sustainability

MDPI

Article

Effects of Default Option and Lateral Presentation on Consumer Choice of the Sustainable Option in an Online Choice Task

Gerrit Antonides [1,*] and Michelle Welvaarts [2]

[1] Department of Social Sciences, Wageningen University, 6700 EW Wageningen, The Netherlands
[2] Nijmegen School of Management, Radboud University, 6500 HK Nijmegen, The Netherlands; MichelleWelvaarts@hotmail.com
* Correspondence: Gerrit.Antonides@wur.nl; Tel.: +31-317-482415

Received: 5 June 2020; Accepted: 6 July 2020; Published: 7 July 2020

Abstract: In order to reduce the environmental impact of products, sustainability must be improved in many industries. One way to accomplish this aim is to influence consumers by means of nudging in order to choose more sustainable products in online choices. We investigated whether the lateral presentation of products from left to right or from right to left, along with using a status quo default option, influence sustainable choices of make-up products. A pilot study has been conducted in order to obtain background information on make-up choices. Next, an online, quantitative experiment has been conducted in which 330 women together made 1094 hypothetical make-up product choices. Making the sustainable option the default resulted in more sustainable choices than making unsustainable products the default. The left–right versus right–left presentation of products did not significantly influence consumer choices. Furthermore, higher educated people and those finding sustainability important relatively often chose a sustainable make-up product. People frequently wearing make-up and those finding a low price important relatively often chose an unsustainable make-up product. Our experiment suggests that making sustainable products the default choice makes a sustainable choice about 8% more likely than making unsustainable products the default choice.

Keywords: sustainable choice; online purchase; default option; left–right presentation

1. Introduction

The environmental impact of products has become very important [1,2]. Environmental problems of the 21st century cannot be resolved through global governance alone [3]; consumers need to contribute to this aim as well. Sustainability comprises environmental, social, and economic aspects [4,5] and can be achieved in many consumer areas, including make-up as part of cosmetics [6]. However, it is not always clear what the green labels given to make-up products mean, which makes it hard to choose between products [6,7]. Regarding the environmental aspect, people place high emphasis on recyclability of the packaging, low energy use and low carbon dioxide emissions during production and shipping [7]. People find it important that products are produced in an environmentally-friendly way and their home appliances must be energy efficient. However, the environmental aspect is not a priority for consumers when talking about green beauty products [6,8]. Not all make-up products are environmentally-friendly [9]. Indeed, consumers know that, for example, palm oil and polyethylene beads have a bad impact on the environment. Often, chemical ingredients are used in make-up products [10]. However, not all synthetic ingredients (such as preservatives in sunscreens) have a negative effect on skin health [11]. These can be even better, safer or more environmentally-friendly than natural ingredients (containing, for example, residual pesticides).

In addition to the environmental impact of consumption, the social and economic impacts are important [4,5]. The social aspect of sustainability is about balancing individual with group needs [12]. In addition, animal-friendliness is considered an important social aspect [7]. Individual needs, leading to sustainable product purchases, are especially egocentric and related to health [6,8]. Other individual reasons are self-expression and status display, and a "license to sin" [6]. With this last reason, people try to relieve the guilt of non-environmentally-friendly behaviors.

Regarding group needs, value must be added to communities [5]. Stakeholders must be supported. Companies could take care of their employees by offering good working conditions and wages. However, a company could also offer communities in which their businesses operate a better future, for example, by providing whole families with their basic needs, such as food, housing, education and healthcare.

Lastly, humane animal treatment is seen as important [7,13]. Since 2013, animal testing for cosmetics has been forbidden in the European Union [14]. However, still, some make-up contains animal products. Using vegan products could take care of this part of the social sustainability aspect.

The economic impact captures both financial and management accounting, including issues of "financial capital (i.e., equity, debt), tangible capital (i.e., machinery, land, stocks) and intangible capital (i.e., reputation, inventions, know-how, organizational routines)" [5] (p. 133). Furthermore, the economic aspect of sustainability considers economic growth as a solution to social and ecological problems [10].

For consumers, "economically sustainable consumption is related to the consumer's decision to not buy products and the disposition to forgo specific purchases" [15] (p. 827). Reasons for consumers to buy economically sustainable products are saving motives, waste concerns, and avoidance motivations [15]. Meanwhile, often, economically non-sustainable products are purchased to attain instant happiness and future well-being.

When talking about sustainability, the economical pillar is seen as less important than the social and environmental pillar [7]. However, people do find fair payment of producers important. Additionally, people do not like wasting products. For example, preservatives in sunscreens could be important for them.

The total Dutch consumption expenses on cosmetics in 2016 have been estimated at over €3.3 billion [16]. Approximately 75% of all women wear make-up and of these women, 80% wear it on a daily basis [17]. These observations show the importance of make-up especially for women. Companies in the make-up industry are increasingly trying to take part in sustainable development by implementing sustainable practices in their supply chain, packaging and ingredients [18–20].

Annual online purchases of cosmetics products are increasing by 4%, up to 8% of total purchases in 2016 [16]. Online product offerings may use different ways of presenting sustainable products, with different consumer choices as a result. Here, we aim to study how the lateral presentation of sustainable products to the left or to the right of unsustainable products, and how presenting a choice option as the status quo, in a make-up choice task, influence consumers' sustainable product choices in this industry. To the best of our knowledge, this type of research has never been conducted for online consumer choices or in the make-up product market. The results will provide recommendations to the industry, marketers and public policy about how to help consumers to choose the sustainable option.

2. Theoretical Background

2.1. Choice Architecture

Choice architecture has been discovered as a way of influencing consumer choice [21–23]. By changing the choice architecture, the freedom to choose should be preserved according to the libertarian paternalism view of Thaler and Sunstein [22]. Nudging is, according to them, a way of influencing people's behavior in directions that will make their lives better. Choice architecture may be accomplished in different ways. For example, to increase consumer preference, products could be

placed at eye-level [23–25], presented in separate categories or interspersed with other categories [26], or given particular colors (say, green for sustainable products). Additionally, normative messages showing that most people prefer a particular product [27] or narrative could be added to make product options more attractive [28].

