Green Defaults and Eco-Friendly Decision Making:

An Analysis of The Attitude Conditionality Theory

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Abstract - To cope with increasing environmental deterioration, both technological advancements and changes in people's behaviors are needed. When time is a constrain, behavioral tools can be used to induce a certain behavior successfully. By modifying the choice architecture presented to individuals, behavioral economists are able to induce a certain behavior. One of the recently most utilized tools are defaults. Defaults are pre-selected options that allow people to defer decision making. However, there are contrasting views debating where their effectiveness comes from. Some believe defaults are attitude-conditional and hence effectively nudge behavior only when paired with weak preferences. Others, instead, believe defaults are attitude-unconditional, meaning that they are successful regardless of people's presences. With the use of an online survey, this study tests the nature of default effectiveness. I measured the number of green choices taken by respondents and the probability to stick to the pre-assigned default through the means of a simulated shopping task, while subjects' environmental attitudes were assessed with the use of the New Environmental Paradigm scale. The results demonstrate that defaults are both attitude-conditional and attitude-unconditional depending on what is intended with default effect. More precisely, if the goal is to induce a higher number of green choices, defaults are attitude-conditional; if the goal is increasing the tendency to stick to the pre-assigned default, they are attitude-unconditional. The main limitation of this research is the unrealistic setting of the shopping task, which hampers the ecological validity. Thus, future research should focus on testing default effectiveness under more life-like circumstances.

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I would like to express my gratitude to my supervisor, professor Aurelien Baillon, for the constant support and encouragement as well as his availability in always providing me with the most insightful advice. Furthermore, I wish to thank my parents who have always believed in me and gone through thick and thin with me. Without them, I would not have been able to overcome all the challenges that this past year has brought on me and for that, I will always be grateful.

1 Introduction

The world has slowly entered a new era of industrialization, prolific in terms of technological advancements, average income, and social development, but deleterious for the environment (Du and Xie, 2020). Pollution, global warning, ozone layer depletion and acid rain are just a few of the major problems the earth is currently facing. Thus, with the threat of inevitable environmental deterioration being ahead of the human species, it is imperative to develop strategies to cope with it. Among the actions that have been taken thus far, the UK government launched the Green Deal, a program that offers UK citizens free green energy products (Rosenow and Eyre, 2013). Then, because the decrease in the energy taxes (due to decreased energy consumption) was higher than the tax increase implemented by the government to compensate for the cost of installing the products, it was advantageous for citizens to take part of the program. Another effort in this direction was taken by China, which stipulated a policy for which all of its producers and importers must assess the energy effectiveness level of their products and display it on the product label (Guan, 2019). Even though the British and the Chinese policies were implemented to achieve the same goal, that is, minimize the impact of human action on the environment, the way they were designed is extremely different. What the UK government did was to exploit the power of incentives to induce its citizens to adopt more pro-environment behaviors. With no upfront costs of getting and installing the products and lowered energy bills, choosing to adhere to the policy was the most profitable decision for citizens. The Chinese government, instead, influenced pro-environment behavior by advancing technologically. China updated the production system and constructed machines able to estimate the energy consumed during production. Then, it showed it to the consumers with the purpose of stimulating more mindful purchases.

The UK and Chinese policies are only 2 examples of what can be done to make consumption and production eco-friendlier. However, the countries that achieved the highest score in the 2018 Environmental performance Index are Switzerland, France, Denmark, Malta and Sweden (Buder, 2019). Unfortunately, there are not as many governments and corporations actively committed in developing strategies to safeguard the environment as one would hope. One reason is related to the lack of funds necessary for technological advancements. China was able to carry out the label policy because it could bear the expenses related to providing such service to its citizens, but not all institutions can afford it. Another reason is that humans' bounded rationality might lead them to prefer immediate gains over long-term, higher rewards. For instance, when having to choose on whether it is better to incur some costs to buy green products or to not incur such costs and pay higher bills later, individuals tend to underestimate the amount of tax savings they would make by choosing the first

option. In other words, even when more environmentally advanced policies are created, cognitive limitations, imperfect information and time constraints might make individuals reluctant to adopt them[1]. Although this may seem in sharp contradiction with the assumption of rationality usually made in economics, the Cabinet Office Behavioral Insights Team (2011) explained that: "*the behaviors of individuals can deviate greatly from a standard rational choice model, in which people objectively weigh up the costs and benefits of investing time and money into 'greening' their homes and being more energy efficient*". Hence, the inability of individuals to rationally assess and weight the pros and cons of their actions may lead them to create additional pollution (that could have been avoided if rational decisions were taken in the first place)[2].

