore, it was aimed to test whether the effect differs when considering people's regulatory focus. Therefore, six hypotheses

were formulated and tested. The first hypothesis stated that the provision of information affects people's attitude towards plastic-free grocery shopping. In turn, the second hypothesis stressed that no effect of information framing on subjective norm was expected. Similarly, another hypothesis indicated that also no effect of information framing on perceived behavioral control was expected. A further hypothesis was formulated to state that it was expected that loss framed information increase people's intention to do plastic-free grocery shopping more than gain framed information would do. Finally, two hypotheses referred to an expected moderation effect of people's regulatory focus on the effect of information framing on attitude. Whereas the first of the two hypotheses claimed that the effect of gain framed information on attitude will increase when people's level of being promotion-focused increases, the later one stated that the effect of loss framed information on attitude will increase when people's level of being prevention-focused increases. Since no significant effect was found, none of the prior formulated hypotheses can be confirmed. Hence, the study could not find framed information as affecting people's behavior in the context of plastic-free grocery shopping, which was measured by means of the predictors stated in the theory of planned behavior. However, looking at the descriptive statistics and additional findings, conclusions about the purchase behavior in the context of plastic-free grocery shopping can be drawn.

As expected, most people that wanted to buy a zero-waste item were in the loss framed condition group. However, since the difference in amount of people that wanted to buy a zero-waste item among the condition groups was low, one cannot assume that their behavior was influenced by the provision of information.

It is striking that although few participants regularly went grocery shopping at plastic free-supermarkets and respectively the majority of the participants never bought something at a plastic-free supermarket before this study, the willingness to buy a zero-

waste item in the end of the experiment was high. In addition, the only person that did not want to buy a zero-waste item and stated that he or she will not do plastic-free grocery shopping was in the control group and had few experiences. One might argue that the one person did not want to buy a zero-waste item as he or she did not hold knowledge about the consequences of plastic consumption since it was not provided with information. In turn, one can conclude that this implies that the provision of information increases people's willingness to perform the desired behavior. However, since this finding applies to only one person, one needs to treat it as an outlier. Consequently, since the differences in all predictors of the theory of planned behavior among the three condition groups were low, one can assume that the provision of information and the tested framing methods do not influence whether people do or do not go plastic-free grocery shopping. This assumption is supported by alternative explanations and findings of other studies.

An alternative explanation for the similarity among the three condition groups and the finding that many participants held rare experience with plastic-free grocery shopping prior this research but were willing to do it in the end of the research might be that, instead of being influenced by the particular information, the general context of the research increased the participants' awareness. To be more detailed, as the concept of zero-waste is a subject of much debate but still new, people might already be aware of the consequences of plastic waste but did not experienced plastic-free shopping themselves. Referring to the diffusion of innovation and its adopter categories defined by Rogers (1983), one can assign them to the 'early majority'. Those people "adopt new ideas just before the average member of a social system" (Rogers, 1983, p. 249). Furthermore, since they are less willing to take risks but are open for innovation, the decision period takes more time. Consequently, the majority of the participants in this research might already held knowledge about the zero-waste trend but was still skeptical. The context of the research

and particularly the offer to buy a zero-waste item might have inspired participants to try out plastic-free shopping and to become part of the early majority.

Furthermore, the fact that people held only few prior-experiences with plastic-free grocery shopping but were willing to do so in the end can be explained by the density of plastic-free supermarkets. Especially in rural areas, there are only few plastic-free stores. In previous research Joshi and Rahmann (2015) found that "limited availability and difficulties in accessing green products were major barriers to purchasing environmentally sustainable products" (p. 134). In addition, time needed to look for certain shopping opportunities is prevent people from buying sustainable products (Tanner & Kast, 2003).

Hence, some participants might have already intended to do plastic-free grocery shopping, but due to limited opportunities the motivation to perform this behavior was low. Thus, the offer to buy a zero-waste item online might have been convenient for them as they did not have to spend time to look for a plastic-free grocery shop. In sum, the rare options to do plastic-free grocery shopping might explain why most participants had few or no experiences with plastic-free shopping before this study but wanted to buy a zero-waste item in the end.

Although these alternative explanations might be realistic, one need to consider that those assumptions were not statistically confirmed and that therefore possible behavioral explanations are only a matter of speculation. Hence, it might also be, that the insignificant results occurred due to some limitations in the research design. One limitation that might have influenced the outcomes of this study relates to the preformed statistical tests. Normally distributed data is a requirement for a simple ANOVA. In none of the analysis this requirement was given. However, since a variety of studies prove that a one-way ANOVA is robust against the violation of normally distributed data (Blanca, Alarcón,

Arnau, Bono, & Bendayan, 2017; Glass, Peckham, & Sanders, 1972; Harwell, Rubinstein, Hayes, & Olds, 1992) the ANOVA was executed as planned.

