

Choosing with awe

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Exploring the influence of awe-eliciting environmental nudging and organic shopping trait on sustainable choices in an online shopping context

Nele Panzer, s2979578

University of Twente, The Netherlands

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Supervisor: Dr. T.J.L. Van Rompay, 2nd Assessor: Kars Otten

Department of Behavioural, Management and Social Science

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Abstract

Aim: Addressing the differences between attitude and actual behavior regarding environmental sustainability is becoming more urgent as issues such as climate change are progressing. As nudging strategies have been shown to influence consumer's subconscious decision-making process and therefore having the potential to tackle this discrepancy, this study explores the effect of environmental nudging on sustainable behavior in an online shopping context. Furthermore, this study aims to get a clearer understanding of how feelings of awe, which have been shown to increase prosocial behavior, can be used as an environmental nudge in the context of sustainability.

Method: A 3x2 experimental design (nature-based low-awe vs. high-awe vs. control condition x organic vs. non-organic shopper) was used to explore the influence of an awe manipulation, self-reported organic shopping behavior, as well as their interaction effects on several constructs relating to sustainability. This was implemented in a Qualtrics survey design with three different version of a fictitious online shopping task randomly assigned to participants. Trait nature connectedness was included as a covariate and the survey recorded outcome variables measuring sustainable choices, perceived sustainability of the online store and brand, pro-environmental behavioral intention and acceptance of nudging strategies.

Results: The data shows mostly significant results of nature connectedness for these constructs, as well as some (marginally) significant effects of the organic shopper factor. A manipulation check confirmed the effect of the awe manipulation, but the condition factor failed to have any significant effect on any of the constructs except sustainable product choices.

Conclusion: This study highlights the limits of feelings of awe translating into actual choices and emphasizes the need to adjust the set-up of future research to explore how awe can be used to influence sustainable behavior. It also explores the potential role of mistrust in organizations in the examined context. Furthermore, the significant role of nature

connectedness in sustainable behaviors and attitudes was identified, calling for further research on this concept and its interplay with other nudges.

Key Words: Awe, nudges, sustainable consumption, environmental nudge, nature connectedness

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1 Introduction

Climate change is progressing at an increasing speed, causing considerable harm to the eco-systems and inhabitants on our planet, mainly driven by human influence according to the Intergovernmental Panel on Climate Change (IPCC) (Intergovernmental Panel on Climate Change, 2023). The urgency of acting more environmentally sustainable in order to reduce the progression of climate change is therefore more pressing than ever (Plumer & Popovic, 2018, cited in Berger et al., 2020). Among other social justice issues, addressing environmental concerns and combatting climate change is part of the United Nations (UN) Sustainable Development Goals (United Nations, n.d. a)). While a large part of the responsibility for taking action lies with governments and corporations, individuals are also urged to perform sustainable behaviors accessible to them (Lehner et al., 2016). Some of the areas in which the UN recommends individuals to make changes are using more sustainable modes of transport, such as bicycles or public transport, reducing food waste and being conscious of energy use and consumption habits (United Nations, n.d. b)).

However, even when individuals are educated on sustainability and know which behaviors have more positive or negative implications for the environment, they still often struggle to implement sustainable behaviors in their everyday lives. Previous studies have for example emphasized the discrepancy between positive attitudes towards sustainability and actual consumption habits in relation to the purchasing behaviors of fashion items (Michels et al., 2022, Lee et al., 2020). Some of the barriers to practicing more sustainable behaviors include convenience (Torma et al., 2017), price (Chaplin & Wyton, 2014, Demarque et al., 2015) and habit (Leal & Oliveira, 2020).

Moreover, contrary to years of advertising theory, it has now been established in consumer psychology research that humans are less susceptible to informational persuasion attempts than previous models suggest, as their brains show low involvement most of the time. Rather than using rational arguments, brands therefore tend to use cues in their

advertising to convince people of their product or services (Heath & Feldwick, 2008). This connects to Thaler and Sunstein's work on *nudges*, which refer to techniques to influence the sub-consciousness using certain cues to *nudge* people to perform certain behaviors over other alternative behaviors (Thaler & Sunstein, 2008), for example positioning healthy food items more visibly than unhealthy food items or adding health labels to food products when nudging for healthy eating habits (Cadario & Chandon, 2020).

This can be utilized in relation to sustainability to bridge the gap between attitude and behavior (Guath et al., 2022). As a result of this, there have been multiple studies in recent years exploring different nudging strategies in relation to sustainability. Some of the research on this includes Czajkowski and colleagues' (2019) study on social norm nudging for household recycling, where individuals were informed about other people's recycling levels, as well as Torma and colleagues' (2017) explorations of self-nudging, which entailed participants subscribing to regularly receive an organic food box to nudge themselves to eat more organically.

However, it has been suggested in previous research that the effectiveness of different nudging strategies is context-dependent, meaning that implications for one behavior or social group do not necessarily apply to other situations (Czajkowski et al., 2019), which necessitates the further exploration of different nudging strategies in different environments and conditions. With online shopping becoming more and more popular and fashion making up one of the largest segments of retail e-commerce revenue worldwide (Statista, 2022), the relevance to examine how the online choice environment can be modified to enhance sustainable behaviors in an online fashion retail context emerges.

In regards to the e-commerce context, researchers have previously explored sustainable online food shopping behavior and how this can be influenced through nudges. Demarque and colleagues (2015) implemented social norm nudging in an online grocery store, by marking the products deemed more sustainable with eco labels and displaying

information on how many other customers had previously selected these options (Demarque et al., 2015). In this case, people confronted with a social norm nudge purchased a higher number of sustainably labelled products. Other studies on this topic include multiple nudge strategies in their exploration. This can be seen in Berger and colleagues (2020) comparing default nudging, which refers to making the desired option the default without taking away the element of choice, simplification and social norm nudging in relation to online food shopping. Other examples include Guath and colleagues (2022) exploring attraction and default nudging with regards to electronics in an online shopping context and Michels and colleagues (2022) comparing defaults, active choice and self-nudging strategies.

This study will add to this body of research through looking at environmental nudging in a specific context, namely an online fashion retail environment. Furthermore, research on awe will be implemented as part of this environmental nudge. Awe is defined as a specific mental state induced by perceptions of vastness and an inability to accommodate this, and is often elicited by nature phenomena (Keltner & Haidt, 2003). As will be discussed more in detail in the following sections, being in a state of awe has been shown to positively affect people's prosocial behavior (Piff et al., 2015, Zhao et al., 2018), making it suitable to utilize in the exploration of nudge strategies to address sustainable behavior.

The research is set up as a 3x2 design, constituted by two different stimuli and one control condition implemented in the online store context, as well as a binary distinction of self-reported organic shopper levels. The main outcome variables recorded refer to sustainable choices, namely the number of sustainable items selected, as well as the shipping option selected and whether the participants opted for CO2 compensation of their order. The research question guiding this study is formulated as follows: To what extent can the use of an awe manipulation impact sustainable choices and how does it relate to individuals' organic shopping behavior?

2 Theoretical Framework

2.1 Dual Processing Theory

The tendency to act in a way that might be contrary to one's knowledge on a certain topic, as with the example of sustainability, is explained by behavioral science. According to Kahneman's (2011) Dual Process Theory, human thinking can be distinguished into two systems: System 1, which refers to acting based on heuristics and rules of thumb, and System 2, which includes a higher level of consciousness and refers to thinking and decision making based on information and logic. Most of the time, individuals rely on System 1, meaning that they do not make decisions actively but rather act on automatic behavior. As a result, choice architecture and nudges become relevant in attempts to facilitate desirable behaviors in areas such as sustainability.

2.2 Nudges

While nudges can be classified into cognitive, behavioral, and affective nudges (Cadario & Chandon, 2020), they all utilize the knowledge of System 1 thinking to make desirable behaviors more mentally available over alternatives for consumers, without applying logical persuasion. These nudges are part of the choice architecture, in which the interplay of external factors intentionally and unintentionally influence an individual's behavioral choices (Thaler & Sunstein, 2008, cited in Lehner et al., 2016). Different types of nudges include simplification, environment or context, framing, defaults, reminders and deadlines, social norms, inform campaigns and self-nudging (Leal & Oliveira, 2020). In this study, an environmental nudge was implemented.

2.2.1 Environmental nudge: awe manipulation

When applying environmental nudging, small changes are made to the environment leading to certain information becoming more mentally available to individuals (Tversky and Kahneman, 1974, cited in Leal & Oliveira, 2020). Specifically, the decision environment is

altered (Leal & Oliveira, 2020), in this case by integrating a stimulus into the environment, namely an awe manipulation.

Awe refers to an intense, usually positive emotion, which tends to change the perception of oneself in relation to one's environment (Keltner & Haidt, 2003). Keltner and Haidt (2003) identify awe as being composed of two elements: perceived vastness and need for accommodation. While the former refers to the stimulus itself and an individual's perception of that, the latter describes the necessity of a mental process of adjustment within the individual to grasp a new experience (Keltner & Haidt, 2003).

While awe can occur in different contexts when individuals are confronted with beauty or power which is difficult to comprehend, such as in religion or art, it is commonly associated with experiencing natural phenomena and landscapes. Specifically, Keltner and Haidt (2003) emphasize that "natural objects that are vast in relation to the self (e.g., vistas, waterfalls, redwood) are more likely to produce awe, as are natural events that have effects upon many (e.g., tornadoes, earthquakes)" (p. 310). An example of this being elicited in research is a series of studies carried out by Piff and colleagues (2015) triggering awe in different ways including exposing participants to a nature video, having them look up at a grove of trees or recalling a recent nature-based awe experience.

This confrontation with a vast natural stimulus then evokes a feeling of insignificance of the self in comparison to the world (Piff et al., 2015). This self-diminishment is one of the factors that is used in Yaden and colleagues' (2018) Awe Experience Scale (AWE-S) measuring levels of awe. Furthermore, a feeling of connection to the world and other organisms resulting from a feeling of awe is recorded on said scale in items such as "I felt a sense of communion with all living things" (Yaden et al., 2018, p. 478). Other factors from the scale include the previously mentioned vastness and need for accommodation as outlined by Keltner and Haidt (2003).

Because of this sense of self-diminishment and insignificance triggered by awe, it has been suggested to be correlated to prosocial and sustainable behaviors, because these concern issues that are bigger than the self (Piff et al., 2015; Zhao et al., 2018). Moreover, in terms of the previously mentioned concept of connectedness, awe leads to more selfless behavior (Piff et al., 2015) as a result of subjects identifying as part of a collective or group, rather than acting from an individualist standpoint (Zhang & Keltner, 2016).

Furthermore, Wang and colleagues (2022) found in their study that awe is negatively correlated with psychological barriers concerning sustainable behavior, such as conflicting goals and interpersonal relations, as well as with climate change inaction. As mentioned before, this is due to awe being a self-transcending emotion, therefore removing barriers rooted in self-interest concerning climate change inaction (Stellar et al., 2017, cited in Wang et al., 2022). A stimulus evoking awe is therefore expected to be most effective in increasing sustainable attitudes and behavior compared to the other conditions:

H1: High-awe nature-based environmental nudging increases sustainable choices compared the low-awe condition and the control condition.

H2: High-awe nature-based environmental nudging increases pro-environmental behavioral intention compared the low-awe condition and the control condition.

2.3 Organic shopping trait

As this study is set up as an online shopping scenario, the trait of regular organic shopping behavior is expected to influence particularly the sustainable choice constructs. Furthermore, previous research has shown a difference between environmentally conscious consumers and non-environmentally conscious consumers in the effectiveness of nudge interventions (Guath et al., 2022), making it relevant to implement a comparison between organic and non-organic shoppers in order to explore the effects of the environmental nudge on them separately. As part of the 3x2 design used in this study, the retrospective categorization of organic shoppers vs. non-organic shoppers is therefore expected to impact

the outcome variables, as well as enhance the effects of the awe manipulation on said outcome variables. This leads to the following hypotheses:

H3: Participants categorized as organic shoppers display higher levels of all constructs recorded.

H4: The effects of a high-awe environmental nudge on all recorded constructs are more pronounced in participants categorized as organic shoppers compared to non-organic shoppers.

2.3 Outcome measures: evaluative and descriptive labelling

Concerning the two main outcome measures which measure sustainable choices, namely sustainable product choices and sustainable shipping choices, evaluative and descriptive labelling was implemented. To clarify the level of sustainability of the different choices to the participants, descriptive labelling was used for the shipping method, adding *least sustainable* to the express shipping option (Cadario & Chandon, 2020). Evaluative labelling on the other hand refers to the subjectively categorized presentation of information, for example by using smiling or frowning faces on food products to show how a product scores in terms of health or sustainability (Cadario & Chandon, 2020). In the product selection, this was implemented in a way that some products were labelled with a leaf symbol, indicating that they are in line with the Better Cotton Initiative (BCI) (Better Cotton, n.d.), and therefore more sustainable than comparable products. This was not only implemented to inform participants of which products are more sustainable, but also because this evaluative indication combined with other nudges has been shown to increase sustainable choices in other studies (Demarque et al., 2015). In this case, the same labelling was used in all conditions, meaning they were not compared between groups. However, increased selection of sustainably labelled products among the high-awe condition group could indicate an enhancing effect of awe as an environmental nudge on evaluative labelling.

