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### Protecting Health or the Planet?

*Effects of Value Framing and Environmental Concern on Sustainable Clothing Intentions*

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## Protecting Health or the Planet? Effects of Value Framing and Environmental Concern on Sustainable Clothing Intentions

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### Abstract

The fashion and textile industry are among the biggest contributors to environmental damage, with severe consequences for planetary, population, and individual health as a result. Choosing eco-friendly clothing over regular clothing is one way to reduce the negative impact of clothing consumption. In this study, we therefore tested the effectiveness of value frames emphasizing the benefits for one's individual health (i.e., self-enhancement) vs. value frames emphasizing the benefits for population and planetary health (i.e., self-transcendence), and whether there are any differences in effects of these frames when these are congruent with people's environmental concerns (altruistic vs. egoistic environmental concerns). An experiment ( $N = 344$ ) showed that neither value framing, nor its congruence with environmental concerns lead to a difference in purchase intention. We did, however, find positive spillover effects, such that higher specific (brand) eco-clothing purchase intentions are associated with general eco-clothing purchase intentions—irrespective of the value frame used. Therefore, when eco-friendly clothing is produced and advertised, communication should aim at encouraging initial sustainable consumption behaviours as they may spillover to general sustainable consumption patterns, and this may ultimately positively impact both planetary and population health.

## Keywords

Sustainability communication, environmental concerns, value frame, eco-clothing consumption, planetary health.

The fashion and textile industry are among the biggest contributors to environmental damage (Bailey et al., 2022; Ertekin & Atik, 2015; Niinimäki et al., 2020), with severe consequences for planetary, population, and individual health as a result. This industry is believed to damage the environment in several ways, including textile waste in landfills, microplastic fibres that end up in the ocean, air pollution, and water waste (Taylor & Tilford, 2000). The persistent organic pollutants (POPs) from textile industry are extremely unsustainable and contaminate ecosystem, food chains, ground as well as drinking water supplies, as such threatening planetary health (Weber et al., 2011). Further, this will have health impacts on the public. Water pollution because of the textile industry may cause water shortage problems and directly affect individual health such as respiratory system and skin (Hadler & Islam, 2015; Noreen et al., 2017). The chemicals and plastics in clothing production may also be cancer-causing (Brigden et al., 2012). Vulnerable new-borns and children are especially likely to be affected by chronic exposure to chemicals from textiles (Herrero et al., 2023). The fast fashion industry, which mainly manufactures low-quality clothing with the latest fashion trends and sells them at a low price, even leads to more severe deterioration of the environment (Ertekin & Atik, 2015). This is because consumers are encouraged to dispose their clothing before the clothing is worn out, which causes massive use of natural resources and high waste output (Fletcher, 2008). Moreover, low-quality clothing is usually manufactured from artificial textiles, which are difficult to be decomposed, and can put even more strains on the environment (Palacios et al., 2021). Textile waste that goes directly to landfill in the already vulnerable Global South pollutes the air, soil and groundwater, chances of flooding (because of reasons like impermeable surfaces, altered drainage patterns, reduced absorption, and blocked waterways) and water-borne disease are also higher. Those that need to be burned because of limited space pollute the air and influence respiratory and cardiovascular health (Bick et al., 2018; *The Aftermath of Fast Fashion: How Discarded Clothes Impact Public Health and the Environment* | SPH, n.d.). The severe environmental and health problems caused by fashion and textile (and especially fast fashion) product consumption demonstrate that the clothing industry needs to change.

As consumers are such a vital part in fundamentally decreasing the detrimental effects of fast fashion on planetary, population and individual health. One way to shift consumers to an eco-friendlier consumption pattern is encouraging consumers to choose eco-friendly clothing over regular clothing. Eco-clothing (also known as sustainable, green, or natural clothing) is clothing made from environmental-friendly resources and has less negative impact (i.e., carbon footprint, water pollution, toxic chemicals) on the environment than regular clothing (Ertekin & Atik, 2015). Nowadays both consumers and brands have become increasingly aware of the importance of sustainable development, however, their behavioural intentions and behaviour are still lagging (Kollmuss & Agyeman, 2002; Malkanthie et al., 2023). For brands to make the sales of eco-friendly clothing more attractive, their potential customers need to develop positive attitudes towards their environmentally friendly products, which may be achieved when they apply effective marketing communication strategies (Dhir et al., 2021). To increase the sales and consumption of eco-friendly clothing, it is thus important to study which

communication strategies are effective in stimulating eco-clothing purchase intentions in consumers.

Traditionally, a communication strategy that is often used in persuasive communication to influence perception is message framing. In the realm of pro-environmental behaviour, value framing might be particularly suitable. Values are often seen as key in explaining pro-environmental behaviour (Doherty & Webler, 2016; Steg, 2016) and are the basis of important environmental behaviour models like the Value-Belief-Norm Model (Stern, 2000), and Value-Identity-Personal norm model (Ruepert et al., 2016). These models emphasize that people act pro-environmental because of *self-enhancement values* and/or because of *self-transcending values*. Highlighting such self-enhancement and self-transcending values in pro-environmental messages frame as a specific type of message framing can thus be understood as the salient value or motive to perform a specific behaviour present in a message.

Applying this to the current context of clothing consumption, purchasing eco-clothing could be stimulated by using *self-enhancement values* appeals (i.e., appeals that focus on self-interest), such as individual health benefits when buying eco-clothing; or by using *self-transcending values* appeals (i.e., appeals that altruistically focus on the welfare of others or concerns toward the environment, e.g., de Dominicis et al., 2017), such as public and planetary health benefits. In the current study, we thus test what type of (self-enhancement vs. self-transcendent) appeal is most persuasive for advocating eco-clothing purchasing.

Importantly, we expect that persuasiveness depends on the audience's environmental concern. Previous research studying value framing has yielded incongruent conclusions regarding which type of value frame elicits stronger persuasion effects (e.g., Asensio & Delmas, 2015; Bolderdijk et al., 2013; Grier & Bryant, 2005; Von Borgstede et al., 2014). This has triggered researchers to seek variables that may moderate the effects of value frame on persuasion effects (e.g., Evans et al., 2013; Hansla, 2011; Nilsson et al., 2016). One important audience characteristic when it concerns value framing is environmental concern (Schultz, 2002). People might be concerned about the environment because of effects on themselves (e.g., individual health concern or egoistic concern), but also because of the effects it might have on other people and the environment (e.g., public and planetary health concern, or altruistic and biospheric concern respectively; Schultz, 2002). The Inclusion Model of Environmental Concern (IMEC) suggests that when the value frame (e.g., self-enhancement) is congruent with the audience's environmental concerns (e.g., individual health concern), the audience is more likely to be persuaded by the message (De Dominicis et al., 2017; Hansla, 2011; Nilsson et al., 2016; Steinhorst & Matthies, 2016). Therefore, we expect the persuasion effectiveness of the value frame used in the message depends on the audience's characteristic environmental concern.

Furthermore, it is not only important to instigate behaviour change when it comes to purchasing eco-friendly products, like clothing, but also to catalyse more behaviour change (Meijers et al., 2022). For instance, to achieve actual environmental impact it is important that besides purchase intentions for certain clothing items, ideally consumers have subsequently stronger intentions for purchasing eco-clothing in general. In other words, positive *spillover effects* (i.e., where one's belief, intention, or behaviour influences one's subsequent beliefs, intentions, and behaviour) are important to tackle environmental challenges (Thøgersen & Crompton, 2009). Such spillover effects are, however, not always positive. For example, it was suggested that appealing to self-enhancing benefits does not trigger positive spillovers (Evans et al., 2013; Meijers et al., 2022; Steinhorst & Matthies, 2016), and could even lead to negative

spillover effects according to some studies (e.g., Geng et al., 2019; Maki et al., 2019). Nevertheless, it remains unclear how the purchase intentions towards eco-clothing of a specific brand influence purchase intentions towards general eco-clothing, and how the value frame affects this hypothetical effect; this will be addressed in the current study.

The theoretical contribution of this study is multifold. First, this study contributes to the literature on value framing by testing the effects of self-enhancement (i.e., focusing on individual health) vs self-transcending (i.e., focusing on public and planetary health) appeals. Second, it adds to both value framing theory and the IMEC by testing an important audience characteristic (i.e., environmental concern) as a moderator, which might explain previous mixed findings on the influence of value frames on eco-clothing purchase intentions. Thirdly, this study extends the application of spillover theory by examining the effects of purchase intentions towards specific eco-clothing on purchase intentions towards general eco-clothing, while taking the value frame into consideration as a moderator. Furthermore, the present study is socially relevant because it can provide insights for the fashion and textile industry, such that solutions for increasing consumers' willingness to choose eco-clothing will be discussed. An increased consumption of eco-clothing instead of regular clothing will eventually benefit the health of our planet, as well as the health of our planet's population.

## Theoretical Framework

### *Framing and Values*

Framing refers to the act of presenting information to an audience in a specific way via developing a particular conceptualization to reorient their thinking and influence the audience's evaluation of an issue (Chong & Druckman, 2007). It has been studied in the field of persuasive communication quite frequently (Dijkstra et al., 2009; Kolandai-Matchett, 2009; Pelletier & Sharp, 2008) and is believed to work by priming behaviours through the activation of certain values or motives (Steinhorst & Matthies, 2016). Among the many types of framing, value is especially relevant under environmental context.