Several ways of nudging can be used to influence people in online choices, such as framing, opt-in and opt-out formats [29] and changing the presentation order of choice options [30]. Research in the food context shows that consumers choose healthier foods if the presentation of the product follows the natural mental representation [31]. The natural mental representation, in the food context, means presenting healthy food on the left-hand side and unhealthy food on the right-hand side of a choice menu.

An important way of using choice architecture is to present a product in comparison with a certain preferred reference product category. For many consumers, mainstream, unsustainable products serve as the preferred reference category and any product choice deviating from the reference category may be perceived as a loss. In general, a perceived loss has greater impact on consumer preferences than a commensurate gain [32,33]. Therefore, the more sustainable option will yield less positive attitudes, preferences and choices if the reference option is unsustainable. In order to induce consumers to choose the more sustainable option, one way to influence them is to present the sustainable product as the preferred reference category, consequently resulting in consumers feeling a loss when buying the unsustainable product [34,35]). When an option is considered less sustainable than the sustainable reference option, consumers may hold a negative attitude toward it.

Frederiks, Stenner and Hobman [36] state that people tend to stick to default settings, especially when the amount or complexity of information increases. Even though alternatives may yield better outcomes, people still tend to resist deviation from the default option. The default option saves time, is often viewed as the best option, and is a recommendation of the provider [37,38]. The default option could also be the first available option or solution that suffices or satisfies the minimum requirements [37]. Green defaults can have major consequences for the environment, according to Sunstein and Reisch [39]. However, the effects of using default options in the online consumer environment are still largely unknown.

Another way of influencing consumer choice is by following the natural mental representation in the presentation of a product. According to body-specificity theory, for right-handers, preferred alternatives are associated with the right-hand side of a horizontal continuum [40]. This is especially true for countries where people read from left to right [41]. Presenting products in line with the prevailing mental representation implies that the ease of processing the choice environment will be greater if preferred products are presented on the right-hand side of the horizontal continuum. It has been shown that unhealthy foods are often associated with more positive effect [42] and more desire and temptation [43] than healthy foods and are generally preferred to healthy foods. Romero and Biswas [31] showed that less desirable, healthy products were preferred when they were presented laterally to the left of a desirable and tempting product (unhealthy product) because they were presented in line with the prevailing mental left–right representation. A similar reasoning may apply to preference for sustainable products. Unsustainable products may be assumed to be the preferred category of products in many cases, including cosmetics products. Hence, placing the most sustainable product on the left and the least sustainable product on the right of the continuum would result in higher preference for the sustainable product than vice versa. Based on the above literature, the following hypotheses have been formulated.

Hypothesis 1. *Presenting the most sustainable option as the default choice leads to more sustainable consumer choice than presenting the unsustainable option as the default.*

Hypothesis 2. *Presenting the most sustainable option horizontally to the left of the least sustainable option leads to more sustainable consumer choice than presenting it to the right of it.*

The effect of choice architecture on consumer choice mostly has been tested in laboratory experiments, field experiments, and surveys. Additionally, its effects on sustainable choice are largely unknown. Our research aims at showing the effect in the online choice environment and sustainable consumer choice, which both have become more and more important in modern economy.

2.2. Sustainability–Price Trade-Off

Total global natural and organic industry revenue was $34 billion [44] whereas total global cosmetics manufacturing industry revenue was $357 billion [45], indicating about 10% market share of natural and organic cosmetics products. Based on market share, regular cosmetics products seem to be the reference category for making sustainable product choices. However, it is likely that consumer product choice involves a trade-off between price and sustainability, further influencing product choice. Romero and Biswas [31] state that price can be an important influencer of making sustainable choices. Sustainable products often are associated with a higher price than unsustainable products [46]. This is because usually the higher costs of sustainable initiatives must be accounted for [47]. The average price premium consumers are willing to pay for a coffee product with a sustainable label is 10% [48].

Research suggests that 36% of all Dutch consumers are willing to pay more for a sustainable product [49]. Especially for products with a high environmental impact, and where sustainability has direct advantages for the consumer, about 50% of Dutch consumers find sustainable products important [49]; 54% of cosmetics users say they are concerned about environmental impact [50]. People also claim to be willing to pay more because they, generally, are more positive regarding sustainability; they want to consume without a feeling of guilt; because of the increased quality of sustainable products; and because of the economic growth which gives consumers more financial capabilities [49]. However, because of the attitude–behavior gap, it is not sure whether they actually buy sustainable products [35,48,50–52]. Van Loo et al. [53], concerning sustainability labels on coffee, state that a valid reason for making sustainable choices is very important for consumers. Such a reason can be provided by drawing visual attention to sustainability labels [53]. Grunert [54] argues that it is important to label a product as being sustainable to make sure that consumers understand what this label actually stands for; to let consumers find the label credible; and to let the label be a reliable help in making sustainable choices. Finally, it is important to help consumers to gain enough motivation for making the sustainable choice, even when experiencing time pressure and being in an information overloaded environment. Meise, Rudolph, Kenning and Phillips [55] state that in order for consumers to be willing to pay a higher price for a sustainable product, compared to a less sustainable product, information about sustainability must be included with the product. Based on the above, the following hypothesis has been stated:

Hypothesis 3. *The perceived importance of sustainability is positively related to the willingness to pay a higher price for a more sustainable product.*

3. Pilot Study

A pilot study was conducted in order to find out what aspects people consider important regarding make-up products. The relevant population for this research were Dutch women aged 12 years or over. Girls start wearing make-up from the age of 11 years and older [56]. Since they go to secondary school from the age of 12 years, this age has been taken as a lower bound for our sample. Since 61% of women of 60 years and older still wear make-up, no maximum age was set [17].

The pilot study aimed at gathering information about the consumer's cosmetics buying process. The pilot study consisted of seven qualitative, face-to-face personal interviews containing open questions. Respondents were selected based on convenience (via face-to-face contact, telephone and Facebook), taking into account the need for sample variety, i.e., ages ranging from 18 to 55 years, and various job statuses. All interviews have been transcribed and analyzed.

Firstly, questions have been asked about how respondents took price into account in the buying process, how important a low price was, what the respondents considered to be a fair price, how important a fair price was and why, and what respondents perceived as a fair price for make-up products and why. The prices respondents were willing to pay appeared to differ across make-up products and across respondents, because of different perceptions of quality and brand experience. It appeared that most respondents thought that a (slightly) more expensive product also resulted in a higher quality.

