

This item is the archived peer-reviewed author-version of:

Do verbal and visual nudges influence consumers' choice for sustainable fashion?

Reference:

Roozen Irene, Raedts Mariet, Meijburg Laura.- Do verbal and visual nudges influence consumers' choice for sustainable fashion?
Journal of global fashion marketing - ISSN 2093-2685 - 12:4(2021), p. 327-342
Full text (Publisher's DOI): <https://doi.org/10.1080/20932685.2021.1930096>
To cite this reference: <https://hdl.handle.net/10067/1794300151162165141>

Do verbal and visual nudges influence consumers' choice for sustainable fashion?

1. Abstract

The fashion industry is one of the largest polluters of the world. The exploitation of resources for the ever-changing trends in fashion puts tremendous pressure on the environment. The literature shows that nudging could be an encouraging tool to promote pro-environmental behavior. The aim of this study was to investigate whether nudging can influence consumers' choice towards sustainable fashion.

We examined if a verbal or visual nudge on a retailer's website can significantly influence consumers' (sustainable) fashion choice. Data was collected by an online survey. Respondents (N = 288) were randomly divided into three experimental conditions, i.e., verbal nudge, visual nudge or control group (no nudge). The findings showed a significant positive influence of the verbal nudge and, to a lesser extent, of the visual nudge on choosing the sustainable version of the apparel. The nudges also positively influenced the willingness to pay for the sustainable apparel. This suggests that nudging is a promising tool to direct consumers to a more sustainable fashion choice. Furthermore, the results showed that respondents with a relatively high score on ecological conscious consumer behavior and a relatively low score on fashion involvement are significant more likely to choose the sustainable apparel.

Keywords: nudge; sustainable fashion; fast fashion; fashion involvement; organic cotton

2. Introduction

In the fashion industry collections come and go rapidly, especially in the fast fashion industry (Preuit & Yan, 2017). In most cases, fast fashion apparels are manufactured in a cheap way with remarkably high speed, due to short production and distribution lead times. This results in low prices to be paid by the customers, who are able to update their wardrobe conforming the latest trends at any time of the year (Cachon & Swinney, 2011). The growing overconsumption of clothes is a worldwide development with serious consequences for the environment (Niinimäki et al., 2020).

The fashion industry is responsible for 8 to 10 percent of the world's greenhouse gasses and 20 percent of industrial wastewater pollution worldwide (United Nations Climate Change, 2018). Impacts from the fashion industry consist of a yearly production of 92 million tons of waste and the consumption of 79 trillion liters of water. Moreover, cotton has the highest footprint of all fashion fibers (Niinimäki et al., 2020). For the growth of one kilogram of cotton, between 7.000 and 20.000 liters of water are needed (Helvetas, 2007). In order to mitigate these negative impacts of fabric production, a shift to organically grown textiles and fibers should be made. These more organic textiles and fibers are part of the concept of 'sustainable' fashion.

The fashion industry has started to think about how to design and develop apparels that have less harmful effects during their entire lifecycle (Aakko & Koskennurmi-Sivonen, 2013). Research on sustainable fashion has mainly focused on people's intention to buy and use sustainable fashion (Min Kong & Ko, 2017; Song & Ko, 2017). For example, research showed that consumers' attitude towards sustainable clothing has a significant impact on their purchase intentions (Rausch & Kopplin, 2020; Song & Ko, 2017). Other studies found that consumers' perceived environmental knowledge (i.e. their awareness of environmental issues and consequences of human actions on

the environment) significantly influences their attitudes towards sustainable products and their intentions to purchase sustainable products (Kollmuss & Agyeman, 2002; Preuit & Yan, 2017). Some studies analyzed the motivations and barriers to the popularization of sustainable fashion (Ertekin & Atik, 2015; Lundblad & Davies, 2016; Moon, Lai, Lam, & Chang, 2015). Despite the increase in research within the sustainability field, customers' actual purchase behavior of sustainable apparels is still relatively low. For people creating sustainable fashion marketing campaigns, it therefore remains a challenge to narrow the gap between consumers' attitudes towards sustainable fashion and their actual purchase behavior (Lee et al., 2020). Consumers often express their interest in sustainability but continue to seek out fast and inexpensive fashion (Jung & Jin, 2014). Moreover, many consumers agree with environmentalism, seeking to protect and conserve the elements of the earth's ecosystem, but when they have to make a practical decision between an environment-friendly product and a relatively cheaper and easier accessible product, their choice often does not reflect their intention to be more sustainable (Joergens, 2006). Often the theory of planned behavior (Ajzen, 1985) and/or the attitude - behavior gap (Wiederhold & Martinez, 2018) are used as explanation. Especially in the 'sustainable' fashion industry, consumers experience an enormous field of tension. While trying to behave environmentally friendly and ethically, consumers not only want to pursue belonging and self-esteem, they also seek social acceptance (Lundblad & Davies, 2016). Even though consumers show an interest in environmentally friendly and/or ethical fashion products, the relationship between attitude and purchase behavior is affected by several (personal) circumstances or barriers, e.g., lack of information, lack of credibility of the information, and lack of availability (Wiederhold & Martinez, 2018). Therefore, the following question arises: which techniques can be used to overcome this gap?

In order to make consumers choose the more sustainable option when purchasing apparels, the use of a nudge can play a role (Thaler & Sunstein, 2008). Research has already shown that nudging can be a promising tool to promote pro-environmental and sustainable consumption behavior (Lehner, Mont, & Heiskanen, 2016). However, to our knowledge, only limited research exists on the effectiveness of the use of a nudge on choosing a sustainable apparel option and, moreover, for the environmentally unfriendly fast fashion industry. Therefore, the main objective of this study is to investigate if a nudge can significantly influence consumers' choices for relatively more 'sustainable' (fast) fashion products. Besides, we compared the impact of two different nudges by providing either verbal or visual information on the environmentally friendly aspect of the fast fashion product with a choice situation without a nudge (i.e., no information). Furthermore, we measured the intention to buy the product and the willingness-to-pay for the apparel. Finally, we analyzed if individual differences (i.e., ecological conscious consumer behavior, fashion involvement, gender, age and consumers' financial situation) can also significantly influence their choice process.