Values are defined as important life principles and goals that drive an individual's actions (Schwartz, 1992). Thus, value frames are the life principles or goals that are delivered in a message aiming at influencing the audience's behaviours. When communicating about pro-environmental behaviour, value frames such as self-transcendence and self-enhancement ones may be especially relevant to study, since it has been shown that the activation of these values can affect individuals' pro-environmental behaviours (Clark et al., 2003; Stern et al., 1993). The self-transcendent value frame, also known as the altruistic or biospheric value frame, emphasizes benefits for other people or the natural world, e.g., public or planetary health. On the other hand, the self-enhancing value frame, which is also called the egoistic value frame, emphasizes benefits for oneself, e.g., individual health (Schwartz & Bilsky, 1987, 1990; Levin et al., 1998).

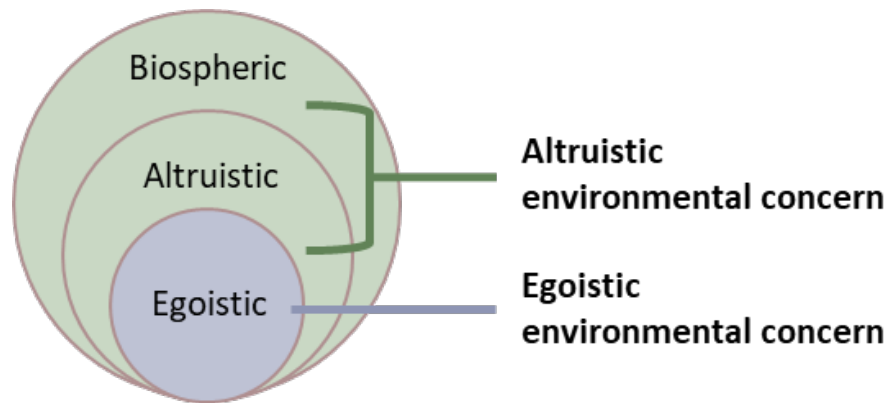
Studies about whether a self-enhancing or self-transcendent value frame is more effective in persuasion show mixed findings. On the one hand, it has been argued that people's altruistic and charitable behaviours are usually triggered by self-interest, for instance by benefits people get in return—offering a psychological compensation for the compassionate act (Holmes et al., 2002). Similarly, scholars have claimed that people tend to behave in a way that fulfils self-interest (Dawkins, 1976; Griskevicius et al., 2012; Hawkes, 1992). This is because to survive

in the natural selection one needs to obtain benefits for oneself, which often comes with the costs on others, therefore a self-enhancing appeal is suggested to be more effective than a self-transcendent appeal (Dawkins, 1976; Hawkes, 1992). Relatedly, it is possible that individuals may not have sensitivity or a sense of connection with the natural environmental or environmental issues, whereas self-enhancing values or self-interest (e.g., related to one's health and finances) are less abstract, more personal, tangible, and easily understandable. Therefore, it has been suggested that the co-benefits of climate change mitigation on health could be included in environmental campaigns to motivate lay audience to engage in pro-environment behaviours or support such policies (Adlong & Dietsch, 2015; Herrmann et al., 2020).

On the other hand, studies found that a self-transcendent appeal focusing on social and environmental benefits is more effective in terms of motivating pro-environmental behaviours than a self-enhancing appeal (Asensio & Delmas, 2015). The reason might be that individuals are mostly inclined to maintain a moral self-perception, for example through behaving pro-environmentally for altruistic reasons (i.e., self-transcendence), while the pursuit of monetary gains or other individual benefits such as health consequences (i.e., self-enhancement) does not lead to such moral rewards (Bolderdijk et al., 2013; Kareklas et al., 2014). In the case of this study for instance, self-enhancing value frame appeal for eco-friendly clothing would emphasize the positive effects on individual health, while self-transcendence value frame appeal would focus more on the positive effects on the public and planetary health. The disagreements on whether a self-enhancing or self-transcendent value frame yields stronger persuasive effectiveness suggest that moderators of the effect might need to be considered. One moderator that seems to be specifically of interest is the audience's environmental concern (e.g., De Dominicis et al., 2017; Hansla, 2011; Nilsson et al., 2016).

### *Pre-Existing Values: Environmental Concern*

Environmental concern is defined as the attitude toward the environment and the consequences of environmental issues (Schultz, 2001; De Dominicis et al., 2017). Schultz (2001; 2002) categorized environmental concerns into three types, namely egoistic, altruistic, and biospheric environmental concerns. Egoistic environmental concern refers to concerns about environmental consequences at a personal level (e.g., that air pollution would affect one's health: *individual health*). The altruistic environmental concern refers to concerns about environmental consequences for other people (e.g., that air pollution would affect vulnerable people: *public health*). While the biospheric environmental concern refers to concerns about environmental consequences for all living species and nature (e.g., that air pollution would put wildlife in danger: *planetary health*). In this study, altruistic and biospheric concerns will be combined into one type of concern, i.e., the altruistic concern<sup>1</sup>, as both types of concerns are consistent with the self-transcendent value frame, which emphasizes the benefits for others or the natural world (Levin et al., 1998; Schwartz & Bilsky, 1987, 1990). As such, the present study has categorized two types of environmental concerns: egoistic and altruistic, in correspondence to the previously mentioned two types of value frames: self-enhancement and self-transcendence.



**Figure 1.** The Systematic, Hierarchical Structure of Environmental Concerns According to the Inclusion Model of Environmental Concern (IMEC)

*Note.* Egoistic environmental concern is present for all people, whereas some also have altruistic environmental concern, and a subset of these might also have biospheric concerns. In the current study, and in line with previous research, both altruistic and biospheric concerns are collapsed into one type of environmental concern: altruistic.

However, the two kinds of environmental concerns are not mutually exclusive, see Figure 1. It has been indicated that egoistic concerns are included within the broader altruistic environmental concerns (De Dominicis et al., 2017; Schultz, 2002). The Inclusion Model of Environmental Concern (IMEC) proposes that for individuals who define themselves as part of nature, their cognitive representations of self are overlapped extensively with their cognitive representations of nature, and thus the environment has an inherent value. While those who do not define themselves as part of nature will not have the overlapping cognition of self and nature, and thus the environment has only a value when it affects the self (Schultz, 2002). Since egoistic environmental concerns are lower order concerns and are important to all, self-enhancement appeals (which are congruent with egoistic environmental concerns) are expected to appeal to all people (Schultz et al., 2005). In contrast, altruistic environmental concerns are higher order concerns, and self-transcendence appeals (which are congruent with altruistic environmental concerns) are only expected to appeal to those who value altruistic environmental concerns. Following this line of reasoning, De Dominicis and colleagues (2017) tested whether individuals with altruistic environmental concerns are appealed by both a self-transcendence and a self-enhancement value framed message, whereas those with egoistic environmental concerns are only appealed by a self-enhanced value framed message. They found that altruistic individuals can indeed be motivated to engage in pro-environmental behaviours by self-enhancement and self-transcendence value frames, while egoistic individuals can only be motivated by self-enhancing value frames. Based on the work by De Dominicis et al. (2017) and the IMEC (Schultz, 2002), we propose the following hypothesis:

*H1:* A message with a self-transcending (i.e., public and planetary health) frame only leads to stronger purchase intentions for eco-clothing for individuals with high altruistic environmental concerns, while a message with a self-enhancement (i.e., individual health) frame leads to stronger purchase intentions for eco-clothing for both individuals with high altruistic and egoistic environmental concerns.

### *Spillover in the Environmental Domain*

Besides the intention to perform the specific behaviour change addressed in the persuasive message, it is also insightful to study how this intention may influence—or spill-over to—the

intention to perform related behaviours. Spillover has been studied in different disciplines and under different terms (for instance, consistency effects, rebound effects, moral licensing effects etc.; Carrico et al., 2018; Sorrell et al., 2020; Truelove et al., 2014). In the field of environmental behaviours, spillover effects refer to the change of non-target and/or subsequent future pro-environmental behaviours (Nilsson et al., 2017). Importantly, research shows that spillovers can go in both directions, thus both positive and negative spillovers. There are abundant empirical studies that have supported the negative spillover effect (e.g., Klöckner et al., 2013; Meijers et al., 2019; Thøgersen & Olander, 2003; Truelove et al., 2014). For instance, the moral licensing theory suggests negative spillover effects, so that individuals who engage in morally right behaviour are hypothesized to subsequently be more likely to engage in less moral behaviours (Monin & Miller, 2001). A study by Mazar and Zhong (2010), for example, demonstrates that people act less altruistically and morally (for example, by being more likely to cheat and steal) after they purchased eco-friendly products. Whereas a volume of studies has supported the moral licensing theory (e.g., Blanken et al., 2015; Carrico et al., 2018; Khan & Dhar 2006; Mazar & Zhong, 2010; Meijers et al., 2019; Merritt et al., 2010), there are also studies that were not able to replicate these findings (Blanken et al., 2014; Urban et al., 2019; Urban et al., 2021). Furthermore, the consistency effect points to a positive spillover (Meijers, et al., 2019; Puntiroli et al., 2022). This effect is explained by the cognitive dissonance theory and the self-perception theory (Carrico et al., 2018). More specifically, cognitive dissonance theory posits that people who engage in one morally good behaviour but not another can experience a sense of discomfort or “dissonance”. To avoid the “dissonance”, people will behave in alignment with their previous actions (Festinger, 1957; 1962). Self-perception theory has also been used to support the positive spillover effect because this theory suggests that people perceive their behaviours as reflective of their beliefs and attitudes; as a result, their subsequent behaviours are very likely to be aligned with their initial behaviours (Bem, 1967; 1972). Similarly, it is pointed out by Lanzini & Thøgersen (2014) that pro-environmental behaviours may push people to adopt more relevant behavioural changes since their first steps may get internalized and become their new baseline.