Next, questions have been asked regarding what respondents considered as a sustainable product, what aspects of sustainability were important, how important sustainability was (regarding four make-up products) and why, and how the respondent took sustainability into account in the buying process. These questions refer to the sustainability aspects, considered in the introduction. Additionally, it has been asked how many more people would be willing to pay for a sustainable make-up product as compared with an unsustainable product, what people perceived to be a fair price for this product, and for which aspects of sustainability people would pay more (or less).

Often, respondents claimed to find sustainability important. However, even when a product was unsustainable, they still bought it for financial reasons. In addition, most respondents said to not even know or investigate whether a product actually was sustainable. Often, it was unclear for them how (environmental) sustainability was related to make-up products. Additionally, some respondents questioned whether the environmental problems were really that big.

Regarding the different aspects of sustainability, firstly, working conditions at the production site and then animal testing were seen as important. Being good for the environment and offering society help were seen as nice, but not necessary. Opinions differed when child labor might be used. Respondents did not take into account allergy-friendly and vegan make-up. Despite some comments, respondents mentioned that labels should be developed to give more insight into sustainable make-up, to let consumers make the right choices and to establish trust in sustainable make-up. Prices were considered very important when developing such labels.

Based on the pilot study, the online experiment was constructed. In the introduction of the survey, the concept of sustainability was made clear. Additionally, it was hard to match different sustainability degrees with the large range of reported prices of make-up products. Therefore, we decided to let consumers state the average price they paid for each make-up product. Based on this reference price, a 5-point sustainability–price scale has been constructed using 5% price increases with each point on the sustainability scale (up to 20% price increase). Beforehand, it was asked which of the four make-up products consumers used.

4. Methods for the Online Experiment

An online, quantitative experiment has been conducted. This section explains the sample, data sources and measures. Four make-up product types have been selected for this study—foundation, lipstick, eyeshadow and nail polish—based on what women wear most and based on the different kinds of applications in each make-up product category (eyes, lips, complexion and nails) [57]. The experiment presented make-up products with different degrees of overall sustainability. The effects of different ways of presentation on consumer choices was observed.

4.1. Design

The experiment comprised a 3 (default at least sustainable, default at most sustainable, or without default) × 2 (presentation from most to least or least to most sustainable) mixed between–within-subjects design in which each subject chose a variant of each of the four make-up products (see Table 1). However, to minimize the number of conditions, the design was incomplete since two products (lipstick and foundation) were only presented with a default, whereas the other two products (eyeshadow and nail polish) were only presented without default. In essence, for two products, a 2 (default at least sustainable, default at most sustainable) × 2 (most to least or least to most sustainable) between-subjects

design was used, whereas for the other two products a 1 (without default) × 2 (most to least or least to most sustainable) between-subjects design was used. In each product pair, one product contained liquid substance, and the other solid substance. The same left–right presentation manipulation was used for all four products within a particular experimental condition. In each condition, half the subjects were presented first with the two products in default mode, then with the two products in no-default mode; this order was reversed for the other half of the subjects. The subjects were randomly assigned to each of the conditions.

Table 1. Experimental design.

	Within-Subjects Manipulation (Random Order)		
	Presentation Mode [1]	**Default [2]**	**No Default [3]**
Between-Subjects Manipulation (Randomized)	LM	Most sustainable	
	ML	Least sustainable	
	LM	Most sustainable	
	ML	Least sustainable	

Notes: [1] LM = scale from least to most sustainable, ML = scale from most to least sustainable; [2] Products used: Eyeshadow, nail polish; [3] Products used: Lipstick, foundation.

4.2. Procedures

The experiment has been conducted in digital survey form and started in the first week of May 2019. The experiment represented a hypothetical buying process, in which respondents chose between several options in order to customize their own make-up products.

Firstly, for each product type, respondents saw a picture of the product they were "buying" hypothetically and the name of the product type (see Figure 1). For each product, the respondents made a choice (by clicking on the preferred box) between several options regarding the product attributes: color (choice between five different colors), and finish (matte or glossy) for lipstick, eyeshadow and nail polish; and color and application method (pump or foam) for foundation. For each product, consumers chose a certain degree of sustainability on a 5-point scale. The scale reflected different degrees of overall sustainability as defined both in an introductory statement and an information box on the choice screen (see Figure 1). The introductory statement read as follows: "Sustainability is considered as doing well for the environment (for example, not using palm oil and using green energy), for companies (at least earning the cost price), for humans (allergy-friendly products), animals (vegan products), employees (good work conditions), and society (like building schools by companies)". No brand names were mentioned and no information on the actual objective environmental, social, and economic impact was provided.

The default manipulations were applied by putting a cross-mark on either the least or the most sustainable product indicated on the sustainability scale (see Figure 1). The left–right manipulation was applied by reversing the least–most scale to the most–least sustainability scale.

The price was shown directly underneath the sustainability choice scale and was adjusted to the degree of sustainability selected. The price of the least sustainable option for each product equaled the self-reported usual price paid for that type of product. Depending on the degree of sustainability, the price of the product was increased by 5% for each additional point on the scale (to a maximum of 20% for the most sustainable product), thus making sustainable products more expensive than unsustainable products. Additionally, information about the attributes was given below the choice frame, and the meaning of sustainability and its different degrees was explained. Finally, by clicking on the "choose" button, respondents finished the hypothetical buying process of the particular make-up product. Respondents went through the above process for all four different make-up products. Even though the sustainability degree and its related price were the most important parts of the experiment, information about the color, finish and application method were added in order to make the experiment more vivid and to disguise the focus on sustainability.