3 Method

3.1 Design

The research design is a survey experiment, which was set up with the software Qualtrics and takes on a 3x2 form (low-awe nature-based stimulus vs. high-awe nature-based stimulus vs. control condition x organic vs. non-organic shoppers), made up of the different variations of the environmental nudge, as well as the distinction on the basis of organic shopping behavior. In terms of the stimulus exposure, participants will be randomly assigned to one of the three different images by the software.

Table 1

3x2 Independent Variable Design

	Control condition	Low-awe nature-based stimulus	High-awe nature-based stimulus
Organic Shoppers	Group A1	Group B1	Group C1
Non-Organic Shoppers	Group A2	Group B2	Group C2

The reason the control condition is a green background is because green is commonly associated with nature and environmentally sustainable options. This can be observed in practice when looking at the use of green in the marketing of eco-friendly stores, as well as in research showing that individuals primed with a green logo had an increased preference for sustainable products (Lee et al., 2020). Having a green control condition will therefore ensure the comparability of the stimuli to the control condition.

3.2 Pre-test

To ensure the suitability of the visual stimuli, a pre-test was conducted, which can be found in the appendix (Appendix A). The goal was to identify a pair of nature-based stimuli which are clearly perceived as low-awe and high-awe stimuli. For this, pre-test participants (n = 15) were exposed to a range of 16 images and asked to assess the respective feelings created

by them. This was measured using 13 items, namely an excerpt from the AWE-S scale, as well as some more direct questions on awe and items recording preference and context suitability, which were all rated on a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree). The images were matched in pairs of similar elements, e.g., a picture of a low-awe forest landscape and a picture of a high-awe forest landscape. This pairing structure was not disclosed to the pretest participants, but the images did appear in this order.

The pretest responses were analyzed by comparing the means of individual and combined items. Only two pairs were identified whose individual awe items were all one whole value apart, as well as the combined variable mean being at least 1 standard deviation apart (Picture 11&12: $M_{11} = 2,83$, $SD: 0,57$, versus: $M_{12} = 4,23$, $SD: 0,62$; Picture 13&14: $M_{13} = 3,02$, $SD: 0,71$, versus: $M_{14} = 4,33$, $SD: 0,52$). Furthermore, only one of these two pairs had a higher mean than 3 (neutral) for both pictures regarding the suitability for the context ($M_{13} = 3,6$; $M_{14} = 3,67$). A one sample t-test was carried out for this pair on the combined awe variable ($t(14) = 9,866$, $p = <.001$), as well as a combined vastness variable consisting of two items ($t(14) = 11,738$, $p = <.001$) and the direct awe question variable ($t(14) = 6,503$, $p = .001$), which confirmed a significant difference in all tests. As a result, the images of this pair were used in this survey as low-awe and high-awe stimulus respectively. These two stimuli, as well as the control condition, were then integrated into a fictitious website (Figure 1-3).

3.3 Materials

Figure 1

Figure 1.1: Control condition, start page



Figure 1.2: Control condition, product selection



Figure 1.3: Control condition, shipping selection

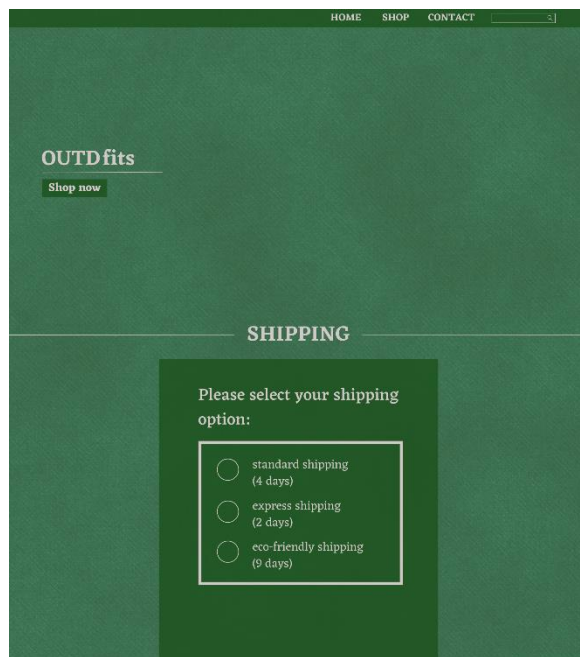


Figure 2

Figure 2.1: Low-awe nature-based environmental nudge, start page

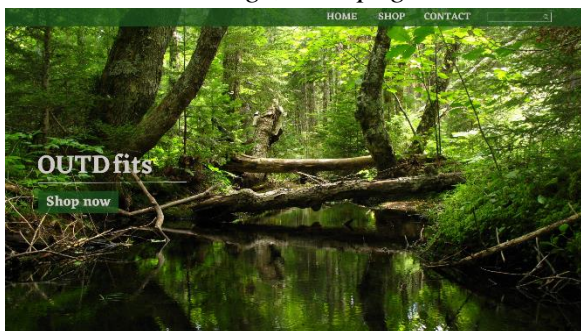


Figure 2.2: Low-awe nature-based environmental nudge, product selection

Figure 2.3: Low-awe nature-based environmental nudge, shipping selection

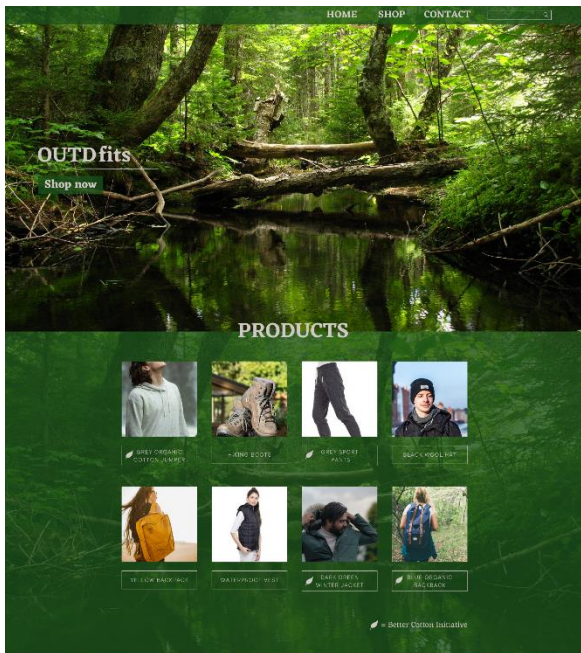


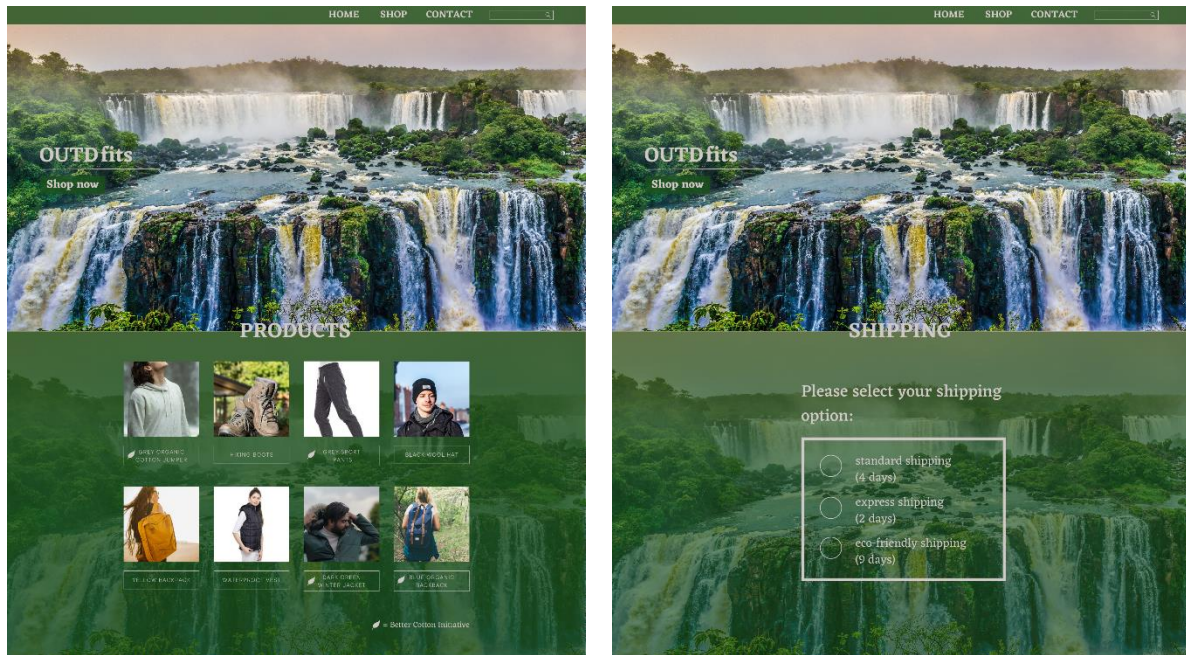
Figure 3

Figure 3.1: High-awe nature-based environmental nudge, start page



Figure 3.2: High-awe nature-based environmental nudge, product selection

Figure 3.3: High-awe nature-based environmental nudge, shipping selection



3.4 Participants

There were no specifications concerning the sample group. A total of 182 participants were recruited through convenience sampling by distributing the link via messaging apps, social media channels and through personal contacts. For 29 out of these, there was no data recorded, meaning that they had either exited the survey on the intro screen or proceeded without confirming their device type, leaving 153 valid replies ($N = 153$). The data was collected over a period of five weeks.

The categorization of the participants was only carried out through the division into the six groups introduced above and not on the basis of any personal data. The organic shopper dimension was determined after the data collection through a median split of the moderator variable. The frequencies of respondents within the six groups are displayed in the cross tabulation of the condition variable and the resulting binary organic shopper variable.

Table 2

*Cross tabulation condition*median split organic shopper*

		Median split organic shopper		
		Non-organic shopper	Organic shopper	Total
Condition	Control condition	24	25	49
	Low-awe condition	25	25	50
	High-awe condition	22	32	54
Total		71	82	153

As illustrated in the cross tabulation, the number of responses is fairly equally split between the six different groups. Slightly more participants have been randomly assigned to the high-awe condition (N = 54) than the low-awe (N = 50) and the control condition (N = 49). Furthermore, the median split of the organic shopper construct resulted in a slightly higher number of participants being categorized as organic shoppers (N = 82) than non-organic shoppers (N = 71).

3.5 Procedure

Ethical approval for this study was granted by the Ethics Committee at the University of Twente (Request nr: 230145). The survey was conducted as a self-administered quantitative questionnaire, where participants were confronted with one of the three stimuli, as well as a question section which was the same for all groups. The manipulations were implemented in an online shopping context of an outdoor fashion retail site (see Figure 1-3).

Since this study is aimed at observing subconscious effects and therefore makes use of deception, the information screen only informed participants that they would be asked to perform a shopping task, namely placing an order at an outdoor fashion store for an upcoming hiking trip, followed by a questionnaire. They were also told that the store participates in the BCI (Better Cotton, n.d.), which again appeared in the product selection. Moreover, participants were asked to carry out the experiment on a laptop or other screen larger than a

mobile phone. Once they confirmed this on the initial information page and proceeded, participants were randomly assigned to one of the six groups by Qualtrics. To potentially verify the device question, a metadata question recording the device type was also embedded in the first page.

When proceeding, participants saw the home page of the website (Figure 1.1, 2.1, 3.1), which was included to achieve the proper effect of the stimulus, as it displayed the respective stimulus on a full screen. Next, a product overview page (Figure, 1.2, 2.2, 3.2) with the same image above it was displayed, asking participants to select three products that appeal to them to their cart. Four of the items were tagged with the leaf, symbolizing BCI products and therefore marked them as more sustainable compared to the other products (Better Cotton, n.d.) (Figure 4).

Figure 4

Better Cotton Initiative – evaluative label (leaf)



The next page contained the website visual with choices concerning shipping (Figure 1.3, 2.3, 3.3). Below, participants saw two questions, one about the shipping option, and another one asking whether they would be willing to pay 1€ for CO2 compensation on their order (Michels et al., 2022). All groups were exposed to a pre-selected answer on both questions, namely the express shipping option [least eco-friendly] and the rejection of CO2 compensation (Figure 5). Individuals were reminded that they are still free to choose any option (opt out) (Leal & Oliveira, 2020). Depending on the stimulus on the website, participants were expected to change this to standard shipping or eco-friendly shipping, as well as agree to CO2 compensation, or keep the pre-selected options. When participants did not change the selected option (“No”) in response to CO2 compensation, display logic presented a text question on a new page asking for their reason for this selection. This is to

possibly identify patterns, such as a general mistrust in organizations to actually compensate for CO₂.

Figure 5

Sustainable choices – shipping selection & CO₂ compensation

Imagine yourself purchasing the items you previously selected from this website. Which shipping option would you choose? (Please **select an option below**)

Note that you can change the current selection by simply clicking another option.

- Standard Shipping (4 days)
- Express Shipping (2 days) [least eco-friendly]
- Eco-friendly Shipping (9 days)

After selecting your shipping option, would you be willing to pay 1€ extra for CO₂ compensation of your order if this website gave you that option?

- Yes
- Maybe
- No

After this experiment part of the study, participants were asked to fill in a questionnaire comprising the dependent measures, as well as a manipulation check. For the latter, participants were again exposed to the website homepage of their respective condition (Figure 1.1, 2.1, 3.1). Lastly, the questionnaire collected information on the previously explored moderator variable, namely organic shopping behavior.