Furthermore, a prior conducted power analysis suggested a sample size of 270 participants to find significant results. Nonetheless, after four weeks of data collection, only 216 participants responded from which 45 respondents were excluded because of various reasons. Thus, the sample size this research was based on might have been too small to represent the actual population and the margin of error was too big. Although it was planned to only include participants in the age between 23 and 80, also younger participants were included. The reason for including younger participants was, that the samples size should not be further decreased. Since the survey was mostly spread among university students, which were expected to independently go grocery shopping and the median age was still above 23, it was assumed that this inclusion would not bias the research outcome. However, for future research some aspects related to the research sample need to be improved. First of all, a bigger sample should be gathered. Furthermore, rather than setting an age span as an inclusion criterion, people should first indicate whether they usually go grocery shopping independently, meaning that not ,for example, their parents doing it. Thus, one can ensure a sample that fits the target group of plastic-free supermarkets best.

Reflecting the research instruments, although the study was designed for the German and Dutch market, the used language was English. Hence, one can assume that not all participants completely understood all information and survey items. Thus, the result might be biased due to misunderstandings. Accordingly, to avoid such biases, one should translate this survey into the languages that are most common among the target group. However, since the researcher's language skills in Dutch were lacking and as an accurate wording is crucial when testing the effect of information framing, English has

been used as a research language most participants were expected to understand. Sticking to the issue of misunderstanding, it might also be that the distinct framing method were not clear enough. Hence, the distinction between loss and gain framing need to be increased by, for example, using more positively and negatively connoted words and supporting the information with visuals. To make sure that the wording of the information is perceived as either gain or loss framed, a pilot study that tests word connotations would increase the reliability of this research. In addition, since this study was conducted in an online-survey format, the measure of the actual purchase behavior is not highly reliable. By offering to buy a zero-waste item that is useful when doing plastic-free grocery shopping, it was aimed to test whether people want to go plastic-free grocery shopping. However, although it was aimed to design an offering which look and feel was as realistic as possible, people might assumed that in the context of a bachelor thesis no products are sold. Hence, participants maybe chose 'I want to buy a zero-waste item' because they were curious whether they can really buy something, rather than being really willing to buy a zero-waste product. For further research, a measurement should be designed that looks more like a real online shop so that the measurement of the behavior becomes more valid. Finally, an explanation for the similarity of the three condition groups might be that people did not processed the information carefully. This explanation is in line with the findings of Block and Keller (1995). They stated that the effect of information framing disappears when people put not much effort in reading the information. However, since a manipulation test was used and those participants that completed the survey quickly were excluded from the analysis, it is not expected that the results were biased by superficial reading.

Answering the overarching research questions, one cannot conclude that the provision of information and more explicitly its framing effects people's intention to do plastic-free grocery shopping. Accordingly, one cannot state whether the regulatory focus

determines whether people are more attuned to one of the framing methods. However, interesting findings can be related to the marketing practices of plastic-free supermarkets and to communication science theory.

Practical implications

As mentioned above, it is assumed that people already held knowledge about the consequences of plastic consumption and rather took the chance to buy a zero-waste item than being convinced by information. Relating this finding to the practice of plastic-free supermarkets, it means that they do not need to provide potential customers with information about the consequences of plastic-consumption. More importantly, they should concentrate on the visibility of their shops to increase the awareness that plastic-free supermarkets exist. Thus, people who want to improve their lifestyle in terms of sustainability, but do not know how to do so, become aware of the possibilities. Vehmas, Raudaskoski, Heikkilä, Harlin, and Mensonen (2018) stress that visibility is essential to change consumers attitude and to maintain the behavior in favor for the long term. Due to an increased visibility of plastic-free grocery shops, also the barrier of time and effort needed to find purchase opportunities defined by Tanner and Kast (2003) can be overcome. Possible advices to increase the visibility of plastic-free shops are traditional advertising, whereas the focus should lie on local media, and influencer marketing. Whereas local media advertising and verbal propaganda is found to be most effective for older target groups, millennials are found to be reached by influencers (Johnstone & Lindh, 2017). As Johnstone and Lindh (2017) state, influencers are valued as supportive tools to in assuming marketing's responsibility to promote sustainable behavior. Hence, by inviting popular influencers, who in turn post pictures of the shop on various social media channels, the supermarkets visibility will increase. Thus, it is expected that, especially among younger people, the zero-waste lifestyle will be pushed forward. Furthermore, to

pick up the so called 'early majority', the ones who intend to do plastic-free grocery shopping but are still skeptical, and to convince them from the supermarket concept, special offers and discounts will serve as a trigger. Thus, people can try out plastic-free supermarkets but do not have to take a risk by spending much money.