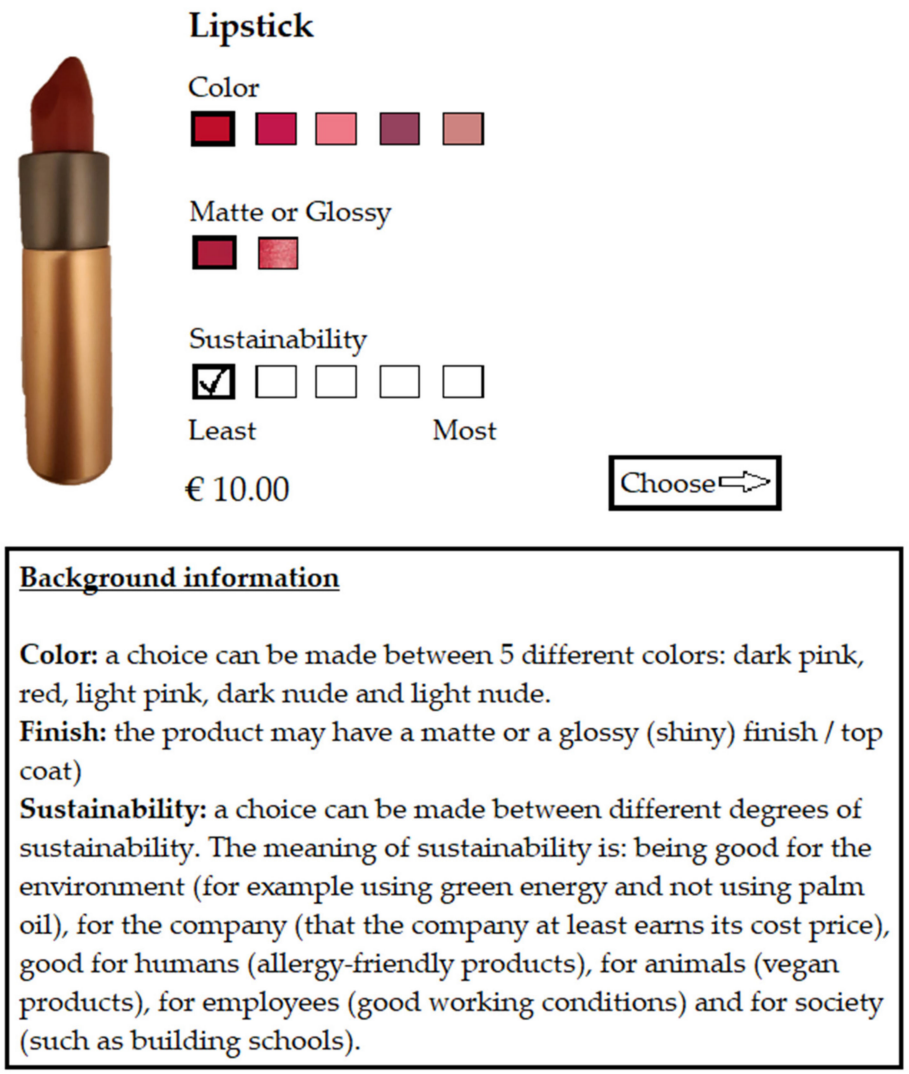

Figure 1. Example of the product choice task with lateral presentation from "least sustainable" on the left to "most sustainable" on the right, default option set at "least sustainable", and price at the "least sustainable" option (adjusted by degree of sustainability).

For the choice aspects of color, finish and application method, the default had been set similar to the default regarding the sustainability degree to disguise the focus on sustainability. For example, if the sustainability scale was presented from most to least sustainable, with the default at the most sustainable option, then the default of the other two choice aspects of the make-up product were similar. The color, finish and application method have not been manipulated regarding the presentation on the horizontal continuum, since these choice aspects could not be considered as either good or bad and no effects of the left–right manipulation were expected.

4.3. Sample

The total sample comprised 330 respondents, after excluding those who never used make-up. The survey questionnaires were distributed online via Facebook, WhatsApp, Instagram, Twitter and E-mail on a Wednesday at noon (as recommended by Coosto [58]). In addition, to increase the sample size, snowball sampling has been conducted by asking friends, family and colleagues to share the survey (via Facebook, WhatsApp, Instagram, Twitter or E-mail) with their family, friends and colleagues. These persons have been contacted face-to-face, and by telephone. An incentive for

completing the questionnaire was offered using a lottery (one mascara or foundation product, for a maximum of 17 euros, and available in Dutch stores).

4.4. Measures

In order to eliminate unclear questions and errors in the survey, five test surveys have been conducted before distributing the actual survey. To reduce non-response and early quitting of the survey, relatively easy questions were asked at the beginning and the end of the survey, whereas the more in-depth questions were asked in the middle. Mostly multiple-choice and scale questions have been asked in order to make the survey clear and fast. Survey questions included the use frequency of make-up, the make-up products used, the prices people usually paid for the make-up products, importance of sustainability of a make-up product, importance of the perceived fair price, use of sustainable make-up, most-used buying channel, age, and education.

The following items concerning the importance of sustainability, low price and fair price were adapted from Ferreira and Coelho [59] and were answered on a 5-point Likert scale running from 1 (strongly disagree) to 5 (strongly agree).

1. When I buy a make-up product, I am very concerned about low prices, but I am equally concerned about product quality.
2. I compare the prices of different brands of make-up to be sure I get the best value for the money.
3. I attach great importance to a low price of make-up products.
4. The sustainability degree of make-up varies with its price.
5. I attach great importance to a fair price regarding make-up.
6. A fair price regarding make-up is something that I value a lot.
7. I attach great importance to the sustainability of make-up.
8. Sustainable make-up is something that I value a lot.

In addition, we adapted questions from Slack [60], in which it was asked how important each of the following factors were with respect to make-up, answered on a 5-point scale (1 = it is not really important, 2 = it is only a problem if it falls below a minimum standard, 3 = it is convenient but not crucial for me, 4 = it is important for my satisfaction, 5 = it is crucial for me to be satisfied).

The reported average prices of the make-up products were: €14.50 for foundation, €10 for lipstick, €9.60 for eyeshadow, and €5.50 for nail polish. 81% were willing to pay a price increase of at least 5% for more sustainable make-up. On average, most people were willing to pay an approximate price increase of 10% as compared with the most unsustainable product. Most people purchased make-up products in physical stores, although about 14% bought them, either partly or exclusively, online.

1. Sustainability
2. Low price
3. Fair price

5. Results

Table 2 shows the age distribution of respondents, which was categorized into three groups for further analysis (0–18, 19–44, and 45 years or over). The highest completed education levels of respondents were also categorized into three groups (elementary/lower, intermediate, and higher). The frequency of make-up use was categorized into three groups (5–7 days a week, 1–4 days a week, less than once a week). Younger and higher educated women were overrepresented as compared with the distribution of women in the population. Yet, the sample showed a large variation in age and level of education.

Table 2. Sample distribution.