3.6 Measures

The full questionnaire for this study is included in the appendix (Appendix B, Figure 1). In the following, the different sections included in the questionnaire, as well as the scales adapted for each construct will be introduced. A full overview of all constructs can also be found in the appendix (Appendix C, Table 1).

3.6.1 Sustainable choices: products

In the product selection made up of 8 different products, 4 of them were labelled with a leaf as explained before. To measure this outcome variable, products labelled with a leaf

have been assigned with a score of 1 each, whereas the rest of the products have a score of 0, the total score of which will be used for the analysis.

3.6.2 Sustainable choices: shipping

The outcome variable sustainable shipping choices is defined as the combined measure of the shipping option and the willingness to pay extra for CO₂ compensation of the shipping. The answers to the two questions have been assigned scores in Qualtrics from 0-2, which correspond to express shipping, standard shipping and eco-friendly shipping accordingly, as well as no, maybe and yes in regards to the question about CO₂ compensation. To be able to measure this as one outcome variable, the scores of the two items were added up into one variable.

For both questions, the least-sustainable option and therefore the option with the lowest score was selected by default. These default options were implemented to be able to attribute any possible results to active choice of opting out of the non-sustainable options (Leal & Oliveira, 2020).

3.6.3 Brand and store perception: perceived sustainability

Using the *environmental sustainability* subscale from Kim and colleagues' (2015) *Measures of Perceived Sustainability Scale* (MPS), perceived sustainability of the presented online store was recorded. To make it congruent with previous formulations in this study, *corporation* was changed to *online store* in the statements, for example "This online store utilizes green products".

Furthermore, a block of statements was added asking specifically about brand perception of the fictitious brand *Outdfits* that was used in the study, with statements such as "I think Outdfits is a sustainable brand". The validity for the two constructs, online store perception and brand perception, was .737 and .816 respectively.

3.6.4 Behavioral intention

Pro-environmental behavioral intention was measured to determine whether the participant groups differ in their behavioral intention as a result of the exposure to a specific stimulus. For this, the *Intention*-subscale from Swaim and colleagues' (2014) study was used, with one item being altered to remove the negation, making it more clear to participants. The construct therefore encompassed 4 items ($\alpha = .916$), including the items "I plan to increase environmentally sustainable activities (e.g., energy conservation, recycling) in the future" and "I expect to increase my level of support for the environment".

3.6.5 Attitude towards nudges

There has been some conflicting research on the effectiveness of nudges as a result of people's negative attitude about the perceived restriction of autonomy (Felsen et al., 2013, cited in Lehner et al., 2016, Leal & Oliveira, 2020). To explore whether feelings of awe have any influence on this level of acceptance, participants' attitude towards nudge interventions was recorded in the questionnaire.

Similar to a study on healthy eating nudges by dos Santos and colleagues (2020), hypothetical nudging interventions in relation to sustainability were formulated. Participants were asked to rate the acceptability of these interventions. These included the adaptation of social norm nudging (Czajkowski et al., 2019), visibility enhancements (Cadario & Chandon, 2020), hedonic enhancements (Vandenbroele et al., 2019), reminders and default nudges (Leal & Oliveira, 2019) in contexts such as recycling, energy use (Czajkowski et al., 2019), food choices (Cadario & Chandon, 2020, Vandenbroele et al., 2019) and online shopping (Guath et al., 2022, Michels et al., 2022). This set of 6 items ($\alpha = .895$) concerning nudge attitudes was included after the outcome variables were recorded, to prevent participants' potential subsequent awareness of nudging strategies of intervening with any other responses.

3.6.6 Manipulation check: Awe

After recording the main outcome variables, participants were again exposed to their respective stimulus. To make sure the high-awe stimulus had the intended effect, levels of awe were measured using items from the AWE-S (Yaden et al., 2018). Since this scale is only included to ensure this difference, and vastness is one of the two core characteristics of awe, this only included the *vastness* factors from the scale. Furthermore, two more direct items, which have also been used in the pre-test and ask about awe and wonder explicitly, namely “I experienced a feeling of awe” and “I felt a sense of wonder” were included as well. Cronbach’s alpha for the 7 items included here was .949.

3.6.7 Moderator: Organic shopping behavior

In order to control for people’s normal organic consumption behavior outside of the study, this was included as the moderator variable referred to as organic shopping factor. For this, 3 items were taken from Panzone and colleagues’ (2016) measurement of consumption attitudes based on the Environmental Attitudes Inventory (EAI) by Milfont and Duckitt (2010). The selection of items is based on whether the statements specifically refer to consumption behaviors and clearly refer to previous behavior, such as “I try to buy products that have minimal packaging”, rather than items that could imply behavioral intention for the future. To adapt the scale to the context at hand, the wording was changed from *food* to *products* in one item, and two more clothing-specific items were added, including “I consider the environmental impact of the clothing I buy”. This made up a total of 5 items with a validity of .807. As previously explained, the mean values of this construct were then grouped into two categories by carrying out a median split.

3.6.8 Covariate: Nature connectedness

Nature connectedness refers to the feeling of connection that an individual has to the natural world. To be able to distinguish the impact of nature connectedness as a trait quality from the elicited awe state (Rosenberg, 1998), nature connectedness was also recorded in the

survey and used as a covariate in the analysis. To measure this concept, an excerpt from the connectedness to nature scale (CNS) by Mayer and colleagues (2004) was used, which is a multi-item scale including affective rather than cognitive self-report measures. Cronbach's alpha for this construct displayed a validity of .892.

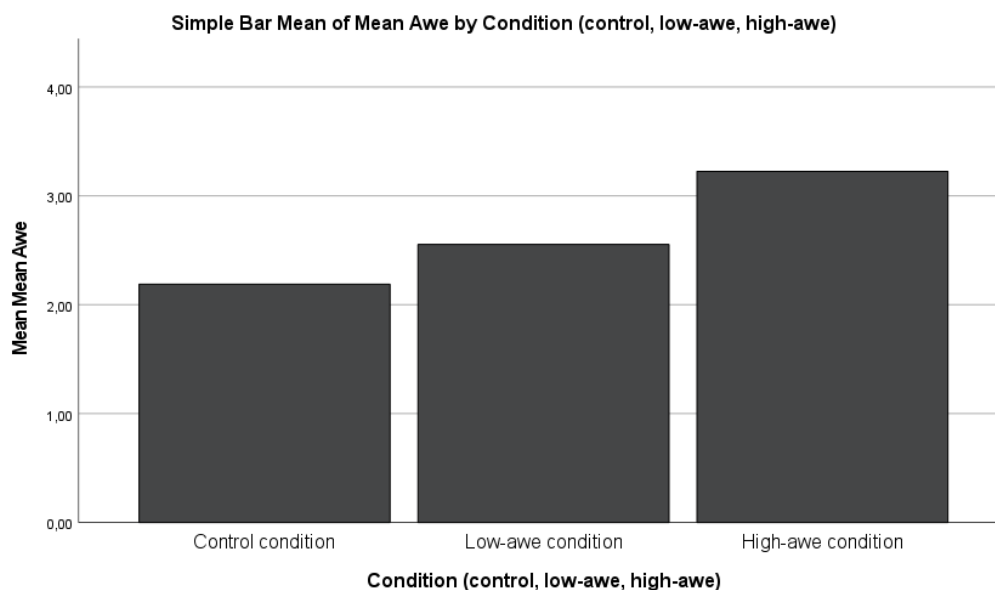
4 Results

4.1 Manipulation check

To confirm the effect of the awe manipulation, an ANOVA was carried out with awe as dependent variable and condition as the independent variable. This showed a significant level of difference between the groups ($F(2, 145) = 16.24, p < .001$). Since the independent variable is made up of three values in this case, namely control condition, low-awe nature condition and high-awe nature condition, a post-hoc analysis was included for the awe construct. The post-hoc analysis for the awe construct showed a significant difference between the control condition ($M = 2.19, SD = .90$) and the high-awe nature condition ($M = 3.23, SD = .88$), as well as between the low-awe condition ($M = 2.55, SD = .98$) and the high-awe condition ($M = 3.23, SD = .88$). There was no significant difference between the control condition and the low-awe condition. Figure 6 illustrates the different levels of awe among the conditions.

Figure 6

Manipulation check – effect of condition on awe



4.1 Analyses of outcome variables

Figure 7

Overview of means

	Control condition		Low-awe condition		High-awe condition	
	Non-organic shopper	Organic shopper	Non-organic shopper	Organic shopper	Non-organic shopper	Organic shopper
Sustainable shipping score	1,92	2,56	2,12	2,52	2,32	2,72
Sustainable product score	1,38	1,68	1,04	1,24	1,68	1,50
Store attitude	3,30	3,70	3,35	3,55	3,86	3,59
Brand attitude	3,48	3,66	3,35	3,72	3,78	3,79
Nudge attitude	3,66	4,55	3,94	4,43	4,31	4,50
Behavioral intention	3,38	4,20	3,73	4,30	3,78	4,16

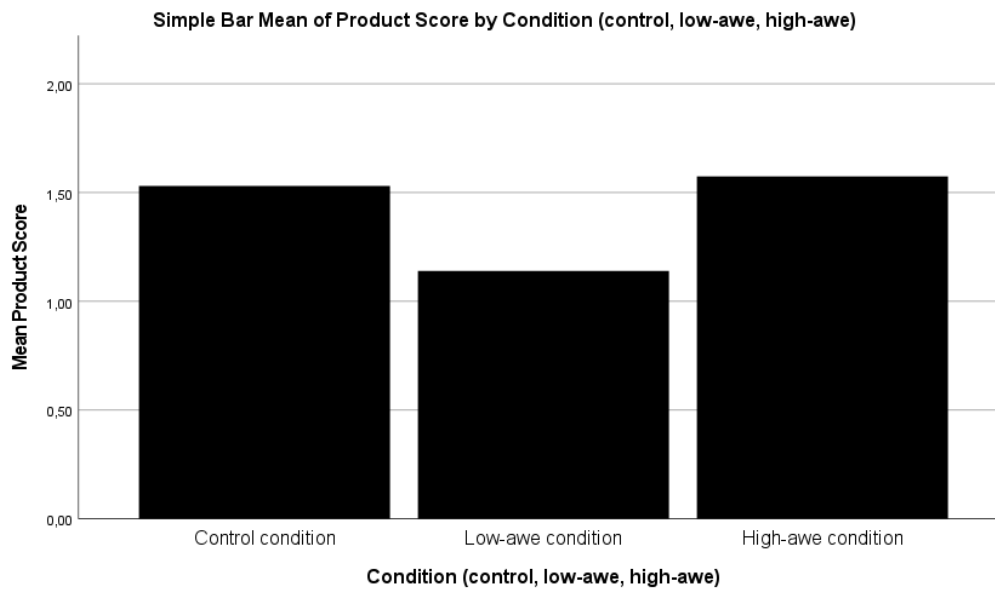
4.2.1 Sustainable product choices

A univariate analysis of variance with both the condition, as well as the organic shopper variable as independent variables, the sustainable product choices construct as dependent variable and nature connectedness as covariate was carried out.

Here, a significant effect of condition was observed ($F(2,145) = 4.5, p = .013$). The post-hoc analysis showed the lowest sustainable product choice among the low-awe condition group ($M = 1.14, SD = .88$), and the highest sustainable product choice among the high-awe condition group ($M = 1.57, SD = .87$). The mean of the control condition was between these the values of the other two conditions ($M = 1.53, SD = .82$). The only significant difference was therefore between the low-awe condition and high-awe condition ($p = .037$), which is visualized in figure 8.

Figure 8

Effect of condition on sustainable product choices



The organic shopper variable showed no significant effect on product choices ($F(1,145) = 0.01, p = .945$), similarly to the interaction of the two independent factors ($F(2,145) = .82, p = .443$). Nature connectedness as a covariate implied a significant effect ($F(1,145) = 3.99, p = .048$). This was identified as a positive relationship in a correlation analysis, meaning higher sustainable product choices were observed in participants with higher levels of nature connectedness ($r(152) = .182, p = .025$) (Appendix C, Figure 2).

4.2.2 Sustainable shipping choices

The construct of sustainable shipping choices was also explored as an outcome variable using the described univariate analysis of variance with the same independent variables and covariate. This showed no significant effect of the condition variable on the sustainable shipping choices construct ($F(2,145) = .344, p = .709$). The organic shopper factor also did not display any significant effect on this construct ($F(1,145) = 1.988, p = .161$). Furthermore, the interaction effect of condition and the organic shopper factor showed no significant effect ($F(2,145) = .116, p = .890$). The covariate nature connectedness did imply a significant effect on sustainable shipping choices ($F(1,145) = 7.098, p = .009$), with a correlation analysis showing higher levels of nature connectedness being related to higher levels of sustainable shipping choices ($r(152) = .289, p = <.001$) (Appendix C, Figure 1).