3. Literature review

3.1. Fast fashion industry

The fast fashion industry is defined by two key characteristics. First, it consists of short production runs and distribution lead times, enabling quick response techniques of less than two weeks (Watson & Yan, 2013). Second, the fast fashion industry has a highly fashionable product design because it carefully monitors consumer tastes for trends. Style, taste, acceptance and change are the major elements of fast fashion apparels and some fast fashion retailers, such as Zara, have

raised the number of new collections to more than twenty a year (Christopher, Lawson, & Peck, 2004; Drew & Yehounme, 2017).

The rapid growth of fast fashion goes along with many serious environmental complications (Claudio, 2007; Moon et al., 2015). The production of fashion products, for example, consumes a large amount of natural and industrial resources. The production of one cotton T-shirt needs, for instance, 2.700 liters of water, this is similar to what an average person drinks in 2.5-year (Drew & Yehounme, 2017). Furthermore, the fashion industry has a high energy use and, therefore, an excessive carbon footprint. In addition, during the production process, over 15.000 different chemicals are used (Niinimäki et al., 2020). Furthermore, at the end of their life cycle, fashion products cause pollution and take up important landfill space. The majority of used clothes ends up in disposal where they are not recycled in an efficient way and, therefore, create a lot of pollution and exert toxic chemicals (Remy, Speelman, & Swartz, 2016).

3.2. Sustainable fashion

As a consequence of the concerns for the environmental impact of the fashion industry, people in the garment industry started brainstorming about how to create apparels that have relatively fewer externalities. This refers to the concept of 'sustainable fashion'. According to Aakko and Koskennurmi-Sivonen (2013) sustainable fashion is an endeavor that draws together sustainable development and fashion, meeting the needs of the present without compromising the ability of future generations to meet their own needs. Goworek, Fisher, Cooper, Woodward, and Hiller (2012, p. 938) define sustainable fashion as "clothing which incorporates one or more aspects of social or environmental sustainability, such as fair-trade manufacturing or fabric containing organically-grown raw material". Often sustainable fashion is seen as a synonym for the term 'slow

fashion', which is in contrast to fast fashion. The slow fashion movement is a cultural transition towards quality over quantity. It does not necessarily mean that everything should be done slowly, but the production should be at the appropriate speed. Slow fashion is often characterized by higher quality of materials and more ethical production processes. Also, the welfare of employees in slow fashion industries is generally higher than the welfare of those working in fast fashion industries. Slow fashion products are mainly made from more durable materials, which make them also more expensive. On the other hand, however, consumers can enjoy slow fashion products for a longer period of time. Furthermore, slow fashion garments are often classic and simple, which helps to prolong their lifespan and, thereby, to reduce the amount of fashion waste (Preuit & Yan, 2017). Finally, sustainability is also high on the agenda of fashion retailers and brands. For example, H&M, Mango and John Lewis have launched multiple recycling initiatives to pave the way for a more sustainable fashion industry: reuse of dropped off old clothes to create new products and sales of second-hand clothes (Preuss, 2021).

3.3. Purchasing fast- and sustainable fashion

Consumers show a large interest in sustainable issues. However, their actual behavior is not in line with their attitudes (Joergens, 2006). Four main barriers to the popularization of sustainable fashion were identified by Moon et al. (2015). The first barrier is the constraint knowledge about *sustainability*. Consumers, in general, have little knowledge about the negative impacts of the production and consumption of fast fashion clothes. The second barrier consists of the insufficient resources of sustainable goods and materials. Moreover, sustainable fashion products often cost more than general apparels, which is the third barrier to the popularization of sustainable fashion. The higher price is caused by the more expensive and durable environmentally friendly materials

and production processes. The last barrier is the design of the products. The design of sustainable fashion is complex and, therefore, not all fashion designers know how to implement it. Also, consumers often perceive the design of sustainable fashion products as unfashionable and unattractive. These barriers make it hard for consumers to behave in line with their interest in sustainability, causing a gap between their attitudes towards sustainable fashion products and their actual fashion purchases.

In order to avoid the negative consequences of the fashion industry and to lower the barrier towards sustainable fashion, changes have to be made by the industry. Pal and Gander (2018) suggest that the business model in the fashion industry can be changed by connecting three strategies: 'narrowing', 'slowing' and 'closing'. 'Narrowing' includes the use of organic fibers and clean technologies. The aim is to have a more demand-driven production with less pollution, less energy and less water spillage. 'Slowing' can be connected to the concept of slow fashion. It consists of the promotion of durable, timeless garments and aims at a decrease in overall consumption. 'Closing' refers to closing the loop by implementing a circular system.

Although when customers have heard about the externalities of the fashion industry and are affected by them, they are not turning their knowledge into behavior (Joergens, 2006). Consumers could play a crucial role in changing the industry, for example, by reacting differently to brands and/or companies that are known to have a relatively high score on polluting production processes. However, this information is not always (public) available which makes it difficult to undertake potential action. Grappi, Romani, and Barbarossa (2017) and Roozen and Raedts (2020) have shown that transparency and sharing (negative) information about the production process of the (fast) fashion industry could make a significant change in consumers' attitudes. A nudge can, therefore, be a significant tool to inform (potential) customers about the apparels and the

consequences of their acquisitions. Furthermore, a nudge can focus people's choice on relatively more sustainable options when purchasing apparels and, hence, helping them contributing to a more sustainable fashion industry. For example, Aspers (2008) and Perez and dos Santos-Lonsdale (2018) showed the importance of a labelling system in the fashion garment industry, whereby the minimum standard of ethical and environmental conditions of the fashion product were indicated on the label. A fMRI-study by Lee et al. (2020) found that a 'green' logo on a fashion product can significantly increase consumers' preferences for sustainable fashion products. Both prior exposures (in the form of a label or a logo) to an environmental priming message can be classified as a nudge communication technique.

