

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor's Thesis Marketing

“Make a difference and feel good about it, too”: Using efficacy primes  
and symbolic attributes to increase sustainable intentions

Name student: Floris van Haarst

Student ID number: 512517

Thesis supervisor: M.J.L. van Hasselt

Second Assessor: B.J. de Boer

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## Abstract

Climate change poses a substantial risk to the survival of our and other species. Anthropogenic carbon emissions are the most important causal factor of global climate change (IPCC, 2023). Of these carbon emissions, a large majority is emitted by households (Druckman & Jackson, 2016). Therefore, in order to combat climate change, households have to switch to more sustainable consumption patterns and adopt more sustainable behavior. Although many households are willing to live more sustainably, there still exists a gap between their intentions and their actions. In order to close this gap, we must figure out how sustainable behavior can be stimulated in the most effective way. The Theory of Planned Behavior (TPB) is widely used in explaining sustainable consumption due to its apparent effectiveness in predicting such behavior (Jackson, 2005). One of the key determinants of consumption in this model is attitudes (Ajzen, 1991). This thesis studies how attitudes toward sustainable products and behaviors might be changed to increase adoption. Furthermore, a concept related to the TPB concept of perceived behavioral control called "participative efficacy beliefs" is explored as a potential to increase such consumption. Participative efficacy beliefs represent the idea that one can meaningfully contribute to achieving a collective goal with their individual actions. This research seeks to determine how effective these strategies are in encouraging sustainable behavior. It uses a questionnaire and finds that these two strategies are ineffective in increasing intentions to adopt three types of sustainable behavior: reducing meat intake, flying less, and eating less meat.

## 1. Introduction

"The extreme weather which has affected many millions of people in July is unfortunately the harsh reality of climate change and a foretaste of the future," says World Meteorological Association (WMO) Secretary-General Prof. Petteri Taalas (World Meteorological Organization, 2023). As Europe and the world deal with heatwaves, droughts and wildfires, the Intergovernmental Panel on Climate Change ever-increasingly attributes global warming to human greenhouse gas emissions (Intergovernmental Panel on Climate Change, 2023).

When it comes to the climate, change starts with the consumer, as reflected in the fact that nearly 75% of global carbon emissions are caused by households (Druckman & Jackson, 2016). In order

to reduce these emissions, households have to make more environmentally conscious purchases and engage in more sustainable behavior. Determining what strategies can be implemented to increase such behaviors requires the study of consumer behavior. Consumer behavior is a phenomenon that has been studied extensively in marketing literature, and it seeks to uncover the motivations consumers have for their actions. Understanding what motivates consumers is key to any successful marketing strategy, explaining the amount of research done on consumer behavior. Within consumer behavior, sustainable consumer behavior is an important and popular topic. As research progresses, we are starting to better understand the motivations and considerations consumers have with sustainable consumer behavior. Sustainable behavior is a special form of consumer behavior that arguably deserves more attention than other forms of research. This is because 1) the impact of collective unsustainable behavior of humans is large (i.e., climate change and pollution greatly impact the comfort of living on this planet), 2) the impact of individual unsustainable behavior is small (i.e., one individual failing to recycle products or driving a polluting car has a negligible impact on the environment), and 3) sustainable behavior often conveys an individual cost but a collective benefit (which means it is not always rational to engage in sustainable behavior).

Even when consumers have the intention to engage in sustainable behavior, this does not always lead to actual behavior. This problem is known under various terms but can be described as the "intention-behavior gap". This gap between consumers' green attitudes and actual sustainable behavior has several causes and has been documented in various industries, for instance in the clothing industry (Rausch & Kopplin, 2021), the food industry (Vermeir & Verbeke, 2006) and the aviation industry (Higham et al., 2014). Closing this gap is of great importance, and understanding why the gap exists is another interesting research question, but this gap will only be mentioned briefly within this thesis. It is something that must be kept in mind, though, when considering research on sustainable behavior.

This thesis focuses mostly on the determinants of intentions to act sustainably and used a questionnaire to empirically test the effectiveness of two strategies for increasing such intentions. Firstly, this thesis looked at the effect of the way products and behavior are presented on the likelihood of consumer adoption. Specifically, the thesis considered the types of attributes products and behaviors possess, and whether it makes a difference which types of attributes are

highlighted when presenting products and behaviors. As explained in the *Literature review* section, products generally have three types of attributes: instrumental (e.g., price, quality), environmental (e.g., locally produced), and symbolic (e.g., effects on self-image). Products and behaviors tend to be presented on their instrumental attributes. However, sustainable products and behaviors tend to have less favorable instrumental attributes, but more favorable symbolic attitudes, compared to other products. Symbolic attributes appear to play an important role in consumption decisions, even though generally consumers themselves don't admit or realize this. This thesis sought to determine how presenting sustainable products or behaviors on attributes other than instrumental attributes would change adoption intentions. It was hypothesized that presenting sustainable products and behaviors on their symbolic rather than their instrumental attributes increases consumers' adoption intentions for such products and behaviors.

Secondly, this thesis studied the phenomenon of participative efficacy beliefs. Participative efficacy beliefs represent the extent to which an individual believes that their individual actions can contribute to a certain group achieving a collective goal. In the context of climate change, this appears to be an important determinant of individual sustainable behavior. Much research finds that these beliefs form an important part of the intention to act sustainably. However, only little research has been done on how to increase such beliefs, and the results of such research are mixed. It turns out to be rather difficult to increase such beliefs by providing explicit information to consumers. However, a promising route is the use of images instead of text to increase participative efficacy beliefs. This thesis sought to determine how efficacy beliefs can be most effectively stimulated in order to increase sustainable behavior. It was hypothesized that individuals who have had climate efficacy primed by efficacy-increasing images will show higher intentions to adopt sustainable behaviors.

This thesis establishes the theoretical background behind sustainable consumer behavior in the *Literature review* section. Here, the conceptual model underlying this thesis is presented. Next, the method used to answer the research questions is presented. The results from the data analysis are presented next, followed by a discussion of the results, the limitations of this study, and suggestions for further research.

## 2. Literature review

### 2.1 Models for explaining sustainable behavior

Over the past decades, research has differed in its approach to sustainable consumption. Some studies did not consider a theoretical model, while others did use some kind of theoretical model to explain the behavior under study (Quoquab & Mohammad, 2020). Jackson (2005) extensively studied behavioral models used to explain sustainable consumption. One of the most prominent models of consumer behavior consumer in economics is the rational choice model (McFadden, 1999). Jackson (2005) finds that even though the rational consumption model is a deeply entrenched and widespread model of consumer behavior, it has recently come under intense scrutiny and criticism. The critiques mentioned in the report include uncertainties about the future preventing full appraisal of costs and benefits of objects, the dismissal of social influence on individual consumption decisions, and the assumed paramount importance of self-interest on consumption decisions. The study then mentions how many of the social-psychological alternatives for the rational choice model incorporate (at least part of) the expectancy-value structure of the rational choice model, and shows that most of these are based on a theory called the simple expectancy-value attitude theory. In this simple model, the attitude of a consumer towards an object is represented by the sum of consumer's beliefs about the object's characteristics, weighted by their evaluations of those characteristics (Jackson, 2005). A symbolic representation of this model is given as follows:

$$A_{obj} = \sum_{i=1}^n b_i e_i$$

Where  $b_i$  represents a consumer's belief about a characteristic of an object,  $e_i$  represents the consumer's evaluation of the characteristic, and the sum includes all such beliefs that a consumer has about an object.