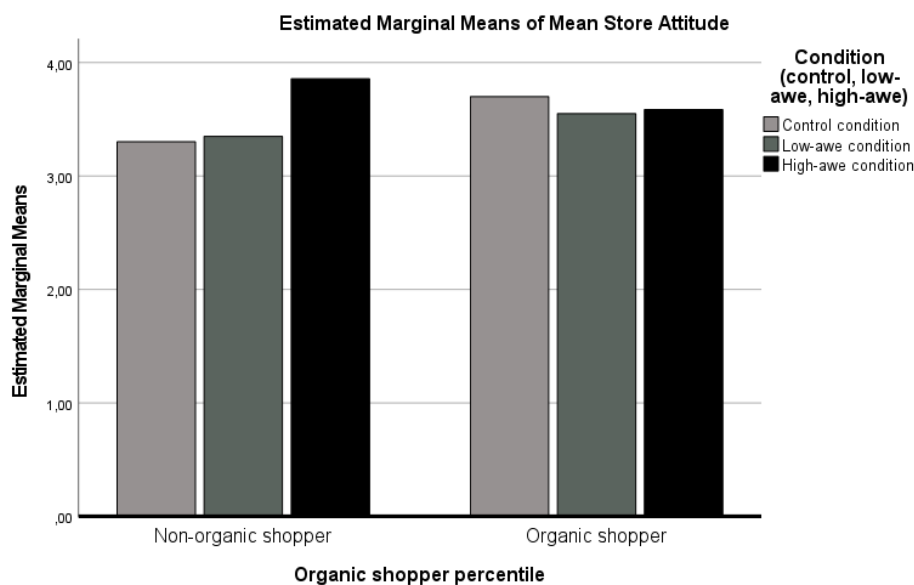
4.2.3 Online store perception & brand perception

In terms of the online store perception construct and brand perception construct, the overall mean scores indicate that both the online store ($M = 3.55$, $SD = .66$) and the brand ($M = 3.64$, $SD = .66$) were perceived as somewhat sustainable.

The condition variable had no significant effects on both store perception ($F(2,144) = 2.04$, $p = .134$) and brand perception ($F(2,144) = 1.87$, $p = .158$). There was also no significant effect observed for the organic shopper variable on both store perception ($F(1,144) = .00$, $p = .992$) and brand perception ($F(1,144) = .48$, $p = .489$). The interaction effects of condition and organic shopper were significant for store perception ($F(2,144) = 3.44$, $p = .035$), but not for brand perception ($F(2,144) = .94$, $p = .394$). The visualization (Figure 9) indicates that the interaction effect concerns the correlation of the awe manipulation and green store perception among the non-organic shopper group.

Figure 9

*Interaction effect organic shopper factor*condition on store perception*



The nature connectedness covariate implied a significant effect for both store perception ($F(1,144) = 5.84$, $p = .017$) and brand perception ($F(1,144) = 6.93$, $p = .009$). Furthermore, the direction of the relationships between nature connectedness and the store

perception ($r(151) = .228, p = .005$), as well as brand perception ($r(152) = .266, p = <.001$) was identified as positive in a correlation analysis (Appendix C, Figure 3 & 4).

4.2.5 Behavioral intention

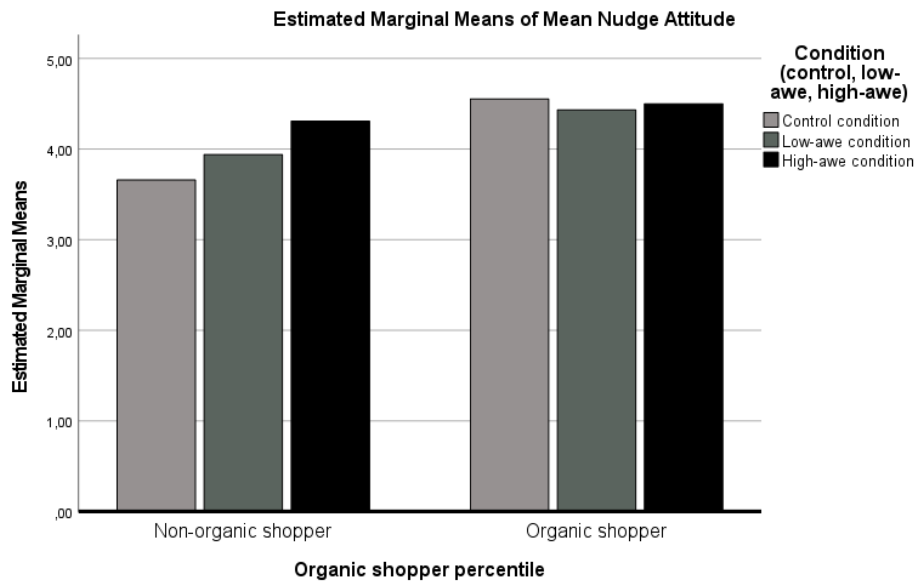
No significant effect of condition ($F(2,145) = .75, p = .476$) and interaction of condition and the organic shopper factor ($F(2,145) = .77, p = .463$) was found on behavioral intention. There was a significant effect of the organic shopper factor on behavioral intention ($F(2,145) = 8.68, p = .004$), with pro-environmental behavioral intention being higher among organic shoppers ($M = 4.22, SD = .68$) than non-organic shoppers ($M = 3.63, SD = .79$). The nature connectedness covariate implied a significant effect on behavioral intention as well ($F(1,145) = 19.84, p < .001$), with higher levels of nature connectedness being correlated with higher levels of pro-environmental behavioral intention ($r(152) = .508, p = <.001$) (Appendix C, Figure 5).

4.2.6 Nudge Attitudes

Lastly, the construct of nudge attitudes was not significantly impacted by the condition ($F(2,144) = 1.24, p = .291$). Looking at the organic shopper factor, there was a significant effect on nudge attitudes ($F(1,144) = 6.85, p = .010$), with acceptance towards nudge attitudes being higher among organic shoppers ($M = 4.49, SD = .57$) than non-organic shoppers ($M = 3.95, SD = .92$). Nature connectedness as a covariate again implied a significant effect here ($F(1,144) = 16.01, p < .001$), displaying a positive relationship with nudge attitudes ($r(151) = .421, p = <.001$) (Appendix C, Figure 6). The interaction effect of condition and organic shopper factor was marginally significant ($F(2,144) = 2.55, p = .082$). The interaction is visualized in figure 10.

Figure 10

*Interaction effect organic shopper factor*condition on nudge attitudes*



4.3 Additional findings

4.3.1 CO2 compensation reasoning

As mentioned in the procedure section, participants selecting *no* in response to whether they would pay extra for CO2 compensation were asked to state their reason for this choice in an open text field. For this open question, 41 responses were recorded, the full numbered list of which can be found in the appendix (Appendix B, Figure 2).

A prevalent response was concerning the financial aspect, with 10 out of 41 responses mentioning not wanting to spend more money or not having the money to spend on this extra cost (cf. response 13, 24, 34). Going beyond this argument related to personal finances, 8 further participants mentioned that this compensation should already be included in the price and paid for by the company or charged for everyone automatically (cf. response 17, 19), with some participants also calling for this to be a legally binding measure for companies to implement (cf. response 5, 11).

The previously assumed general mistrust in organizations and how organization in question actually uses the added cost was also present in 10 out of the 41 responses to this question. This included mistrust that the organization would use the money for CO2 compensation (cf. response 6, 10), mistrust in the effectiveness of compensating for CO2 in

general (cf. 7, 32) as well as the demand for transparency in these instances (cf. response 2, 25).

4.3.2 Time

Time spent on the first set of questions, which displayed the stimulus, was recorded as metadata. The average time of people's first click on the page was around 4 seconds ($M = 3,99$, $SD = 7,9$), while the mean page submit time was at around 25 seconds ($M = 24,77$, $SD = 63,19$).

4.3.3 Device Type

Although participants were asked to confirm that they were using a screen larger than a mobile phone, the metadata questions recording the operating system identified 20 mobile devices among the dataset. However, when carrying out a manipulation check with device type as covariate to see whether this impacted people's experience of awe, no significant effect was observed ($F(1,144) = .5$, $p = .483$).

4.3.4 Effects of organic shopper factor on awe

To explore hypothesis 4 based on the assumption of organic shoppers being more susceptible to the awe manipulation, a univariate analysis of variance with condition and organic shopper as fixed factors and awe as dependent variable was carried out as well. This showed no significant effect of the organic shopper factor on feelings of awe ($F(1,142) = .151$, $p = .221$). Furthermore, the interaction effect of the organic shopper factor and the condition factor also showed no significant effect on awe ($F(2,142) = .93$, $p = .396$). This means that the trait of organic shopper had no individual or interactive influence on the susceptibility to or feeling of awe, and levels of awe were therefore only influenced by the condition, the effect of which was explored in the manipulation check above.

5 Discussion

5.1 Summary and interpretation of results

To summarize the results, the awe manipulation only had a significant effect on sustainable product choices and no significant effect on all other dependent variables. This means that participants confronted with the high-awe stimulus chose more sustainable products than those confronted with the low-awe stimulus, but did not significantly differ in other behaviors and attitudes measured. Furthermore, the difference was only significant when compared to the low-awe condition and not compared to the control condition. To be able to make any assumptions about the impact of the feeling of awe, the sustainable product choices should have been significantly higher compared to both other groups.

The organic shopper factor on the other hand had a significant impact on behavioral intention and nudge attitudes, meaning that organic shoppers showed higher levels of pro-environmental intention and a higher level of acceptance towards nudge interventions. Regarding the interaction of the two independent factors, a significant effect on perceived sustainability of the online store and a marginally significant effect on attitudes towards nudge interventions was observed. When visualizing the latter result as seen above (Figure 10), the interaction effect showed non-organic shoppers reporting increased positive attitudes towards nudges when being exposed to the low-awe stimulus compared to the control condition, and when being exposed to the high-awe stimulus compared to both other conditions. Organic shoppers' attitudes towards nudges on the other hand were more consistent across the groups and indicated the highest levels of acceptance among the control condition. Similarly, store attitudes among non-organic shoppers were also highest when confronted with the high-awe stimulus and lowest among the control condition, whereas organic shoppers showed smaller differences and the highest levels among organic shoppers in the control condition group.

The covariate nature connectedness displayed positive significant relationships with all observed constructs, suggesting that higher levels of nature connectedness correlated with

higher levels of sustainable choices, perceived sustainability of brand and online store, pro-environmental behavior and nudge acceptance (Appendix C, Figure 1-6).

In regards to the high-awe condition, the presented results suggest that although the stimulus did produce significantly higher levels of awe among participants compared to the other conditions, this did not affect any of the outcome measures except sustainable product choice. Since the product selection made use of evaluative labelling in the form of the leaf symbol, this shows that there might be a potential to enhance evaluative labelling effects with the implementation of awe. However, since this finding was not significant between all groups and no other significant results were found beyond this particular outcome, the overall lack of effectiveness of elicited feelings of awe on the recorded outcome measures is highlighted here. This calls for modifications of the use of awe in future research, which will be explored in the following subsection.

Based on the assumption that organic shoppers might be more susceptible to feelings of awe, hypothesis 4 predicted an enhancing effect of the organic shopping factor on the effects of the awe-manipulation. The hypothesis here was formulated in a way that the effects of awe on the outcome measures would be more pronounced among organic shoppers. However, the additional results show no significant effect of the organic shopping factor on awe, both on its own and in interaction with the condition variable. Furthermore, figure 9 and 10 displaying the interaction effects of the independent variables on store perception and nudge attitudes respectively suggest that overall, non-organic shoppers were actually more susceptible to the awe manipulation than organic shoppers.

Overall, organic shoppers did display a higher level of acceptance towards nudging strategies than non-organic shoppers. Whereas people generally might feel manipulated by nudging strategies (Leal & Oliveira, 2020), the behaviors targeted through the nudging strategies proposed here might be perceived as more acceptable by organic shoppers, since they already act in line with these to a certain extent. However, while mean nudge attitudes

among non-organic shoppers were significantly less positive across all conditions than among organic shoppers, the awe manipulation seems to have been more influential on non-organic shoppers in this context, as mentioned before. This suggests a potential for using awe stimuli in conjunction with other nudge interventions in order to increase acceptance and minimize negative perceptions of such interventions among people who do not already tend to perform the targeted desired behaviors (Lehner et al., 2016).

The overall more pronounced effects of the organic shopper factor and nature connectedness compared to the condition factor across the constructs suggests that these trait factors are more influential on the considered outcome variables than state factors, namely the feeling of awe elicited here (Rosenberg, 1998). For example, the exposure to a high-awe stimulus had no significant impact on behavioral intention and nudge attitudes, while both organic shopper and nature connectedness significantly impacted these two variables.

Furthermore, nature connectedness was the most influential factor with significant effects on all constructs. In previous research, nature connectedness has been shown to not only influence individuals' mental well-being (Howell et al., 2011, Martin et al., 2020), but also the way one treats nature and the environment, and therefore, the choices one makes regarding environmental sustainability (Martin et al., 2020, Mayer et al., 2004). As a result of the significant effects of this concept displayed in this study, future research should focus on nature connectedness as an independent factor to gain more insight into how this trait impacts sustainable behavior and perceptibility to different nudges, and how it interacts with other factors.

Interestingly, the organic shopping variable showed no significant effect on either of the sustainable choices constructs. This means that people assessing themselves as performing higher levels of organic shopping behavior on average did not select more sustainable options regarding products, shipping and CO₂ compensation compared to those with lower self-reported organic shopping behavior, and therefore did not actually display organic shopping

behavior in this context. One explanation for the limited results on the sustainable shipping choices in general could be the default selection of the least sustainable options in regards to shipping and CO2 compensation. As people are generally more likely to maintain the status quo (Leal & Oliveira), the higher effort when having to change this selection might explain why there are no significant results for any of the independent factors.