This mixed evidence regarding positive and negative spillover can be explained by several factors that might moderate the effect, for example, environmental identity (Meijers et al. 2019; Truelove et al., 2014) and value-frame (Steinhorst et al., 2015). Of particular interest in the current study are previous studies focusing on the effects of value frames on spillover effects. For example, it is demonstrated in the study by Steinhorst et al. (2015) that a self-transcendent value frame (reducing CO<sub>2</sub>) can lead to a positive spillover, and a self-enhancing value frame (saving money) regarding saving electricity does not lead to any spillover to further climate-friendly intentions. Similar effects are found by Evans with colleagues (2013), while Xu with colleagues (2018) couldn't distinguish the effects of different value frames in intervention. It should be noticed that many above mentioned studies that operationalize self-enhancement versus self-transcending as monetary versus environment. By using individual health (instead of monetary) versus public and planetary health (instead of planetary health only), this study is original and adds to the literature. Monetary appeal is a benefit that might be temporary, extrinsic, and once taken away might backfire (Van der Linden, 2015), while individual health is more an intrinsic motivation, it is underexplored whether the effects are similar or not. Thus, based on the above literature, the following hypothesis was formulated and visualised in Figure 2:

*H2*: Higher specific (brand) eco-clothing purchase intentions will lead to higher general eco-clothing purchase intentions (i.e., positive spillover) when a self-transcendent value frame is used; no spillover is expected when a self-enhancing value frame is used.

## Methods

To test the hypotheses that the value frame might affect specific (brand) eco-clothing purchase intentions (depending on one's environmental concerns) and spillover effects, two simulated clothing web-shops were built specifically for this study (see Figure 3). The web-shop either used a self-enhancement value frame, emphasizing the benefits of eco-friendly clothing for one's individual health (Figure 3 on the left), or a self-transcendence value frame, emphasizing the benefits of eco-friendly clothing for public or planetary health (Figure 3 on the right). Each web shop contained a front page with a general slogan, highlighting the self-enhancement or self-transcendence value frame. Then, there are four sub-categories of the clothing collection of the brand (i.e., Organic Cotton, Denim, Silk, and ReNew) together with their corresponding value frame benefits (see Appendix A for the messages that were presented on the web-shops). From the front page, the participants could click on the four sub-categories of the clothing collection. Once they did so, they were taken to a new page where they were shown several options within that category (e.g., in the ReNew category they could see jackets, shoes, and backpacks). The two web-shops offered the exact same clothing items, the only difference was the set of description messages being used.<sup>2</sup>

It is worth noticing that the concepts of planetary health and traditional environmental health overlap as both examine the relationship between human health and conditions originating outside the body (e.g., extreme temperatures, chemicals and biological agents, vector-borne diseases), but that the concepts are not identical in nature. Planetary health can be defined as “the health of human civilization and the state of the natural systems on which it depends” (Whitmee et al., 2015, p. 1978). It explicitly accounts for the importance of natural systems in terms of the potential harm that comes from human-caused perturbations of these systems,

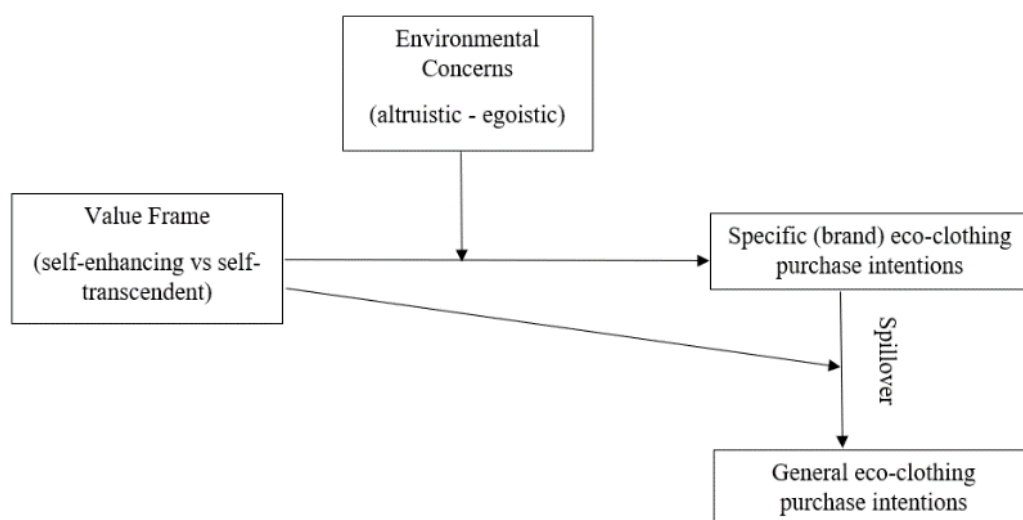
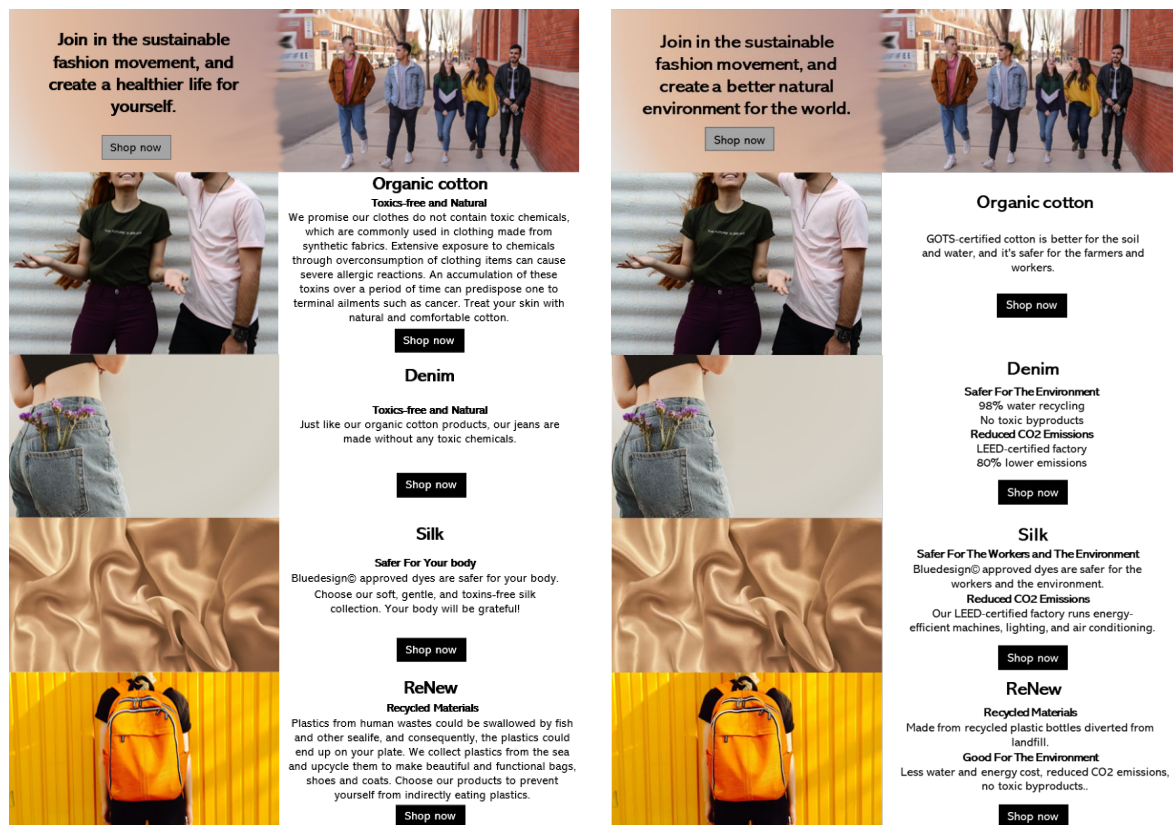


Figure 2. Conceptual Model



**Figure 3.** Impressions of the Two Web-Shops: Self-Enhancement vs. Self-Transcendence Value Frame

*Note.* On the left the web-shop with self-enhancement value frame is depicted, whereas on the right the web-shop with self-transcendence value frame is depicted.<sup>3</sup>

which is a consideration that has not been necessarily factored into traditional environmental health research to date (Seltenrich, 2018). However, in the stimulus material, the term ‘planetary health’ is not mentioned in the self-transcendence value frame condition, because this term may not be familiar to the participants, and we felt that “create a better natural environment for the world” is a more intuitive phrasing that leads to a perspective shift toward nature and puts emphasis on the Earth’s systems and health.

### Procedure

All participants were first presented with an informed consent form with information about the study and its procedures (the study was approved by the Ethical Review Board). If they agreed to participate, they started the study by answering a few demographics questions and questions related to their environmental concerns.

Hereafter, they were randomly assigned to one of the two conditions (self-enhancement and self-transcendence value frame) and were provided with the link to the web-shop. The web-shop contained a front-page that emphasized either self-enhancing reasons or self-transcendent reasons for choosing environmentally friendly clothing items (see Figure 3). Participants were told to browse through the front page and check out at least two product categories (i.e., Organic Cotton, Denim, Silk, and ReNew). Participants could proceed with the study after they stayed at the web-shop for at least 45 seconds, which was implemented to ensure that they really looked through the website. After being exposed to the website, the participants answered a series of questions about their specific (brand) eco-clothing purchase intentions, as

well as their general eco-clothing purchase intentions. Lastly, the manipulation check and attention checks were presented. As a first attention check, we included a question to check whether participants indeed took the time to read the instructions. Therefore, participants were asked to not accurately answer the following question but to answer “Slovenia” and “None of the above” for the question, “Which of the following countries have been in the news in the past week?” Furthermore, we asked participants to answer two open questions about the webshop: “Please describe to us the website you just saw.” and “There were four categories of products on the Ecowear website. Please write down the names of at least two collections of Ecowear.”