3.4. The concept of nudging for the fashion industry

According to Thaler and Sunstein (2008, p. 89) a nudge is "any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any option or significantly changing their economic incentives". Nudges aim to facilitate people's choices, without interfering with their freedom of choice and preferences (Thaler & Sunstein, 2008). Often, nudges are implemented by policymakers for two reasons: to reduce undesirable behavior (e.g., the consumption of unhealthy food) and/or to stimulate desirable behavior (Lehner et al., 2016).

Lehner et al. (2016) discuss four types of tools for nudging: simplification and framing of information, changes to a physical environment, changes to a default policy, and the use of social norms. Firstly, simplification and framing refer to the accessibility and the manner in which information is displayed. Simplification plays an important role in consumers' decision-making process, whereas framing influences individuals' values and attitudes. An experiment involving framing in a school cafeteria found that product names such as *Grandma's* Zucchini Cookies,

increased sales compared to Zucchini Cookies (Wansink, Painter, & Van Ittersum, 2001). A second tool for nudging involves changing consumers' physical environment, such as putting products on eye-level in supermarkets. Thirdly, people prefer to stick to default options because this means following the path of least resistance. For example, when enrolment for an organ donation program is the default option, people are more likely to take part than when they have to sign up for the program (Johnson & Goldstein, 2003). Finally, social norms can significantly influence consumer behavior. Goldstein et al. (2008) were able to increase the re-use rate of hotel towels by adding a sign that stated that the majority of guests reused their towels instead of focusing on the environmental benefits. It is important to remark that strong underlying preferences and involvement can influence the effect of a nudge intervention (Lehner et al., 2016). Additionally, the literature shows that ecological conscious consumer behavior can significantly influence consumers' attitude towards (fast) fashion clothing (Diddi et al., 2019; Roozen & Raedts, 2020; Sun et al., 2014). Therefore, for testing the effectiveness of a nudge in choosing sustainable fashion, the fashion involvement of a consumer and the ecological conscious consumer behavior have to be taken into account.

Nudges could be encouraging tools to promote a broad range of pro-environmental and sustainable consumption behaviors (Lehner et al., 2016). A well-known example of this so called 'green nudges' took place at Rutger University, which adopted a policy to change the settings of all printers on double-sided printing by default. By doing this, they saved seven million pages in one semester, which is equivalent to 620 trees (Croson & Treich, 2014). Dianoux et al. (2019) present an overview of the different typologies of nudges. They showed that in external business communication nudges can be very effective. Furthermore, research shows that nudges are quick, low-cost and easy to implement stimuli to convince individuals to adopt the desired behavior

(Dianoux et al., 2019). Although there is potential for more nudging interventions, experiments for choosing sustainable fashion options have remained unexplored by researchers. Therefore, two main research questions can be formulated:

RQ1: Can nudging significantly influence consumers' choice for a more sustainable clothing item?

RQ2: Do sociodemographic (age, gender and financial situation) and fashion related characteristics of the participants (e.g., ecological conscious consumer behavior, fashion involvement) significantly influence consumers' sustainable fashion choice process?

4. Research design

In order to be able to test the two research questions, a quantitative research was conducted. A survey was designed using Qualtrics.com. Data was collected with Prolific. We implemented the nudge in a simulation of the Hennes & Mauritz AB (H&M) website. H&M is one of the leading fast fashion companies in terms of global revenues, the company operates in more than 74 countries and has over 126.000 employees (<https://hmgroup.com/brands/hm.html>). Therefore, H&M can be considered as a strong prototype of a global fast fashion company (Del Rocío Bonilla, del Olmo Arriaga & Andreu, 2019). The brand is also becoming more and more committed to creating great fashion at the best price in a sustainable way. One of the steps towards more sustainable fashion was the launch of their *Conscious* collection, a line made from fabrics such as organic cotton, organic linen, tencel and recycled polyester (Diderich, 2011; HM, n.d.). Therefore, choosing their website in our experimental setting was a well-considered choice.

In the first part of the questionnaire, participants were randomly allocated to one of the three conditions: a *verbal* nudge, a *visual* nudge or the control setting (no nudge). On the next page of

the questionnaire, participants had to choose between two black T-shirts (one of the most popular apparels worldwide). This gender-neutral product increased the likelihood that participants would be able to associate with the situation and answer the questions. Both T-shirts looked the same and had the same descriptions (available sizes, number of reviews and available colors). The only difference between both pieces of clothing was their fabric. One T-shirt was made from *regular* cotton. The other one was an ecological fashion product - a *sustainable* fashion T-shirt – from the Conscious collection. In each of the three experimental conditions, the two T-shirts were shown randomly next to each other. Figure 1 presents the control condition.

{insert Figure 1 about here}

In the verbal nudge condition, extra information in text form was provided and presented in a way that fits human information processing capabilities and decision-making processes (Lehner et al., 2016). In line with the Conscious collection of H&M the “Conscious Cotton T-shirt” we added additional information about the T-shirt’s sustainable fabrics. In Figure 2 the verbal nudge is presented.

{insert Figure 2 about here}

For the *visual* nudge condition, we added a website page with a visual emphasis on the Conscious collection of H&M (see Figure 3). Participants were kindly asked to click through to the next page after having looked at the web page. On the next page of the questionnaire, they were asked to select one of the two versions of the T-shirt (see Figure 1).