Theoretical implications and future research

Looking at the theoretical implications that derive from this study, no interrelation of the theory of planned behavior, the regulatory focus theory, and information framing can be confirmed. However, suggestions for further research can be made. First of all, it might be that after improving the above-mentioned limitations, significant effects of information framing to the purchase behavior in the context of plastic-free shopping can be found and in turn it can be determined whether people's regulatory focus moderates this effect. Furthermore, since it is only assumed that the rare visibility of possibilities to do plastic-free grocery shopping increases people's willingness to perform the behavior in favor but not verified yet, this assumption should be tested in future research. Additionally, it might be that purchase behavior in the context of plastic-free grocery shopping cannot be predicted only by the theory of planned behavior. Han and Kim (2010) found for example, that when applying the theory of planned behavior in purchasing contexts it should be extended with the variables of customer satisfaction and the image of a product. Furthermore, according to Chen and Hung (2016) environmental ethics and environmental consciousness are a further predictor for behavioral intention to use green products. Hence, in future research it should be tested whether further variables might influence purchasing behavior in the context of plastic-free grocery shopping and in turn, whether these additional variables are influenced differently by various types of information framing. Consequently, future research should go beyond the theory of planned behavior in order to understand the underlying mechanism of information framing.

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Appendices

Appendix A

Informed consent form

Thank you very much for your willingness to participate in this study. This study is being done as part of a bachelor thesis.

The purpose of this research study is to explore your attitude regarding plastic free shopping. To do so, I want to ask you to read all given information carefully and to answer the following survey honestly. It will take you approximately 15 minutes to complete this study.

Your participation in this study is entirely voluntary and anonymous and you can withdraw at any time without giving a reason. Your answers in this study will remain confidential. All data is kept anonymously, and personal information will not be passed on to third parties under any condition. Under no circumstances will any personal data or identifying information be included in the report of this research. Nobody, except the researcher and the supervisor will have access to the anonymized data in its entirety.

If you have any questions for the researchers about the study, feel free to contact m.krieter@student.utwente.nl.

If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other

than the researcher(s), please contact the Secretary of the Ethics Committee of the Faculty of Behavioral, Management and Social Sciences at the University of Twente by ethicscommittee-bms@utwente.nl

By clicking on 'Yes, I agree to participate', you declare the following:

I hereby declare that I have been informed in a clear manner about the aim and method of this study. Furthermore, I participate on my own free will and I am aware that I can withdraw from this research at any time without having to mention a reason. Information about anonymity and how to get in contact with the researchers in case of questions or comments are clear to me.

Appendix B

Offer to buy a zero-waste item

Do you want to buy one of our zero waste items for your next plastic-free grocery shopping trip?

Unpacked
THE PLASTIC-FREE SUPERMARKET

Appendix C

De-briefing

Thank you for participating in this research.

The offer to buy plastic-free items is part of this research and therefore fictive.

The aim of this research is to investigate the effect of information framing on behavioral intention and the actual purchase behavior in the context of plastic-free shopping. There were three conditions in this research. Either you received gain framed information, loss framed information or no information at all.

Your answers will be treated confidential, and data will be used only in combination with the answers of all participants.

If you have any further questions or want to know more about this research, feel free to contact me: m.krieter@student.utwente.nl

Kind regards

Maren Krieter

Appendix D

Questionnaire Regulatory Focus

1. If something unpleasant is going to happen I usually get pretty "worked up."
2. I worry about making mistakes.
3. Critic hurts me quite a bit.
4. I feel pretty worried or upset when I think or know somebody is angry at me.
5. Even if something bad is about to happen to me, I rarely experience fear or nervousness. (R)
6. I feel worried when I think I have done poorly at something.
7. I have very few fears compared to my friends. (R)
8. When I get something I want, I feel excited and energized. [a]
9. When I'm doing well at something, I love to keep at it. [a]
10. When good things happen to me, it affects me strongly. [a]
11. It would excite me to win a contest. [a]

[a] Promotion Items

Notes: (R) = reverse scored.