However, the issues of bounded rationality and achievement of behavior changes can be addressed by altering the choice architecture presented to individuals in a nonfinancial and nonmandatory way. In particular, prominent has been the introduction of defaults. Defaults are tools that modify people's behavior mainly through three processes. First, they reduce the effort individuals face when taking a decision. Second, they act as a reference point against which gains and losses are assessed. Third, they are perceived as implicit suggestions made by experts. Defaults were found to be successful in inducing a certain behavior in several domains, from medical decision making (Ansher et al., 2014), to consumer behavior (Brown and Krishna, 2004; Herrmann et al., 2011), travel direction decisions (Taube et al., 2018), and moral conduct (Mazar and Hawkins, 2015). Most importantly, Johnson and Goldstein (2003) made a break-through discovery when they demonstrated that utilizing organ donation as a default condition lead to a huge spike in the rates of organ donations in different countries. Nonetheless, it is important to remember that people have specific preferences towards all aspects of their lives. In the case of the environment, there are individuals that care and act as to not harm it, whereas there are others that do not place much importance on it. The mere presence of such preferences could undermine the success of defaults. Thus, shedding light on the interplay of attitudes and defaults is of primary relevance before deciding to adopt them. This study is concerned with the application of green defaults.

There are 2 conflicting views regarding the interaction of environmental attitudes and defaults. One group of scientists believe that default effectiveness is attitude-conditional. That is, defaults successfully produce a change in behavior only when preferences for a certain topic are weak

[1] Individuals' rational decision-making skills are impaired by the complexity of the problem at hand, which hampers the relationship between information processing and the decision environment. Hence, people tend to satisfice instead of spending time and effort to assess the situation, which leads them to take sub-optimal choices (Simon, 1990).
[2] Bounded rationality in the environmental dimension is not always an issue. There are individuals who are committed to produce as little pollution as possible even without getting incentives for it.

(Johnson and Goldstein, 2003). For instance, if individuals do not really care about what happens to their organs after death, then they will be more likely to stick to the organ donation default. Instead, another group of scientists believe that default effectiveness is attitude-unconditional. More precisely, defaults always successfully modify people's behavior, regardless of their preferences towards a certain topic (Kaiser, Byrka and Hartig, 2010; Kaiser, Arnold and Otto, 2014; Vetter and Kutzner, 2016). With the goal of clarifying the nature of default effectiveness, this study analyses both the individual and joint effect of environmental attitudes and green defaults on people's decisions. More specifically, starting from the assumption of attitude-conditionality, it is hypothesized that people's environmental attitudes positively moderate the effect of green default allocation, inducing individuals to make more eco-friendly choices and to display an increased tendency to stick to the pre-assigned condition.

To test for the previous, an online survey was constructed. The survey consisted of a simulated shopping task, from which the number of green choices and the probability to accept the default are assessed, and a scale measuring participants' environmental attitudes. Several OLS linear regressions and linear probability models were estimated with the use of the software Stata. The analysis demonstrates that defaults effectiveness appears to be both attitude-conditional and attitude-unconditional depending on what is intended for default effect. In particular, while both environmental attitudes and green default allocation individually and positively influence the tendency to stick to a pre-assigned condition, environmental attitudes negatively moderate the effect of green default allocation on the number of green choices taken by the respondents. The rest of the study is structured as follows. Section 2 provides a summary of the main literature and theories on the topics of choices, attitudes and defaults. Section 3 describes the methodology used, with a detailed explanation of the survey flow and variables tested. Section 4 follows with the main results for the number of green choices and default acceptance. Section 5 discusses the results, their implications and the limitations of the conducted experiment. Section 6 provides advices for improvement for future research. Finally, section 7 outlines the conclusion.

2 Literature Review

2.1 Attitudes and Choices

The interest for the environment is considered a general attitude based on the cognitive and emotional assessment of environmental deterioration (Dunlap and Van Liere, 1978; Bamberg, 2003).