### *Participants and Design*

Participants were recruited through the subject pool of the University of Amsterdam and took part in an online experiment for partial course credits. In total, 406 participants were randomly assigned to one of the conditions (self-transcendence vs. self-enhancement value frame) of a between-subjects design with environmental concern (altruistic – egoistic) being measured as a continuous predictor. To filter out the responses from participants who did not pay sufficient attention to the study, the following steps were used. Firstly, 62 participants who answered the first attention check question wrongly were excluded, leaving 344 people for the study. Secondly, people’s answers to two open questions about the website were checked (“Please describe to us the website you just saw. The minimum length is 140 characters. You may say something about the brand, the products, or the messages delivered by the website.” and “There were four categories of products on the Ecowear website. Please write down the names of at least two collections of Ecowear.”). The answers of these participants all looked correct (they gave correct description of the website and answered correctly about at least two of the four product categories names), leading to no additional respondents being excluded. The final dataset consisted of 280 females (81.40%), 60 males (17.44%) and 4 participants who preferred not to disclose their gender (1.16%); the mean age is 22.3 ( $SD = 1.8$ ). The majority of participants (63.37%;  $n = 218$ ) had completed or were completing a bachelor or equivalent level of education. Participants were from 47 countries, with 129 (37.50%) Dutch and 39 (11.34%) German people as the majority.

### *Measures*

**Environmental Concerns.** The moderator variable “environmental concerns” was adapted from the studies by Schultz (2001), Schultz et al. (2005), and De Dominicis et al. (2017). This variable was measured by the item “I am concerned about environmental problems because of the consequences for [...]” regarding twelve options: me, my future, my lifestyle, my health, humanity, children, people in the community, future generations, plants, animals, marine life, and birds. The first four items represented egoistic environmental concerns, whereas the remaining eight items represented altruistic and biospheric concerns (Schultz 2001; 2005; in this study, altruistic and biospheric concerns were taken together as altruistic concerns as both represent self-transcendent concerns). This variable was measured on a scale from 1 (Not at all important) to 7 (Extremely important). The items were recoded if needed and computed into a new variable based on the approach in De Dominicis et al. (2017). More specifically, the mean

of items representing egoistic environmental concerns were computed into a new variable, which obtained a sufficient reliability score (Cronbach's  $\alpha = .88$ ). The same step was taken for the items representing altruistic environmental concerns (Cronbach's  $\alpha = .81$ ). Then, a relative score (the difference between 'egoistic environmental concerns' and 'altruistic environmental concerns') was calculated. The relative score ranged from -4 to 2.9, with a mean score of -0.4 ( $SD = 1.0$ ). The higher the score is, the more egoistic (vs. altruistic) environmental concerns the person holds.

**Specific (Brand) Eco-Clothing Purchase Intentions.** This was one of the dependent variables, which intended to measure participants' intentions to purchase clothing products from the brand on the website they browsed. This variable was developed partly based on the study by Kim and Chung (2011): "The next time I go clothing shopping, I would purchase from Ecowear," and "It is likely that I will purchase clothing items from Ecowear," with an additional item developed by the authors ("If Ecowear can ship items to the place where I live in, I would purchase items from Ecowear"). The three items were measured on Likert scale from 1 (*Totally disagree*) to 7 (*Totally agree*) and yielded a Cronbach's  $\alpha$  of .90 ( $M = 3.9$ ,  $SD = 1.4$ ).

**General Eco-Clothing Purchase Intentions.** This variable was designed to measure the spillover effect from purchase intentions towards products of Ecowear to other eco-friendly clothing products. The measurement of this variable consisted of 7 items, including "I would buy organic clothing to help support organic farming", "If available, I would seek out eco-friendly clothing", "If I find eco-friendly clothing the next time I go shopping for clothing, I will buy it", "I would pay more for eco-friendly clothing", "The next time I go clothing shopping, I will purchase an organic cotton product", "Whenever possible, I will buy clothing that is environmentally friendly", and "I am planning to buy an eco-friendly clothing item" (adapted from Gam et al., 2010). The seven items were measured on Likert scale from 1 (*Totally disagree*) to 7 (*Totally agree*) and yielded a Cronbach's  $\alpha$  of .88 ( $M = 4.8$ ,  $SD = 1.0$ ).

**Demographic Variables.** Age, gender and education level were measured with "Which gender do you identify yourself with?" with answer options *female*, *male*, *other/prefer not to say*, "In which year were you born?" and "What is the highest level of education you have completed or you're completing?" with 7 answer options from *less than primary education* to *doctoral or equivalent level* plus *other/prefer not to say/I don't know*.

**Manipulation Check.** Two statements were presented, "The front page of the website emphasized the benefits for the planet, animals, or other people if I buy clothing from Ecowear." and "The front page of the website emphasized the benefits for myself if I buy clothing from Ecowear." with answer scale from 1 = *Completely disagree* to 7 = *Completely agree*.

## Results

All data used for the present study is available on the Open Science Framework ([https://osf.io/29djz/?view\\_only=a533049c79f94a7e9d26a9f844dbc3e1](https://osf.io/29djz/?view_only=a533049c79f94a7e9d26a9f844dbc3e1)).

### *Randomization check*

To check whether the randomisation of gender was successful, a chi-square test was performed with value frame (self-enhancement vs self-transcendence) and gender as variables. The result shows that gender was not equally distributed among conditions,  $\chi^2(2) = 7.44, p = .02$ . However, regression analysis showed that gender did not have a relationship with variables of concern (moderator and dependent variables). Therefore, gender will not be used as a covariate in the analysis. Chi-square tests and *t*-tests were performed to check whether the randomizations of educational level and age were successful. The results indicated that the randomizations of education level ( $\chi^2(5) = 3.52, p = .620$ , and age ( $t(330.72) = 0.74, p = .463$ )<sup>4</sup> were successful.

### *Manipulation check*

The results of an independent samples *t*-test showed that, as expected, participants in the self-enhancement ( $M = 6.6, SD = 1.6$ ) condition perceived the website emphasizing the benefits for oneself stronger than participants in the self-transcendence ( $M = 4.1, SD = 1.9$ ) condition,  $t(321.73) = 12.96, p < .001$ , equal variance was not assumed, Cohen's  $d = 1.44$ , the difference was very large and significant. Besides, participants in the self-transcendence ( $M = 6.8, SD = 1.3$ ) condition perceived the website emphasizing the benefits for other people, animals, and the natural world stronger than participants in the self-enhancement ( $M = 6.1, SD = 2.0$ ) condition,  $t(301.16) = -3.67, p < .001$ , equal variance was not assumed, Cohen's  $d = -0.42$ , this difference was medium. The manipulation of the value frame was considered successful.

Additionally, we conducted two dependent sample *t*-tests within each condition to see whether the means and SDs for the two manipulation check statements were significantly different. For the self-enhancement condition, participants considered the emphasis on the benefits for the planet, animals and other people ( $M = 6.1, SD = 2.0$ ) lower than the emphasis on benefits for themselves ( $M = 6.6, SD = 1.6$ ),  $t(175) = -2.48, p < .01$ , Cohen's  $d = 2.61$ , the mean difference was 0.49 and significant. For the self-transcendence condition, participants considered the emphasis on the benefits for the planet, animals and other people ( $M = 6.8, SD = 1.3$ ) higher than the emphasis on benefits for themselves ( $M = 4.1, SD = 1.9$ ),  $t(167) = 15.46, p < .01$ , Cohen's  $d = 2.20$ , the mean difference was 2.62 and significant.

### *Main analyses*

**Predicting Specific (Brand) Eco-Clothing Purchase Intentions.** To test H1, a multiple regression was conducted, with specific (brand) eco-clothing purchase intentions as the dependent variable, and value frame (self-enhancing vs self-transcending), environmental concerns (altruistic or egoistic based on difference in scores), and their interaction as the predictors. The regression model was not significant and therefore could not be used to predict specific (brand) eco-clothing purchase intentions,  $F(3, 343) = 0.83, p = .479, R^2 = .07$ . The results showed that the interaction effect between value frame and environmental concern was not significant,  $b = -0.13, t = -0.90, p = .370, 95\% CI [-0.40, 0.15]$ . Furthermore, the results showed that participants who were exposed to the self-transcending value frame ( $M = 3.8, SD = 1.4$ ) did not have weaker specific (brand) eco-clothing purchase intentions, compared to

participants who were exposed to the self-enhancing value frame ( $M = 4.0$ ,  $SD = 1.4$ ),  $b = -0.20$ ,  $t = -1.26$ ,  $p = .210$ , 95%  $CI [-0.51, 0.11]$ . Likewise, the results showed that the main effect of environmental concerns was not significant either,  $b = 0.002$ ,  $t = -0.02$ ,  $p = .988$ , 95%  $CI [-0.19, 0.20]$ , implying that specific (brand) eco-clothing purchase intentions were not influenced by the egoistic vs altruistic environmental concern of the participants, H1 is thus rejected.