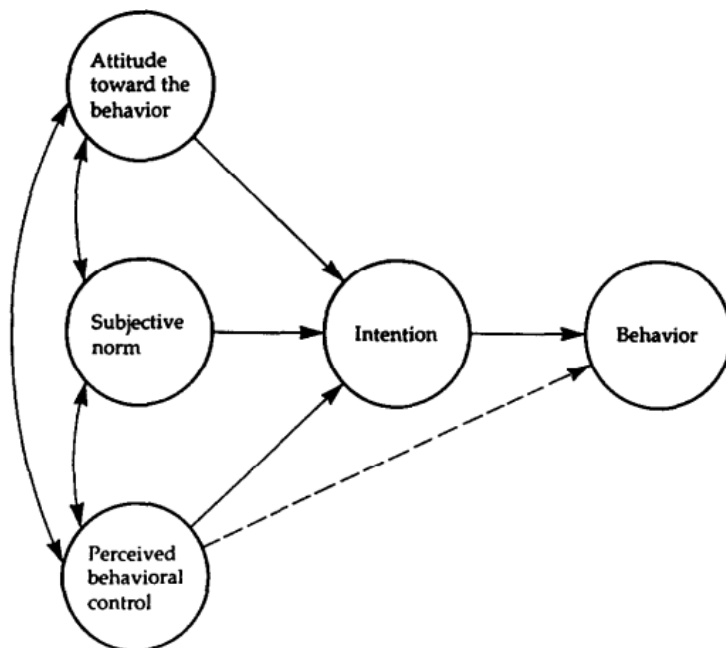
The study shows the steps of evolution this model made to arrive at the more complex Theory of Planned Behavior (TPB), which is currently one of the most widely used models in explaining sustainable consumer behavior (Quoquab & Mohammad, 2020). The prevalence and effectiveness in explaining sustainable behavior of TPB is evidenced by various literature reviews over the past decades, which generally find support for the explanatory power in

sustainable consumption of various concepts within the TPB model. See for instance Bamberg & Möser (2007) for general pro-environmental behavior, Aertsens et al. (2009) for sustainable food consumption, or Han & Stoel (2017) for socially responsible consumer behaviors.

One of the key determinants of behavior according to TPB is attitude towards that behavior (Ajzen, 1991, see Figure 1). In determining the attitude towards a behavior, the TPB follows the aforementioned simple expectancy-value framework. Accordingly, as Ajzen (1991) presents the model, beliefs are linked to certain outcomes or attributes of a behavior, and these beliefs are weighted by the subjective evaluation of each belief by the individual. Overall attitude toward a behavior is then found by summing over the strength of each belief multiplied by their respective subjective evaluation (Ajzen, 1991). For example, an individual might hold a moderately strong belief that purchasing an electric vehicle confers higher financial costs than a conventional alternative and might evaluate this outcome as very negative. The individual might simultaneously hold a slightly strong belief that an electric vehicle leads to lesser driving pleasure due to longer charging times but might evaluate this outcome as only slightly negative. In order to determine the attitude towards driving an electric car of this individual, these two and all other salient beliefs the individual has towards the behavior must be considered. The attitude towards a behavior feeds directly into the intention to adopt such a behavior, which is considered the most important antecedent of actual behavior (Ajzen, 1991).

**Figure 1**

*Representation of the Theory of Planned Behavior. Extracted from Ajzen (1991).*



## 2.2 Product attributes of sustainable consumption

### *Self-other trade-off*

Attitude formation is an important point to consider when promoting sustainable consumption. One of the main challenges for increasing the adoption of sustainable behavior is the self-other trade-off (White et al., 2019). The self-other trade-off is defined by White et al. (2019) as the weigh-off consumers have to make between the perceived cost to the self of sustainable products or behaviors and the positive (i.e., environmental and social) benefits that are external to the self. All of the beliefs about such attributes feed into the attitude of a consumer towards such products or behaviors. The fact that sustainable products and behaviors often come with higher perceived costs compared to conventional alternatives means that these products must have counterbalancing benefits as well, at least if they are to enjoy equal or more positive attitudes from consumers. Furthermore, these benefits have to be communicated clearly so that consumers are aware of these benefits when making their consumption choices. Communicating these benefits is of increased importance because the environmental quality of products is often hidden (Meyer, 2001). The Meyer (2001) study presents a breakdown of perceived costs and benefits into several categories. Benefits are divided into functional benefits, appearance, self-esteem and image. Costs are divided into product price, cost of supply, cost of usage, cost of change and cost of disposal. The study then mentions how green products come with certain increased costs. An example which is mentioned is the fact that green products are generally less available than conventional products, leading to higher search costs. This corresponds with the observation by White et al. (2019) that sustainable products tend to come with increased costs to the self. In order words, how can consumers be convinced to behave or buy in a way that they might perceive as more costly than the non-sustainable alternative, even though they don't directly observe the benefits from such behavior and consumption? The breakdown of costs and benefits provides a roadmap for considering which benefits might counterbalance the increased perceived costs of sustainable consumption.

### *Symbolic and instrumental attributes*

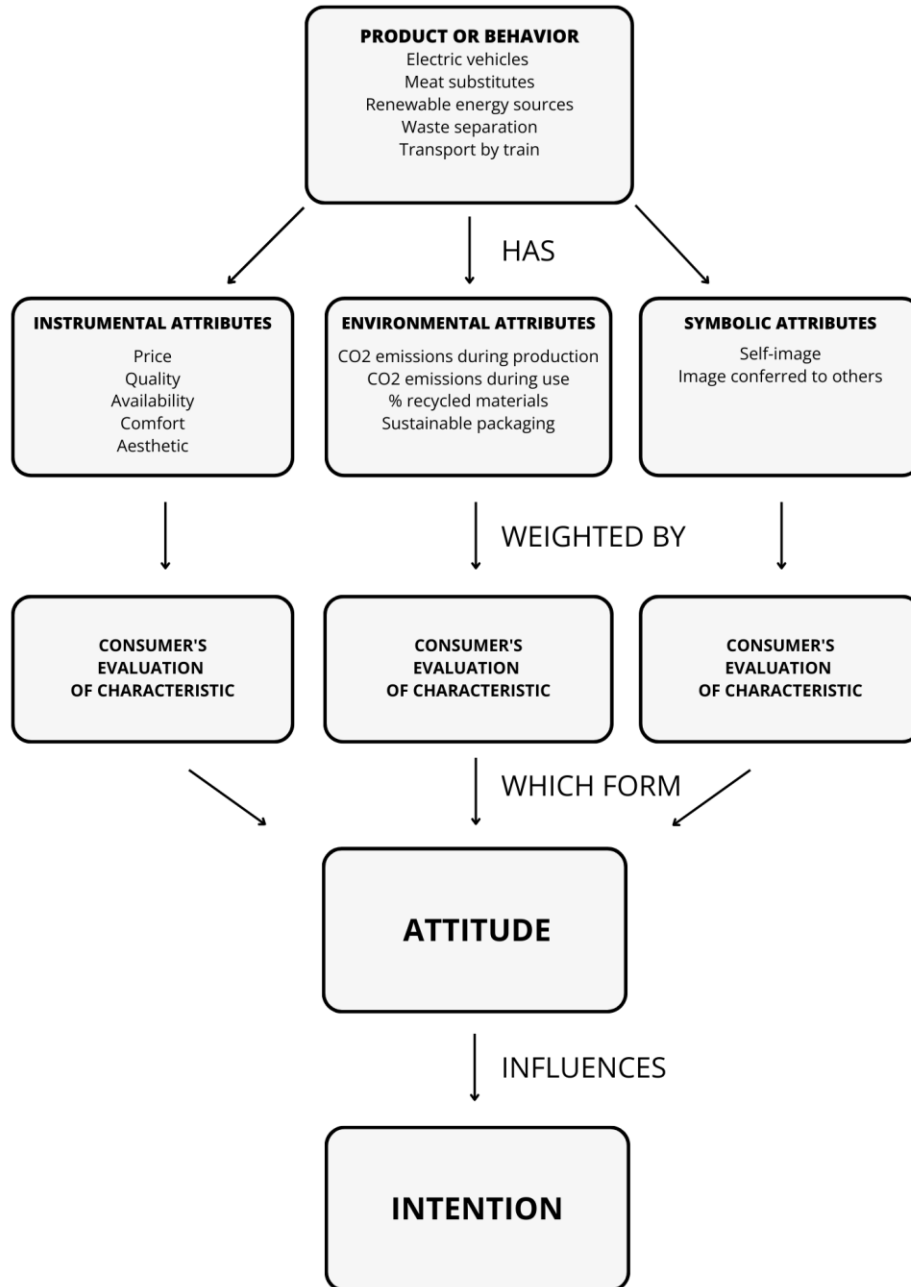
Looking more broadly at the types of attributes objects might possess, at least three types of attributes play an important role in the consumption of sustainable goods or the adoption of sustainable behavior: instrumental, environmental, and symbolic attributes (Noppers, 2018). The

Noppers (2018) study defines instrumental attributes as the functional (positive or negative) outcomes of ownership and use of a sustainable innovation. Environmental attributes are defined as the (positive and negative) outcomes of ownership and use of a sustainable innovation for the environment. Symbolic attributes are defined as the (positive and negative) outcomes of the ownership and use of a sustainable innovation for one's (self-)identity and social status. In the context of food consumption, for instance, instrumental attributes might include the price paid and availability of the product, environmental attributes might include CO2 emissions of the production process and whether the product is produced locally, and symbolic attributes might include a product's contribution to a consumer's self-image and to their image as presented to other people (Taufik et al., 2022). Figure 2 provides an overview of the attributes products and behaviors possess and the way these attributes feed into the attitude and thus intentions consumers have toward that product or behavior.