Environmental attitude levels should be relatively high given the obvious changes the earth is going through. However, on the one hand, Milfont and Shultz (2016) showed that the majority of the world's population is aware of the current environmental situation, indicating that the levels of environmental attitudes might be high. On the other hand, Global Footprint Network (2016) demonstrated that past habits that are deemed harmful for the environment are persisting, which indicates that the environmental attitude levels are not that high. Despite the confusion regarding people's concerns for the environment, it is still logical to believe that higher environmental attitude levels lead individuals to make more environmentally friendly choices. Weiger (1983) studied the effect of a direct experience of a naturally functioning ecosystem on conservation attitudes and pro-environment behavior. Then, by comparing it to a constructed environment, such as a zoo, the author found that frequently experiencing a naturally functioning ecosystem was more strongly linked to conservation attitudes and pro-environment behavior than the constructed environment was. Furthermore, Hines et al (1987) conducted a meta-analysis to establish what variables contribute the most to generate eco-friendly behavior and found attitudes to be one of them. This study defines behavior as people's actions and choices, and attitudes as their preferences. Despite the empirical support on the link between attitudes and behavior being not extremely strong, environmental attitudes seem to predict pro-environmental behavior generally (Kaiser, Byrka, and Hartig, 2010), and environmentally friendly consumer behavior specifically (Roberts and Bacon, 1997; Tanner and Wölfing Kast, 2003), at least when people's attitudes are assed and validated with reliable measures (Kaiser and Byrka, 2015). Moreover, Diekmann and Franzen (2019) showed that the influence of attitudes on behavior is stronger when such behavior imposes minor costs.

To address the confusion about the relationship between environmental attitudes and eco-friendly decisions, this research seeks to investigate whether more positive attitudes towards the environment lead individuals to make more "green choices". For this purpose, the following hypothesis is formulated:

H1.a: *" Individuals with positive attitudes towards the environment will choose green alternatives more often than individuals with negative attitudes."*

2.2 Choice Architecture: Defaults

McCauley (2016) pointed out that not all human-generated pollution is a direct consequence of industrialization, but part of it is caused by the psychological biases in individuals' minds. For this reason, behavioral economics tools can be applied to environmental issues to change people's

behavior. Behavioral incentives can be both financial and non-financial and can be used to deal with many different biases, like the status quo, discounting, and social conformity. Under standard economic assumptions, the key to understand people's decision, and thus nudge their behaviors, is to analyze the relationship between incentives and underlying preferences (Guan, 2019). However, behavioral economists noticed that the assumptions disregard important factors that are unrelated to incentives and that affect human behavior. Fortunately, such factors can be addressed in the way the choice is presented to individuals. For instance, by considering whether individuals feel the need to conform to what is perceived as socially acceptable, the desire to adhere to one's idealized version of themselves, and the amount of effort they are willing to make to actively choose an option, the choice architecture can be adapted to the behavior that one wishes to achieve (Sunstein and Reisc, 2014).

One effectively malleable element of the choice architecture is defaults. A default is an option that is selected automatically unless an alternative is specified. Thus, default rules establish what happens if people do nothing at all. There are different factors behind the belief that defaults successfully modify behavior. First, if choosers perceive the default option as an *implicit suggestion*, they might be less likely to opt-out. Individuals tend to think that the default option is chosen by some expert and are thus more likely to stick to it as they trust the source of knowledge. There is strong evidence that a lack of information on the part of the chooser accounts for a great deal of default effectiveness (Sustein and Reisch, 2019). Second, in order for choosers to opt-out, they need to focus on whether they should trade off environmental and other economic goods. This "*effort tax*" can induce them to defer decision making. Moreover, if the question is morally challenging, technical or in general, difficult, it may be even more tempting to avoid making a decision. Third, the default option is usually perceived as the *reference point*, and a departure from it leads to either a gain or a loss. Given that people are loss averse, and thus dislike losses far more than they enjoy gains, it is a risky move to opt-out. In particular, in the context of the environment, people might feel shame and regret if they are considering rejecting the green default.