{insert Figure 3 about here}

After choosing one of the T-shirts, we asked the participants on a 7-point scale about their *intentions* to buy the chosen product (“*very unlikely*”, ..., “*very likely*” based on Roozen and Raedts, 2020) and their willingness to pay (WTP) for the two T-shirts (“*I really do not want to*

buy it”, “less than € 2,99”, “between € 3 and € 4,99”, “between € 5 and € 9,99”, “between € 10 and € 14,99”, “between 15 and € 29,99”, “between € 30 and 49,99” and more than € 49,99”). Next, we measured ecologically conscious consumer behavior (SECB) when purchasing apparels, based on Sudbury-Riley’s Likert scale (2016) with 4 7 point items (‘when I purchase apparels, I always make a conscious effort to buy textiles that are low in pollutants’, ‘if I understand the potential damage to the environment that some products can cause, I do not purchase them’, ‘I normally make a conscious effort to limit my purchases of apparels that are made of or use scarce resources’ and ‘I switch brands for ecological reasons’). Furthermore, we measured participants’ fashion involvement: their perceived personal relevance or interest in fashion. Tigert et al. (1976) has shown that consumers with a relatively high score on fashion involvement buy significantly more items of clothing and spend more per item than consumers with a relatively low score on fashion involvement. Fashion involvement was measured on a 5-items 7 point Likert scale (i.e., ‘I try to keep my wardrobe up-to-date with fashion trends’, ‘I like to shop for clothes’, ‘I like fashion’, ‘I often buy T-shirts’ and ‘I often buy clothes in general’) and based on Tigert et al. (1976). Finally, gender, age, and the financial situation (‘how would you describe your financial situation?’ I ‘poor’, ..., 10 ‘very good’) of the participants were measured (Roozen & Raedts, 2020).

5. Results

5.1. Sample description and measurements

We ran this study among male and female respondents from different age groups. The respondents were randomly exposed to one of the three experimental conditions. In total, 288 responses were used for the data analysis. The first condition, i.e., the verbal nudge condition, had 96 respondents,

the visual nudge condition had 94 respondents and the third condition, the control group, had 98 respondents. 49.1% of the respondents were female. No significant differences between the experimental conditions were found ($X^2[2] = 2.509; p = .285$). The age of the participants ranged from 18 to 67 years ($M = 29.28, SD = 9.71$). The average score for their financial situation was 5.43 on 10 ($SD = 2.02$). No significant differences were found for age ($F[2,279] = 1.490.; p = .227$) and financial situation scores ($F[2,272] = .082.; p = .921$) between the different experimental conditions. Most of the participants were inhabitants from a western country. In total 88.02% of the participants were from Europe, 2.10% from Canada, 3.59% from the US, 2.40% from South Africa, and 1.49% from South America, and about 2% from other countries. Geographical locations can have a significant impact on the awareness, knowledge, and behaviors of consumers (Min Kong & Ko, 2017). However, almost all of our participants are from western countries and the manipulation material used in our experiment is common for the western market. Based on the results of the reliability analyzes average scores for the constructs ecologically conscious consumer behavior (SECB) (Cronbach's $\alpha = .902, M = 4.25, SD = 1.50$), and fashion involvement (Cronbach's $\alpha = .862, M = 3.71, SD = 1.33$) were calculated.

5.2. Research results

The data in Table 1 shows that nudging can significantly influence consumers' choice for sustainable fashion (RQ1), ($X^2[2] = 15.90; p < .001$). The participants in the verbal nudge condition chose the sustainable version of the T-shirt significantly more often than the control group (no nudge).

{insert Table 1 about here}

To answer RQ2 a model that could predict discrete outcomes was needed. A binary model was the best option since there were only two possible discrete outcomes: choosing a sustainable T-shirt (from the Conscious collection) versus choosing a non-sustainable T-shirt, therefore, we used a binary logistic regression model. We estimated to what extent sociodemographic and fashion related characteristics of the participants significantly influence the sustainable fashion choice process next to the presence of a verbal or visual nudge. The probabilities that a participant chooses a sustainable or a regular T-shirt are given by:

$$P_{SUS-T-Shirt}(X_i, \omega) = \frac{\exp(X_i^t \beta)}{1 + \exp(X_i^t \beta)} \quad (1)$$

$$P_{REG-T-Shirt}(X_i, \omega) = 1 - P_{EF}(X_i, \omega) = \frac{1}{1 + \exp(X_i^t \beta)} \quad (2)$$

in which ω is a vector of the estimated coefficients β , and X_i are the regressor variables in the model. In Table 2 the estimated coefficients, standard errors, log-odds ($\exp(B)$), and fit values of the model are presented.

Table 2 shows the significant positive influence of the verbal nudge on the sustainable choice process ($p < .001$). In binary logistic regression the log-odds (see Table 2) can be interpreted as odds ratios, for every unit increase in the answer, the probability becomes $\exp(B)$ higher. For example, the probability that a consumer chooses the sustainable T-shirt after being confronted with the verbal nudge is 4.040 times higher compared to the no-nudge (control) condition. Furthermore, the visual nudge also shows, to a lesser extent, a significant positive influence on the sustainable choice process ($p < .100$). For the visual nudge, the probability for choosing the sustainable version of the T-shirt increases with 1.788 times, compared to the control condition with no nudge. Furthermore, participants with a relatively high score on ecological conscious consumer behavior and a low score on fashion involvement have a significant higher change to choose the sustainable apparel. Subsequently, the results indicate that socio-demographic variables

do not significantly influence the choice process ($p > .05$). The different goodness of fit values are satisfying and indicate that the model is significantly better than to the null model. Finally, Table 3 shows how many cases were correctly predicted in the full binomial logit model, using a cut-value of .500. The overall percentage of cases that were correctly predicted is 67.8% (74.8% for the sustainable choice and 58.5% for the regular choice).