In contrast to actual sustainable behavior, pro-environmental behavioral intention was observed to be significantly higher in organic shoppers compared to non-organic shoppers. This construct included statements about situations outside of the fictitious shopping task and outside of commercial settings and indicates that the lack of results regarding sustainable choices among organic shoppers might be attributable to the context in which these choices were presented here.

As reported in the additional findings, mistrust in organizations was expressed regarding the reasoning for not selecting CO2 compensation. This likely also affected the other measures of sustainable choices in this context, namely shipping option and product selection. Particularly the paradox of participants being classified as organic shoppers and reporting pro-environmental behavioral intentions but not displaying significantly higher levels of sustainable choices could be explained by this.

Concerning the shipping options, while express shipping is usually observably quicker than other shipping options, the eco-friendliness of a given shipping option cannot be traced by the consumer, making it subject to mistrust. This mistrust also applies to the sustainability labelling of the products. This is particularly pronounced as sustainability claims, such as green labels and green shipping become more and more of a norm and organizations feel the pressure to implement these claims to stay competitive (Johannsdottir, 2015), potentially making them less authentic and believable to consumers (Day et al., 2022).

When speaking of mistrust in commercial organizations, one therefore has to include the concept of greenwashing, which refers to misleading sustainability claims made by

organizations (TerraChoice, 2010). An increasing awareness about this among consumers is causing skepticism about the intentions and the actual actions of corporations (Nyilasy et al., 2014). Moreover, because of the omnipresence of both green marketing and green washing, consumers might be overexposed and therefore desensitized to such influences.

Furthermore, lack of transparency was mentioned repeatedly as a reason not to opt for CO2 compensation. This goes hand in hand with mistrust in organizations and greenwashing, as the only way that companies can actually back their sustainability claims is through providing factual information on the impact of these claims. In this case, people did not have access to further information on the brand and how the CO2 would be compensated, as well as the actual impact of the eco-friendly shipping option.

Apart from the lack of belief in the sustainability claims made in the shopping task, some individuals also mentioned not feeling responsible for making sustainable choices in this context, as they see the accountability on the side of the organization or the government to reduce harmful impact on our climate and implement these options as the standard. These patterns of not feeling personally responsible to modify individual action have also been identified in previous research (Chaplin & Wyton, 2014). This is part of a larger conversation on individualist and structuralist approaches when it comes to climate change action responsibility, the latter of which argues for corporations and governments to take action on a structural level and maintains that it is neither effective nor fair to put this responsibility on individuals (Brownstein et al., 2021).

Additionally, higher levels of *perceived consumer effectiveness*, referring to the extent to which consumers feel as though their sustainable consumption choices actually have a positive impact, has previously been suggested to have a positive influence on closing the gap between sustainable behavioral intention and actual sustainable consumption behavior (Nguyen et al., 2019). These attitudes regarding individual action might have therefore also influenced the sustainable choices results both in the sense of responsibility, as exemplified in

the CO2 compensation responses, but also with participants possibly feeling as though their individual choices are ineffective and therefore not selecting the sustainable options.

Furthermore, in the CO2 compensation responses, participants also mentioned cost as a deciding factor in not opting for compensation, which has been previously suggested to be a barrier regarding sustainable behavior (Chaplin & Wyton, 2014). This overall pattern might be partially attributable to many of the participants being students as a result of the convenience sampling procedure, as well as the inflation following the Covid-19 pandemic and the resulting price consciousness of consumers overall (The Economist, 2022). This might explain why the two outcome variables based on sustainable selection of products, as well as shipping and CO2 compensation, show limited results in general, since participant's economic situation is not considered as a factor here. Although the product selection did not include prices, as one of the responses indicates, people generally associate more sustainable products with higher prices.

5.2 Limitations and theoretical implications

Although the stimulus was displayed in full at the beginning of the survey and the manipulation check suggested a significant effect of the high awe stimulus on feelings of awe, this seems to be too weak to translate into actions. As a result of the previously mentioned recorded mobile responses, using a desktop or laptop should be implemented in follow-up research as a requirement condition rather than a self-report measure asking participants to confirm their device type. However, even when using a desktop screen, the full potential of an awe-inspiring image might not be reached compared to larger images, virtual reality experiences (Chirico et al., 2018) or physically being present in awe-inspiring nature, which would most likely have stronger effects on the experience of vastness and the need to accommodate said vastness, which constitute the awe experience (Keltner & Haidt, 2003). The findings concerning the time spent on the pages could also indicate that for the stimulus to have an effect on participant's choices and attitudes, they have to be exposed to it for a

longer period of time and experience it more consciously. To summarize, while people did report higher levels of awe, these physical limitations of the awe manipulation might explain the lack of translation into action and attitude changes.

Furthermore, mental limitations relating to the shopping task have to be examined. One factor that has to be considered is that participants were confronted with a fictitious task, which might not accurately reflect their real actions (Michels et al., 2022). Furthermore, the previously discussed reasons for not opting for CO2 compensation might also apply to other responses. The mistrust in organizations and demand for transparency could explain the lack of effects of the awe manipulation on the choices made within in the shopping task. Furthermore, no information was collected on previous familiarity with and attitude towards the Better Cotton Initiative. This meant that this study could not account for knowledge about or skepticism towards this initiative, as well as factors like the mere exposure effect (Zajonc, 1968) which could increase acceptance towards and trust in the BCI as a result of repeated previous exposure to it.

In future research, in combination with enhancing the physical display of awe stimulus, separating the awe manipulation from the task might be useful to mitigate the influence of mistrust and over-exposure to green marketing and isolate the effects of the awe-eliciting stimulus more. Furthermore, collecting information on participants' attitudes toward climate change responsibility and individualism versus collectivism, as well as providing more detailed information and therefore transparency on sustainability claims, might help reduce some of the limitations discussed above. This connects to previous research suggesting a positive correlation between *green transparency* of a brand and a positive attitude towards the sustainability of the product or brand in question (Lin et al., 2017).

In terms of the analyses that did show significant results in this study, there is also the potential of the more pronounced effects of awe among non-organic shoppers to be explored in future research, particularly regarding nudge acceptance. Here, it would be interesting to

use different nudge strategies, such as the ones suggested in the statements that made up this construct, for example displaying more food products with a lower carbon food print more appealing and prominent in online stores (Appendix C, Table 1), in combination with implementing an awe manipulation. The underlying assumption here is that the awe manipulation could enhance the acceptance and therefore also the effectiveness of said nudge strategy, specifically among people with lower levels of previous sustainable behavior and environmental concern.

5.3 Practical implications

In terms of practical implications, this incorporation of awe-eliciting imagery in commercial online environments seems to not be enough to nudge people to opt for the more sustainable options. However, when looking at the effect of condition on online store perception, incorporating awe-eliciting images in combination with providing transparency about their sustainable impact, could help promote the sustainable efforts of organizations and increase their effectiveness as a result of reduced mistrust and increased perceived consumer impact (Lin et al., 2017, Nguyen et al., 2019). Moreover, consumers being confronted with these types of stimuli, especially when also possessing traits of nature connectedness, might be more accepting and show fewer negative reactions to other implemented nudging strategies as reflected in the presented results. From an ethical perspective, this should not be used to manipulate or mislead consumers by simply enhancing greenwashing tactics (Nyilasy et al., 2014), but rather be implemented to contribute towards more sustainable consumption in line with the UN's sustainable development goals in order to reduce the negative impact of consumerism on our climate (UN, n.d. a)).

This potential for the implementation of nudge strategies is not only applicable to commercial settings and, as addressed in the discussion of the limitations of this study, might in fact be more effective in non-commercial settings. While there are changes necessary in the e-commerce sector in regards to its large contribution to climate change, these also have to be

addressed on the side of the corporation or on a legislative level (Day et al., 2022), holding organizations rather than individuals accountable. Exploring the influence of awe manipulations and other nudges in less commercial settings to promote sustainable behavior might prove to be more fruitful in addressing individual's impact on human-made climate change.

References

- 2022 has been a year of brutal inflation (2022, December 22). *The Economist*
<https://www.economist.com/finance-and-economics/2022/12/21/2022-has-been-a-year-of-brutal-inflation>
- Berger, M., Müller, C., & Nüske, N. (2020). Digital Nudging in Online Grocery Stores-Towards Ecologically Sustainable Nutrition. *In ICIS*.
- Better Cotton (n.d.). What is Better Cotton? Retrieved April 4, 2022, from
<https://bettercotton.org/>
- Biasutti, M., & Frate, S. (2017). A validity and reliability study of the attitudes toward sustainable development scale. *Environmental Education Research, 23*(2), 214-230.
<https://doi.org/10.1080/13504622.2016.1146660>
- Brosdahl, D. J., & Carpenter, J. M. (2010). Consumer knowledge of the environmental impacts of textile and apparel production, concern for the environment, and environmentally friendly consumption behavior. *Journal of textile and apparel, technology and management, 6*(4), 1-9.
- Brownstein, M., Kelly, D., & Madva, A. (2022). Individualism, structuralism, and climate change. *Environmental Communication, 16*(2), 269-288.
- Cadario, R., & Chandon, P. (2020). Which healthy eating nudges work best? A meta-analysis of field experiments. *Marketing Science, 39*(3), 465-486.
<https://doi.org/10.1287/mksc.2018.1128>
- Cash, P. J., Hartlev, C. G., & Durazo, C. B. (2017). Behavioural design: A process for integrating behaviour change and design. *Design Studies, 48*, 96-128.
<https://doi.org/10.1016/j.destud.2016.10.001>
- Chaplin, G., & Wyton, P. (2014). Student engagement with sustainability: Understanding the value-action gap. *International Journal of Sustainability in Higher Education, 15*(4), 404-417.

- Chirico, A., Ferrise, F., Cordella, L., & Gaggioli, A. (2018). Designing awe in virtual reality: An experimental study. *Frontiers in psychology*, 8, 2351.
<https://doi.org/10.3389/fpsyg.2017.02351>
- Czajkowski, M., Zagórska, K., & Hanley, N. (2019). Social norm nudging and preferences for household recycling. *Resource and Energy Economics*, 58, 101110.
<https://doi.org/10.1016/j.reseneeco.2019.07.004>
- Day, T., Mooldijk, S., Smit, S., Posada, E., Hans, F., Fearnehough, H., Kachi, A., Warnecke, C., Kuramochi, T. & Höhne, N. (2022). Corporate Climate Responsibility Monitor 2022 – Assessing the transparency and integrity of company’s emission reduction and net-zero targets. *NewClimate Institute*. Retrieved 08 July 2023 from
<https://newclimate.org/resources/publications/corporate-climate-responsibility-monitor-2022>
- Demarque, C., Charalambides, L., Hilton, D. J., & Waroquier, L. (2015). Nudging sustainable consumption: The use of descriptive norms to promote a minority behavior in a realistic online shopping environment. *Journal of Environmental Psychology*, 43, 166-174. <https://doi.org/10.1016/j.jenvp.2015.06.008>
- Dos Santos, Q., Perez-Cueto, F.J.A., Mello Rodrigues, V., Appleton, K., Giboreau, A., Saulais, L., Monteleone, E., Dinnella, C., Brugarolas, M. & Hartwell, H. (2020). Impact of a nudging intervention and factors associated with vegetable dish choice among European adolescents. *European journal of nutrition*, 59(1), 231-247.
<https://doi.org/10.1007/s00394-019-01903-y>
- Fernández-Manzanal, R., Rodríguez-Barreiro, L., & Carrasquer, J. (2007). Evaluation of environmental attitudes: Analysis and results of a scale applied to university students. *Science Education*, 91(6), 988-1009. <https://doi.org/10.1002/sce.20218>

- Guath, M., Stikvoort, B., & Juslin, P. (2022). Nudging for eco-friendly online shopping—Attraction effect curbs price sensitivity. *Journal of Environmental Psychology, 81*, 101821. <https://doi.org/10.1016/j.jenvp.2022.101821>
- Heath, R., & Feldwick, P. (2008). Fifty years using the wrong model of advertising. *International Journal of Market Research, 50*(1), 29-59. <https://doi.org/10.1177/147078530805000105>
- Hormio, S. (2023). Collective responsibility for climate change. *Wiley Interdisciplinary Reviews: Climate Change*, e830. <https://doi.org/10.1002/wcc.830>
- Howell, A. J., Dopko, R. L., Passmore, H. A., & Buro, K. (2011). Nature connectedness: Associations with well-being and mindfulness. *Personality and individual differences, 51*(2), 166-171. <https://doi.org/10.1016/j.paid.2011.03.037>
- Intergovernmental Panel on Climate Change (2023). Climate Change 2023: Synthesis Report. Retrieved 06 July, 2023, from <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>
- Johannsdottir, L. (2015). Drives of proactive environmental actions of small, medium and large Nordic non-life insurance companies—and insurers as a driving force of actions. *Journal of Cleaner Production, 108*, 685-698. <https://doi.org/10.1016/j.jclepro.2015.06.055>
- Kahneman, D. (2011). *Thinking, fast and slow*. London: Penguin Books.
- Keltner, D. & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion, *Cognition and Emotion, 17*(2), 297-314, <https://doi.org/10.1080/02699930302297>
- Kim, H. S., & Damhorst, M. L. (1998). Environmental concern and apparel consumption. *Clothing and Textiles Research Journal, 16*(3), 126-133. <https://doi.org/10.1177/0887302X9801600303>