In this study, I distinguish two main default categories: green and conventional. A green default is such that the automatically pre-selected choice is eco-friendly, while the alternative is the conventional version of the eco-friendly choice. A conventional default is when the pre-selected alternative is not the eco-friendly choice. Examples of green defaults exist and proved to be effective in the past. Vetter and Kutzner (2016)'s results demonstrate that when the choice of green energy is put as the default option, people are more likely to select green energy compared to people that were given conventional energy as the default option. Egebark and Ekstrom (2016), instead, investigated

how default printing settings influence people's paper consumption and found that double-sided printing defaults nudge people to use less paper. Friis et al. (2017) showed the effectiveness of defaults in positively influencing individuals' vegetables intake. From past literature it appears that utilizing a default result in the achievement of a more environmentally mindful behavior. However, it is still unclear what is the driving force behind the success of this choice architecture. In other words, it is yet to establish whether defaults are tools that are so powerful to singlehandedly incentive green behavior, whether people's attitudes towards the environment are generally very positive, or whether the interaction of attitudes and defaults produces effective results.

The present research distinguishes between 2 possible outcomes representing default effectiveness: *i)* an increase in the number of green choices taken by individuals; *ii)* an increased tendency to stick to the default. With the goal of gaining a better understanding of the implications of green defaults on the first definition of default effect, the following hypothesis is formulated:

H2.a: *"Individuals that are assigned to a green default will choose green alternatives more often than individuals assigned to a conventional default."*

Then, to analyze the effects of green defaults on the second definition of default effect, the following is further hypothesized:

H2.b: *"Individuals that are assigned to a green default will be more likely to stick to the default, compared to individuals that are assigned to a conventional default."*

2.3 Attitude- conditional vs. Attitude-Unconditional Defaults

The current discourse among scientists debates whether defaults are effective irrespective of people's attitudes or whether they are not. That is, one stream of thought stipulates that defaults' success is attitude-conditional: they are successful only when attitudes are weak (Johnson and Goldstein, 2003). More specifically, if some individual displays strong preferences towards a certain topic, for instance one consumer strongly prefers conventional energy over green energy, then defaults will have little to no effect in modifying that individual behavior. The effectiveness of a green energy default has been demonstrated both in the lab and in the field, but always assuming its conditionality on favorable environmental attitudes (Ebeling and Lotz, 2015; Pichert and Katsikopoulos, 2008).

The other stream of thought, instead, postulates that defaults' success is attitude-unconditional, that is, people's behavior can be independently predicted by the additive effect of attitudes and defaults. Thus, by sticking to the green energy default, the consumer experiences a reduction in costs in terms of time and effort saved in opting out. Such cost decline comes with a reduced level of "care" for the environment (that is, a decreased environmental attitude level) necessary to compensate whichever further impediment the consumer might experience in choosing green energy. In this domain, scientists have transformed Campbell's theory (Campbell, 1963), developing the so-called Campbell paradigm. The paradigm suggests that behavior is the result of two factors: a person's preferences towards the environment (environmental attitudes), and the costs that a specific behavior implies. Kaiser, Byrka and Hartig (2010) dropped the attitude-behavior consistency assumption on which the model was based on and explained that if a person's attitudes exceed the costs of a behavior, then the behavior has a reasonable chance of manifesting (Kaiser and Arnold et. Al, 2014). Vetter and Kutzner (2016) were the first to provide empirical support for this theory. They conducted a green energy default experiment in which they asked participants to imagine that, after moving to a new town, they were automatically assigned an energy provider. Then, subjects that were given the green energy default were more likely to choose green energy then participants allocated to the conventional condition. More importantly, the authors found that people's environmental attitudes predicted green choices and that the default effect on green choices was independent of attitudes.

While the individual contributions of green defaults and environmental attitudes are investigated throughout *H1.a – H2.a*/*H2.b* and are also already supported by robust findings (Sustein and Reisc, 2014; Kaiser and Byrka, 2015), the combined effect of the two lacks experimentation and therefore remains unclear (Johnson and Goldstein, 2003; Taube and Vetter, 2019; Kaiser, Arnold and Otto, 2014). Thus, this research wants to fill the literature gap and try to demonstrate that the effect of defaults on people's green choices is moderated by environmental attitudes. The following hypothesis is formulated:

H3.a: *"When assigned to a green default, individuals that hold positive attitudes towards the environment will choose green alternatives more often than individuals that hold negative attitudes."*

Additionally, the interplay of defaults and attitudes is further investigated in terms of sticking to the pre-assigned default. The following hypothesis is also formulated:

H3.b: *"When assigned to a green default, individuals that hold positive attitudes towards the environment will be more likely to stick to the default, compared to individuals that hold negative attitudes."*[3]

3 Methods

To test the hypotheses previously mentioned, this research makes use of an online survey created on the Qualtrics software. This data collection process was chosen over other methodologies because it enables experimenters to gather relatively large amounts of data in a small time period, it is inexpensive relative to other data collection techniques, and it creates a standardized stimulus that eliminates the researcher's biases and assures precision in data measurements. Furthermore, different ways to spread the survey can be exploited, such as e-mail, text or anonymous links, allowing the researcher to reach a broader audience and thus generate data that better describes the characteristics of the population involved in the study. This section summarizes the survey flow, describes the obtained sample and introduces the main variables used for regression analysis.