{insert Table 3 about here}

The average score for purchase intention is 4.82 ($SD = 1.62$) on a 7-point scale, suggesting that our participants' intention to buy the T-shirt of their choice was relatively high. The purchase intention did not significantly differ between both nudging conditions ($F[2,287] = .021; p = .979$) or between the two options regular of conscious version of the T-shirt: $t[286] = 1.730; p = 0.085$. We also found no significant differences for purchase intention for both T-shirt versions within the different nudge conditions ($t_{\text{no-nudge}} [96] = .587, p = .559$; $t_{\text{verbal-nudge}} [94] = 1.038, p = .302$; $t_{\text{visual-nudge}} [92] = 1.494, p = .139$). Hence, these findings suggest that the nudge only influenced our participants' choice behavior, but not their intentions to buy the T-shirt.

However, we found significant differences between participants' willingness to pay scores for the different nudge conditions and within the different choice options. Table 4 presents the average scores for the WTP for the two different T-shirts (both variables were measured after the choice process).

{insert Table 4 about here}

The results of Table 4 show that – in general – the average scores of the WTP is higher for the chosen option than for the non-chosen option, and also higher for the conscious cotton T-shirt than for the regular T-shirt. A paired samples t-test showed that the participants who chose the regular T-shirt have an average score for WTP for the regular T-shirt of 4.32 which is significantly higher

than the WTP score for the conscious cotton T-shirt (4.07): $t[121] = 3.308, p = .001$. Also, the participants who chose the conscious cotton T-shirt have a significant higher WTP for their chosen option (4.55) compared to their non-chosen option (4.09): $t[165] = 6.971, p < .001$. An independent samples t-test showed that the average WTP for the conscious cotton T-shirt (4.55) is at a 10% reliability level significantly higher than for the regular T-shirt option (4.32): $t [286] = 1.884, p = 0.061$ (see Table 4). Furthermore, the average WTP scores for the conscious cotton T-shirt are significant higher in the verbal nudge condition compared to the no nudge condition ($F[2, 285] = 5.117; p = .007$). This suggests that the nudge could not only significantly influence the choice behavior towards a sustainable choice, it can also significantly positive influence the WTP for the sustainable fashion choice.

Furthermore, the results of paired sample t-tests show that for the control condition (no-nudge) the WTP is not significantly different between the regular and the conscious cotton T-shirt. However, for the visual and verbal nudge conditions the WTP for the consciousness cotton T-shirt is significantly higher at a 10% reliability level ($t_{visual\ nudge} [95] = 2.941, p = .004; t_{verbal\ nudge} [93] = 1.891, p = .062$).

6. Conclusion and discussion

The fashion industry is one of the biggest polluters worldwide, it is responsible for chemical pollution and excessive waste (land filling). Also high carbon emissions are produced during the production phase (Niinimäki et al., 2020). However, there is a rise in ‘new’ strategies of sustainable fashion collections in the fashion industry. Unfortunately, there are still barriers to the popularization of these sustainable fashion collections (Ertekin & Atik, 2015; Lundblad & Davies,

2016; Moon et al., 2015). The aim of this study was to investigate if nudges can give a gentle push towards more sustainable choice of clothing.

The literature shows that a nudge can be a promising tool for sustainable behavior (Dianoux et al., 2019; Goldstein, Cialdini, & Griskevicius, 2008; Lehner et al., 2016; Rolls et al., 2002). However, research about the effectiveness of a nudge for a sustainable fashion choice is rare. This paper addressed this gap in the literature.

Our findings show a significant influence of the presence of a verbal nudge on consumers' sustainable fashion choice. When verbal information is provided on the positive environmentally friendly characteristics of a garment, consumers are more likely to choose this piece of clothing compared to the non-sustainable version of the clothing piece. This finding is in line with other researches where verbal nudges are proven to be efficient (Fischer, 2008; Wansink, Painter, & Van Ittersum, 2001; Lee et al., 2020). Another way to give the respondent a gentle push towards the sustainable garment was through a visibility nudge, however, this nudge showed to be less effective than the verbal one. Furthermore, our results show that in our control condition (no nudge) there was no significant difference between the choice options (55.1 % choose the regular cotton T-shirt).

Moreover, our findings indicate that – in general – participants are eager to pay a significant higher price for the garment they had chosen. In addition, the willingness to pay for the sustainable T-shirt was higher than for the regular T-shirt. Therefore, a nudge towards a sustainable choice can also be a profitable instrument for the fashion industry. These findings confirm the results of the study of O'Connell (2020) who showed that 37% of his participants would pay an extra 10% for sustainable fashion products compared to non-sustainable fashion, and that 31% were even willing

to pay 25% more, whereas Moon et al. (2015) showed that a higher price of sustainable fashion is often seen as a barrier towards buying.

Moreover, the findings of our binary logistic regression model show that next to the nudges, ecological conscious behavior has a significant positive impact on consumers' sustainable choice behavior. This is in line with the research of Diamantopoulos, Schlegelmilch, Sinkovics, and Bohlen (2003) which showed that consumers with a high score on environmental concern are more likely to purchase green products. Our results show that consumers with a relatively high score on fashion involvement are significantly less willing to choose for the sustainable fashion option. This suggests that consumers with a high involvement rate of fashion products are less willing to choose for a relatively 'slow' fashion sustainable product. Also Kim et al. (2018) found that involvement in the (fast) fashion development plays a significant role. They showed that involvement creates an emotional connection which can be translated in a higher score on loyalty towards the fashion industry. Furthermore, our results show that sustainable fashion choices are not significantly influenced by age, gender and the financial situation of consumers.