**Figure 2**

*Representation of the pathway from attributes to intention*



As noted before, attributes of sustainable products tend to differ from those of conventional products. Highlighting different attributes should make such attributes more salient to consumers and thus influence their attitudes towards the object and subsequently their adoption intentions.

Therefore, the difference in such attributes between sustainable and conventional products leads to the following research question:

Research question 1: If sustainable products and behaviors are presented on other attributes than instrumental attributes, how does this affect the adoption intention of consumers?

Following the White et al. (2019) article, this thesis will research the possibilities of using the symbolic attributes of sustainable products and behaviors to increase the intention of consumers to buy such products or adopt such behaviors. This means that, in terms of the benefits mentioned by Meyer (2001), this thesis will focus on the benefits of self-esteem and image that are conferred by sustainable products and behaviors to attempt to overcome the self-other trade-off, i.e. tip the balance in favor of sustainable consumption compared to non-sustainable consumption.

#### *Importance of various attributes for consumer choice*

Looking at the relevance of different types of attributes, the Noppers (2018) study determines that several studies have shown that instrumental and environmental attributes are important to consumers, and more positive evaluations of such attributes lead to an increased adoption of sustainable products. Symbolic attributes, however, pose an interesting paradox. Noppers et al. (2014) studies adoption intentions of two sustainable products (electric cars and local renewable energy systems) and shows similar results related to symbolic attributes in both cases. The study shows that when consumers are directly asked how important they consider symbolic attributes to be in their consumption decision, they consider symbolic attributes as less important than both instrumental and environmental attributes. However, paradoxically, the study finds that the more consumers consider electric cars and local renewable energy systems to have certain symbolic attributes, the higher the likelihood of adoption, even when controlling for instrumental and environmental attributes. Taufik et al. (2022) find similar results when studying attributes of plant-based food innovations. Consumers in the study identified symbolic attributes as the least important attributes when considering their consumption of the plant-based foods, and again higher evaluations of symbolic attributes led to higher adoption intentions, controlling for evaluations of instrumental and environmental attributes, thus extending these results to the context of food-related innovations. Bakış & Kitapçı (2023) use a slightly different method to study the relevance of symbolic attributes. They determine the relevance of symbolic attributes

by considering the indirect effect they have on intention to buy sustainable clothing via their effect on attitudes towards such clothing, thus following the TPB model. They find a significant effect of evaluation of such attributes on purchasing intentions. Even though they did not consider consumers' own evaluations of the relevance of symbolic attributes to their purchasing behavior, their study further demonstrates the relevance of symbolic attributes in consumption decisions by extending previous studies into the sustainable fashion context.

The previously described research indicates that people consider attributes such as price, availability, product quality and a product's impact on the environment when buying products and self-report that these are relevant to their purchase decision. Consumers say they find symbolic attributes, such as the impact of their purchase on their self-image, unimportant when buying products, but indirect methods reveal that these indeed do play an important role. Consumers appear to equally consider the symbolic value of their consumption when making consumption decisions. Noppers (2018) poses several possible explanations for this, for instance that consumers are unwilling to admit the relevance of symbolic attributes to their consumption decisions because it is socially undesirable to say you bought a product or adapted a behavior to gain status or improve self-image. However, it appears to be an important factor nonetheless, and since previous research has focused mostly on instrumental and environmental attributes (Noppers, 2018), it is interesting to see what effect the emphasis on symbolic attributes can achieve in increasing sustainable behavior.

Therefore, this thesis presents the following first hypothesis

Hypothesis 1: Presenting sustainable products and behaviors on their symbolic rather than their instrumental attributes increases consumers' adoption intentions for such products and behaviors.

### 2.3 Participative efficacy beliefs

The main addition of the Theory of Planned Behavior compared to its predecessors is the concept of perceived behavioral control (Ajzen, 1991). Ajzen motivates his decision to include perceived behavioral control in TPB by the necessity to account for situations where people have incomplete volitional control over behaviors, for instance when successfully executing a behavior

depends on the cooperation of others. This was a feature which the Theory of Reasoned Action, the direct predecessor of TPB, lacked according to Ajzen (1991). The concept of perceived behavioral control is based mostly on the concept of self-efficacy as put forward by Bandura (Ajzen, 2002; see Bandura, 1977). Self-efficacy measures the extent to which an individual believes they can successfully execute a behavior to achieve a certain outcome (Bandura, 1977). Self-efficacy measures are most useful in explaining individual actions taken to solve individual problems, but such beliefs are less relevant for collective actions to solve problems perceived as collective (Chen, 2015). However, as we have seen, reducing climate change through sustainable consumption usually entails an individual cost and a collective benefit. This makes reducing climate change a problem of collective action. For this, we need a different type of belief, which is the subject of this section.

Jagers et al. (2020) state that a collective action problem is often defined as "a situation in which actors are motivated to take a course of action that is more beneficial than costly to them individually but is more costly than beneficial to society." Within this subject, the literature again ascertains an interesting paradox. This paradox is explained in an article by Van Zomeren et al. (2013). The article states that classic instrumental accounts of participation in collective action by individuals predicts that rational actors will generally show free-riding behavior rather than individually contribute to the common cause, especially when they believe that the collective action will achieve its pursued goal. This is because a rational individual understands that their own contribution is very unlikely to be the decisive factor in the group's success. It follows that an individual's belief in the effectiveness in collective action should predict inactivity of the part of that individual. The article then mentions how it is a well-established result in research that group efficacy beliefs increase collective action participation. In this way, the paradox between theoretically rational behavior and empirically observed behavior is established. The article proposes participative efficacy beliefs, or the "belief that one can make a difference through one's own contribution to the collective efforts aimed at achieving group goals", as an explanation for this paradox. It uses three studies to test whether participative efficacy beliefs are a significant determinant of participation in collective action and finds support for the construct and predictive validity of these beliefs in all three studies, even when other common explanations for the paradox are included in the models.

Although the processes and motives underlying participation in collective action have been extensively studied, these insights have only recently been applied to the context of sustainable behavior (Bamberg et al., 2015). Building upon the work by Van Zomeren et al. (2013), studies such as Hamann & Reese (2015), Bamberg et al. (2015) and Furlong & Vignoles (2020) further establish participative efficacy beliefs as important determinants of environmental intentions. Some caveats are that the Hamann & Reese (2015) article fails to consider determinants other than efficacy in their model, and the Furlong & Vignoles (2020) article establishes only an indirect effect of such beliefs on pro-environmental behavior. Through such studies, though, a consensus seems to be emerging that efficacy perceptions positively influence pro-environmental intentions (Hornsey et al., 2021a). This cements efficacy beliefs as one of the four “core” motivations for collective action (Van Zomeren, 2019).

The above represents the importance of the feeling of “making a difference” in stimulating the intention to behave sustainably in consumers. Indeed, one of the key reasons consumers don't engage in a host of sustainable behaviors is their belief that it won't make much of a difference (Pieters et al., 2022). This illustrates the importance of efficacy beliefs. However, the type of efficacy beliefs that consumers have also matters. Participative efficacy beliefs appear to be the most important factor in determining sustainable behaviors. They represent the idea that an individual's personal actions can contribute to a group achieving a certain goal. Given the global nature of climate change, one can see this group as the global population, and the group's goal as effectively reducing climate change. Then, it follows that the idea that one's personal actions make a noticeable difference in the effort to reduce climate change appears to be a key determinant of sustainable action.