3.1 The Experimental Design

For the purpose of this research, a three-part survey was designed and sent to potential participants via WhatsApp texts and a LinkedIn post. The impacts of default allocation and individuals' attitudes towards the environment were tested to shed light on the way they influence the quantity of green choices taken as well as the tendency to stick to a pre-assigned default. Randomization was achieved by allocating participants in one of two conditions upon opening of the survey. Cross section data was generated and tested by the means of OLS regressions and linear probability models for between subject variations.

3.1.1 The Survey Flow

Participants were first presented with an introductory text providing them with information about the nature of the research and encouraging them to try to answer truthfully. Note that no specific information regarding the goal of the study as well as what the questionnaire seeks to analyze was given. At survey completion, the subjects received a link that gifted them some credit on the Survey

[3] A visual representation of the hypotheses tested in this research can be found in Appendix B.

Swap platform. The credit, in turn, was exchangeable for survey respondents[4]. Participation in the experiment was thus incentivized through the SurveySwap link and it required about 7 minutes of the respondents' time. The subjects consented to participate with their own free will, and anonymity and confidentiality were guaranteed in treating their data. Furthermore, no form of personal identification was asked. The experimenter made sure that ethical issues were addressed, and questions were phrased in such a way as to not cause any psychological harm to the experimented subjects.

After the introductory text, participants were randomly allocated to one of two conditions: the green default group or the conventional default group. The first part of the survey consisted in a shopping task to which experimented subjects were introduced with the situation:

"You go to the supermarket to buy the following products: paper towel, muesli cereal, and green lemon tea. For each product you are given two alternatives or a free choice. Please indicate your preferred choice."

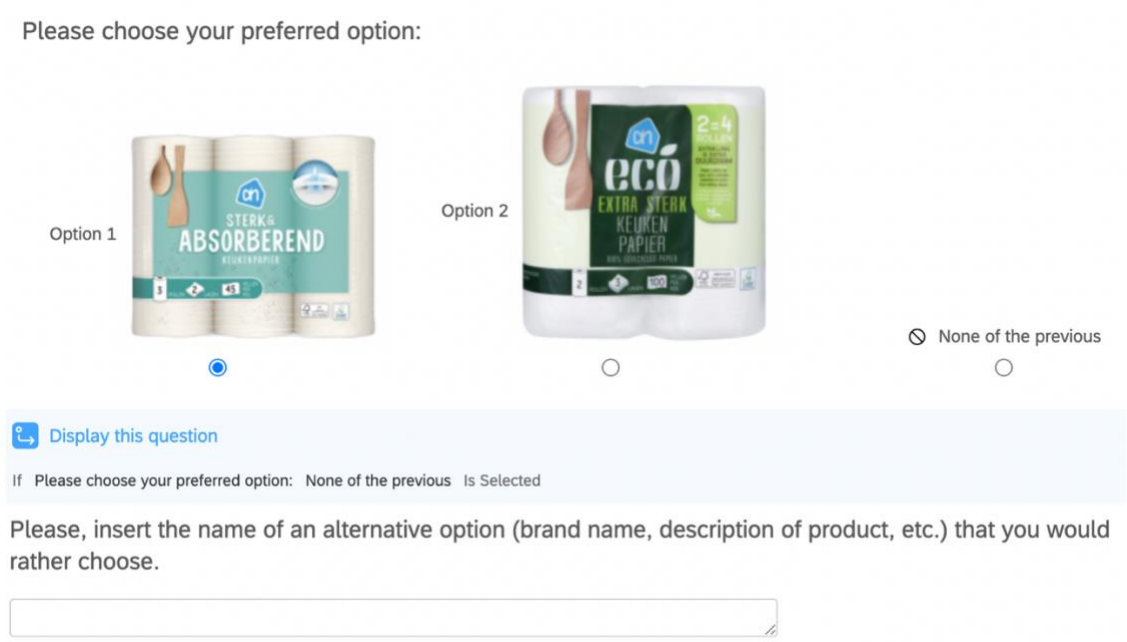
Thus, participants had to make a total of 3 decisions. Each decision was a choice between 2 products and an alternative. One product was the green option, the other was the conventional counterpart of the green product, and the "free choice" is the possibility of typing in the preferred brand for that same product category. Neither of the product options conveyed prices or other detailed information regarding the ingredients, but the green products were distinguishable from the conventional ones because of the eco label placed on them. The products that were used in the survey were taken from the Albert Heijn website [5], thus subjects might have been familiar with the alternatives displayed. Furthermore, to prevent preferences for pricier/cheaper products, the options selected for each choice had similar mean prices[6] ($mean_{Conventional\ basket} = 2.7$, $mean_{Green\ basket} = 2.4$).