Items were measured on a 4-point Likert-scale (1 = Totally disagree, 2 = Disagree, 3 = Agree, 4 = Totally agree)

Appendix E

Gain framed information

Appendix F

Loss framed information

Appendix G

Questionnaire Theory of Planned Behavior

Intention

1. Assuming I have access to a plastic-free shop, I intend to buy my grocery there.
2. Given that I have access to a plastic-free shop, I predict I would to buy my grocery there.

Attitude

3. I like the idea of plastic-free grocery shopping.
4. I have a positive attitude towards plastic-free grocery shopping.

Subjective norm

5. People who influence my decisions think that I should do plastic-free grocery shopping.
6. People who are important to me think that I should do plastic-free grocery shopping.

Perceived behavioral control

7. If a plastic-free supermarket would be nearby in my neighborhood, the decision to do plastic-free grocery shopping is entirely up to me (and not up to others).
8. It is doable for me to do plastic-free grocery shopping
9. Doing plastic-free grocery shopping is feasible for me.

Items were measured on a 5-point Likert-scale (1 = Totally disagree, 2 = Disagree, 3 = Neither agree nor disagree 4 = Agree, 5 = Totally agree)

Appendix H

Additional results

Reasoning for purchase behavior. In order to understand the participants' decision, the indicated reason for deciding to buy a zero-waste item need to be considered. Only one participant indicated that he or she does not want to buy a plastic-free item as he or she will not do plastic-free grocery shopping. Other reasons to not buy a plastic-free item were 'I already have enough products for plastic-free grocery shopping' (19.3%, n = 33), 'I do not need items to do plastic-free grocery shopping' (4.1%, n = 7), 'I would like to buy zero-waste items but not now/online/in the context of this research/etc.' (14.0%, n = 24), and 'other reasons' (1.8%, n = 3). To further understand the decisions for and against buying a zero-waste item, the reasoning for the behavior was compered per condition group. Second, the behavioral reason was compared per level of experiences participants had with plastic-free grocery shopping. Finally, the indicated behavioral reasons were first compared per condition groups combined with the participants' experiences.

Willingness to buy zero-waste items and the reasoning for the behavior per condition group. Figure 2 shows the distribution of the various reasons among the three condition groups. All participants from the two groups that received information chose one of the three options that indicated that they were willing to do plastic-free grocery shopping but not to buy a zero-waste item. Hence, they either already had enough items (gain framed: 54.2%, *n* = 13; loss framed 38.5%, *n* = 5), do not need an item (gain framed: 12.5%, *n* = 3; loss framed: 15.4%, *n* = 2) to perform this behavior or do not want to buy an item in the context of the research (gain framed: 33.3%, *n* = 8; loss framed: 46.5%, *n* = 6). In contrast, participants that did not receive information mostly indicated to already have enough zero-waste items (48.4%, *n* = 15), followed by the willingness to buy a zero-waste item but not in the context of the research (23.3%, *n* = 10) and other reasons (9.7%, *n* = 3).

Only two of them (6.5%) indicated that they do not need items to do plastic-free shopping and only one did not want to go plastic-free shopping (3.2%, $n = 1$).

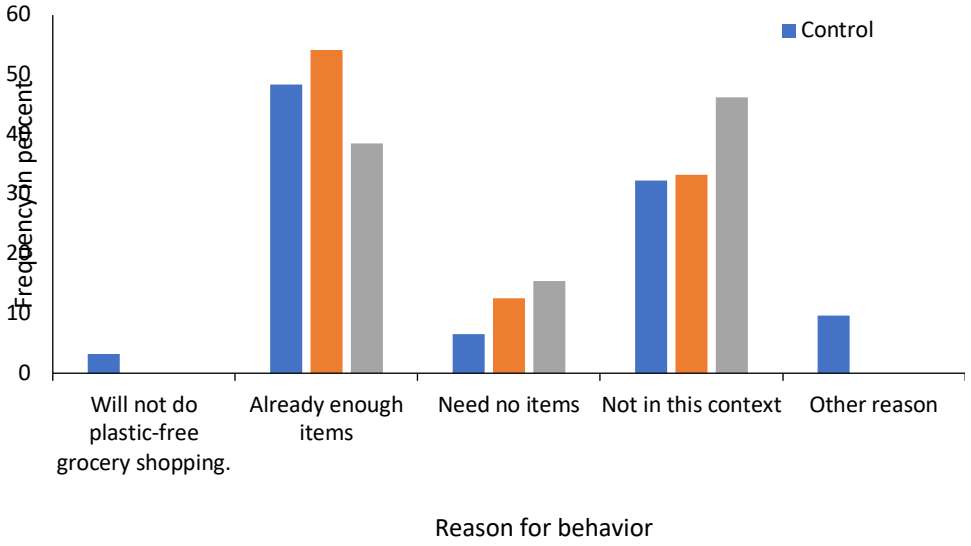

Figure 2. Frequency of indicated reasons for not buying a plastic-free item per condition group.