Our results show that a 'relatively' cheap and convenient policy as introducing a 'nudge' on the online website of a fast fashion retailer can significantly influence the sustainable choice behavior of potential customers (cf. Dianoux et al., 2019). Furthermore, our findings indicate that potential customers are even willing to pay more for their (sustainable) choices. Participants in all conditions indicated that they were willing to purchase the T-shirt, which means that the 'extra' push does not significantly negatively influence their purchasing intention behavior. Furthermore, the verbal nudge had interesting other repercussions. Additional (verbal and visual) information on the retailer's website about the sustainable aspects of the product increased the WTP. In general, sustainable fashion products are more expensive because of their environmentally friendly

materials and processes. This research shows that if additional information on the environmental aspects of the product is provided, consumers are willing to pay more for the product. This finding shows that the barrier of a higher price can be overcome by additional information (Ertekin & Atik, 2015). Therefore, we can conclude that nudges are a promising tool that fast fashion companies can implement in their online web shop to direct consumers to sustainable fashion options. Furthermore, the findings of Tezer and Onur Bodur (2020) indicate that consumers' consumption experience significantly improves after buying a relative environmentally friendly purchase, which even suggests an extra 'boost' of the sustainable fashion choice.

7. Limitations and suggestions for future research

The current study examined the effects of using verbal and visual nudges on consumers' sustainable fashion choice behavior in an online retail environment. Future research is needed to understand whether this nudging effect can be generalized to other fashion products and/or for other sustainable material (i.e., organic cotton, organic linen, tencel and recycled polyester) for other companies. Furthermore, the nudges focused on the environmental externalities of the fashion industry. However, in the fashion industry not only the environment suffers, also the social impact of the (fast) fashion industry (extreme low wages, a lack of evident worker's rights, health implications for the workers and labor under dangerous circumstances). The fashion industry often uses child labor in their production process (Brooks, 2019). Therefore, the influence of 'social' nudges (for example 'child-labor' free clothing) should be investigated.

8. References

Aakko, M., & Koskennurmi-Sivonen, R. (2013). Designing sustainable fashion: Possibilities and challenges. *Research Journal of Textile and Apparel*, 17(1), 13-22.

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11- 39). Berlin, Heidelberg: Springer-Verlag.
- Aspers, P. (2008). Labelling fashion markets. *International Journal of Consumer Studies*, 32(6), 633-638.
- Brooks, A. (2019). *Clothing poverty: The hidden world of fast fashion and second-hand clothes*. London: Zed Books.
- Cachon, G. P., & Swinney, R. (2011). The value of fast fashion: Quick response, enhanced design, and strategic consumer behavior. *Management Science*, 57(4), 778-795.
- Christopher, M., Lowson, R., & Peck, H. (2004). Creating agile supply chains in the fashion industry. *International Journal of Retail & Distribution Management*, 32(8), 367-376.
- Claudio, L. (2007). Waste couture: Environmental impact of the clothing industry. *Environmental Health Perspectives*, 115(9), A448-A454.
- Croson, R., & Treich, N. (2014). Behavioral environmental economics: Promises and challenges. *Environmental and Resource Economics*, 58(3), 335-351.
- Del Rocío Bonilla, M., del Olmo Arriaga, J. L., & Andreu, D. (2019). The interaction of Instagram followers in the fast fashion sector: The case of Hennes and Mauritz (H&M). *Journal of Global Fashion Marketing*, 10(4), 342-357.
- Dianoux, C., Heitz-Spahn, S., Siadou-Martin, B., Thevenot, G., & Yildiz, H. (2019). Nudge: A relevant communication tool adapted for agile innovation. *Journal of Innovation Economics & Management*, 28(1), 7-27.
- Diddi, S., R.N. Yan, B. Bloodhart, V. Bajtelsmit & McShanel, K. (2019) Exploring young adult consumers' sustainable clothing consumption intention-behavior gap: A Behavioral Reasoning Theory perspective, *Sustainable Production and Consumption*, 18, 200–209.
- Diderich, J. (2011). H&M launches sustainable conscious collection: *Women's Wear Daily*, 201(23), 3-n/a.
- Diamantopoulos, A., Schlegelmilch, B., Sinkovics, R., & Bohlen, G. (2003). Can socio-demographics still play a role in profiling green consumers? A review of evidence and an empirical investigation. *Journal of Business Research*, 56(6), 465-480.
- Drew, D., & Yehounme, G. (2017, July 5). *The apparel industry's environmental impact in 6 graphics*. Retrieved from <http://www.wri.org/blog/2017/07/apparel-industrys-environmental-impact-6-graphics>

- Ertekin, Z.O., & Atik, D. (2015). Sustainable markets: Motivating factors, barriers, and remedies for mobilization of slow fashion. *Journal of Macromarketing*, 35(1), 53-69.
- Fischer, C. (2008). Feedback on household electricity consumption: A tool for saving electricity? *Energy Efficiency*. 1(1), 79-104.
- Goldstein, N., Cialdini, R., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35(3), 472-482.
- Goworek, H., Fisher, T., Cooper, T., Woodward, S., & Hiller, A. (2012). The sustainable clothing market: An evaluation of potential strategies for UK retailers. *International Journal of Retail & Distribution Management*, 40(12), 935-955.
- Grappi, S., Romani, S., & Barbarossa, C. (2017). Fashion without pollution: How consumers evaluate brands after an NGO campaign aimed at reducing toxic chemicals in the fashion industry. *Journal of Cleaner Production*, 149, 1164-1173.
- Helvetas. (2007). *From the plant to the T-shirt*. Retrieved from https://organiccotton.org/oc/wGlobal/scripts/wDownloadDocument.php?path=/oc/pdf/07_from-plant-to-t-shirt.pdf
- Hensher, D.A., Rose, J.M., & Greene, W.H., (2005). *Applied choice analysis: A primer*. Cambridge: Cambridge University Press.
- H&M. (n.d.). *Conscious Products Explained*. Retrieved from https://www2.hm.com/nl_be/customer-service/product-and-quality/conscious-concept.html.
- Joergens, C. (2006). Ethical fashion: Myth or future trend? *Journal of Fashion Marketing and Management*, 10(3), 360-371.
- Johnson, E. J., & Goldstein, D. (2003). Do defaults save lives? *Science*, 302, 1338-1339.
- Jung, S., & Jin, B. (2014). A theoretical investigation of slow fashion: Sustainable future of the apparel industry. *International Journal of Consumer Studies*, 38, 510–519.
- Kim, J., Park, J., & Glovinsky, L. (2018). Customer involvement, fashion consciousness, and loyalty for fast-fashion retailers. *Journal of Fashion Marketing and Management*, 22(3), 301-316.
- 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.
- 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.

- Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging – A Promising tool for sustainable consumption behaviour? *Journal of Cleaner Production*, 134-, 166-177.
- Lundblad, L., & Davies, I.A. (2016). The values and motivations behind sustainable fashion consumption. *Journal of Consumer Behavior*, 15(2), 149-162.
- McFadden, D.L. (1984). Econometric analysis of qualitative response models. In Z. Griliches & M.D. Intriligator (Eds.), *Handbook of Econometrics* (Vol. 2, pp. 1395-1457). Amsterdam: Elsevier.
- McNeill, L., & Moore, R. (2015). Sustainable fashion consumption and the fast fashion conundrum: Fashionable consumers and attitudes to sustainability in clothing choice. *International Journal of Consumer Studies*, 39(3), 212-222.
- Min Kong, H., & Ko, E. (2017). Why do consumers choose sustainable fashion? A cross-cultural study of South Korean, Chinese, and Japanese consumers. *Journal of Global Fashion Marketing*, 8(3), 220-234.
- Moon, K., Lai, C., Lam, E., & Chang, J. (2015). Popularization of sustainable fashion: Barriers and solutions. *The Journal of The Textile Institute*, 106(9), 939-952.
- Niinimäki, K., Peters, G., Dahlbo, H., Patsy P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth Environment*, 1(4), 189-200.
- O'Connell, L. (2020). *How much more are you willing to pay for sustainable fashion than normal fashion?* Retrieved from <https://www.statista.com/statistics/1010137/premium-consumers-willing-to-pay-for-sustainable-fashion-products-by-amount-worldwide/>
- Pal, R., & Gander, J. (2018). Modelling environmental value: An examination of sustainable business models within the fashion industry. *Journal of Cleaner Production*, 184, 251-263.
- Perez, A., & dos Santos Lonsdale, M. (2018). Garment label design and companion information to communicate fashion sustainability issues to young consumers. *Visible Language*, 52(3), 115-139.
- Preuit, R., Yan, R.-N., (2017). Fashion and sustainability: Increasing knowledge about slow fashion through an educational module. *International Journal of Environmental & Science Education*. 12(5), 1139–1154.
- Preuss, S. (2021). *Sustainability efforts of the fashion industry in February 2021*. Retrieved from <https://fashionunited.uk/news/business/33-sustainability-efforts-of-the-fashion-industry-in-february-2021/2021031254398>
- Rausch, T.M., & Kopplin, C.S. (2020). Bridge the gap: Consumers' purchase intention and behavior regarding sustainable clothing. *Journal of Cleaner Production*, 278, 123882.

- Remy, N., Speelman, E., & Swartz, S. (2016). *Style that's sustainable: A new fast-fashion formula*. Retrieved from <https://www.mckinsey.com>
- Rolls, B.J., Morris, E.L., & Roe, L.S. (2002). Portion size of food affects energy intake in normal-weight and overweight men and women. *The American Journal of Clinical Nutrition*, 76(6), 1207-1213.
- Roozen, I., & Raedts, M. (2020), The Power of Negative Publicity on the Fast Fashion Industry. *Journal of Global Fashion Marketing*. 11(4), 380-396.
- Song, S., & Ko, E. (2017). Perceptions, attitudes, and behaviors toward sustainable fashion: Application of Q and Q-R methodologies. *International Journal of Consumer Studies*, 41(3), 264-273.
- Sudbury-Riley, L., & Kohlbacher, F. (2016). Ethically minded consumer behavior: Scale review, development, and validation. *Journal of Business Research*, 69(8), 2697-2710.
- Sun, Y., Kim, K. H., & Kim, J. (2014). Examining relationships among sustainable orientation, perceived sustainable marketing performance, and customer equity in fast fashion industry. *Journal of Global Fashion Marketing*, 5(1), 74–86.
- Tezer, A., & Bodur, H. O. (2020). The Greenconsumption Effect: How Using Green Products Improves Consumption Experience. *The Journal of Consumer Research*, 47(1), 25-39.
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. New Haven: Yale University Press.
- Tigert, D.J., Ring, L.R., & King, C.W. (1976). Fashion involvement and buying behavior: A methodological study. *Advances in Consumer Research*, 3, 46-52.
- United Nations Climate Change (2018). *UN helps fashion industry shift to low carbon..* Retrieved from <https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon>
- Wansink, B., Painter, J., & Ittersum, K. (2001). Descriptive menu labels' effect on sales. *Cornell Hotel and Restaurant Administration Quarterly*, 42(6), 68-72.
- Watson, M. Z., & Yan, R. N. (2013). An exploratory study of the decision processes of fast versus slow fashion consumers. *Journal of Fashion Marketing and Management*, 17(2), 141-159.
- Wiederhold, M., & Martinez, L.F. (2018). Ethical consumer behavior in Germany: The attitude-behaviour gap in the green apparel industry. *International Journal of Consumer Studies*, 42(4), 419-429.