Participants in the green (conventional) default could choose the pre-selected green (conventional) product or opt-out from the default and either choose the conventional (green) alternative or type in any brand that they like. The decision to include the possibility of choosing respondents' own preferred brands was made to better resemble real-life situations and to avoid the misclassification of a green default rejection as a non-green choice (i.e. opting out from a green

[4] Since the survey was sent to EUR student WhatsApp groups, many respondents are expected to be writing a thesis and therefore in need of respondents for their own surveys.
[5] The products used can be found on the following webpage: https://www.ah.nl
[6] The complete survey flow can be found in Appendix A

default does not imply choosing a conventional product as participants may also select an alternative option that is still green). It is important to note that the inclusion of a free choice does not affect the tendency to stick to the pre-assigned default as individuals choosing an alternative product are opting out from their default option. Each product choice was displayed in the following way:

Figure 1 – Product Choice Example (Conventional Group)



Representation of how choices were displayed to subjects during the survey. The figure shows that the pre-assigned default is the conventional product. By opting out, participants can either choose the green product (option 2) or none of the previous option (the free choice). Only if the free choice was selected, they were asked to insert the name of their preferred brand.

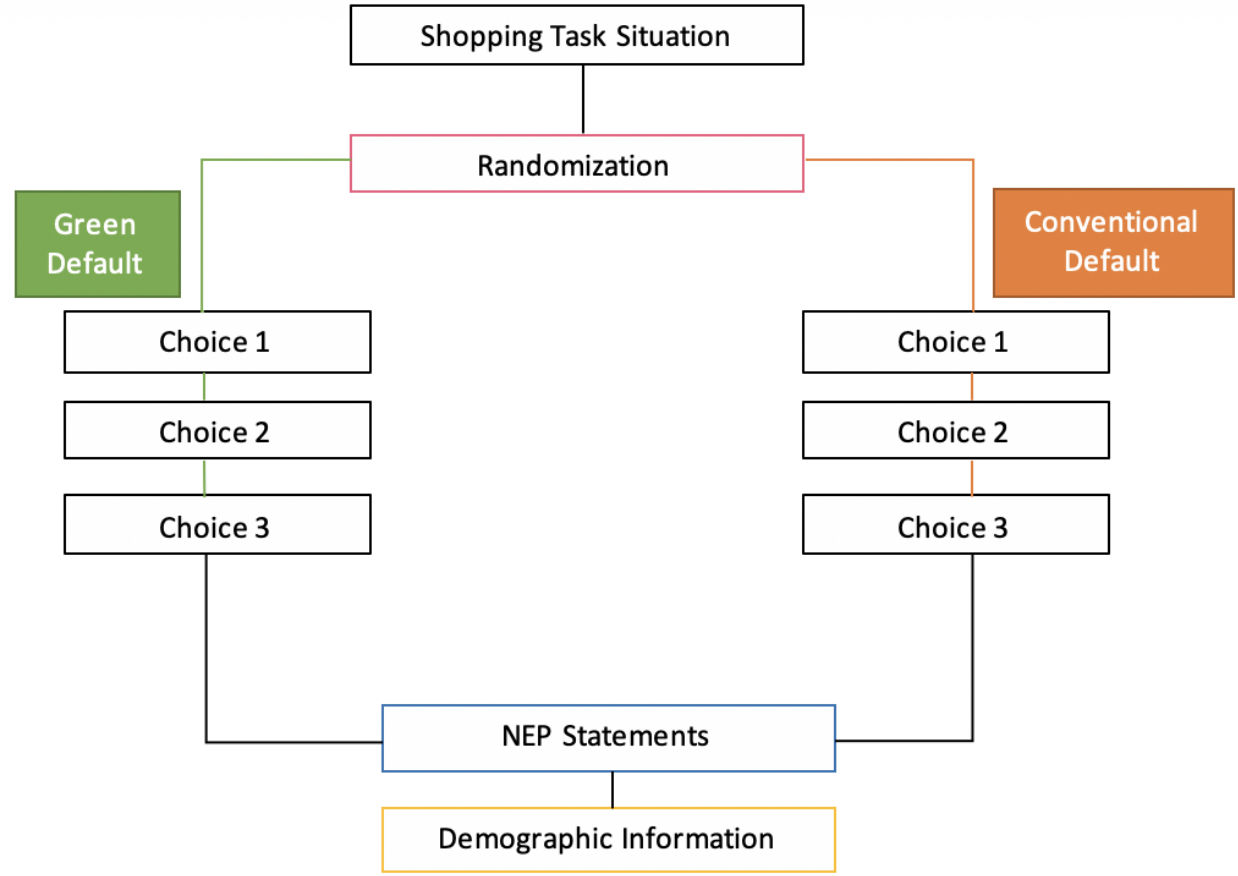
After the products selection, participants were asked to answer three questions related to their purchasing habits in terms of the products and brands they usually buy as well as how environmentally conscious their shopping is.