**Predicting General Eco-Clothing Purchase Intentions.** A multiple regression analysis was conducted to investigate H2. In this regression model, general eco-clothing purchase intentions served as the dependent variable, and value frame (self-enhancing vs self-transcendent), specific (brand) eco-clothing purchase intentions and their interaction were the predictors. The overall regression model was significant and strongly predicted general eco-clothing purchase intentions,  $F(3, 343) = 54.19$ ,  $p < .001$ ,  $R^2 = .32$ . The interaction between value frame and specific (brand) eco-clothing purchase intentions was not significant,  $b = 0.06$ ,  $t = 0.93$ ,  $p = .354$ , 95%  $CI [-0.07, 0.20]$ . Yet, the results showed that specific (brand) eco-clothing purchase intentions were strongly associated with general eco-clothing purchase intentions,  $b = 0.40$ ,  $t = 8.20$ ,  $p < .001$ , 95%  $CI [0.30, 0.49]$ , indicating a positive spillover effect. Value frame was not a predictor of spillover,  $b = -0.45$ ,  $t = -1.59$ ,  $p = .113$ , 95%  $CI [-1.01, 0.11]$ , implying that general eco-clothing purchase intentions did not differ for people who were exposed to the self-enhancing ( $M = 5.0$ ,  $SD = 1.0$ ) rather than the self-transcendent value frame ( $M = 4.7$ ,  $SD = 1.0$ ), H2 was also rejected.

## Discussion

First, this study aimed at testing whether a congruency between the value frame and an individual's environmental concerns leads to higher specific (brand) eco-clothing purchase intentions than no such congruency. Based on the IMEC (Schultz, 2002), it was hypothesized that a self-enhancing value frame is appealing for both individuals with egoistic and altruistic environmental concerns, while a self-transcendent value frame is appealing for individuals with altruistic rather than egoistic environmental concerns. Yet, the results found in this study are not consistent with these hypotheses or the results described in De Dominicis (2017), as the present study found that neither value frames nor environmental concerns independently predicted specific purchase intentions, and no interaction effect between the two was present, i.e., the effects of value frames did not differ for people with different environmental concerns.

The inconsistency between the present and previous findings may result from the difference in the type of behaviour studied. In this study, participants were exposed to an online clothing shop, and thereby they might feel that they were persuaded to buy new clothing rather than helping the environment. It has been argued that "green consumerism" only helps justify consumption by easing consumers' guilt and making them feel that their purchase is helping the environment (Kolandai-Matchett, 2009). Thus, people who are really concerned about environmental problems might realize that purchasing sustainable clothing is still worse than purchasing no clothing at all. After all, the essence of purchasing eco-friendly clothing is still consumerism. Besides, some individuals might have felt that the brand is hypocritical to use eco-friendliness as a marketing tool. For instance, one comment from a participant says "looks like something for hipsters. Quite expensive and gets me thinking if they really do it for the planet or just want to make a profit over the backs of concerned people." In contrast, the type

of behaviour in the study by De Dominicis et al. (2017) was participating in a beach clean-up event, which likely did not arouse such negative thoughts.

### *Spillover Effects*

Second, this study attempted to test whether a positive spillover effect exists when a self-transcendent rather than self-enhancing value frame was presented. The results partially supported the hypothesis. A positive spillover effect was found in general, showing that those who had higher purchase intentions regarding the specific green brand, also had higher purchase intentions regarding green eco-clothing in general. This was however not dependent on whether a self-transcendent or a self-enhancing value frame was presented.

Regarding spillover effects, the current study supports the consistency theory (Meijers, et al., 2019; Puntiroli et al., 2022), because it is found that people's general eco-clothing purchase intentions were consistent with their specific (brand) eco-clothing purchase intentions. However, a positive spillover was found in both value frame conditions, which is not aligned with the findings by Steinhorst et al., (2015), as they demonstrated that a positive spillover only exists when a self-transcendent value frame is used, and no spillover occurs when a self-enhancing value frame is used. There are two possible explanations for this pattern. First, the self-enhancing value frame message also briefly mentioned the environment ("Plastics from human wastes could be swallowed by fish and other sealife..."), thus participants' attention might have shifted from the self-enhancing value frame to the pro-environmental goal, potentially being more in line with the self-transcending value frame used in the other experimental condition. This explanation was also suggested in the study by Lanzini and Thøgersen (2014), which also found a positive spillover in the self-enhancing condition. It is important to mention that there were overall othersome disparities exhibited between the two conditions beyond the intended difference in value framing. For instance, for the text on organic cotton section, the two conditions have quite a different length of text, which could have led to differences in viewing time and attention. Furthermore, the self-transcendent condition included more numerical data, which may have skewed message appraisal and comprehension. And more headlines in the self-transcendence condition may have contributed to the complexity of skimming the website. Finally, the language used in the self-enhancement condition also appears to have been perceived as somewhat more personal compared to its counterpart the language used in the self-transcending condition (e.g., "we collect plastics" vs. "made from recycled plastics"), which may have potentially influenced participants' perceptions and attitudes. However, the successful manipulation checks and medium to larger effect sizes partially mitigate this concern. Next, the similarity between the two behaviours (specific and general eco-clothing purchase intentions) was suggested to affect the elicitation of a spillover effect (Nilsson et al., 2017). The two behaviours in this study were rather similar and people may have shown strong intentions for the subsequent behaviour because it was similar to the prior behaviour, and it would make them look hypocritical if they were willing to do the prior but not the subsequent action.

### *Limitations and Future Research*

This study has a few limitations. First, participants' purchase intentions instead of their actual purchase behaviours were measured, while previous studies mostly stimulated participants to actually adopt pro-environmental behaviours (e.g., Carrico et al., 2018). The results might have

been slightly different—most likely weaker—if actual pro-environmental behaviour instead of behavioural intention was measured, as it has been pointed out in previous studies that behavioural intention does not always translate into actual behaviours (a substantial intention-behaviour gap; Hsu & Huang, 2010; Radecki & Jaccard, 1999). Nevertheless, purchase intention could still give us insights into the participants' attitudes. Future studies may want to replicate this study in a field setting, and lead participants to adopt an actual pro-environmental behaviour before studying spillover effects or compare intention and actual pro-environmental behaviours. Second, no conclusions can be drawn about the potential causal relationship between the specific (brand) eco-clothing purchase intentions and general eco-clothing purchase intentions because they were measured nearly immediately after one another. In addition, there is conceptual overlap between the specific and general behaviours targeted in this study, which may lead to correlations between the two (observed in this study) and should be taken into account when interpreting the results. In further studies, the general eco-clothing purchase intentions should be measured after a certain time of the prior, specific pro-environmental behaviour taking place. Only when investigating behaviours in a sequential order, i.e., with time in between measurements, and with an experimental set-up, i.e., comparing groups that did vs did not perform prior pro-environmental behaviour, we can conclude that it is the occurrence of the prior behaviour that causes the subsequent behaviour. Also, it might be interesting to study two types of behaviour that are less overlapping, e.g., clothing consumption and food consumption, although spill-over to related behaviours is more likely to occur (Maki et al., 2019). Third, there might be confounding variables (e.g., the trustworthiness of the web-shop and the sincerity of the brand) that were not considered in the analyses. They may influence the outcome variables should be measured and included in the analyses. To illustrate, a few comments from participants mentioned that they did not want to purchase from this website because this website was made with Wix (a platform to develop websites) and therefore was not professional. Further, some participants commented that they thought this brand was just trying to sell clothing instead of caring about the environment. These factors may contribute to why we found null effects in this study. Future endeavours could measure and—if needed—control for potential confounders.

### *Conclusion*

Clothing consumption has profound impacts on individual, public, and planetary health. The findings of the study point to a new mindset required among designers, manufacturers, and consumers in order to find more sustainable ways that do not only fulfil present consumer needs for more eco-friendly clothing but also attain sustainable improvements in production in the clothing industry. In other words, production system and consumption pattern of environmentally friendly clothing go hand in hand (Kleinhüchelkotten & Nietzke, 2019, 2020; Niinimäki & Hassi, 2011). Policies, legislation, subsidies and taxes also need to be considered from a governmental level. The current research shows that self-enhancement (i.e., individual health) value frames are as effective in stimulating eco-clothing consumption as self-transcendence (i.e., public and planetary health) value frames. Furthermore, the present study concludes that a value frame that is congruent with recipient's environmental concern (e.g., self-transcendent value frame with altruistic environmental concern) may not be more effective than when these are incongruent. These findings may also provide insights for communication specialists. Especially during the digital communication era, tailoring information based on the

information from recipient's browsing and purchasing history becomes more feasible. Nevertheless, only tailoring the value frames used in persuasive communication based on the type of environmental concerns consumers have, may not be enough to stimulate an eco-friendlier consumption pattern. However, since we did observe positive spillover effects between the intention to purchase brand specific eco-clothing and eco-clothing in general, other ways to persuade consumers to make their first eco-friendly purchase are warranted if we were to ultimately promote planetary and population health.

## Notes

1. In De Dominicis et al. (2017) social concern was used instead of altruistic concern, we decide to keep the original label proposed by Schultz (2002).
2. Please note that participants in general indicated that they liked the clothing in the webshop ( $M = 4.9$ ,  $SD = 1.2$  on a scale from 1 = *Totally dislike* to 7 = *Totally like*), they also thought the clothing was somewhat expensive ( $M = 2.0$ ,  $SD = 0.7$  on a scale from 1 = *Very expensive for me* to 5 = *Very cheap for me*). Importantly, the liking and price perceptions did not differ between the two conditions.
3. Please note that the pictures differ a little from the original pictures due to copyright. The current pictures are copyright free from Unsplash. From top to bottom these pictures are made by: Elliott Reyna, DISRUPTIVO, Andreea Juganaru, Susan Wilkinson and David Pisnoy.
4. Equal variance was not assumed.

## Ethical Approval

The study has been approved by the Ethics Review Board under number 2020-PC-12686.