An interesting problem is determining in which way these types of beliefs can be increased. This leads to the following research question:

Research question 2: How can efficacy beliefs be most effectively stimulated in order to increase sustainable behaviors?

#### *Previous research into efficacy beliefs*

If participative efficacy beliefs play such a key role in determining sustainable behavior, one would expect a rich literature on how such beliefs can be stimulated, given the high impact that

climate change will likely have on our environment. However, there is of yet little research in which attempts are made to experimentally increase such beliefs. The most comprehensive of such studies is a study by Hart and Feldman (2016), in which subjects were exposed to one of six constructed news articles about climate change, and subsequently their intentions of political action were measured. The stories were varied in their emphasis on internal efficacy (the ease with which individuals can take political action), external efficacy (individual's perception of the extent to which public officials will respond to public calls for change), and response efficacy (whether political action will achieve its stated goal). News stories were constructed which were meant to increase one of these efficacy beliefs (positive valence) and other news stories were constructed to decrease one of these efficacy beliefs (negative valence). In addition, three mediating variables were measured, leading to a total of 18 possible effects. Of these 18 pathways through which intended political participation could have been affected, only two significant effects on political intentions were found: the positive internal efficacy condition had a significant positive indirect effect through perceived internal efficacy, and the negative external efficacy condition had a significant negative indirect effect through perceived external efficacy. All 16 other pathways showed no effects on political behavioral intentions. The study did confirm the positive association between perceived efficacy and behavioral intentions, this time in the context of political action.

The study by Hart and Feldman (2016) has started an interesting trend of experimental manipulative studies which have found no or little effect of individual efficacy manipulations on perceived individual efficacy, and subsequently on pro-environmental behavioral intentions (Hornsey et al., 2021b). For instance, three studies in the article by Jugert et al. (2016) used fictitious news articles designed to increase collective efficacy among its subjects. The effect on perceived collective and individual efficacy was measured, as well as pro-environmental behavioral intentions. No direct effect was found on pro-environmental behavioral intentions, but two of the three studies found an indirect effect on intentions through perceived individual efficacy. To confirm that individual efficacy beliefs were key to the pathway through which collective efficacy manipulations influenced behavioral intentions, study 4 of the article manipulated individual efficacy as well as collective efficacy, leading to four experimental conditions (collective efficacy: high vs. low, individual efficacy: high vs. low). This study confirmed their hypothesis that collective efficacy manipulations only increased behavioral

intentions when the individual efficacy manipulation was high, lending support to the existence of participative efficacy beliefs (i.e., collective efficacy only made a difference when participants also read a text that an individual contribution makes a difference). However, strangely, the individual efficacy manipulation had no effect on perceived individual efficacy or on pro-environmental behavioral intentions.

In a study by Xue et al. (2016) participants were made to watch a video about potential negative effects of climate change on China and strategies for individuals to reduce that threat, including how to apply those strategies in daily life. Half of the participants were shown a shortened version of the video, where the strategies individuals could pursue to reduce climate change were left out, leading to a high and low individual efficacy condition. The researchers found no direct effect of the message type on perceived efficacy by the subjects in their study. Hornsey et al. (2021a) hypothesized that convincing individuals they can make a difference in such a large-scale problem as climate changes requires too much of an intellectual leap for most individuals. They hypothesize that including information on ripple effects (i.e., multiplier effects of individual behavior in influencing others' behavior) in the communication about efficacy beliefs should help individuals make this leap and thus more effectively increase individual efficacy beliefs. They do this by showing participants a slide show explaining such multiplier effects. In their first study, they find that individuals' participative efficacy beliefs and pro-environmental behavioral intentions increased compared to a group which was shown only a slide show about how carbon emissions were measured. However, when they slightly modified their research design in a second study to decrease primed demand characteristics and social desirability effects, the effect disappeared.

One of the few success stories comes from a study by Hamann et al. (2021) in which sustainability volunteers were recruited to participate in a coaching weekend where one of the goals was to increase efficacy beliefs of the participants. The study finds that the coaching weekend indeed increased participative efficacy beliefs and intentions of some pro-environmental behaviors. However, given that the participants were all already participating in a student-led sustainability initiative before attending the coaching weekend, and that coaching weekends are unlikely to be practically feasible for a larger public, this study comes with some qualifications.

### *Lack of consistent results in current research*

The description above paints a bleak picture: participative efficacy beliefs appear key to solving the potentially catastrophic problem of climate change, but current research has failed to find consistent ways of increasing such beliefs in individuals. Why is it so hard to increase participative efficacy beliefs? Or, put differently, why can't we make people believe that their contribution to reducing climate change makes a difference?

One possible answer to this question is put forth by Hornsey et al. (2021b). The study explains how efficacy perceptions have long been considered to result from analytical reasoning processes, meaning they can be updated in response to information and education. As a result, the study says, most studies aimed at increasing such efficacy beliefs have focused on explicit, verbal instruction on the subject. Some of these studies have been presented above, and many of these have indeed not been successful in increasing efficacy beliefs. Hornsey et al. (2021b) puts forward the explanation that climate efficacy beliefs might be the result of non-analytical rather than analytical reasoning processes, which encode reality in concrete images and metaphors rather than through words and numbers. If this is the case, the study hypothesizes, climate efficacy beliefs might be more responsive to imagery than text. Early evidence appears to confirm this hypothesis. Most of the evidence comes from Q-sort studies, in which subjects arrange a set of pictures on the basis of 1) the extent to which they make the subject feel that climate change is important, and 2) the extent to which they make subjects feel they are able to do something about climate change (i.e., climate efficacy beliefs). Results from a selection of such studies are discussed in the Methodology section. It is noteworthy that certain images seem to recur in each context in which this study is executed as the most efficacy-increasing images. This lends support to the hypothesis that climate efficacy beliefs might arise from non-analytical reasoning processes. Following from this hypothesis, this thesis presents the following hypothesis:

Hypothesis 2: Individuals who have had climate efficacy primed by efficacy-increasing images will show higher intentions to adopt sustainable behaviors.



## 2.4 The intention-behavior gap

An important qualifying phenomenon of studies such as the one presented in this thesis is the "intention-behavior gap", a phenomenon which has been named and defined in many different ways in the literature (Elhaffar et al., 2020). For the purposes of this research, the following definition is used (adapted version from Gruber & Schlegelmilch [2014]): "the discrepancy between customers' intentions to buy sustainable products and adopt sustainable behaviors and their actual behavior".

As discussed above, intentions to perform a certain behavior are the most important determinant of actual behavior in the Theory of Planned Behavior. The intention-behavior gap directly qualifies this connection by showing that even when people intend to perform a certain behavior, this does not entail they always follow through on this intention. The intention-behavior gap is a widely studied phenomenon in multiple contexts: see, for instance, Sniehotta et al. (2005) for physical exercise and Gibson et al. (2020) for social distancing during the COVID-19 pandemic. In the context of sustainable consumption, as well, many studies have looked into the intention-behavior gap (Elhaffar et al., 2020). To give an example of the prevalence of this gap, consider the study by Litvine & Wüstenhagen (2011). Although the study measured attitudes rather than intentions, attitudes should be a strong precursor to intentions and thus behavior according to the TPB. The study attempted to increase the consumption of green energy by consumers with positive attitudes towards green energy (i.e., to close the intention-behavior gap) by exposing them to different types of information. The study measured the amount of people who did not yet consume green energy at the time of the study (86.5% of the sample) as well as their attitudes towards green energy, and found that 73% of this group expressed positive attitudes towards the consumption of green energy. When the study followed the participants in the months following their participation to determine whether those with positive attitudes towards green energy would switch to a green energy provider, only around 10% of the participants in each experimental group actually made the switch. This points to the large discrepancy between people's intentions and their actual behavior in the context of sustainable consumption. Various explanations for this gap have been put forward, such as the difficulty of breaking habits, perceived inferiority of sustainable products, perceived difficulty of adopting green behavior, and green product unavailability (Elhaffar et al., 2020). Some studies even attribute the existence of an intention-

behavior gap to social desirability bias (see, for instance, Barber et al., 2016), pointing to people's tendency to report higher intentions of sustainable behavior when asked, due to the social desirability of such behavior. In this view, consumers only say they intend to behave sustainably because it is socially desirable, but their stated intentions do not match their actual intentions.