The second part of the survey consisted in measuring individuals' environmental attitudes by asking them to rank 15 statements on a 5-point Likert scale. The 15 statements were taken from the New Environmental Paradigm (NEP) scale created by Dunlap and Van Liere (2000)[7]. The third and last part of the survey asked respondents to insert their basic demographic information. Demographic questions were put at the end to incentivize maximum concentration for the shopping task. The end

[7] More information regarding the NEP scale and the Environmental Attitude measure can be found in Section 3.3.2

of the questionnaire comprised a thank you massage for participants and a link to the SurveySwap page to get free credit. Figure 2 displays the survey flow chart.

Figure 2 – The Survey Flow



The Figure represents the flow of the survey. First, all subjects read the same introductory text to the shopping task. Then, randomization happened, and participants were split into 2 groups, corresponding to the conventional and green defaults. Each group was confronted with 3 choices with varying pre-assigned default options, depending on which group they were initially randomly allocated. At the end of the shopping task, all subjects scored the same NEP statements and answered demographic questions

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3.2 The Sample

Participants were recruited through the use of the survey anonymous link which was sent both to WhatsApp groups of EUR students and posted on Linked-In. Thus, the sample is expected to be mainly composed of individuals currently getting their bachelor's or master's degree in The Netherlands. Furthermore, to be eligible for participation, potential respondents need to be aged at least 18 or above and need to be Dutch inhabitants. A total of 137 subjects took the survey, of which 10 did not succeed in completing the demographic questions. Of the remaining 127, 14 did not pass

the attention check and were thus removed from the sample, leaving a total of 113 final participants. The attention check was put towards the end of the survey to test whether respondents were reading the text or whether they were randomly answering the questionnaire. More specifically, it was located halfway through the statements of environmental attitudes and it asked subjects to select all possible answers.

Table 1 – Descriptive Statistics for the Entire Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Female	113	0.69	.4644	0	1
Age	113	23.46	3.917	18	55
Education					
Categories:			Freq.	Percent.	Cum.
High School or equivalent			10	8.85	8.85
College without degree			6	5.31	14.16
Associate Degree			2	1.77	15.93
Bachelor's degree			73	64.60	80.53
Graduate Degree			22	19.47	100.00
Employment					
Categories:			Freq.	Percent.	Cum.
Employed (contractual under 40 hrs/week)			42	37.17	37.17
Employed (contractual 40+ hrs/week)			14	12.39	49.56
Unemployed and looking for work			21	18.58	68.14
Unemployed and not looking for work			31	27.43	95.58
Prefer not to say			4	4.42	100.00
Nationality					
Categories:			Freq.	Percent.	Cum.
Dutch			42	37.17	37.17
Belgian			1	0.88	38.05
German			12	10.62	48.67
Other			57	50.44	99.12
Prefer not to say			1	0.88	100.00
Residence					
Categories:			Freq.	Percent.	Cum.
Rotterdam			39	34.51	34.51
Other			73	64.60	99.12
Prefer not to say			1	0.88	100.00