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## Conflict of Interest

The authors have no conflict of interest to declare.

## References

- Adlong, W., & Dietsch, E. (2015). Environmental education and the health professions: Framing climate change as a health issue. *Environmental Education Research*, 21(5), 687–709. <https://doi.org/10.1080/13504622.2014.930727>

- Aruta, J. J. B. R. (2020). Connectedness to nature encourages, but materialism hinders, ecological behavior in the Philippines: The higher order and second-order factors of environmental attitudes as viable mediating pathways. *Ecopsychology*, *13*(2), 114–122. <https://doi.org/10.1089/eco.2020.0053>
- Asensio, O. I., & Delmas, M. A. (2015). Nonprice incentives and energy conservation. *Proceedings of the National Academy of Sciences*, *112*(6), E510–E515. <https://doi.org/10.1073/pnas.1401880112>
- Bailey, K., Basu, A., & Sharma, S. (2022). The environmental impacts of fast fashion on water quality: A systematic review. *Water*, *14*(7), Article 1073. <https://doi.org/10.3390/w14071073>
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, *74*(3), 183–200. <https://doi.org/10.1037/h0024835>
- Bem, D. J. (1972). Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 6, pp. 1–62). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60024-6](https://doi.org/10.1016/S0065-2601(08)60024-6)
- Bick, R., Halsey, E., & Ekenge, C. C. (2018). The global environmental injustice of fast fashion. *Environmental Health*, *17*(1), Article 92. <https://doi.org/10.1186/s12940-018-0433-7>
- Blanken, I., Van de Ven, N., & Zeelenberg, M. (2015). A meta-analytic review of moral licensing. *Personality and Social Psychology Bulletin*, *41*(4), 540–558. <https://doi.org/10.1177/0146167215572134>
- Boehnke, K., Lietz, P., Schreier, M., & Wilhelm, A. (2011). Sampling: The selection of cases for culturally comparative psychological research. In D. Matsumoto & F. J. R. van de Vijver (Eds.), *Cross-cultural research methods in psychology* (pp. 101–129). Cambridge University Press.
- Bolderdijk, J. W., Steg, L., Geller, E. S., Lehman, P. K., & Postmes, T. (2013). Comparing the effectiveness of monetary versus moral motives in environmental campaigning. *Nature Climate Change*, *3*(4), 413–416. <https://doi.org/10.1038/nclimate1767>
- Brigden, K., Casper, K., Cobbing, M., Crawford, T., Dawe, A., Erwood, S., & Wüthrich, M. (2012). Toxic threads: The big fashion stitch-up. *Greenpeace International*.
- Carrico, A. R., Raimi, K. T., Truelove, H. B., & Eby, B. (2018). Putting your money where your mouth is: An experimental test of pro-environmental spillover from reducing meat consumption to monetary donations. *Environment and Behavior*, *50*(7), 723–748. <https://doi.org/10.1177/0013916517713067>
- Chong, D., & Druckman, J. N. (2007). Framing theory. *Annual Review of Political Science*, *10*, 103–126. <https://doi.org/10.1146/annurev.polisci.10.072805.103054>
- Clark, C. F., Kotchen, M. J., & Moore, M. R. (2003). Internal and external influences on pro-environmental behavior: Participation in a green electricity program. *Journal of Environmental Psychology*, *23*(3), 237–246. [https://doi.org/10.1016/S0272-4944\(02\)00105-6](https://doi.org/10.1016/S0272-4944(02)00105-6)
- Cohen, M. J. (2005). Sustainable consumption American style: Nutrition education, active living and financial literacy. *The International Journal of Sustainable Development & World Ecology*, *12*(4), 407–418. <https://doi.org/10.1080/13504500509469650>
- Dawkins, R. (1976). Hierarchical organisation: A candidate principle for ethology. In P. P. G. Bateson & R. A. Hinde (Eds.), *Growing points in ethology*. Cambridge University Press.

- De Dominicis, S., Schultz, P., & Bonaiuto, M. (2017). Protecting the environment for self-interested reasons: Altruism is not the only pathway to sustainability. *Frontiers in Psychology*, 8, Article 1065. <https://doi.org/10.3389/fpsyg.2017.01065>
- Dhir, A., Sadiq, M., Talwar, S., Sakashita, M., & Kaur, P. (2021). Why do retail consumers buy green apparel? A knowledge-attitude-behaviour-context perspective. *Journal of Retailing and Consumer Services*, 59, Article 102398. <https://doi.org/10.1016/j.jretconser.2020.102398>
- Dijkstra, A., Schakenraad, R., Menninga, K., Buunk, A. P., & Siero, F. (2009). Self-discrepancies and involvement moderate the effects of positive and negative message framing in persuasive communication. *Basic and Applied Social Psychology*, 31(3), 234–243. <https://doi.org/10.1080/01973530903058441>
- Doherty, K. L., & Webler, T. N. (2016). Social norms and efficacy beliefs drive the alarmed segment's public-sphere climate actions. *Nature Climate Change*, 6(9), 879–884. <https://doi.org/10.1038/nclimate3025>
- Ertekin, Z., & Atik, D. (2015). Sustainable markets: Motivating factors, barriers, and remedies for mobilization of slow fashion. *Journal of Macromarketing*, 35(1), 53–69. <https://doi.org/10.1177/0276146714535932>
- Evans, L., Maio, G. R., Corner, A., Hodgetts, C. J., Ahmed, S., & Hahn, U. (2013). Self-interest and pro-environmental behaviour. *Nature Climate Change*, 3(2), 122–125. <https://doi.org/10.1038/nclimate1662>
- Festinger, L. (1957). *A theory of cognitive dissonance* (Vol. 2). Stanford University Press.
- Festinger, L. (1962). Cognitive dissonance. *Scientific American*, 207(4), 93–106.
- Fletcher, K. (2008). Sustainable fashion and textiles: Design journeys. *Environmental Science and Technology*, 45(21), 9175–9179. <https://doi.org/10.4324/9781315857930>
- Gam, H. J., Cao, H., Farr, C., & Kang, M. (2010). Quest for the eco-apparel market: A study of mothers' willingness to purchase organic cotton clothing for their children. *International Journal of Consumer Studies*, 34(6), 648–656. <https://doi.org/10.1111/j.1470-6431.2010.00898.x>
- Geng, L., Chen, Y., Ye, L., Zhou, K., & Chen, Y. (2019). How to predict future pro-environmental intention? The spillover effect of electricity-saving behavior under environmental and monetary framing. *Journal of Cleaner Production*, 233, 1029–1037. <https://doi.org/10.1016/j.jclepro.2019.06.088>
- Gökşen, F., Adaman, F., & Zenginobuz, E. Ü. (2002). On environmental concern, willingness to pay, and postmaterialist values: Evidence from Istanbul. *Environment and Behavior*, 34(5), 616–633. <https://doi.org/10.1177/0013916502034005003>
- Grier, S., & Bryant, C. A. (2005). Social marketing in public health. *Annual Review of Public Health*, 26, 319–339. <https://doi.org/10.1146/annurev.publhealth.26.021304.144610>
- Griskevicius, V., Cantú, S. M., & Van Vugt, M. (2012). The evolutionary bases for sustainable behavior: Implications for marketing, policy, and social entrepreneurship. *Journal of Public Policy & Marketing*, 31(1), 115–128. <https://doi.org/10.1509/jppm.11.040>
- Griskevicius, V., Tybur, J. M., & Van den Bergh, B. (2010). Going green to be seen: Status, reputation, and conspicuous conservation. *Journal of Personality and Social Psychology*, 98(3), 392–404. <https://doi.org/10.1037/a0017346>
- Halder, J. N., & Islam, M. N. (2015). Water pollution and its impact on the human health. *Journal of Environment and Human*, 2(1), 36–46. <https://doi.org/10.15764/EH.2015.01005>

- Hansla, A. (2011). Value orientation and framing as determinants of stated willingness to pay for eco-labeled electricity. *Energy Efficiency*, 4(2), 185–192. <https://doi.org/10.1007/s12053-010-9096-0>
- Hathaway, J., & Maibach, E. W. (2018). Health implications of climate change: A review of the literature about the perception of the public and health professionals. *Current Environmental Health Reports*, 5, 197–204. <https://doi.org/10.1007/s40572-018-0190-3>
- Herrero, M., Rovira, J., González, N., Marquès, M., Barbosa, F., Sierra, J., Domingo, J. L., Nadal, M., & Souza, M. C. O. (2023). Clothing as a potential exposure source of trace elements during early life. *Environmental Research*, 233, Article 116479. <https://doi.org/10.1016/j.envres.2023.116479>
- Herrmann, A., Amelung, D., Fischer, H., & Sauerborn, R. (2020). Communicating the health co-benefits of climate change mitigation to households and policy makers. In D. Holmes & L. Richardson (Eds.), *Research handbook on communicating climate change* (pp. 279–289). Edward Elgar Publishing. <https://doi.org/10.4337/9781789900408.00040>
- Holmes, J. G., Miller, D. T., & Lerner, M. J. (2002). Committing altruism under the cloak of self-interest: The exchange fiction. *Journal of Experimental Social Psychology*, 38(2), 144–151. <https://doi.org/10.1006/jesp.2001.1494>
- Hsu, C. H., & Huang, S. (2010). Formation of tourist behavioral intention and actual behavior. In *2010 7th International Conference on Service Systems and Service Management* (pp. 1–6). <https://doi.org/10.1109/ICSSSM.2010.5530150>
- Hustvedt, G., & Dickson, M. A. (2009). Consumer likelihood of purchasing organic cotton apparel. *Journal of Fashion Marketing and Management: An International Journal*, 13(1), 49–65. <https://doi.org/10.1108/13612020910939879>
- Joanes, T., Gwozdz, W., & Klöckner, C. A. (2020). Reducing personal clothing consumption: A cross-cultural validation of the comprehensive action determination model. *Journal of Environmental Psychology*, 71, Article 101396. <https://doi.org/10.1016/j.jenvp.2020.101396>
- Kareklas, I., Carlson, J. R., & Muehling, D. D. (2014). “I eat organic for my benefit and yours”: Egoistic and altruistic considerations for purchasing organic food and their implications for advertising strategists. *Journal of Advertising*, 43(1), 18–32. <https://doi.org/10.1080/00913367.2013.799450>
- Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing research*, 43(2), 259–266. <https://doi.org/10.1509/jmkr.43.2.259>
- Kim, H. Y., & Chung, J. E. (2011). Consumer purchase intention for organic personal care products. *Journal of Consumer Marketing*, 28(1), 40–47. <https://doi.org/10.1108/07363761111101930>
- 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>
- Kleinhüchelkotten, S., & Neitzke, H. P. (2019). Increasing sustainability in clothing production and consumption—opportunities and constraints. *GAIA—Ecological Perspectives for Science and Society*, 28(1), 240–248. <https://doi.org/10.14512/gaia.28.S1.11>
- Kleinhüchelkotten, S., & Neitzke, H. P. (2020). Towards more sustainability in clothing production and consumption: Options, opportunities, and constraints. *Responsible Consumption and Production*, 12, 27–57. <https://doi.org/10.3390/books978-3-03897-873-2-3>