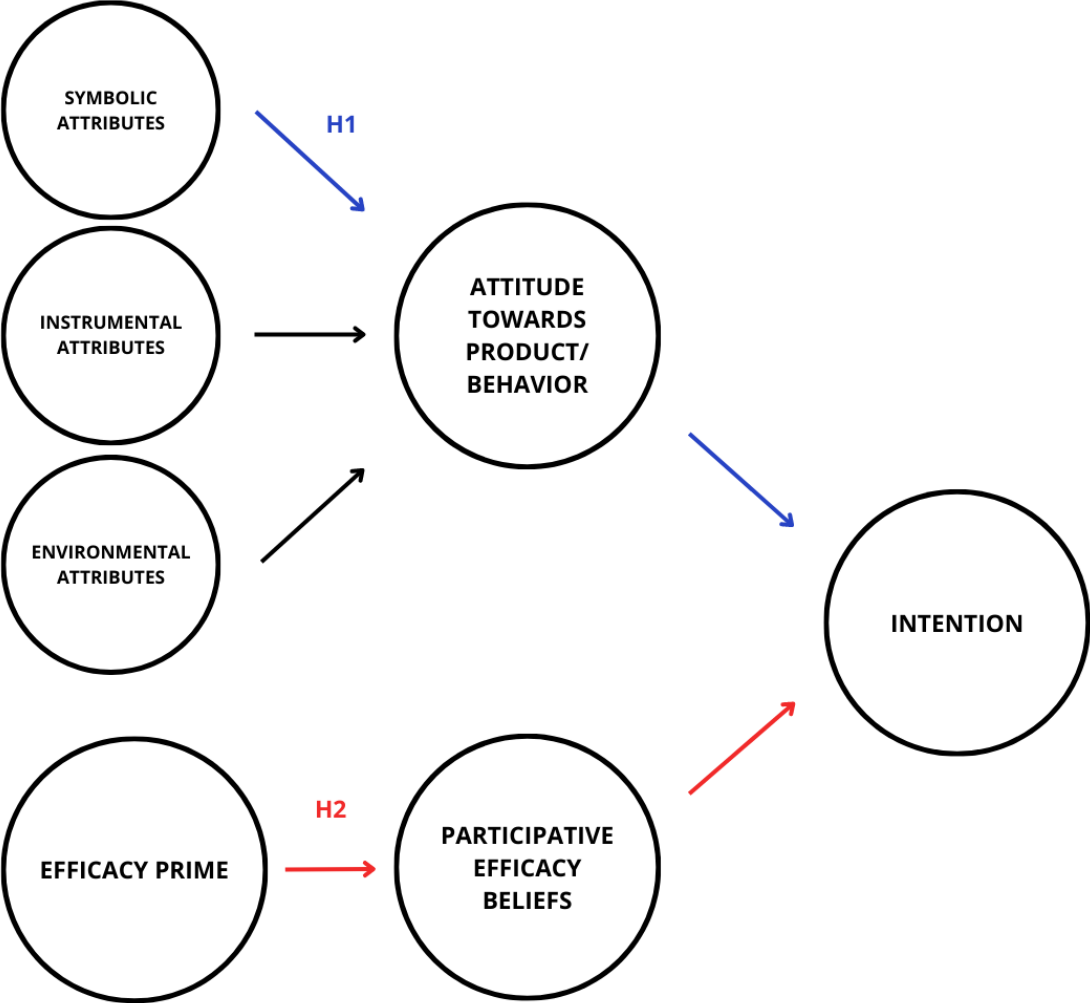
Although the theoretical validity of the Theory of Planned Behavior is well-established and the various constructs in it also show their predictive power in empirical studies, the intention-behavior gap must always be kept in mind as an important limitation of this theory and thus of this thesis in explaining actual behavior.

2.5 Conceptual model

Below, the conceptual model used in this thesis is visualized.

Figure 3

Representation of the conceptual model used in this study



### 3. Methodology

This thesis makes use of a questionnaire with a 2x2 (efficacy: efficacy prime vs. no efficacy prime, attributes: symbolic vs functional attributes) design.

#### 3.1 Contents of the questionnaire

##### *Demographics and environmental attitudes*

Respondents first answered some demographic questions and indicated their environmental interest. Although socio-demographic characteristics have displayed mixed results in determining sustainable consumption, the evidence does not rule out their relevance (Panzone et al., 2016). Therefore, age, gender, and education were included as socio-demographic characteristics which might be of influence. These variables are coded as *Age*, *Gender*, and *Education*, respectively.

The questions indicating environmental interest were taken from Cheung et al. (2014), Experiment 2. Environmental interest contained four items: 1) “I feel a moral obligation to protect the environment”, 2) “I feel that I should protect the environment”, 3) “I feel it is important that people in general protect the environment”, and 4) “Our environmental problems cannot be ignored” (Cronbach’s  $\alpha = 0.87$ ). The responses to these four questions were averaged and combined into a *Env\_attitude* variable.

##### *Participative efficacy beliefs*

Then, those in the efficacy prime condition were shown three graphics of images with an accompanying text simply stating, "Change starts with you", in order to minimize distraction from the image. Those in the no efficacy prime condition were shown nothing. The images were selected based on their ability to increase self-efficacy in consumers as determined by previous research. O'Neill & Nicholson-Cole (2009) provide the first clues as to the effectiveness of certain imagery to increase self-efficacy. The study used a Q-sort methodology, as described in the *Literature review* section, and certain images were consistently ranked highest in the extent to which they increased self-efficacy. O'Neill et al. (2013), using similar methodology but with a larger sample, largely confirmed these results. Metag et al. (2016) also used similar methodology to extend these results beyond the Anglosphere and also largely confirmed these results cross-culturally. Certain images recur in each of these studies as the most effective in increasing self-

efficacy. The O'Neill & Nicholson-Cole (2009) article uses a scale ranging from  $-3$  to  $+3$  to determine the extent to which efficacy is increased by each image, while the O'Neill et al. (2013) and Metag et al. (2016) articles use a scale ranging from  $-4$  to  $+4$ . In this thesis, three pictures from the results of these studies were selected and used.

A picture which was ranked highest or second highest in increasing efficacy in nearly all studies was a picture of a house with solar panels. A picture of a wind farm was the only one which ranked similarly. Furthermore, in the O'Neill et al. (2013) and Metag et al. (2016) studies, pictures of an electric car and of red meat sale at a counter were ranked second or third highest among all cohorts. Because of the emphasis on individual behavior, this thesis used the pictures of a house with solar panels, an electric car and red meat sale at a counter. Whether a participant was shown the efficacy prime is coded in a dummy variable called *Efficacy\_prime*.

#### *Symbolic and functional attributes*

For the symbolic/functional attributes, the questionnaire will contain a text that describes three sustainable behaviors: driving an electric car, taking fewer flights, and eating fewer animal products. Jones & Kammen (2011) identify the average emissions of a typical U.S. household and find that motor vehicle fuel is the largest, while purchasing meat is the third-largest contributor to household emissions, suggesting large emission reduction potential in these behaviors. Similarly, a systematic review of 53 studies finds that shifting to battery electric vehicles (BEVs) (i.e., driving an electric car) is associated with the second-highest emissions reduction potential, while a vegan diet is associated with the seventh-highest emissions reduction potential (out of over 60 items of sustainable behavior). Therefore, a focus on these behaviors is justified by their potential impact in reducing climate change.

The two texts differed in their focus: one text presented the three sustainable behaviors on their symbolic attributes, and one text presented the behaviors on their functional attributes. Both texts were said to be from a consumer report by Deloitte, in order to increase their credibility.

Whether a participant was shown the text with symbolic attributes is coded in a dummy variable called *Symb\_attributes*.

### *Dependent Variables*

After being exposed to the experimental manipulations described above, participants were asked to answer several questions regarding their intentions to adopt sustainable behaviors.

*Intention to reduce meat consumption* was measured by three items taken from Graça et al. (2015): 1) “I am willing to reduce my meat consumption”, 2) “I am willing to follow a plant-based diet”, and 3) “Meat is an irreplaceable part of my diet” (reversely coded) (Cronbach’s  $\alpha = 0.79$ ). These three items were averaged and combined into a *Reduce\_meat* variable.