Variable		Sample%	Population% [1]
Age in years	12–24	43.1	17.5
	25–34	20.6	13.4
	35–44	4.5	11
	45–54	16.7	12
	55–64	11.2	10.1
	65+	3.9	13.8
Education level	Elementary/Lower	13	23.3
	Intermediate	38.8	45.6
	Higher professional/general	46.7	29.6
Make-up use	5–7 days per week	70	
	1–4 days per week	18.8	
	Minimally 1 time per month	3.9	
	Only exceptionally	4.5	
	Never	2.7	
Make-up usage	Foundation	68.5	
	Lipstick	72.1	
	Eyeshadow	62.1	
	Nail polish	64.8	
Purchase channel	Online	3.3	
	Physical store	83.3	
	Both online and physical store	10.6	
	No answer	2.7	

[1] Statistics Netherlands [61]. Age distribution corrected for wearing make-up [17].

In order to reduce the reported information on the importance of a low price, fair price, and sustainability, principal axis factor analysis with oblique rotation has been conducted on these variables. After deleting items 1, 2 and 4 with communalities lower than 0.2, a satisfactory three-factor solution was found, explaining 78% of the item variance. The factor "low price" was formed by items 3 and 10 ($\alpha = 0.639$), the factor "fair price" was formed by items 5, 6, and 11 ($\alpha = 0.808$), and the factor "sustainability" was formed by items 7, 8, and 9 ($\alpha = 0.919$). The reliabilities of the scales were satisfactory, and we took the simple averages of the respective items as the scale values.

All respondents completed information for at least one product choice; partial missing information was mainly due to non-use or non-reported average prices paid for the products. In total, 1094 product choices were made. Next, we conducted ordinal regression analysis (probit) with product choice (measured on the 5-point sustainability scale) as the dependent variable, and experimental manipulations, background information, and product dummy variables as independent variables. To allow for correlated error terms within observations of the same respondent, robust clustering of error terms was applied. Stata 15 software was used to carry out the regressions. First, we ran the regression for the choices where default options were presented (involving the products of foundation and lipstick only) on 545 product choices (see Table 3).

The effect of manipulation of the default option (check mark on the 5-point sustainability choice scale) was significant ($p < 0.05$), indicating that the default at the least sustainable option was associated with less sustainable product choice than with the default at the most sustainable option, as expected. The average marginal effect of default, calculated at the sample mean, indicates that the probability of buying a sustainable product decreases by 8% if the default option changes from most to least sustainable. However, the effect of manipulating the presentation of the sustainable choice scale from least to most or from most to least sustainable (the lateral presentation) was not significant, contrary to expectations. Type of product (foundation or lipstick) was not significant, indicating that respondents made equally sustainable choices for either product, everything else equal. Both high education ($p < 0.01$) and importance of sustainability ($p < 0.01$) were associated with more sustainable

product choice than medium or low education, and unimportance of sustainability, respectively. The importance of a low price was associated with less sustainable product choice ($p < 0.05$), but the effect of importance of a fair price was not significant. The effects of age and medium frequency wear of make-up were not significant. McFadden's pseudo-R^2 of the regression was 0.087.

Table 3. Ordinal regression of sustainability of product choices with default options.

Variables	Coef.	Std. Err. [g]	
High frequency wear [a]	−0.371	0.208	*
Medium frequency wear [a]	−0.144	0.121	
Age 12–24 years [b]	−0.333	0.279	
Age 25–54 years [b]	−0.350	0.273	
Medium education [c]	0.176	0.193	
High education [c]	0.573	0.198	***
Low price importance	−0.168	0.067	**
Fair price importance	−0.078	0.084	
Sustainability importance	0.548	0.077	***
Product lipstick [d]	0.061	0.065	
Default at least sustainable [e]	−0.273	0.120	**
Continuum from most to least [f]	0.075	0.118	
Constant 1	−0.240	0.498	
Constant 2	0.017	0.502	
Constant 3	0.855	0.510	
Constant 4	1.291	0.514	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Default values: [a] low frequency of make-up wear, [b] age 55 years or over, [c] low education, [d] product foundation, [e] default indicated at most sustainable, [f] continuum from least to most sustainable. [g] Robust standard errors based on respondent-clustered error terms.

Next, we ran the regression of sustainable product choice on all choices made (involving all four make-up products) on 1094 observations (see Table 4). The effect of default at the least sustainable option was negative (−0.150) and not statistically significant, as compared with no-default option. The effect of default at the most sustainable option was positive (0.115) and not statistically significant, as compared with the no-default option. However, a test of the equality of the two effects was rejected ($Chi^2(1) = 4.91$, $p < 0.05$), indicating significant different effects of the two default options on the sustainability of the product choices. The difference between the coefficients (0.265) almost equals the absolute value of the coefficient of the default manipulation in Table 3 (0.273), indicating about equal change in likelihood of choosing the sustainable option in both analyses.

Presenting the most sustainable option on the left or on the right of the sustainability scale had no effect on the sustainability of the product choices, contrary to expectations. The effects of product types were not significant, suggesting that sustainable product choice was not dependent on the type of product. It must be kept in mind, though, that the product effect of nail polish was confounded with the no-default manipulation. So, in effect, the non-significant effect of nail polish merely indicates that the effect was not significantly different from the effect of the eyeshadow product. The effects of the remaining variables were the same as in Table 2, except for the negative effect of medium make-up wear frequency, as compared with low wear frequency. A test of equality of the effects of high and low frequency wear was not significant ($Chi^2(1) = 2.59$, n.s.), indicating that the effect sizes were equal.

Although sustainable products generally are less popular than regular products, they may be more desirable for people who find sustainability more important. For those people, the left–right presentation order may influence their choices more than for those who are indifferent. By way of exploratory investigation, we included interaction terms of the importance of sustainability and left–right presentation order, and importance of sustainability and default presentations. However, none of the interaction effects were statistically significant.

Table 4. Ordinal regression of sustainability of product choices with default and no-default options.