Willingness to buy zero-waste items and the reasoning for the behavior per level of experience. Participants' decision to buy a zero-waste item they indicated within this research was compared by the experiences with plastic-free grocery shopping participants hold prior to this research (see Table 4). In each group of experience, the amount of people that wanted to buy a zero-waste item was higher than the amount of people that did not want to buy a zero-waste item. However, the difference between the amount of people that want to buy a zero-waste item and those who do not want to buy a zero-waste item was lowest among those people who were familiar with plastic-free supermarkets but never bought something there.

Table 4.

Proportion of Behavior by Experiences

Experiences	Do not want to buy	Want to buy	Total
High experiences	28.6 (2)	71.4 (5)	100.0 (7)
Some experiences	38.9 (14)	61.1 (22)	100.0 (36)
Familiar with plastic-free supermarkets but no experiences	42.6 (29)	57.4 (39)	100.0 (68)
No experiences	38.3 (23)	61.7 (37)	100.00 (60)

Note. Whole numbers are presented in parentheses.

Taking into account the reason people indicated for not buying a zero-waste item, it was striking that all participants that were highly experienced in going plastic-free grocery shopping indicated that they already had enough items (100 %, *n* = 2). In contrast, those participants who hold some experiences were twofold. Hence, they indicated to either already have enough items (57.1 %, *n* = 8) or do not want to buy zero-waste items in the context of this research (42.9%, *n* = 6). Furthermore, most of the participants who were familiar with plastic-free supermarkets but never bought something there indicated that they already had enough zero-waste items (55.2%, *n* = 16). The second largest group would have liked to buy a zero-waste item but not in the context of the research (24.1%, *n* = 7) followed by the reason that they do not need an item to do plastic-free shopping (13.8%, *n* = 4) and other reasons (6.9%, n = 2). Finally, those participants that were unexperienced in plastic-free shopping gave the most diverse reasons for their behavior. Hence, most of them wanted to buy a zero-waste item but not in the context of this research (47.8%, *n* = 11). Following, 30.4 percent (*n* = 7) indicated to already have enough

items and 13.0 percent (n = 3) did not need items to go plastic-free grocery shopping. An equally number of participants indicated that they will not do plastic-free shopping (4.3%, n = 1) or had an alternative reason for not buying a zero-waste item (4.3%, n = 1). To have a better overview, Figure 3 shows the distribution of the various reasons among the different levels of experiences.