- Kim, J., Taylor, C. R., Kim, K. H., & Lee, K. H. (2015). Measures of perceived sustainability, *Journal of Global Scholars of Marketing Science*, 25(2), 182-193,
<https://doi.org/10.1080/21639159.2015.1015473>
- Leal, C. C., & Oliveira, B. (2020). Choice architecture: Nudging for sustainable behavior. In C.F. Machado and J.P. Davim (Eds.), *Sustainable management for managers and engineers* (pp. 1-17). *ISTE Ltd and John Wiley & Sons, Inc.*
<https://doi.org/10.1002/9781119804345.ch1>
- Lee, E. J., Choi, H., Han, J., Kim, D. H., Ko, E., & Kim, K. H. (2020). How to “Nudge” your consumers toward sustainable fashion consumption: An fMRI investigation. *Journal of Business Research*, 117, 642-651. <https://doi.org/10.1016/j.jbusres.2019.09.050>
- Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging – A promising tool for sustainable consumption behaviour?. *Journal of Cleaner Production*, 134, 166-177.
<https://doi.org/10.1016/j.jclepro.2015.11.086>
- Lin, J., Lobo, A., & Leckie, C. (2017). The role of benefits and transparency in shaping consumers’ green perceived value, self-brand connection and brand loyalty. *Journal of Retailing and Consumer Services*, 35, 133-141.
<https://doi.org/10.1016/j.jretconser.2016.12.011>
- Maloney, M. P., Ward, M. P., & Braucht, G. N. (1975). A revised scale for the measurement of ecological attitudes and knowledge. *American Psychologist*, 30(7), 787.
<https://doi.org/10.1037/h0084394>
- Martin, L., White, M. P., Hunt, A., Richardson, M., Pahl, S., & Burt, J. (2020). Nature contact, nature connectedness and associations with health, wellbeing and pro-environmental behaviours. *Journal of Environmental Psychology*, 68, 101389.
<https://doi.org/10.1016/j.jenvp.2020.101389>

- Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of environmental psychology*, 24(4), 503-515. <https://doi.org/10.1016/j.jenvp.2004.10.001>
- Michels, L., Ochmann, J., Günther, S. A., Laumer, S., & Tiefenbeck, V. (2022). Empowering consumers to make environmentally sustainable online shopping decisions: A digital nudging approach. University of Hawai'i at Mānoa.
- Milfont, T. L., & Duckitt, J. (2010). The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of Environmental Psychology*, 30(1), 80-94. <https://doi.org/10.1016/j.jenvp.2009.09.001>
- Nguyen, H. V., Nguyen, C. H., & Hoang, T. T. B. (2019). Green consumption: Closing the intention-behavior gap. *Sustainable Development*, 27(1), 118-129. <https://doi.org/10.1002/sd.1875>
- Nyilasy, G., Gangadharbatla, H., & Paladino, A. (2014). Perceived greenwashing: The interactive effects of green advertising and corporate environmental performance on consumer reactions. *Journal of business ethics*, 125, 693-707. <https://doi.org/10.1007/s10551-013-1944-3>
- Panzone, L., Hilton, D., Sale, L., & Cohen, D. (2016). Socio-demographics, implicit attitudes, explicit attitudes, and sustainable consumption in supermarket shopping. *Journal of Economic Psychology*, 55, 77-95. <http://dx.doi.org/10.1016/j.joep.2016.02.004>
- Piff, P. K., Dietze, P., Feinberg, M., Stancato, D. M., & Keltner, D. (2015). Awe, the small self, and prosocial behavior. *Journal of Personality and Social Psychology*, 108(6), 883. <http://dx.doi.org/10.1037/pspi0000018>
- Rosenberg, E. L. (1998). Levels of analysis and the organization of affect. *Review of general psychology*, 2(3), 247-270. <https://doi.org/10.1037/1089-2680.2.3.247>

- Statista. (2022, December 16). E-commerce revenue worldwide 2017-2027, by segment. Retrieved January 20, 2022, from <https://www.statista.com/forecasts/1223973/e-commerce-revenue-worldwide-by-segment>
- Swaim, J. A., Maloni, M. J., Napshin, S. A., & Henley, A. B. (2014). Influences on student intention and behavior toward environmental sustainability. *Journal of Business Ethics*, *124*, 465-484. <http://dx.doi.org/10.1007/s10551-013-1883-z>
- TerraChoice (2010). The Sins of Greenwashing: Home and Family Edition. Retrieved June 15, 2023, from https://www.twosides.info/wp-content/uploads/2018/05/Terrachoice_The_Sins_of_Greenwashing_-_Home_and_Family_Edition_2010.pdf
- Thaler, R.H. & Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven & London: Yale University Press.
- Tobler, C., Visschers, V. H., & Siegrist, M. (2012). Consumers' knowledge about climate change. *Climatic change*, *114*, 189-209. <http://dx.doi.org/10.1007/s10584-011-0393-1>
- Torma, G., Aschemann-Witzel, J., & Thøgersen, J. (2018). I nudge myself: exploring 'self-nudging' strategies to drive sustainable consumption behaviour. *International journal of consumer studies*, *42*(1), 141-154. <https://doi.org/10.1111/ijcs.12404>
- United Nations (n.d. a)). The 17 Goals. Retrieved November 18, 2022, from <https://sdgs.un.org/goals>
- United Nations (n.d. b)). Act Now: Start with 10 impactful actions. Retrieved November 18, 2022, from <https://www.un.org/en/actnow/>
- Vandenbroele, J., Vermeir, I., Geuens, M., Slabbinck, H., & Van Kerckhove, A. (2020). Nudging to get our food choices on a sustainable track. *Proceedings of the Nutrition Society*, *79*(1), 133-146. <https://doi.org/10.1017/S0029665119000971>
- Wang, C., Geng, L., & Rodríguez-Casallas, J. D. (2022). Mindfulness to climate change inaction: The role of awe, "Dragons of inaction" psychological barriers and nature

connectedness. *Journal of Environmental Psychology*, 101912.

<https://doi.org/10.1016/j.jenvp.2022.101912>

Yaden, D. B., Kaufman, S. B., Hyde, E., Chirico, A., Gaggioli, A., Zhang, J. W., & Keltner, D. (2018). The development of the Awe Experience Scale (AWE-S): A multifactorial measure for a complex emotion. *The Journal of Positive Psychology*, 14(4), 474-488.
<https://doi.org/10.1080/17439760.2018.1484940>

Yang, Y., Hu, J., Jing, F., & Nguyen, B. (2018). From awe to ecological behavior: The mediating role of connectedness to nature. *Sustainability*, 10(7), 2477.
<https://doi.org/10.3390/su10072477>

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of personality and social psychology*, 9(2p2), 1. <https://doi.org/10.1037/h0025848>

Zhang, J. W., & Keltner, D. (2016). Awe and the natural environment. *Encyclopedia of Mental Health*, 1, 131-134.

Zhao, H., Zhang, H., Xu, Y., Lu, J., & He, W. (2018). Relation between awe and environmentalism: The role of social dominance orientation. *Frontiers in psychology*, 9, 2367. <https://doi.org/10.3389/fpsyg.2018.0236>

Appendix A: Pretest

Figure 1

Pretest instructions and questions

You are participating in a pre-test which aims at determining the effects of different images of nature on your emotional state.

Please look at each of the following pictures individually and intuitively respond to the statements after each picture on the given scale (from strongly disagree to strongly agree).

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I felt small compared to everything else.					
I had the sense of being connected to everything.					
I felt that I was in the presence of something grand.					
I perceived vastness.					
I experienced a feeling of awe.					
I felt a sense of wonder.					
The landscape is awe-inspiring to me.					
I felt amazed.					
I think this landscape is beautiful.					
This landscape appeals to me personally.					
I personally prefer this kind of landscape over other types of landscapes.					

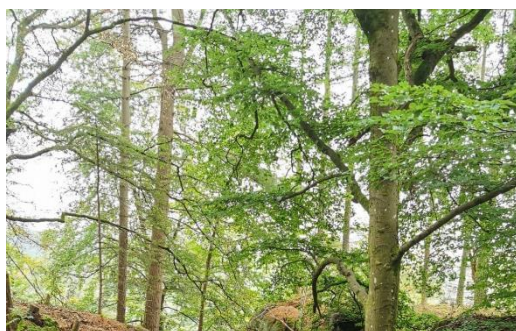
This image would fit into the branding of an outdoor fashion store.

This image would fit into a marketing campaign for a sustainable brand.

Figure 2

Pretest pictures

Picture
1&2

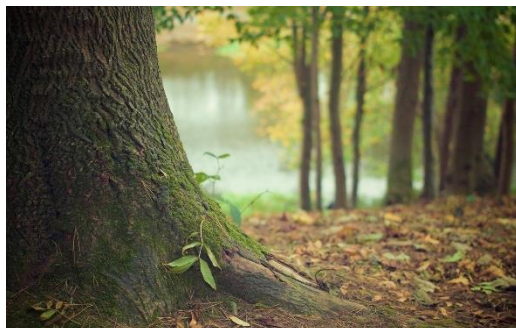


Panzer, N., Photograph of trees. 03 September 2020.

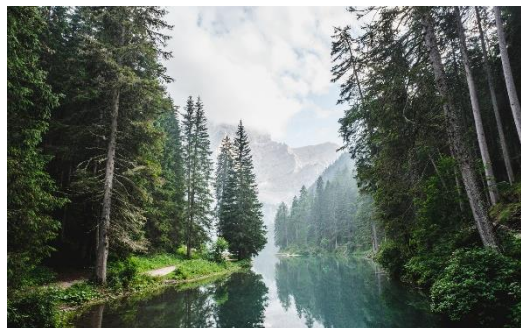


Panzer, N, Photograph of mountain landscape with trees. 08 June 2021.

Picture
3&4



<https://pixabay.com/de/photos/baumstamm-wurzeln-bellen-569275/>



<https://pixabay.com/de/photos/fluss-b%3%A4ume-berge-koniferen-1866579/>

Picture
5&6



<https://pixabay.com/de/photos/graspflanze-k%C3%BCste-ufer-strand-193803/>



<https://pixabay.com/de/photos/d%C3%BCne-meer-himmel-wolken-nordsee-2523909/>

Picture
7&8

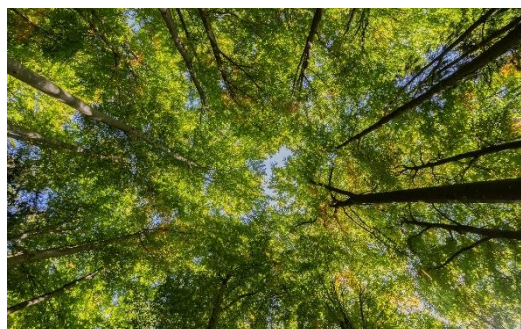
<https://pixabay.com/de/photos/sandstrand-welle-schaum-1663173/>



<https://pixabay.com/de/photos/strandmeer-sonnenuntergang-sonne-1751455/>

Picture
9&10

<https://pixabay.com/de/photos/wald-b%C3%A4ume-natur-drau%C3%9Fen-weg-1868028/>



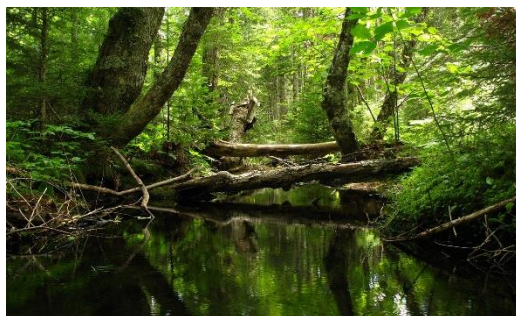
<https://pixabay.com/de/photos/baumkro-ne-bl%C3%A4tter-bl%C3%A4tterdach-wald-2782858/>

Picture
11&12

<https://pixabay.com/de/photos/fluss-felsen-stapel-1335737/>



<https://pixabay.com/de/photos/fluss-felsen-b%C3%A4ume-nadelbaum-5765785/>

Picture
13&14

<https://pixabay.com/de/photos/bachlauf-wald-bach-natur-wasser-509949/>



<https://pixabay.com/de/photos/wasserfall-alle-landschaft-b%C3%A4ume-wald-1417102/>

Picture
15&16



<https://pixabay.com/de/photos/blumen-gras-sommer-feld-bl%C3%BCte-7790227/>



<https://pixabay.com/de/photos/rapsbereich-der-rapeseeds-feld-2135026/>

Appendix B: Survey

Figure 1

Qualtics Survey

I am inviting you to take a survey for research. This survey is completely voluntary. There are no negative consequences if you do not want to take it. If you start the survey, you can always change your mind and stop at any time without any consequences. In that case, your data will be deleted.

What will you do?

You will be exposed to the website of the outdoor fashion store "Outfits". Imagine you are planning a hiking trip and are placing an order for some clothing items for your trip at this online store. This online store is also participating in the Better Cotton Initiative, which aims at a more sustainable production of cotton. You will be shown images of the store website and can make selections based on that in the questions underneath the images. Afterwards, there will be a short questionnaire.

Researcher: Nele Panzer, Master Student, Faculty of Behavioural, Management and Social Sciences, University of Twente

In case of any questions, you can e-mail me: n.panzer@student.utwente.nl

This study will take about 10min.

It is important that you use a laptop or other screen larger than a mobile phone to participate in this study.

Please confirm, that that is the case.