Variables	Coef.	Std. Err. [g]	
High frequency wear [a]	−0.393	0.178	**
Medium frequency wear [a]	−0.226	0.104	**
Age 12–24 years [b]	−0.108	0.211	
Age 25-54 years [b]	−0.121	0.203	
Medium education [c]	0.087	0.158	
High education [c]	0.500	0.167	***
Low price importance	−0.135	0.057	**
Fair price importance	−0.055	0.071	
Sustainability importance	0.508	0.065	***
Product lipstick [d]	0.060	0.065	
Product nail polish [d]	0.110	0.070	
Default at least sustainable [e]	−0.150	0.095	
Default at most sustainable [e]	0.115	0.096	
Continuum from most to least [f]	0.020	0.099	
Constant 1	−0.033	0.371	
Constant 2	0.263	0.372	
Constant 3	1.129	0.381	
Constant 4	1.561	0.385	

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Default values: [a] low frequency of make-up wear, [b] age 55 years or over, [c] low education, [d] product foundation, [e] no default indicated, [f] continuum from least to most sustainable. [g] Robust standard errors based on respondent-clustered error terms.

6. Discussion

Our study has tested the effects of two nudges—presenting default choice options, and left-to-right versus right-to-left presentation order of the choice options—on the choice of degree of make-up product sustainability. Product sustainability was defined based on its global environmental, social, and economic impact without providing information about its actual objective impact. The degree of product sustainability varied from "least sustainable" to "most sustainable" on a 5-point scale. The main result shows a significant effect of default choice options on sustainable consumer choice in an online choice environment.

On average, the choice process with the default at the most sustainable choice option resulted in choosing the most sustainable product more often than when the default was placed at the least sustainable choice option. The sustainable product choice was about 8% more likely if the default product was sustainable than if it was unsustainable. The effect of offering products without default fell in between. Since the level of sustainability was correlated with the price level in our experiment, the results suggest that consumers indeed were willing to pay more in order to buy more-than-average sustainable products if the default was set at the most sustainable option, and they were less willing to pay premium prices for more-than-average sustainable products if the default was set at the least sustainable option. This result may be used to increase sustainable product choices in online purchase environments by presenting the most sustainable product as the default choice. According to Tversky and Kahneman [33], the effect occurs because a loss—considered as deviation from the default option—has greater impact on preferences than a commensurate gain. Additionally, Frederiks et al. [36] expected that in opting-out situations, consumers sooner choose the default option (compared to other options), among other ways to influence green consumer choices. Our result is also in line with Van Dam and De Jonge [35] who found that negative labeling of a non-green product had a different (larger) effect on sustainable choices than positive labeling of a green product (favoring the green option).

Product providers could use our findings by offering choice frames and using defaults, as in our experiment. Instead of using different choice frames, alternative ways of using defaults may be used, such as, for example, presenting products in particular order (the first of which would act as a default). Presentation order effects may have significant effects on consumer choice, as shown in Joachims et al. [30].

The current research did not show any significant effect regarding left-to-right versus right-to-left presentation of choice options on the horizontal continuum, contradicting findings by Casasanto [40], Romero and Biswas [31], and Spalek and Hammad [41]. We based our assumption of lower preference for sustainable products than for regular products on the much larger sales volume for the latter. This preference basis is qualitatively different than the sensory experience associated with healthy and unhealthy products, used in Romero and Biswas [31]. As sensory experience is probably a more intuitive preference basis than market information, it may explain why the left–right presentation was successful in food but not in make-up choices. Furthermore, our choice continuum comprised a range of choice options differing in both sustainability and price, which differs from the continuums of desirability and health used in Romero and Biswas [31], who presented two different products (one on the left side and one on the right side) from which subjects could choose, without corresponding difference in price. We find that our more realistic lateral choice presentation, varying both sustainability and price, did not influence consumer preferences for sustainable products.

Obviously, consumers who found the environment more important tended to choose more sustainable make-up products, implicitly indicating that they were willing to pay a higher price. Grob [62] argues that environmental behavior is mainly caused by personal philosophical values and emotions. The current research agrees with this, although finding a low price important reduced the level of sustainable product choices. Except for people who value sustainability more, higher education also seems to be associated with more sustainable choices, whereas a lower price and higher frequency of using make-up products was associated with less sustainable choices. It is recommended for companies to approach their target groups taking these characteristics into account.

Since we focused exclusively on sustainable consumer choice as defined in the experiment, our findings cannot be used to estimate carbon emission reductions of any other objective indicators of environmental improvements associated with more sustainable product choice. Furthermore, although our sample is not representative of the Dutch population, the variety in age and education is large enough to draw tentative conclusions for Dutch women purchasing make-up products online. However, the willingness to participate in our survey and unknown geographical location of the participants are factors that should be taken into consideration in generalizing our results to the Dutch population, apart from generalizing to other countries. In addition, our research is aimed at the cosmetics industry, more specifically at women who wear make-up and are not necessarily applicable to other industries. Although our research shows that about 14% of respondents buy their make-up online, online purchases are following a trend of increasing volume and will become more relevant in the future.

Author Contributions: Conceptualization, G.A. and M.W.; methodology, G.A. and M.W.; software, M.W.; validation, G.A. and M.W.; formal analysis, G.A. and M.W.; investigation, M.W.; resources, M.W.; data curation, M.W.; writing—original draft preparation, G.A. and M.W.; writing—review and editing, G.A. and M.W.; supervision, G.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Lélé, S.M. Sustainable development: A critical review. *World Dev.* **1991**, *19*, 607–621. [CrossRef]
2. Luchs, M.G.; Brower, J.; Chitturi, R. Product choice and the importance of aesthetic design given the emotion-laden trade-off between sustainability and functional performance. *J. Prod. Innov. Manag.* **2012**, *29*, 903–916. [CrossRef]
3. Wood, C. *Environmental Impact Assessment: A Comparative Review*, 2nd ed.; Pearson Prentice Hall: Harlow, UK, 2003.
4. Charter, M.; Tischner, U. *Sustainable Solutions: Developing Products and Services for the Future*; Routledge: London, UK, 2017.