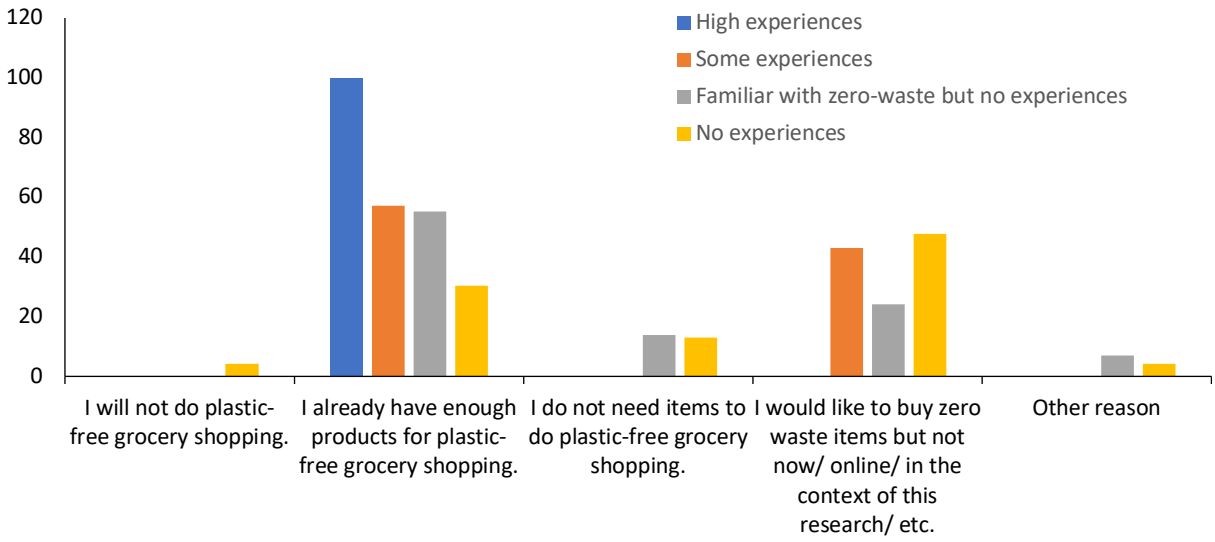

Figure 3. Frequency of indicated reasons for not buying a plastic-free item per level of experience.

Reasoning for the behavior compared by per level of experience and condition group. Finally, for each condition group the reasons they gave for not buying a zero-waste were compared by the participants' prior experiences. The results are visualized in Figure 4 to 6. Only participant who indicated to not want to buy a zero-waste item because he or she does not want to go plastic-free shopping was in the control group and had no experiences with plastic-free shopping. Accordingly, in both condition groups people with

more experiences as well as people with little to no experiences only chose reasons for their behavior that implied that they would like to do plastic-free grocery shopping but do not want to buy a zero-waste item.

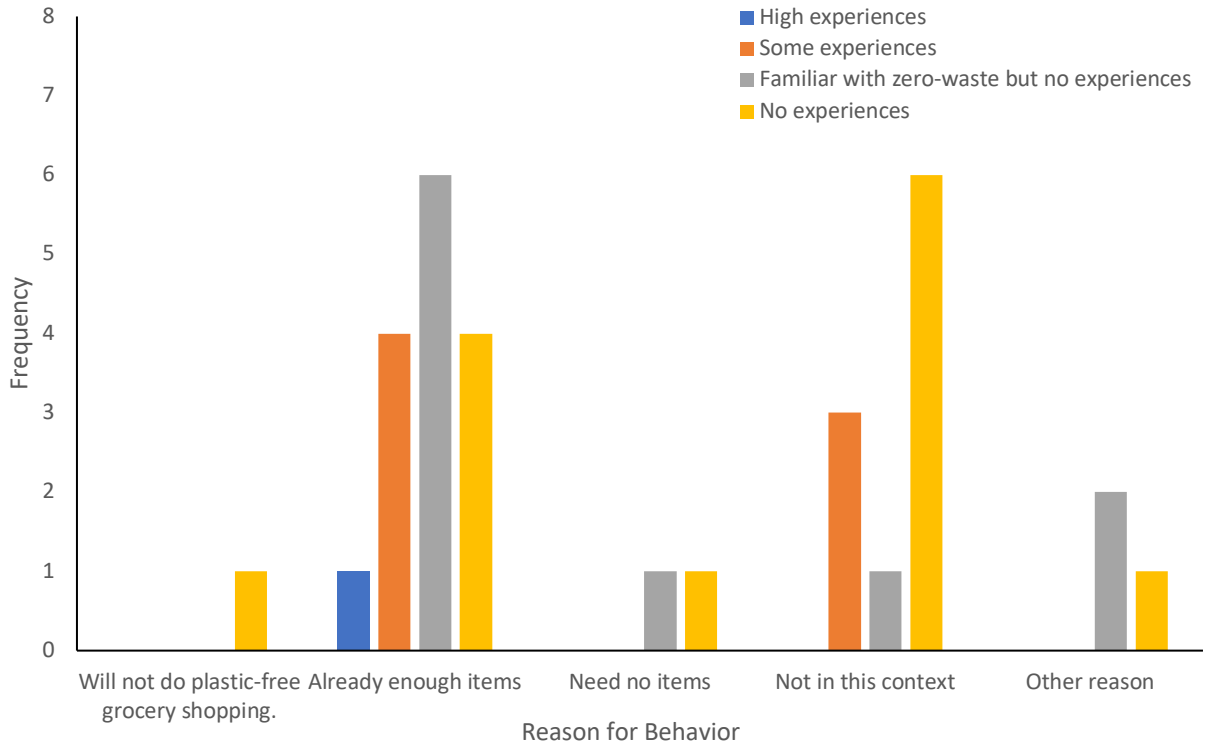

Figure 4. Frequency of indicated reasons for not buying a plastic-free item per experiences for the control group.