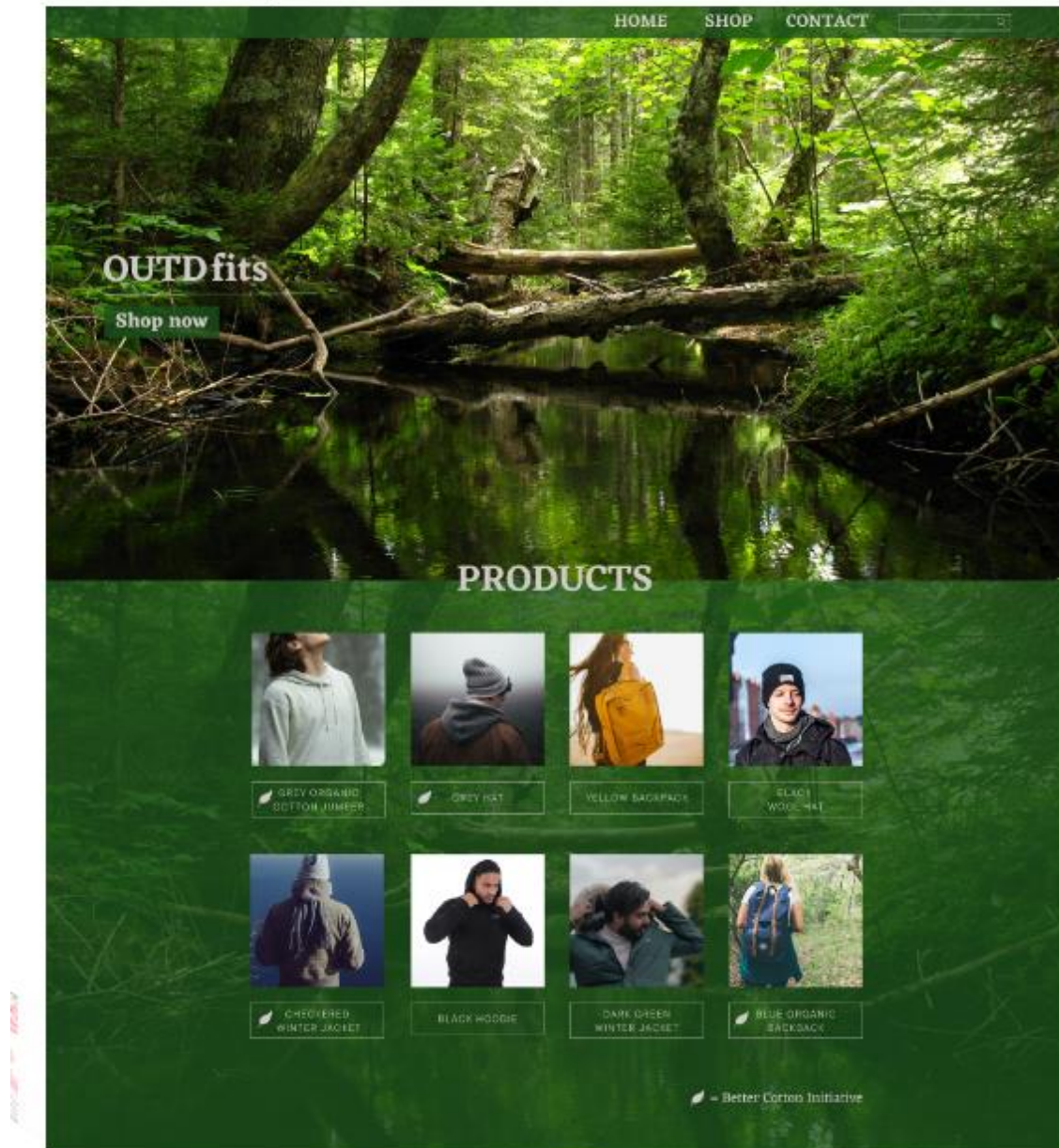
- Yes, I am currently using a laptop or other screen larger than a mobile phone



Start

Condition variables – example condition: low-awe environmental nudge

Please answer the question below this website visual.



Please three items that appeal to you by **clicking the boxes below**.

- Grey Organic Cotton Jumper (Better Cotton Initiative)
- Grey Hat (Better Cotton Initiative)
- Yellow Backpack
- Black Wool Hat
- Checkered Winter Jacket (Better Cotton Initiative)
- Black Hoodie
- Dark Green Winter Jacket
- Blue Organic Backpack (Better Cotton Initiative)



Please answer the questions below this website visual.



Imagine yourself purchasing the items you previously selected from this website. Which shipping option would you choose? (Please **select an option below**)

Note that you can change the current selection by simply clicking another option.

- Standard Shipping (4 days)
- Express Shipping (2 days) [least eco-friendly]
- Eco-friendly Shipping (9 days)

After selecting your shipping option, would you be willing to pay 1€ extra for CO₂ compensation of your order if this website gave you that option?

- Yes
- Maybe
- No



If CO2 compensation question “No”

Is there any particular reason you would not be willing to pay for CO2 compensation?



Standardized survey part

To what extent do you agree with these statements regarding the online store you were presented with?

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
This online store utilizes green products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This online store invests in the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This online store produces eco-friendly products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This online store recycles/uses recycled materials.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent do you agree with the following statements regarding the brand "Outdfits" in this study?

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I think Outdfits is an environmentally sustainable brand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think Outdfits is an eco-friendly brand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think Outdfit is a durable brand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think Outdfits is an environmentally concious brand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please answer to the following statements about the climate in regards your attitude **at this moment**.

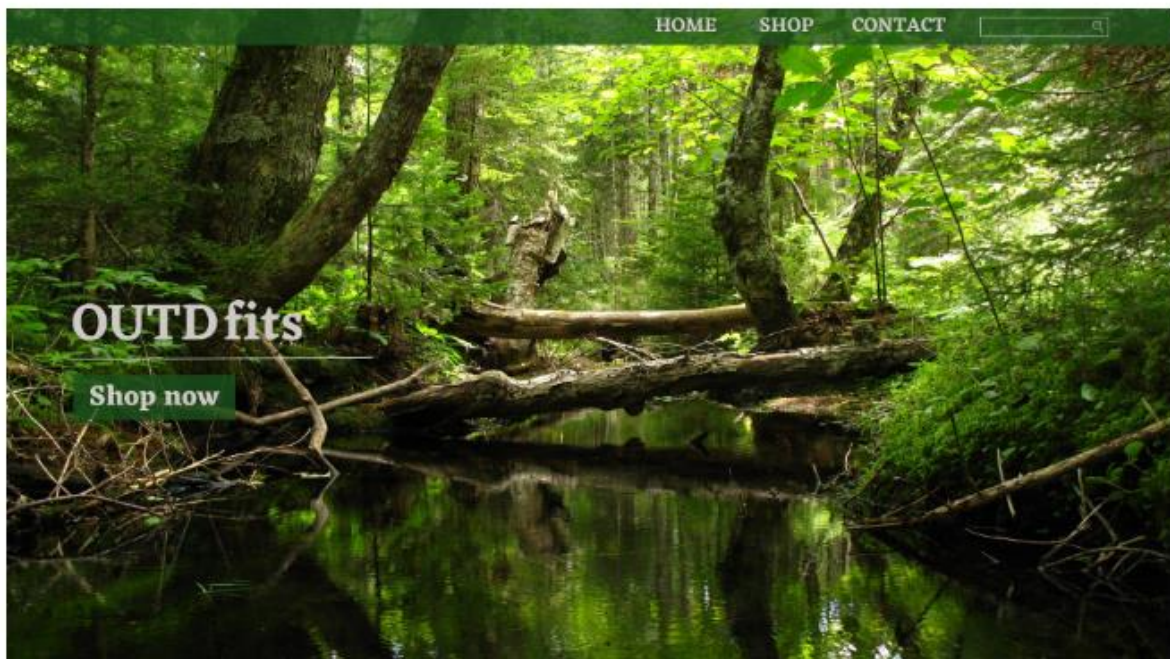
	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
We must protect the climate's delicate equilibrium.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate protection is important for our future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry about the climate's state.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Climate change has severe consequences for humans and nature.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please answer to the following statements in regards to your attitude **at this moment**.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I plan to increase environmentally sustainable activities (e.g., energy conservation, recycling) in the future.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I intend to seek out more opportunities to be more environmentally active in the future.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the future, I plan to look into how I can play a greater role in protecting the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to increase my level of support for the environment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

→

Here you are presented again with the website image. Please assess the statements below in regards to your feelings when looking at this visual.



Please reply to the following statements with regards to how you felt when looking at this website.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I felt that I was in the presence of something grand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experienced something greater than myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt in the presence of greatness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perceived something that was much larger than me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I perceived vastness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I experienced a feeling of awe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt a sense of wonder.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please reply to the following statements with regards to how you feel at this moment.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I think of the nature as a community to which I belong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I recognize and appreciate the intelligence of other living organisms.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I think of my life, I imagine myself to be part of a larger cyclical process of living.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel as though I belong to the earth as equally as it belongs to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that all inhabitants of Earth, human and nonhuman, share a common 'life force'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Like a tree can be part of a forest, I feel embedded with the broader natural world.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
My personal welfare is dependant on the welfare of the natural world.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

You have almost reached the end of this survey.

Please indicate your attitude in regards to the following statements.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I think it would be acceptable if locally sourced products were positioned more prominent in supermarkets, so people are more likely to choose them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be acceptable for local governments to inform citizens of the number of people making use of waste recycling to get others to conform to that norm.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be acceptable for my workplace/school/university to send me reminders for sustainable behaviours (e.g. bringing a reusable coffee cup), if I could unsubscribe from these reminders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be acceptable for online grocery stores to portray food products with a lower carbon footprint more appealing and prominent compared to those with a higher carbon footprint.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be acceptable for energy providers to use a green energy plan by default, as long as people could choose to opt out and select another plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it would be acceptable if C02 compensation was made a standard when ordering products online, as long as customers could still remove this from their order.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Please reply to the following statements regarding your **normal shopping behaviour**.

	Strongly disagree	Somewhat disagree	Neutral	Somewhat agree	Strongly agree
I try to buy products that have the minimal amount of packaging.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is important for the products I buy to declare the carbon footprint.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am taking steps to address my carbon footprint.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider the environmental impact of the clothing I buy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I mostly buy clothing labelled as environmentally friendly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Thank you for participating in this survey! Your response has been recorded and you can close the tab now.

If you have questions or want to learn more about this study, please contact me at:
n.panzer@student.utwente.nl

Figure 2*CO2 responses*

1. No reason
2. because I would need more information to know if the money is well invested. Plus, I don't know how big my impact is
3. The total amount of my order increases
4. Global warming;
5. Ja, Ziel muss es sein, dass es generell verpflichtend eingeführt wird, dass die Ware die in den Versand geht CO2 kompensiert wird und zwar verpflichtend. Freiwilligkeit mit einem Aufpreis für CO2 wird langfristig nicht funktionieren und ist meiner Meinung nach nicht zu 100% kontrollierbar und nur eine Aktion für das schlechte Gewissen.
[EN: Yes, the goal has to be that it will be introduced in generally as legally binding that shipped products will be CO2 compensated. A voluntary model with an extra cost for CO2 will not work in the long run and in my opinion is not 100% controllable and only makes use of a guilty conscience.]
6. Nicht sicher, dass Unternehmen die CO2 Gebühr auch für angegebenen Grund benutzen
[EN: Not sure that companies use the CO2 fee for the reason stated]
7. Because I do not know how the company offsets the CO2 emissions (e.g. which project they support), as not all projects targeting reduction of CO2 are actually effective
8. It costs more
9. Längere Lieferzeit
[EN: longer delivery times]
10. I would not trust that the money is really for CO2 compensation

11. I do not think this should be a decision per person but a decision by the government for all kind of shipment options to include CO2 compensation.
12. no
13. I would if i had a bigger income
14. I dont have any urgent things i should pay for it
15. Not economical
16. No at all, Just it isn't a usual thing for me to give money to a clothes shop.
17. This could be included in the price
18. I have a feeling that the products are already expensive, so I would like to save some
19. The compensation should be included in the shipping price in general and for everybody
20. no
21. No
22. I don't want to pay an extra fee
23. I am not sure if the amount will be used for the intended purpose.
24. No Money
25. Because I don't know what the company will do with the money. Transparency would be nice.
26. I feel like paying for compensation is not the way to do it. I would prefer taking action instead of buying off my bad feeling.
27. It could be already included in the price. People are generally aversive to pay for something extra
28. Why cost it more? I think it must be standard.
29. no, it is just extra money and in this economy everything is already expensive
30. don't think it worth

31. I don't want to be held responsible for the emissions of companies. Make your processes carbon neutral from the start or don't take part in the market.
32. In my opinion, the compensation strategies do not have a lasting effect on climate change, it is a broader tactic of 'green washing'. I am not willing to pay extra for things that do not change the current economic order.
33. I do not believe it will be used for CO2 compensation
34. money, money, money
35. Don't understand the essence of paying extra money in the CO2 reduction.
36. I think the website/deliveryservice has the responsibility to compensate for the CO2 emission.
37. I'm a broke student who is barely able to buy clothes for an everyday outfit.
38. No real reason except saving money
39. sometimes CO2 compensations are not very trustful or valuable therefore i would rather try to make the initial action less impactful on the environment so that you don't have to compensate that much
40. I don't know how reliable is the information
41. I think it's not necessary

Appendix C: Result tables and figures

Table 1

Constructs

	Cronbach's alpha
Online store perception	.737
<ol style="list-style-type: none"> 1. This online store utilizes green products. 2. This online store invests in the environment. 3. This online store produces eco-friendly products. 4. This online store recycles/uses recycled materials. 	
Brand perception	.816
<ol style="list-style-type: none"> 1. I think Outdfits is an environmentally sustainable brand. 2. I think Outdfits is an eco-friendly brand. 3. I think Outdfit is a durable brand. 4. I think Outdfits is an environmentally conscious brand. 	
Behavioral intention	.916
<ol style="list-style-type: none"> 1. I plan to increase environmentally sustainable activities (e.g., energy conservation, recycling) in the future. 2. I intend to seek out more opportunities to be more environmentally active in the future. 3. In the future, I plan to look into how I can play a greater role in protecting the environment. 4. I expect to increase my level of support for the environment. 	
Awe	.949
<ol style="list-style-type: none"> 1. I felt that I was in the presence of something grand. 2. I experienced something greater than myself. 3. I felt in the presence of greatness. 4. I perceived something that was much larger than me. 5. I perceived vastness. 6. I experienced a feeling of awe. 7. I felt a sense of wonder. 	
Nudge Attitude	.895

1. I think it would be acceptable if locally sourced products were positioned more prominent in supermarkets, so people are more likely to choose them.
2. I think it would be acceptable for local governments to inform citizens of the number of people making use of waste recycling to get others to conform to that norm.
3. I think it would be acceptable for my workplace/school/university to send me reminders for sustainable behaviors (e.g. bringing a reusable coffee cup), if I could unsubscribe from these reminders.
4. I think it would be acceptable for online grocery stores to portray food products with a lower carbon footprint more appealing and prominent compared to those with a higher carbon footprint.
5. I think it would be acceptable for energy providers to use a green energy plan by default, as long as people could choose to opt out and select another plan.
6. I think it would be acceptable if CO2 compensation was made a standard when ordering products online, as long as customers could still remove this from their order.