5. Dyllick, T.; Hockerts, K. Beyond the business case for corporate sustainability. *Bus. Strateg. Environ.* **2002**, *11*, 130–141. [CrossRef]
6. Cervellon, M.-C.; Carey, L. Consumers' perceptions of 'green': Why and how consumers use eco-fashion and green beauty products. *Crit. Stud. Fash. Beauty* **2011**, *2*, 117–138. [CrossRef]
7. Hanss, D.; Böhm, G. Sustainability seen from the perspective of consumers. *Int. J. Consum. Stud.* **2012**, *36*, 678–687. [CrossRef]
8. Nielsen. *Unpacking the Sustainability Landscape*; Insight Report, CPG, FMCG & Retail 11-09-2018; Nielsen: New York, NY, USA, 2018.
9. Natural Product Insider. Top Sustainability Concerns Facing Cosmetics Industry. 2016. Available online: https://www.naturalproductsinsider.com/beauty/top-sustainability-concerns-facing-cosmetic-industry (accessed on 26 June 2020).
10. Csorba, L.M.; Boglea, V.A. Sustainable cosmetics: A major instrument in protecting the consumer's interest. *Reg. Bus. Stud.* **2011**, *3*, 167–176.
11. The Body Shop. Onze Ingrediënten. Available online: https://www.thebodyshop.com/nl-nl/over-ons/onze-ingredienten (accessed on 19 February 2019).
12. Purvis, B.; Mao, Y.; Robinson, D. Three pillars of sustainability: In search of conceptual origins. *Sustain. Sci.* **2019**, *14*, 681–695. [CrossRef]
13. The Body Shop. *Enrich not Exploit, Sustainability Report 2017*; The Body Shop International Limited: Watersmead, UK, 2018.
14. European Commission. *Communication from the Commission to the European Parliament and the Council on the Animal testing and Marketing Ban and on the State of Play in Relation to Alternative Methods in the Field of Cosmetics*; Document 52013DC0135; European Commision: Brussels, Belgium, 2013.
15. Hüttel, A.; Ziesemer, F.; Peyer, M.; Balderjahn, I. To purchase or not? Why consumers make economically (non-) sustainable consumption choices. *J. Clean. Prod.* **2018**, *174*, 827–836. [CrossRef]
16. Statistics Netherlands. Cosmetics Sales up Partly Due to Webshops. 2018. Available online: https://www.cbs.nl/en-gb/news/2018/32/cosmetics-sales-up-partly-due-to-webshops (accessed on 10 August 2018).
17. Marktdata.nl. Three-Quarters of Women Wear Make-up. 2018. Available online: https://www.marktdata.nl/nieuws/Driekwart-van-de-vrouwen-draagt-makeup (accessed on 25 January 2019). (In Dutch).
18. Feng, C.; Chen, H.; Ho, J.C. Promoting the Diffusion of Sustainable Innovations in the Cosmetic Industry. In Proceedings of the 2018 IEEE Technology and Engineering Management Conference (TEMSCON), Evanston, IL, USA, 28–30 June 2018; pp. 1–5.
19. Livesey, S.M.; Kearins, K. Transparent and caring corporations? A study of sustainability reports by The Body Shop and Royal Dutch/Shell. *Organ. Environ.* **2002**, *15*, 233–258. [CrossRef]
20. Peattie, K. Towards sustainability: The third age of green marketing. *Mark. Rev.* **2001**, *2*, 129–146. [CrossRef]
21. Benartzi, S.; Beshears, J.; Milkman, K.L.; Sunstein, C.R.; Thaler, R.H.; Shankar, M.; Tucker-Ray, W.; Congdon, W.J.; Galing, S. Should governments invest more in nudging? *Psychol. Sci.* **2017**, *28*, 1041–1055. [CrossRef] [PubMed]
22. Thaler, R.H.; Sunstein, C.R. *Nudge: Improving Decisions about Health, Wealth and Happiness*; Yale University Press: New Haven, CT, USA, 2011.
23. Velema, E.; Vyth, E.L.; Steenhuis, I.H.M. Using nudging and social marketing techniques to create healthy worksite cafeterias in the Netherlands: Intervention development and study design. *Am. J. Clin. Nutr.* **2017**, *107*, 236–246. [CrossRef] [PubMed]
24. Marchini, A.; Diotallevi, F.; Paffarini, C.; Stasi, A.; Baselice, A. Visualization and purchase: An analysis of the Italian olive oil grocery shelves through an in-situ visual marketing approach. *Qual. Mark. Res.* **2015**, *18*, 346–361. [CrossRef]
25. Thorndike, A.N.; Sonnenberg, L.; Riis, J.; Barraclough, S.; Levy, D.E. A 2-phase labeling and choice architecture intervention to improve healthy food and beverage choices. *Am. J. Public Health* **2012**, *102*, 527–533. [CrossRef] [PubMed]
26. Van Herpen, E.; Fischer, A.R.H.; van Trijp, H.C.M. How to position 'mildly sustainable' products: The joint impact of assortment display and price setting. *Food Qual. Prefer.* **2015**, *46*, 26–32. [CrossRef]
27. Schultz, W.P.; Khazian, A.M.; Zaleski, A.C. Using normative social influence to promote conservation among hotel guests. *Soc. Influ.* **2008**, *3*, 4–23. [CrossRef]