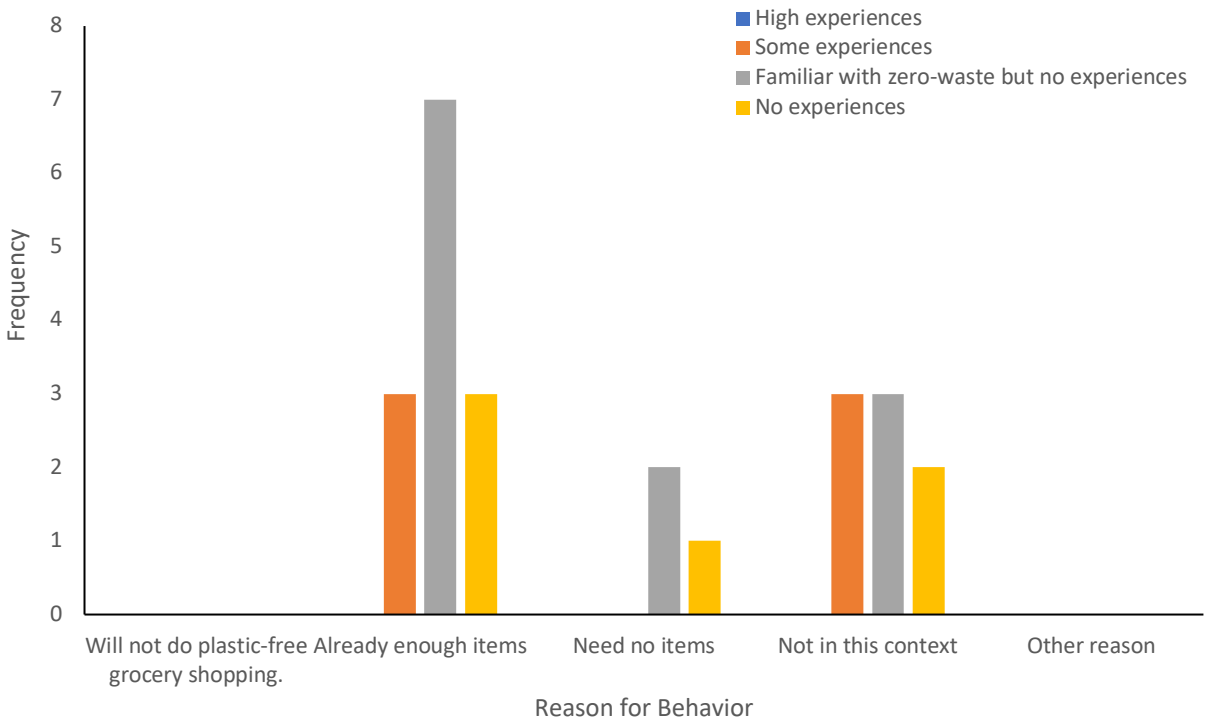

Figure 5. Frequency of indicated reasons for not buying a plastic-free item per experiences for the gain framed intervention group.