- Klößner, C. A., Nayum, A., & Mehmetoglu, M. (2013). Positive and negative spillover effects from electric car purchase to car use. *Transportation Research Part D: Transport and Environment*, 21, 32–38. <https://doi.org/10.1016/j.trd.2013.02.007>
- Kolandai-Matchett, K. (2009). Mediated communication of “sustainable consumption” in the alternative media: A case study exploring a message framing strategy. *International Journal of Consumer Studies*, 33(2), 113–125. <https://doi.org/10.1111/j.1470-6431.2009.00754.x>
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260. <https://doi.org/10.1080/13504620220145401>
- Krishna, A. (2016). A clearer spotlight on spotlight: Understanding, conducting and reporting. *Journal of Consumer Psychology*, 26(3), 315–324. <https://doi.org/10.1016/j.jcps.2016.04.001>
- Lanzini, P., & Thøgersen, J. (2014). Behavioural spillover in the environmental domain: An intervention study. *Journal of Environmental Psychology*, 40, 381–390. <https://doi.org/10.1016/j.jenvp.2014.09.006>
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149–188. <https://doi.org/10.1006/obhd.1998.2804>
- Maki, A., Carrico, A. R., Raimi, K. T., Truelove, H. B., Araujo, B., & Yeung, K. L. (2019). Meta-analysis of pro-environmental behaviour spillover. *Nature Sustainability*, 2(4), 307–315. <https://doi.org/10.1038/s41893-019-0263-9>
- Malkanthe, M. A. A., Herath, H. M. C. J., & Galdolage, B. S. (2023). Plastic use among Sri Lanka's metropolitan population: A study of environmental consciousness and behaviour. *Kelaniya Journal of Management*, 12(1), 1–28. <https://doi.org/10.4038/kjm.v12i1.7740>
- Martinez, F., & Fioulaine, N. (2015). Time and the misfits: Temporal framing and priming in persuasive communication. In M. Stolarski, N. Fioulaine, & W. van Beek (Eds.), *Time perspective theory; Review, research and application: Essays in honor of Philip G. Zimbardo* (pp. 385–402). Springer International Publishing. [https://doi.org/10.1007/978-3-319-07368-2\\_25](https://doi.org/10.1007/978-3-319-07368-2_25)
- Mazar, N., & Zhong, C. B. (2010). Do green products make us better people? *Psychological Science*, 21(4), 494–498. <https://doi.org/10.1177/0956797610363538>
- Meijers, M. H., Noordewier, M. K., Verlegh, P. W., Willems, W., & Smit, E. G. (2019). Paradoxical side effects of green advertising: How purchasing green products may instigate licensing effects for consumers with a weak environmental identity. *International Journal of Advertising*, 38(8), 1202–1223. <https://doi.org/10.1080/02650487.2019.1607450>
- Meijers, M. H., Smit, E. S., de Wildt, K., Karvonen, S. G., Van der Plas, D., & Van der Laan, L. N. (2022). Stimulating sustainable food choices using virtual reality: Taking an environmental vs health communication perspective on enhancing response efficacy beliefs. *Environmental Communication*, 16(1), 1–22. <https://doi.org/10.1080/17524032.2021.1943700>
- Merritt, A. C., Effron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and Personality Psychology Compass*, 4(5), 344–357. <https://doi.org/10.1111/j.1751-9004.2010.00263.x>
- Meyer, A. (2001). What's in it for the customers? Successfully marketing green clothes. *Business Strategy and the Environment*, 10(5), 317–330. <https://doi.org/10.1002/bse.302>

- Milfont, T. L., & Schultz, P. W. (2016). Culture and the natural environment. *Current Opinion in Psychology*, 8, 194–199. <https://doi.org/10.1016/j.copsyc.2015.09.009>
- Miller, D. T. (2001). The norm of self-interest. *American Psychologist*, 54(12), 1053–1060. <https://doi.org/10.1037/0003-066X.54.12.1053>
- Monin, B., & Miller, D. T. (2001). Moral credentials and the expression of prejudice. *Journal of Personality and Social Psychology*, 81(1), 33–43. <https://doi.org/10.1037/0022-3514.81.1.33>
- Niinimäki, K. (2010). Eco-clothing, consumer identity and ideology. *Sustainable Development*, 18(3), 150–162. <https://doi.org/10.1002/sd.455>
- Niinimäki, K., & Hassi, L. (2011). Emerging design strategies in sustainable production and consumption of textiles and clothing. *Journal of Cleaner Production*, 19(16), 1876–1883. <https://doi.org/10.1016/j.jclepro.2011.04.020>
- Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>
- Nilsson, A., Bergquist, M., & Schultz, W. P. (2017). Spillover effects in environmental behaviors, across time and context: A review and research agenda. *Environmental Education Research*, 23(4), 573–589. <https://doi.org/10.1080/13504622.2016.1250148>
- Nilsson, A., Hansla, A., Heiling, J. M., Bergstad, C. J., & Martinsson, J. (2016). Public acceptability towards environmental policy measures: Value-matching appeals. *Environmental Science & Policy*, 61, 176–184. <https://doi.org/10.1016/j.envsci.2016.04.013>
- Noreen, M., Shahid, M., Iqbal, M., & Nisar, J. (2017). Measurement of cytotoxicity and heavy metal load in drains water receiving textile effluents and drinking water in vicinity of drains. *Measurement*, 109, 88–99. <https://doi.org/10.1016/j.measurement.2017.05.030>
- Pelletier, L. G., & Sharp, E. (2008). Persuasive communication and proenvironmental behaviours: How message tailoring and message framing can improve the integration of behaviours through self-determined motivation. *Canadian Psychology*, 49(3), 210–217. <https://doi.org/10.1037/a0012755>
- Peterson, R. A. (2001). On the use of college students in social science research: Insights from a second-order meta-analysis. *Journal of Consumer Research*, 28(3), 450–461. <https://doi.org/10.1086/323732>
- Prakash, G., Choudhary, S., Kumar, A., Garza-Reyes, J. A., Khan, S. A. R., & Panda, T. K. (2019). Do altruistic and egoistic values influence consumers' attitudes and purchase intentions towards eco-friendly packaged products? An empirical investigation. *Journal of Retailing and Consumer Services*, 50, 163–169. <https://doi.org/10.1016/j.jretconser.2019.05.011>
- Puntiroli, M., Moussaoui, L. S., & Bezençon, V. (2022). Are consumers consistent in their sustainable behaviours? A longitudinal study on consistency and spillover. *Journal of Business Research*, 144, 322–335. <https://doi.org/10.1016/j.jbusres.2022.01.075>
- Radecki, C. M., & Jaccard, J. (1999). Signing an organ donation letter: The prediction of behavior from behavioral intentions. *Journal of Applied Social Psychology*, 29(9), 1833–1853. <https://doi.org/10.1111/j.1559-1816.1999.tb00154.x>
- Ruepert, A., Keizer, K., Steg, L., Maricchiolo, F., Carrus, G., Dumitru, A., Mira, R. G., Stancu, A., & Moza, D. (2016). Environmental considerations in the organizational context: A pathway to pro-environmental behaviour at work. *Energy Research & Social Science*, 17, 59–70. <https://doi.org/10.1016/j.erss.2016.04.004>