Organic Shopper

.807

1. I try to buy products that have the minimal amount of packaging.
2. It is important for the products I buy to declare the carbon footprint.
3. I am taking steps to address my carbon footprint.
4. I consider the environmental impact of the clothing I buy.
5. I mostly buy clothing labelled as environmentally friendly.

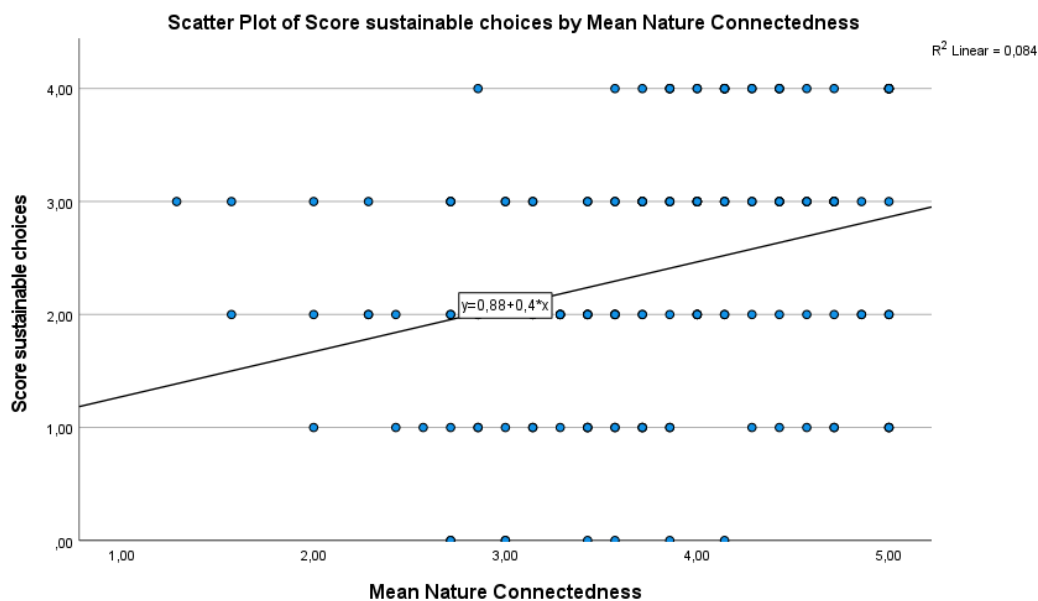
Nature Connectedness

.892

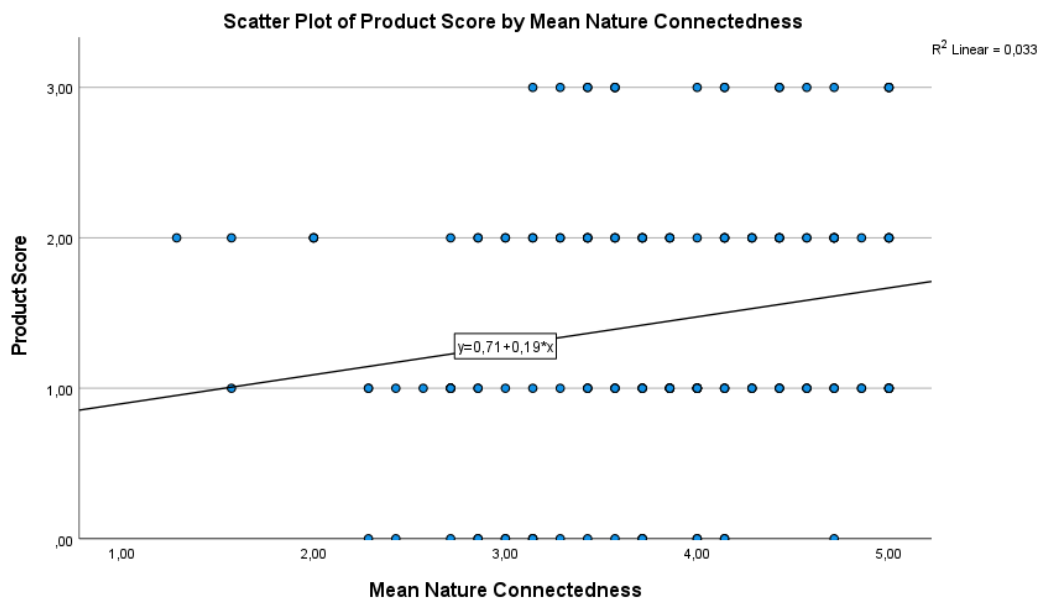
1. I think of the nature as a community to which I belong.
 2. I recognize and appreciate the intelligence of other living organisms.
 3. When I think of my life, I imagine myself to be part of a larger cyclical process of living.
 4. I feel as though I belong to the earth as equally as it belongs to me.
 5. I feel that all inhabitants of Earth, human and nonhuman, share a common 'life force'.
 6. Like a tree can be part of a forest, I feel embedded with the broader natural world.
 7. My personal welfare is dependent on the welfare of the natural world.
-

Figure 1

Nature connectedness correlation – sustainable shipping score

**Figure 2**

Nature connectedness correlation – sustainable choices score

**Figure 3**

Nature connectedness correlation – store attitude

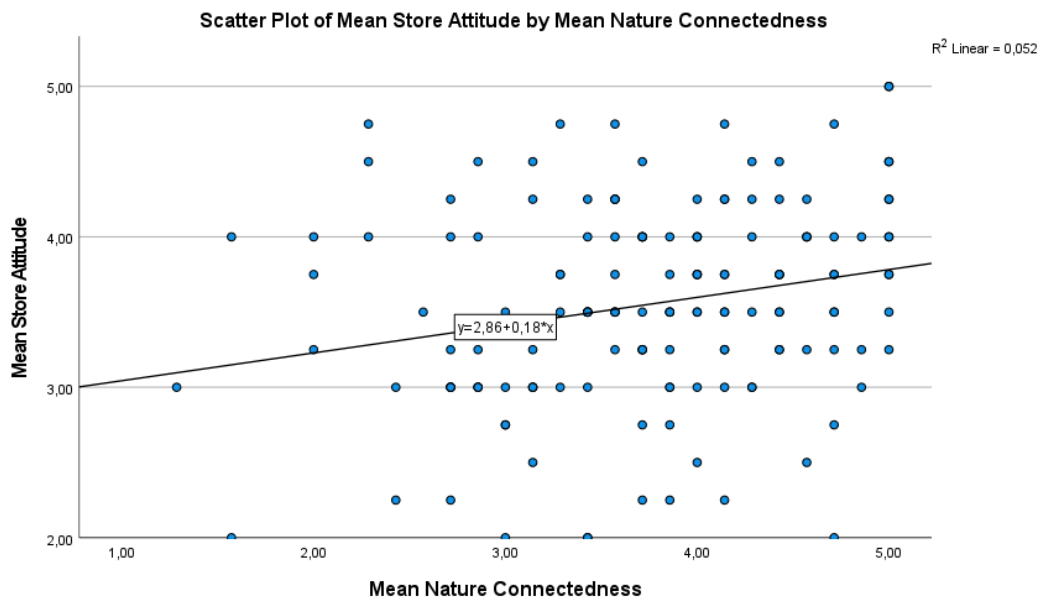


Figure 4

Nature connectedness correlation – brand attitude

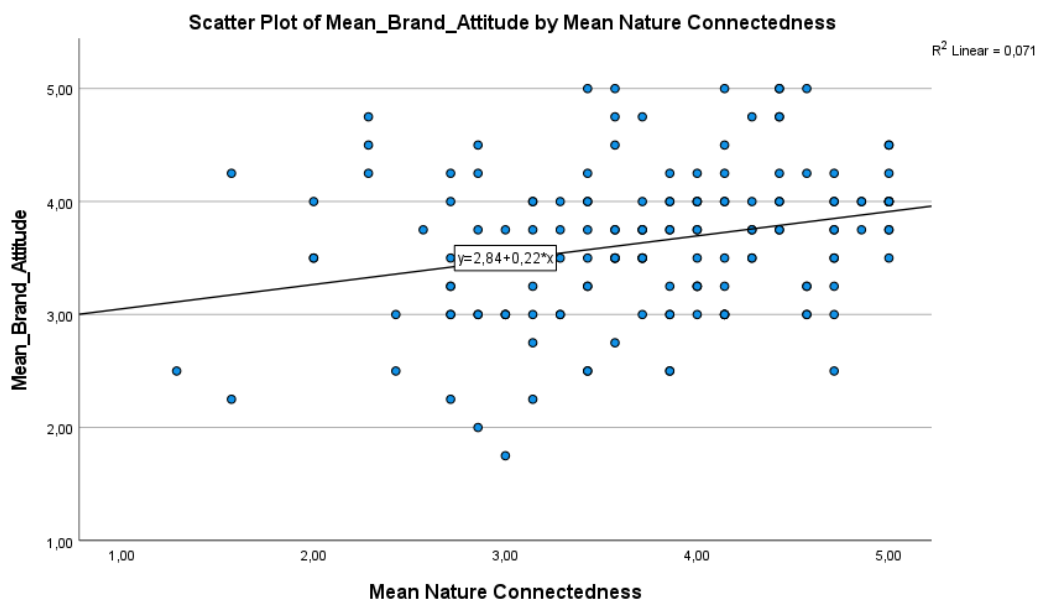


Figure 5

Nature connectedness correlation – behavioral intention

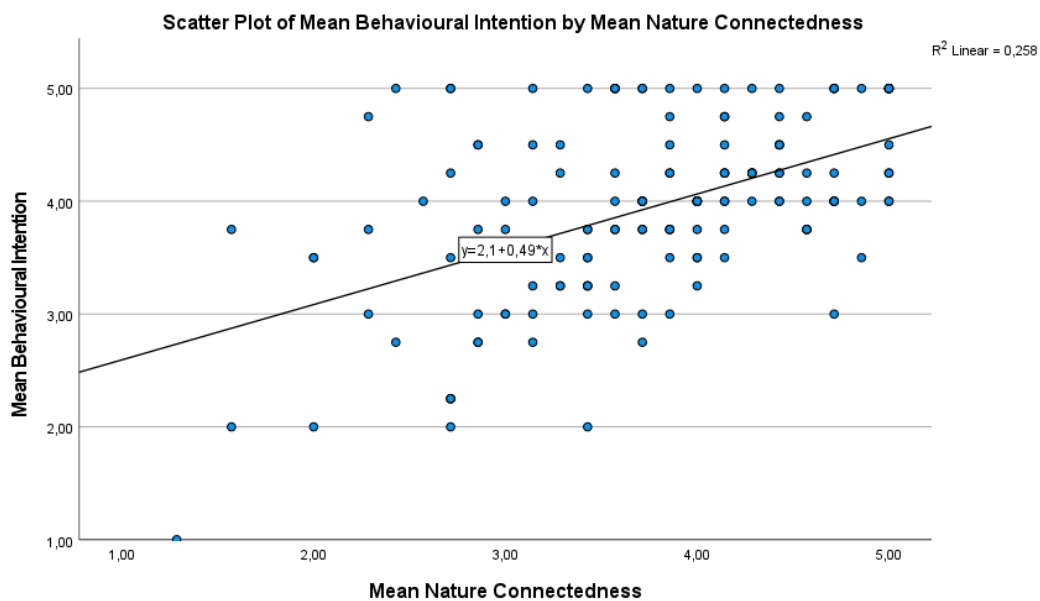


Figure 6

Nature connectedness correlation – nudge attitude