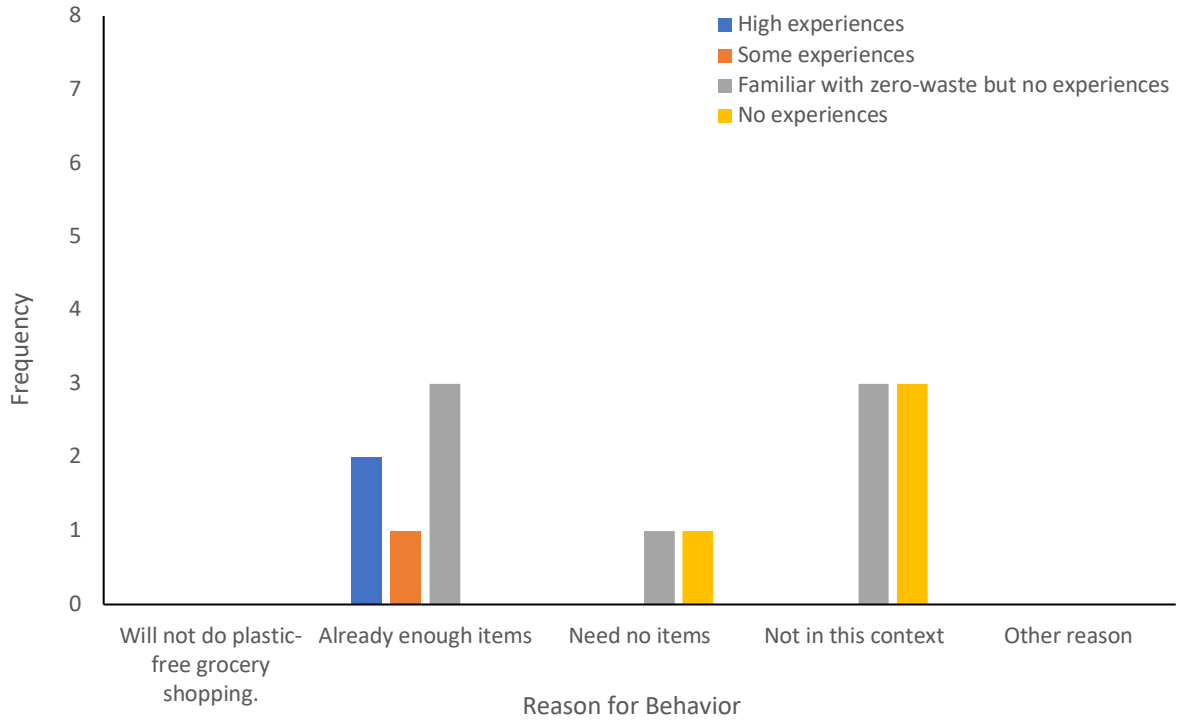

Figure 6. Frequency of indicated reasons for not buying a plastic-free item per experiences for the loss framed intervention group.

Appendix I

Literature Log

Research questions.

1. How can purchase behavior be changed?
2. What effects do different types of information framing have?
3. How does the regulatory focus relate to the effect of information framing?

Criteria preferred materials.

References used for this bachelor thesis should be scientific. Therefore, mostly articles published in scientific journals are used. However, to explain current trends and certain terms also nonscientific data was used in the introduction. Furthermore, since this bachelor thesis is written in English, also the articles which are cited should be in English. However, also German articles are considered. Since the most important concepts in the bachelor thesis are traditional theories, no specific criteria for the recency of the used literature was defined. However, recent articles are preferred so that the most actual findings can been considered. In addition, only studies of which the context and results are applicable to the context of this research were determined.

Relevant terms.

Concepts	Related terms	Smaller terms	Broader terms
Behavioral change	Theory of planned behavior	Attitude, Subjective norm, Perceived behavioral control	Purchase behavioral
Information framing	Message framing, Prospect theory	Loss framing, Gain framing	Wording
Regulatory focus theory		Prevention focus, Promotion focus	Outcome sensitivity

Search actions.

	Date	**Database/ Set number**	**Search action + Search technique**	**Total hits**
1	26.02.	Google Scholar	Behavioral AND change AND theory	5470000
2	26.02.	FINDUT	Behavioral AND change theory	84362
3	26.02.	Scopus	Behavioral AND change AND theory	25638
4	26.02.	Scopus	Theory AND of AND planned AND behavior	10726
5	26.02.	Scopus	Theory AND of AND planned AND behavior	107
6	26.02	Google Scholar	Theory AND of AND planned AND behavior	362000
7	27.02.	Google Scholar	Message AND framing	813000
8	27.02.	Google Scholar	Information AND framing	1670000
9	27.02.	Google Scholar	Information AND framing	1300000
10	27.02.	Google Scholar	Gain AND loss AND framing	488000
11	27.02.	Scopus	Information AND framing	73326
12	27.02.	Scopus	Gain AND loss AND framing	10776

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Reflection.

In order to gain understanding of the terms of interest, I looked for various articles. I started with broader search terms and continued the more detailed terms. Thus, I gained an overview of existing knowledge first and then specified it to the knowledge relevant to my bachelor thesis. To gain a broad understanding on an easier basis, I read also non-scientific articles in the beginning. Thus, I created a broader understanding in the beginning and was able to understand and to refer to scientific sources later. In sum, to increase the reliability of my work, I mostly referred to scientific papers and books. In order to explain all relevant terms as explicit as possible, I also looked at the references used in the articles I found to be relevant. Thus, I was able to compare various research and to then formulate hypotheses. To find scientific sources I mostly used databases such as Scopus and Google Scholar. Whereas I felt overwhelmed of the bunch of literature In the beginning, I was able to define my search terms more specifically in the end. This was on the one hand because I became more familiar with the concepts of interest, but also because I created an understanding on how search terms need to be formulated to get certain knowledge.

Furthermore, it helped me to scan also reference lists of useful articles and to use the function ‘related articles’ on google scholar. Thus, when I found an article to be relevant but wanted to gain more in-depth knowledge, I got articles with a similar context.