- Schultz, P. W. (2001). The structure of environmental concern: Concern for self, other people, and the biosphere. *Journal of Environmental Psychology, 21*(4), 327–339. <https://doi.org/10.1006/jevp.2001.0227>
- Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 61–78). Springer US. [https://doi.org/10.1007/978-1-4615-0995-0\\_4](https://doi.org/10.1007/978-1-4615-0995-0_4)
- Schultz, P. W., Gouveia, V. V., Cameron, L. D., Tankha, G., Schmuck, P., & Franěk, M. (2005). Values and their relationship to environmental concern and conservation behavior. *Journal of Cross-Cultural Psychology, 36*(4), 457–475. <https://doi.org/10.1177/0022022105275962>
- Schultz, P. W., & Zelezny, L. (1999). Values as predictors of environmental attitudes: Evidence for consistency across 14 countries. *Journal of Environmental Psychology, 19*(3), 255–265. <https://doi.org/10.1006/jevp.1999.0129>
- Schultz, P. W., & Zelezny, L. (2003). Reframing environmental messages to be congruent with American values. *Human Ecology Review, 10*(2), 126–136.
- Schwartz, S. (2006). A theory of cultural value orientations: Explication and applications. *Comparative Sociology, 5*(2–3), 137–182. <https://doi.org/10.1163/156913306778667357>
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 1–65). Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)
- Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology, 53*(3), 550–562. <https://doi.org/10.1037/0022-3514.53.3.550>
- Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology, 58*(5), 878–891. <https://doi.org/10.1037/0022-3514.58.5.878>
- Schwartz, S. H., Melech, G., Lehmann, A., Burgess, S., Harris, M., & Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross-cultural Psychology, 32*(5), 519–542. <https://doi.org/10.1177/0022022101032005001>
- Scott, C. A. (1977). Modifying socially-conscious behavior: The foot-in-the-door technique. *Journal of Consumer Research, 4*(3), 156–164. <https://doi.org/10.1086/208691>
- Seltenrich, N. (2018). Down to earth: The emerging field of planetary health. *Environmental Health Perspectives, 126*(7), Article 072001. <https://doi.org/10.1289/EHP2374>
- Shen, B., Wang, Y., Lo, C. K., & Shum, M. (2012). The impact of ethical fashion on consumer purchase behavior. *Journal of Fashion Marketing and Management: An International Journal, 16*(2), 234–245. <https://doi.org/10.1108/13612021211222842>
- Sorrell, S., Gatersleben, B., & Druckman, A. (2020). The limits of energy sufficiency: A review of the evidence for rebound effects and negative spillovers from behavioural change. *Energy Research & Social Science, 64*, Article 101439. <https://doi.org/10.1016/j.erss.2020.101439>
- Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., Summerhayes, C. P., Barnosky, A. D., Cornell, S. E., Crucifix, M., Donges, J. F., Fetzer, I., Lade, S. J., Scheffer, M., Winkelmann, R., & Schellnhuber, H. J. (2018). Trajectories of the earth system in the Anthropocene. *Proceedings of the National Academy of Sciences, 115*(33), 8252–8259. <https://doi.org/10.1073/pnas.1810141115>

- Steg, L. (2016). Values, norms, and intrinsic motivation to act pro-environmentally. *Annual Review of Environment and Resources*, 41, 277–292. <https://doi.org/10.1146/annurev-environ-110615-085947>
- Steinhorst, J., Klöckner, C. A., & Matthies, E. (2015). Saving electricity – For the money or the environment? Risks of limiting pro-environmental spillover when using monetary framing. *Journal of Environmental Psychology*, 43, 125–135. <https://doi.org/10.1016/j.jenvp.2015.05.012>
- Steinhorst, J., & Matthies, E. (2016). Monetary or environmental appeals for saving electricity? –Potentials for spillover on low carbon policy acceptability. *Energy Policy*, 93, 335–344. <https://doi.org/10.1016/j.enpol.2016.03.020>
- Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407–424. <https://doi.org/10.1111/0022-4537.00175>
- Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25(5), 322–348. <https://doi.org/10.1177/0013916593255002>
- Stern, P. C., Kalof, L., Dietz, T., & Guagnano, G. A. (1995). Values, beliefs, and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology*, 25(18), 1611–1636. <https://doi.org/10.1111/j.1559-1816.1995.tb02636.x>
- Tam, K. P., & Milfont, T. L. (2020). Towards cross-cultural environmental psychology: A state-of-the-art review and recommendations. *Journal of Environmental Psychology*, 71, Article 101474. <https://doi.org/10.1016/j.jenvp.2020.101474>
- Taylor, B., & Tilford, D. (2000). Why consumption matters. In J. B. Schor & D. B. Holt. (Eds.), *The consumer society reader* (pp.463–487). The New Press.
- Thøgersen, J., & Crompton, T. (2009). Simple and painless? The limitations of spillover in environmental campaigning. *Journal of Consumer Policy*, 32(2), 141–163. <https://doi.org/10.1007/s10603-009-9101-1>
- Thøgersen, J., & Ölander, F. (2003). Spillover of environment-friendly consumer behaviour. *Journal of Environmental Psychology*, 23(3), 225–236. [https://doi.org/10.1016/S0272-4944\(03\)00018-5](https://doi.org/10.1016/S0272-4944(03)00018-5)
- Truelove, H. B., Carrico, A. R., Weber, E. U., Raimi, K. T., & Vandenberg, M. P. (2014). Positive and negative spillover of pro-environmental behavior: An integrative review and theoretical framework. *Global Environmental Change*, 29, 127–138. <https://doi.org/10.1016/j.gloenvcha.2014.09.004>
- Urban, J., Bahník, Š., & Kohlová, M. B. (2019). Green consumption does not make people cheat: Three attempts to replicate moral licensing effect due to pro-environmental behavior. *Journal of Environmental Psychology*, 63, 139–147. <https://doi.org/10.1016/j.jenvp.2019.01.011>
- Urban, J., Braun Kohlová, M., & Bahník, Š. (2021). No evidence of within-domain moral licensing in the environmental domain. *Environment and Behavior*, 53(10), 1070–1094. <https://doi.org/10.1177/0013916520942604>
- Urien, B., & Kilbourne, W. (2011). Generativity and self-enhancement values in eco-friendly behavioral intentions and environmentally responsible consumption behavior. *Psychology & Marketing*, 28(1), 69–90. <https://doi.org/10.1002/mar.20381>
- Van der Linden, S. (2015). Intrinsic motivation and pro-environmental behaviour. *Nature Climate Change*, 5(7), 612–613. <https://doi.org/10.1038/nclimate2669>

- Verbeke, W. (2008). Impact of communication on consumers' food choices: Plenary lecture. *Proceedings of the Nutrition Society*, 67(3), 281–288. <https://doi.org/10.1017/S0029665108007179>
- Von Borgstede, C., Andersson, M., & Hansla, A. (2014). Value-congruent information processing: The role of issue involvement and argument strength. *Basic and Applied Social Psychology*, 36(6), 461–477. <https://doi.org/10.1080/01973533.2014.958226>
- Weber, R., Watson, A., Forter, M., & Oliaei, F. (2011). Persistent organic pollutants and landfills—a review of past experiences and future challenges. *Waste Management & Research*, 29(1), 107–121. <https://doi.org/10.1177/0734242X10390730>
- Whitmee, S., Haines, A., Beyrer, C., Boltz, F., Capon, A. G., Dias, B. F. de S., Ezeh, A., Frumkin, H., Gong, P., Head, P., Horton, R., Mace, G. M., Marten, R., Myers, S. S., Nishtar, S., Osofsky, S. A., Pattanayak, S. K., Pongsiri, M. J., Romanelli, C., ... Yach, D. (2015). Safeguarding human health in the Anthropocene epoch: Report of The Rockefeller Foundation–Lancet Commission on planetary health. *The Lancet*, 386(10007), 1973–2028. [https://doi.org/10.1016/S0140-6736\(15\)60901-1](https://doi.org/10.1016/S0140-6736(15)60901-1)
- Xu, L., Zhang, X., & Ling, M. (2018). Pro-environmental spillover under environmental appeals and monetary incentives: Evidence from an intervention study on household waste separation. *Journal of Environmental Psychology*, 60, 27–33. <https://doi.org/10.1016/j.jenvp.2018.10.003>

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## Appendix

### Appendix A. The Text on the Webpage Used in the Experiment

	Self-Enhancement	Self-Transcendence
<b>Main message</b>		
Headlines	Join in the sustainable fashion movement, and create a healthier life for yourself!	Join in the sustainable fashion movement, and create a better natural environment for the world.
<b>Sub-messages</b>		
Organic cotton	Toxics-free and Natural We promise our clothes do not contain toxic chemicals, which are commonly used in clothing made from synthetic fabrics. Extensive exposure to chemicals through overconsumption of clothing items can cause severe allergic reactions. An accumulation of these toxins over a period of time can predispose one to terminal ailments such as cancer. Treat your skin with natural and comfortable cotton.	GOTS-certified cotton is better for the soil and water, and it's safer for the farmers and workers.
Denim	Toxics-free and Natural Just like our organic cotton products, our jeans are made without any toxic chemicals.	Safer For The Environment 98% water recycling. No toxic byproducts. Reduced CO2 Emissions LEED-certified factory. 80% lower emissions.

## Appendix A. The Text on the Webpage Used in the Experiment (continued)

	Self-Enhancement	Self-Transcendence
<b>Sub-messages</b>		
Silk	<p>Safer For Your Body            Bluedesign@ approved dyes is safer for your body.            Choose our soft, gentle, and toxins-free silk collection. Your body will be grateful!</p>	<p>Safer For The Workers and The Environment            Bluedesign@ approved dyes are safer for the workers and the environment.            Reduced CO2 Emissions            Our LEED-certified factory runs energy-efficient machines, lighting, and air conditioning.</p>
ReNew	<p>Recycled Materials            Plastics from human wastes could be swallowed by fish and other sealife, and consequently, the plastics could end up on your plate. We collect plastics from the sea and upcycle them to make beautiful and functional bags, shoes and coats. Choose our products to prevent yourself from indirectly eating plastics.</p>	<p>Recycled Materials            Made from recycled plastic bottles diverted from landfill.            Good For The Environment            Less water and energy cost, reduced CO2 emissions, no toxic byproducts.</p>