*Intention to reduce air travel* was measured by two items loosely based on Whitmarsh et al. (2020): 1) “In the future, I intend to fly less”, and 2) “In the future, I intend to use more sustainable transport methods instead of flying” (Cronbach’s  $\alpha = 0.89$ ). These two items were averaged and combined into a *Reduce\_flying* variable.

*Intention to switch to battery-electric vehicle* was measured by two items taken from Noppers et al. (2014): 1) “I would never buy an electric car” (reversely coded) and 2) “I would consider an electric car when purchasing a (next) car” (Cronbach’s  $\alpha = 0.48$ ). Due to the low Cronbach’s Alpha, these two items could not be averaged and combined, and as such two separate models were used. One model measured the effect on whether a consumer would consider an electric vehicle when purchasing a (next) car, represented by the variable *Electric\_now*. The other measures whether consumers would ever buy an electric car and is represented by the *Electric\_ever* variable.

All questions were measured on a 7-point Likert scale. Table 1 provides an overview of the measured constructs and the questions used in the questionnaire. The questionnaire is added as an appendix to this thesis.

**Table 1**

*Questions used to measure variables*

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**Environmental attitudes (Cronbach's  $\alpha = .874$ )** **M = 5.88 , SD = 1.11**

I feel a moral obligation to protect the environment

I feel that I should protect the environment

I feel it is important that people in general protect the environment

Our environmental problems cannot be ignored

**Intentions to reduce meat intake (Cronbach's  $\alpha = .793$  )** **M = 5.13, SD = 1.64**

I am willing to reduce my meat consumption

I am willing to follow a plant-based diet

Meat is an irreplaceable part of my diet (R)

**Intentions to reduce flying (Cronbach's  $\alpha = .889$ )** **M = 4.91, SD = 1.66**

In the future, I intend to fly less

In the future, I intend to use more sustainable transport methods instead of flying

**Ever buying an electric car** **M = 5.51, SD = 1.71**

I would never buy an electric car (R)

**Considering an electric car when purchasing** **M = 4.98, SD = 1.86**

I would consider an electric car when purchasing a (next) car

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*Note.* Questions with (R) were reversely coded

### 3.2 Sampling and data

The data presented in this work are based on a survey conducted in June and July 2023. After the survey was constructed, 9 people participated in a test version of the survey, in which they were given the opportunity to ask questions, comment, and give feedback on all parts of the survey. On

the basis of this process, some wording was changed, additional explanatory text was added and the survey was made more mobile-friendly. The completed survey was then distributed. The sample was acquired through a combination of convenience sampling and snowball sampling. The survey was distributed among family and friends of the author and they were subsequently asked to distribute the survey among their network.

In total, 117 responses were collected. 19 responses were left out because the participant did not complete the survey, leaving a total of 98 responses which were used for analysis.

A comparison between the sample and the population (Dutch individuals) is made in the following tables.

**Table 2**

*Age distribution of questionnaire respondents and target population*

	Sample %	Population %
Under 18	1.00	18.77
18 - 24	25.50	8.93
25 - 34	10.20	12.98
35 - 44	3.10	12.03
45 - 54	5.10	13.48
55 - 64	26.50	13.78
65 - 74	24.50	11.13
75 - 84	3.10	6.66
85 or older	1.00	2.23

*Note.* Population data taken from Centraal Bureau voor de Statistiek (2023a).



**Table 3**

*Gender distribution of questionnaire respondents and target population*

	Sample %	Population %
Female	58.20	50.28
Male	40.80	49.72
Prefer not to say	1.00	0.00

*Note:* Population data taken from Centraal Bureau voor de Statistiek (2023b).

**Table 4**

*Education distribution of questionnaire respondents and target population*

	Sample %	Population %
Secondary education or lower	15.30	62.70
Bachelor's degree	29.60	22.40
Master's degree	49.00	0.00
Doctorate	6.10	0.00
Master's degree/doctorate	0.00	14.20
Unknown	0.00	0.70

*Note:* Population data taken from Ministerie van Onderwijs, Cultuur en Wetenschap (2023). The source for population data does not distinguish between individuals with master's degrees and doctorates, explaining the zero values in the table.

### 3.3 Data analysis

Because this thesis seeks to quantify how much the average intentions of sustainable consumption systematically vary according to the levels of the *Efficacy\_prime* and *Symb\_attributes* variables, while controlling for other variables such as demographics, a multiple linear regression analysis is suitable and thus was performed (Gordon, 2015).

### *Assumptions of multiple linear regression*

The four assumptions which must be fulfilled for multiple linear regression analysis to produce unbiased results are (taken from Flatt & Jacobs, 2019): 1) the error terms of observations are independent over space and time (mainly relevant for time-series data), 2) homoscedasticity of error terms (error terms have constant variance), 3) error terms are normally distributed, and 4) a linear and additive relationship exists between the dependent and independent variables. The study mentions several ways of testing these assumptions, which will be used to determine whether the data in this study fit the assumptions required for unbiased multiple linear regression analysis.

The assumption of independent error terms does not apply to this research as no time-series or spatial data are used.

The homoscedasticity of error terms means that the variance of error terms (residuals between predicted and observed values) must be constant across the predicted values of the dependent variable. This is tested by plotting the residuals against the predicted values of the dependent variable. In this thesis, this was done by adding a plot of residuals against predicted values under the “Plots” menu of the Linear Regression tool in SPSS and visually inspecting the plot for equal spread. Upon inspections of these plots for all four regression models, the assumption of homoscedasticity of error terms appeared not to be violated in any of the models.

The error terms of the regression must be normally distributed for the p-values of the t-tests to be valid (Flatt & Jacobs, 2019). The distribution of the error terms of the models is studied by inspecting the probability-probability plot of the error terms. This entails comparing the distribution of the residuals against the normal distribution in a plot. The plot is generated by selecting the “Normal probability plot” under the “Plots” option of the Linear Regression tool in SPSS. The plots were visually inspected by the author and no large deviations from normality were observed, meaning the error terms approximately follow a normal distribution in the data.

The final assumption which must be checked to verify the appropriateness of the linear regression method is the linear relationship between dependent and independent variables. However, since nearly all of the independent and control variables are categorical variables, the assumption of linearity does not make sense and is not required (Casson & Farmer, 2014). The only linear

relationship to be checked is that between environmental attitudes and the four dependent variables. The linearity of this relationship is checked by generating scatterplots between the four dependent variables and the *Env\_attitude* variable, four plots in total. Visual inspection of these plots did not give any indication of non-linearity of the relationships. Furthermore, and most importantly, no non-linearity between these variables is assumed in the theoretical foundation of this research, as presented in the *Literature review* section.

## 4. Results

This section will cover the results of the various regression analyses which were used to test the hypotheses of this paper. The various dependent variables will be covered one by one.

**Table 5**

*Regression results from the model considering a reduction in meat intake*

	$\beta$	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	1.62	1.14	1.43	0.16
Efficacy_prime	-0.24	0.32	-0.75	0.45
Symb_attributes	-0.55	0.31	-1.77	0.08
Env_attitude	0.41	0.17	2.43	0.02
<i>Education level</i>				
Bachelor's degree	0.61	0.52	1.19	0.24
Master's degree	0.45	0.50	0.89	0.38
Doctorate	-0.06	0.79	-0.08	0.94
<i>Age</i>				
Under 18	1.77	1.76	1.01	0.32
25 - 34	1.28	0.63	2.03	0.05
35 - 44	0.94	0.97	0.97	0.34
45 - 54	0.85	0.74	1.15	0.25
55 - 64	1.17	0.46	2.57	0.01
65 - 74	0.83	0.46	1.78	0.08
75 - 84	1.86	0.96	1.94	0.06
85 or older	-2.00	1.58	-1.27	0.21
Female	0.61	0.33	1.87	0.07

*Note.* Dependent Variable: Reduce\_meat

In the model considering a reduction in meat intake in Table 5, neither the efficacy prime nor the presentation of symbolic attributes had a significant ( $\alpha = 0.05$ ) effect on the intention to reduce meat intake. This means that, on average, the intentions to reduce meat intake did not differ between the participants which were shown the efficacy prime compared to those who were not shown the efficacy prime, and they did not differ between the participants which were shown the symbolic attributes compared to those which were shown the instrumental attributes, holding all other variables constant. The results from this model do not support H1 and do not support H2.