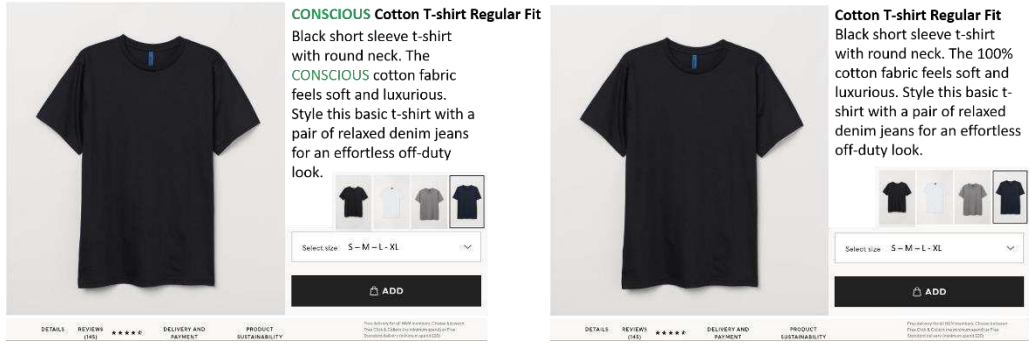


Figure 1. Information about the Conscious T-shirt (L) and the non-sustainable version of the T-shirt (R) in the control condition.

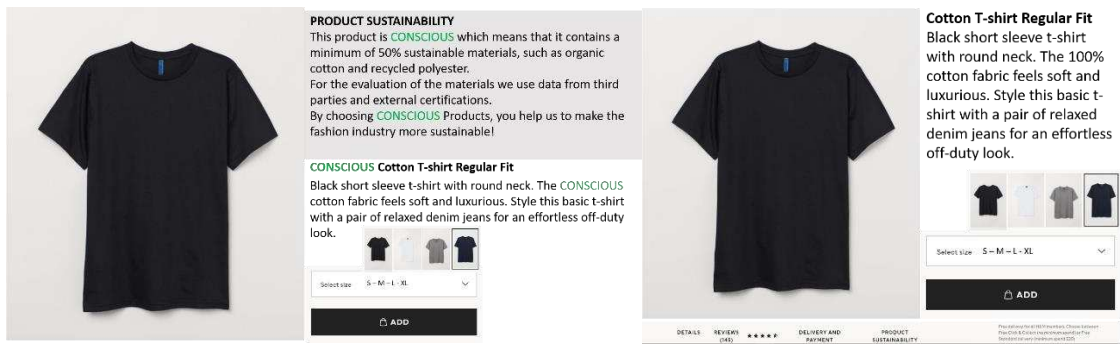


Figure 2. Verbal nudge condition with the Conscious T-shirt on the left and the non-sustainable version of the T-shirt on the right.



Figure 3. The visual nudge used in the experiment.

Table 1
Effect of both type of nudges on consumers' choice for sustainable fashion.

		Verbal nudge (n=98)	Visual nudge (n=94)	No nudge (n=97)
Choice T-shirt	Regular	27.1%	44.7%	55.1%
	Sustainable (Conscious)	72.9%	55.3%	44.9%

Table 2

Effects of explanatory variables on choosing the sustainable version of the T-shirt ¹⁾

Variables (X _i)	Estimated Coefficients (β)	Log odds (Exp (B))
Verbal nudge	1.396 (.338)***	4.040
Visual nudge	.581 (.318)*	1.788
Average Ecological Social behavior	.361(.097)***	1.434
Average Fashion Involvement	-.211 (.105) **	.809
Gender	-.577 (.282)	.562
Age	-.014 (.014)	.986
Financial Situation	-.055 (.069)	.947
Constant	-.071 (.799)	.931
Log likelihood (estimated model)	329.620	
Omnibus Tests of Model Coefficients	X ² [7] = 43.808 (p < .001)	
R ² Nagelkerke	.199	
Hosmer & Lemeshow Goodness of Fit	X ² [8]=9.071 (p= .336)	
U ² (% predicted correctly)	67.8%	

***significant (p <.01), **significant (p <.05), *significant (p <.10)

¹⁾ According to McFadden (1984) and Hensher et al. (2005) the sample size allowed us to use binary logistic regression analyses (minimum requirement of 50 choosing each alternative)

Table 3

Classification of correctly predicted consumers' choice

		Predicted		
		Choice T-shirt		% correct
Observed		Regular	Sustainable	
Choice	Regular	69	49	58.5
T-shirt	Sustainable	39	116	74.8
Overall (%)				67.8

The cut-value is .500

Table 4

Willingness to pay scores (WTP) for the T-shirt given the nudge condition and the consumers' choice

Choice T-shirt:	WTP_R ¹⁾				WTP_C ²⁾			
	No-nudge	Visual nudge	Verbal nudge	Average WTP	No-nudge	Visual nudge	Verbal nudge	Average WTP
Regular	4.13 (.953) (N=54)	4.38 (1.10) (N=42)	4.62 (1.06) (N=26)	4.32 (1.04) (N=122)	3.93 (1.18) (N=54)	4.02 (1.14) (N=42)	4.42 (.809) (N=26)	4.07 (1.10) (N=122)
Conscious cotton	4.11 (1.15) (N=44)	3.87 (1.01) (N=52)	4.24 (1.16) (N=70)	4.09 (1.12) (N=166)	4.41 (1.06) (N=44)	4.48 (.874) (N=52)	4.70 (1.15) (N=70)	4.55 (1.05) (N=166)

¹⁾Willingness to pay scores for the regular T-shirt ²⁾Willingness to pay scores for the Conscious T-shirt