28. Winterbottom, A.; Bekker, H.L.; Conner, M.; Mooney, A. Does narrative information bias individual's decision making? A systematic review. *Soc. Sci. Med.* **2008**, *67*, 2079–2088. [CrossRef] [PubMed]
29. Johnson, E.J.; Bellman, S.; Lohse, G.L. Defaults, framing and privacy: Why opting in-opting out. *Mark. Lett.* **2002**, *13*, 5–15. [CrossRef]
30. Joachims, T.; Granka, L.; Pan, B.; Hembrooke, H.; Gay, G. Accurately Interpreting Clickthrough Data as Implicit Feedback. In Proceedings of the ACM SIGIR Forum, Tokyo, Japan, 7–11 August 2017; ACM: New York, NY, USA, 2017; Volume 51, pp. 4–11.
31. Romero, M.; Biswas, D. Healthy-left, unhealthy-right: Can displaying healthy items to the left (versus right) of unhealthy items nudge healthier choices? *J. Consum. Res.* **2016**, *43*, 103–112. [CrossRef]
32. Kahneman, D.; Knetsch, J.L.; Thaler, R.H. The endowment effect, loss aversion, and status quo bias: Anomalies. *J. Econ. Perspect.* **1991**, *5*, 193–206. [CrossRef]
33. Tversky, A.; Kahneman, D. Loss aversion in riskless choice: A reference-dependent model. *Q. J. Econ.* **1991**, *106*, 1039–1061. [CrossRef]
34. Pichert, D.; Katsikopoulos, K.V. Green defaults: Information presentation and pro-environmental behaviour. *J. Environ. Psychol.* **2008**, *28*, 63–73. [CrossRef]
35. Van Dam, Y.K.; De Jonge, J. The positive side of negative labelling. *J. Consum. Policy* **2015**, *38*, 19–38. [CrossRef]
36. Frederiks, E.R.; Stenner, K.; Hobman, E.V. Household energy use: Applying behavioural economics to understand consumer decision-making and behaviour. *Renew. Sustain. Energy Rev.* **2015**, *41*, 1385–1394. [CrossRef]
37. Johnson, E.J.; Goldstein, D. Do defaults save lives? *Science* **2003**, *302*, 1338–1339. [CrossRef] [PubMed]
38. Johnson, E.J.; Hershey, J.; Meszaros, J.; Kunreuther, H. Framing, probability distortions, and insurance decisions. *J. Risk Uncertain.* **1993**, *7*, 35–51. [CrossRef]
39. Sunstein, C.R.; Reisch, L.A. Green by default. *Kyklos* **2013**, *66*, 398–402. [CrossRef]
40. Casasanto, D. Embodiment of abstract concepts: Good and bad in right- and left-handers. *J. Exp. Psychol. Gen.* **2009**, *138*, 351–367. [CrossRef]
41. Spalek, T.M.; Hammad, S. The left-to-right bias in inhibition of return is due to the direction of reading. *Psychol. Sci.* **2005**, *16*, 15–18. [CrossRef]
42. Shiv, B.; Fedorikhin, A. Heart and Mind in Conflict: The interplay of affect and cognition in consumer decision making. *J. Consum. Res.* **1999**, *26*, 278–292. [CrossRef]
43. Hofmann, W.; van Koningsbruggen, G.M.; Stroebe, W.; Ramanathan, S.; Aarts, H. As pleasure unfolds. *Psychol. Sci.* **2010**, *21*, 1863–1870. [CrossRef]
44. Grand View Research. Natural Cosmetics Market Size Analysis Report by Product (Skin Care, Hair Care, Fragrance, Color Cosmetics), by Distribution Channel (Supermarket/Hypermarket, Online), and Segment Forecasts, 2019–2025. 2018. Available online: https://www.grandviewresearch.com/industry-analysis/natural-cosmetics-market (accessed on 28 May 2020).
45. IBISWorld. Global Cosmetics Manufacturing Industry. 2019. Available online: https://www.ibisworld.com/global/market-size/global-cosmetics-manufacturing (accessed on 28 May 2020).
46. Ingenbleek, P.T.M. Price strategies for sustainable food products. *Br. Food J.* **2015**, *117*, 915–928. [CrossRef]
47. Choi, S.; Ng, A. Environmental and economic dimensions of sustainability and price effects on consumer responses. *J. Bus. Ethics* **2011**, *104*, 269–282. [CrossRef]
48. De Pelsmacker, P.; Driesen, L.; Rayp, G. Do consumers care about ethics? Willingness to pay for fair-trade coffee. *J. Consum. Aff.* **2005**, *39*, 363–385. [CrossRef]
49. Duurzaam-Ondernemen.nl. More and More Consumers Willing to Pay for Sustainable Products or Services. 2018. Available online: https://www.duurzaam-ondernemen.nl/steeds-meer-consumenten-bereid-extra-te-betalen-voor-duurzame-producten-of-diensten/ (accessed on 6 March 2019). (In Dutch).
50. CBI. *Which Trends Offer Opportunities or Pose Threats on the European Natural Ingredients for Cosmetics Market?* CBI, Ministry of Foreign Affairs: The Hague, The Netherlands, 2019.
51. Ipsos; London Economics Consortium. *Consumer Market Study on the Functioning of the Meat Market for Consumers in the European Union*; SANCO/2009/B1/010; EU Custom Research and Coordination Centre: Brussels, Belgium, 2012.
52. Hussain, S.S. Green consumerism and ecolabelling: A strategic behavioral model. *J. Agric. Econ.* **2000**, *51*, 77–89. [CrossRef]

53. Van Loo, E.J.; Caputo, V.; Nayga, R.M., Jr.; Seo, H.-S.; Zhang, B.; Verbeke, W. Sustainability labels on coffee: Consumer preferences, willingness-to-pay and visual attention to attributes. *Ecol. Econ.* **2015**, *118*, 215–225. [CrossRef]
54. Grunert, K.G. Sustainability in the food sector: A consumer behaviour perspective. *Int. J. Food Syst. Dyn.* **2011**, *2*, 207–218. [CrossRef]
55. Meise, J.N.; Rudolph, T.; Kenning, P.; Phillips, D.M. Feed them facts: Value perceptions and consumer use of sustainability-related product information. *J. Retail. Consum. Serv.* **2014**, *21*, 510–519. [CrossRef]
56. Glamour Magazine. This Is the Average Age Girls Now Start Wearing Make-up. 2014. Available online: https://www.glamourmagazine.co.uk/article/average-age-women-girls-start-wearing-make-up-drops (accessed on 8 March 2019).
57. NCV Nederlandse Cosmetica Vereniging. Make up. 2018. Available online: https://www.ncv-cosmetica.nl/cosmetica/wat-cosmetica/make (accessed on 18 February 2019).
58. Coosto. In 2018, What Are the Best Times to Post on Social Media? 2018. Available online: https://www.coosto.com/nl/blogs/wat-zijn-2018-de-beste-tijdstippen-om-te-posten-op-social-media (accessed on 29 April 2019). (In Dutch).
59. Ferreira, A.G.; Coelho, F.J. Product involvement, price perceptions, and brand loyalty. *J. Prod. Brand Manag.* **2015**, *24*, 349–364. [CrossRef]
60. Slack, N. The importance-performance matrix as a determinant of improvement priority. *Int. J. Oper. Prod. Manag.* **1994**, *14*, 59–75. [CrossRef]
61. Statistics Netherlands. Cosmetics Purchases up, Partly because of Web Shops. 2018. Available online: https://www.cbs.nl/nl-nl/nieuws/2018/32/cosmeticaverkopen-mede-door-webwinkels-omhoog (accessed on 22 May 2020).
62. Grob, A. A structural model of environmental attitudes and behaviour. *J. Environ. Psychol.* **1995**, *15*, 209–220. [CrossRef]