In the first model, education level and gender did not have a significant effect on the intention to reduce meat intake. In terms of age, participants who were aged between 25 and 34 and between 55 and 64 had significantly higher intentions to reduce meat intake compared to participants aged 18 to 24. The rest of the age groups did not differ significantly from the 18-24 group in their intentions to reduce meat intake. Environmental attitude had a significant positive effect on intentions to reduce meat intake.

**Table 6***Regression results from the model considering a reduction in flying*

	$\beta$	SE	<i>t</i>	<i>p</i>
Efficacy_prime	-0.08	0.32	-0.26	0.79
Symb_attributes	-0.42	0.31	-1.34	0.19
Env_attitude	0.74	0.17	4.47	<.001
<i>Education level</i>				
Bachelor's degree	0.48	0.51	0.94	0.35
Master's degree	0.08	0.50	0.16	0.87
Doctorate	0.88	0.78	1.13	0.26
<i>Age</i>				
Under 18	0.23	1.75	0.13	0.90
25 - 34	-0.55	0.63	-0.87	0.39
35 - 44	-0.73	0.97	-0.75	0.45
45 - 54	0.27	0.73	0.37	0.71
55 - 64	-0.29	0.46	-0.63	0.53
65 - 74	-0.27	0.46	-0.58	0.57
75 - 84	1.07	0.95	1.12	0.27
85 or older	2.08	1.57	1.33	0.19
Female	0.30	0.33	0.91	0.37

*Note.* Dependent Variable: Reduce\_flying

Looking at the regression results from the second model in Table 6, again neither the efficacy prime nor the presentation of symbolic attributes had a significant ( $\alpha = 0.05$ ) effect on the intention to reduce meat intake. In this model, education level, age, and gender all did not significantly increase or decrease intentions to reduce meat intake. The only significant variable is the environmental attitude, which had a significant positive effect on the intentions to reduce meat intake.

**Table 7**

*Regression results from the model considering current interest in electric vehicles*

	$\beta$	SE	$t$	$p$
Constant	1.42	1.33	1.06	0.29
Efficacy_prime	-0.40	0.37	-1.08	0.29
Symb_attributes	-0.14	0.37	-0.37	0.71
Env_attitude	0.68	0.20	3.46	<.001
<i>Education level</i>				
Bachelor's degree	0.12	0.61	1.97	0.05
Master's degree	0.48	0.59	0.81	0.42
Doctorate	1.59	0.92	1.72	0.09
<i>Age</i>				
Under 18	-0.56	2.07	-0.27	0.79
25 - 34	-0.19	0.74	-0.25	0.80
35 - 44	-1.21	1.14	-1.06	0.29
45 - 54	-1.35	0.87	-1.56	0.12
55 - 64	0.11	0.54	0.21	0.83
65 - 74	-1.17	0.55	-2.15	0.04
75 - 84	-0.73	1.13	-0.65	0.52
85 or older	0.27	1.85	0.14	0.89
Female	-0.76	0.38	-1.98	0.05

*Note.* Dependent Variable: Electric\_now

The third model in Table 7 reveals that again neither the efficacy prime nor the presentation of symbolic attributes had a significant ( $\alpha = 0.05$ ) effect on the current interest in considering an electric vehicle. In terms of education level, participants whose highest education level was a Bachelor's degree were significantly more likely to consider driving an electric vehicle than participants whose highest education level was secondary education or lower. Furthermore,

participants who were aged between 65 and 74 were significantly less likely to consider driving an electric vehicle than participants aged 18 to 24, and female participants were significantly less likely to consider driving an electric vehicle. Environmental attitude had a significant positive effect on current interest in driving an electric car.

**Table 8**

*Regression results from the model considering whether one would ever consider driving electric*

	<i>β</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	4.52	1.28	3.53	<.001
Efficacy_prime	0.33	0.36	0.93	0.35
Symb_attributes	-0.35	0.35	-1.00	0.32
Env_attitude	0.24	0.19	1.26	0.21
<i>Education level</i>				
Bachelor's degree	0.60	0.58	1.02	0.31
Master's degree	0.47	0.56	0.83	0.41
Doctorate	-0.17	0.89	-0.19	0.85
<i>Age</i>				
Under 18	2.26	1.99	1.14	0.26
25 - 34	0.16	0.71	0.23	0.82
35 - 44	0.22	1.10	0.20	0.84
45 - 54	0.83	0.83	1.00	0.32
55 - 64	-0.20	0.52	-0.39	0.70
65 - 74	-1.11	0.52	-2.12	0.04
75 - 84	-1.21	1.08	-1.12	0.27
85 or older	-1.81	1.78	-1.02	0.31
Female	-0.87	0.37	-2.36	0.02

*Note.* Dependent Variable: Electric\_ever

Lastly, the model in Table 8 looking at whether participants would ever consider driving an electric car revealed that, again, neither the efficacy prime nor the presentation of symbolic attributes had a significant ( $\alpha = 0.05$ ) effect on whether participants would ever consider driving an electric car.

Education level did not have a significant effect on whether participants would ever consider driving an electric car. Surprisingly, environmental attitude did not have a significant effect, in contrast to all the previous models. Considering age, participants aged between 65 and 74 were significantly less likely than those aged between 18 and 24 to ever consider driving an electric car. Female participants were significantly less likely to ever consider driving an electric car than male participants.

## 5. Discussion

### 5.1 General discussion of results

The results presented above are surprising. The efficacy prime and presentation of symbolic attributes failed to have a significant effect in all of the models studied. This means that both hypotheses of this thesis are not supported. The efficacy prime apparently did not have an effect on participants' sustainable intentions. This means that this study joins a list of scientific research papers that failed to increase participative efficacy beliefs, pointing to the difficulty of affecting such beliefs. This thesis therefore also does not lend support to the hypothesis by Hornsey et al. (2021b) that efficacy beliefs are the result of a non-analytical reasoning process and are therefore manipulable by images rather than by text. However, the lack of effect could be due to other factors, such as the specific images used. Images depicting the same thing but which are more visually attractive might be more effective, for instance, if they make individuals consider the images for a longer time. Also, the text used to accompany the images might be of importance in determining whether efficacy beliefs are updated.

The presentation of sustainable products and behaviors on symbolic rather than instrumental attributes also failed to increase participants' sustainable intentions. With the symbolic attributes, the presentation of the products and behaviors might also matter. The attributes were presented in



the style of a consumer report by Deloitte, and the focus on symbolic attributes might have more effect in a more realistic consumption setting, for instance in an advertising campaign.

In terms of demographics, the results were mixed. In some cases, there was a clear effect, but no demographic variable made a difference across each model. Age and gender appear most relevant in sustainable consumption decisions, with significant effects in two of the four models. The clearest predictor of sustainable consumption intentions is environmental attitude, which had a significant effect in three of the four models constructed in this thesis.

## 5.2 Limitations of this study

An obvious limitation of this study is the aforementioned intention-behavior gap. Intentions to execute a certain behavior do not always result in the behavior actually being executed. Various reasons for the existence of such a gap are given in the *Literature Review* section of this thesis. In this thesis, actual behavior was not observed, and only intentions were measured. Because of the intention-behavior gap, increased intentions to execute sustainable behavior would not automatically lead to an increase in sustainable behavior. However, given the insignificant results of the experimental manipulation, it is unlikely that a difference in behavior would be observed between the different experimental groups, seeing as there was no observed difference in intentions between the groups.

The sample did not correspond to the population in various ways. Overall, the sample was more female, higher-educated, and more concentrated around ages 18-24 and 55-74 than the Dutch population. This potentially influenced the results of the data analysis, and in order to acquire more generalizable results a more representative sample should be used. The bias in the sample might have influenced the results of this study in various ways. Research into the influence of socio-demographics on sustainable consumption finds that age and gender might play a role in attitudes towards sustainable consumption and thus affect intentions (Diamantopoulos et al., 2003). Younger individuals tend to have higher environmental attitudes, and females tend to show higher environmental intentions as well as engage in more sustainable behavior (Diamantopoulos et al., 2003). If these groups are over-represented in the sample and already have a favorable outlook towards sustainable behavior, there might be a limit as to how much their intentions of sustainable behavior can be increased, making them less sensitive to the

experimental manipulations in this study. Furthermore, the sample was rather small, so a larger sample might lead to more generalizable results.

There is one part of the Theory of Planned Behavior which was not measured at all in this study: the subjective norm. The subjective norm refers to the perceived social pressure to perform or not perform a certain behavior. Participation in this questionnaire was done in private and without observation by the researcher. Social norms and visibility of a behavior can influence sustainable intentions and behavior. For instance, research has found differences in sustainable behavior based on whether the behavior is visible or invisible to others (Brick et al., 2017).

Another limitation of this study is that the effect of the presentation of different attributes on attitude and the effect of the efficacy prime on participative efficacy beliefs were not directly measured. Rather, only the effect of these manipulations on behavioral intentions through the constructs of attitude and participative efficacy beliefs was measured.

### 5.3 Recommendations for further research

The experimental manipulations in this study apparently failed to increase participative efficacy beliefs in the participants. This result fits in with the common previous findings in the literature, representing the difficulty of increasing such beliefs in consumers. It proves very hard to find ways of increasing such beliefs in consumers through instruction about efficacy beliefs.

Following the framework by Hornsey et al. (2021b), where such beliefs might originate from non-analytical reasoning processes and thus might be more responsive to imagery, this study used images that were found to increase such efficacy beliefs in consumers. The lack of effect on efficacy beliefs of such images in this study contradicts previous evidence from Q-sort studies of efficacy-increasing imagery (see *Literature Review* “*Lack of consistent results in current research*”). Because the theoretical foundation for the effectiveness of such imagery on increasing efficacy beliefs comes almost exclusively from such studies, further research could attempt to confirm the results of the Q-sort studies using different methodologies. This would help increase our understanding of the effect of imagery on climate efficacy beliefs. To name an example of why this is important, one weakness of Q-sort studies is that, because participants are forced to rank pictures on the extent to which they make them feel like they can do something about climate change, we essentially only observe the effect of each picture on efficacy beliefs relative to the other pictures considered, rather than their absolute effect. In other words,

participants have to choose which of the pictures makes them feel *most able* to do something about climate change, but we cannot be sure how much those pictures actually affect climate efficacy beliefs in the participants.

Further research could also study the most effective way of communicating symbolic attributes of products and behaviors to consumers. For instance, marketing research could look at the differences in adoption based on whether the product or behavior is presented through television, traditional advertising or social media, and as such determine the most productive marketing strategy for sustainable goods and behaviors. This could benefit both sustainable companies trying to create a more sustainable future and governments seeking to attain climate goals. Of course, an important contribution would be studying the effect such interventions have on actual sustainable consumption, rather than just measuring intentions. This would shed more light on the actual effect of such interventions and the intention-behavior gap. Finally, research could be done into whether the effect of efficacy primes and the presentation symbolic attributes differs between different demographic groups. These interventions might have a different effect on different groups, and as such a one-size-fits-all approach, such as the approach used in this study, might not be effective in increasing intentions in all groups.

## 6. Conclusions

This thesis set out to uncover strategies to increase positive attitudes towards sustainable goods and behavior and empower consumers' belief that their contribution to reducing climate change makes a difference. The two strategies which were used failed to attain their stated goals. The reason they were unsuccessful remains to be determined, but it cements the reputation of the rigidity of climate efficacy beliefs. The concept of symbolic attributes poses a promising pathway to more sustainable consumption, and provides an interesting number of possibilities to explore in further research. However, it is time for the consumer to not only talk green, but act green, and finding ways to achieve that goal is of the hardest, but one of the most important puzzles future researchers should set out to solve.

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## Appendix 1. Questionnaire

*Welcome page*



**Thank you for participating in this survey!**

This questionnaire supports research into the effects of certain types of text and images on sustainable consumption. You will be asked some demographic information, be shown some text and/or images related to sustainable behavior and subsequently be asked some questions about intentions of sustainable behavior.

Continue

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*Data consent form*



**Consent to use your data**

The data collected in this survey are used for the previously mentioned research. All data you enter in this survey will be completely anonymised before being used for analysis. Your data will be deleted after this research is completed. Please confirm that you agree to the use of your data in this research below before continuing.

I understand how my data will be used and consent to the use of my data for this research



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## Demographic information



First, please enter this demographic information. Afterwards, please indicate your environmental attitudes on the next page.

### What is your age?

- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 - 74
- 75 - 84
- 85 or older

### What is your gender?

- Male
- Female
- Prefer not to say

### What is the highest level of education you have finished?

- Primary education
- Secondary education
- Bachelor's degree
- Master's degree
- Doctorate



Continue

*Environmental attitude*



Please indicate to what extent you agree with these statements (1 = strongly disagree, 7 = strongly agree).

	1	2	3	4	5	6	7
I feel a moral obligation to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I should protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel it is important that people in general protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our environmental problems cannot be ignored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Continue

Efficacy prime condition (no efficacy prime condition was shown nothing)



Please consider the following images regarding climate change:



Continue

*Symbolic attributes condition*



**Please consider the following extract:**

"[...] You are what you eat. But not only what you eat. Our consumption patterns show a lot about who we are as a person. This applies to sustainable consumption as well. Consumers who have switched to more sustainable consumption patterns such as reducing meat intake, driving electric and flying less, are noticing the effects this switch has on themselves.

One effect of sustainable consumption which is often mentioned is the increase in self-image sustainable consumption confers. Consuming sustainably increases an individual's self-image as a conscious and responsible consumer. It confers to consumers the feeling of "doing the right thing". This works on the individuals themselves but has an external effect as well. With their consumption, consumers feel they are effectively able to communicate this image to other people, positively distinguishing themselves from other consumers. By doing this, they set a positive example for others to follow. This can generate positive reactions from their environment and thus increase their own well-being.

In this way, consuming sustainably is found to not only confer benefits for the environment and society, but for the sustainable consumers themselves as well. Consumers are increasingly considerate of these effects, and this is reflected in an increase in various types of sustainable behavior. [...]"

- Extract taken from 2022 Global Consumer Insights Report, Deloitte



Continue

*Instrumental attributes condition*



**Please consider the following extract:**

"[...] Patterns of consumption are changing. Sustainable innovations have come a long way and are influential in this process. In the field of transportation, sustainable alternatives abound. As these innovations are developed, consumers are increasingly discovering the benefits of more sustainable consumption. For instance, the electric car market is booming and buying electric is considered by consumers to be beneficial in different ways. Although purchasing prices are still higher, this is compensated by cost savings on gas and maintenance, leading to long-term benefits. Similarly, although charging an electric vehicle takes longer than filling up a gas tank, charging is becoming more rapid and charging ports are becoming ubiquitous.

For long-distance travelling, choosing the train over the plane is becoming a more attractive alternative as well. Consumers are increasingly enjoying the proximity of train stations to their homes, the avoidance of long security queues, and the increased comfort of travelling by train. This effect is still counterbalanced by relatively higher ticket prices, which consumers cite as an important drawback.

Another change in consumption is our diets. Sustainable innovations are reducing meat consumption, with consumers increasingly opting for vegetarian and vegan options. Reducing meat intake decreases the risk of heart disease and stroke, among others, which is an important motivator for consumers to decrease their meat consumption. With the recent rise in meat prices, consumers are also experiencing that reducing meat intake confers cost benefits. Furthermore, the broad availability of meatless recipes and high-quality meat replacement products make it ever easier to switch to a low-meat diet. [...]"

- Extract taken from 2022 Global Consumer Insights Report, Deloitte



Continue

*Intentions to adopt sustainable behaviors*



Please indicate to what extent you agree with these statements (1 = strongly disagree, 7 = strongly agree).

1	2	3	4	5	6	7
I would never buy an electric car						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would consider an electric car when purchasing a (next) car						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


1	2	3	4	5	6	7
I am willing to reduce my meat consumption						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am willing to follow a plant-based diet						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meat is an irreplaceable part of my diet						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

1	2	3	4	5	6	7
In the future, I intend to fly less						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the future, I intend to use more sustainable transport methods instead of flying						
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>






*End-of-survey message*



Erasmus  
Behavioural  
Lab

Thank you very much for finishing this survey!  
Your answers have been saved.



Survey Powered By [Qualtrics](#)