Summary statistics for the demographic characteristic of the sample. Female is a dummy variable that takes value of 1 for females and 0 for males. Age is a continuous variable. Education, employment, nationality and residence are categorical variables, the categories are displayed in Table

Descriptive statistics for the final sample are displayed in Table 1. Among the 113 subjects, 69% were female, the average age is of approximately 23 years old. 64.60% of the subjects achieved a bachelor's degree, 19.47% has a graduate degree, while the remaining's maximum education level completed is either high school (8.85%) or college (5.31%). Approximately half of participants (49.56%) are either part-time employees (37.17%) or full-time employees (12.39%), whereas the

other half is unemployed. Among these, 18.58% are looking for a job and 27.43% are not looking for a job. The sample is mainly composed of Dutch subjects (37.17%) and individuals from nationalities other than German, Belgian and Dutch (50.44%). Finally, 34.51% of participants live in Rotterdam, while 64.60% live in other cities in The Netherlands.

Table 2 displays the sample descriptive statistics per treatment and control groups separately. Despite the percentage of women in the control group being about 10 percentage points higher than in the treatment group, other demographic variables do not vary much. For instance, average age is approximately 24 years old in the control group and around 23 years old in the treatment group. Exceptions are the proportions of employed under 40 hrs/week, and Belgian and German individuals, which are higher in the control group than in the treatment group. Furthermore, the number of observations per condition is relatively unbalanced, with the control group having 65 subjects and the treatment group only having 48. The reason for this unbalanced sample is not due to the attention check elimination (7 subjects per group were removed), but to the dropping out of the survey. While only 4 observations in the control condition dropped out from the survey before completion, in the treatment condition 6 observations did not terminate it. T-tests for mean differences in the treatment and control groups were conducted for each demographic variable. There is no statistically significant difference in mean values between the 2 conditions for all variables except for age. However, the difference in mean age for conventional and green defaults is only marginally significant.

Table 2 - Descriptive Statistics per Treatment Condition

Variable	Control Group			Treatment Group		
	N	mean	Std. Dev	N	mean	Std. Dev.
Female	65	.723	.451	48	.646	.483
Age	65	23.969	4.805	48	22.792	2.073
Education:						
Categories:	Freq.	Percent	Cum.	Freq.	Percent	Cum.
High School or equivalent	5	7.69	7.69	5	10.42	10.42
College without degree	3	4.62	12.31	3	6.25	16.67
Associate Degree	1	1.54	13.85	1	2.08	18.75
Bachelor's degree	41	63.08	76.92	32	66.67	85.42
Graduate Degree	15	23.08	100.00	7	14.58	100.00
Employment:						
Categories:	Freq.	Percent	Cum.	Freq.	Percent	Cum.
Employed (contractual under 40 hrs/week)	26	40.00	40.00	16	33.33	33.33
Employed (contractual 40+ hrs/week)	7	10.77	50.77	7	14.58	47.92
Unemployed and looking for work	12	18.46	69.23	9	18.75	66.67
Unemployed and not looking for work	17	26.15	95.38	14	29.17	95.83
Prefer not to say	3	4.62	100.00	2	4.17	100.00
Nationality:						
Categories:	Freq.	Percent	Cum.	Freq.	Percent	Cum.
Dutch	23	35.38	35.38	19	39.58	39.58
Belgian	5	7.69	43.08	1	2.08	41.67
German	36	55.38	98.46	7	14.58	56.25
Other	1	1.54	100.00	21	43.75	100.00
Prefer not to say						
Residence:						
Categories:	Freq.	Percent	Cum.	Freq.	Percent	Cum.
Rotterdam	22	33.85	33.85	17	35.42	35.42
Other	42	64.62	98.46	31	64.58	100.00
Prefer not to say	1	1.54	100.00	0	0	0

Summary statistics for the demographic characteristic of the sample, per treatment group. Female is a dummy variable that takes value of 1 for females and 0 for males. Age is a continuous variable. Education, employment, nationality and residence are categorical variables, the categories are displayed in Table

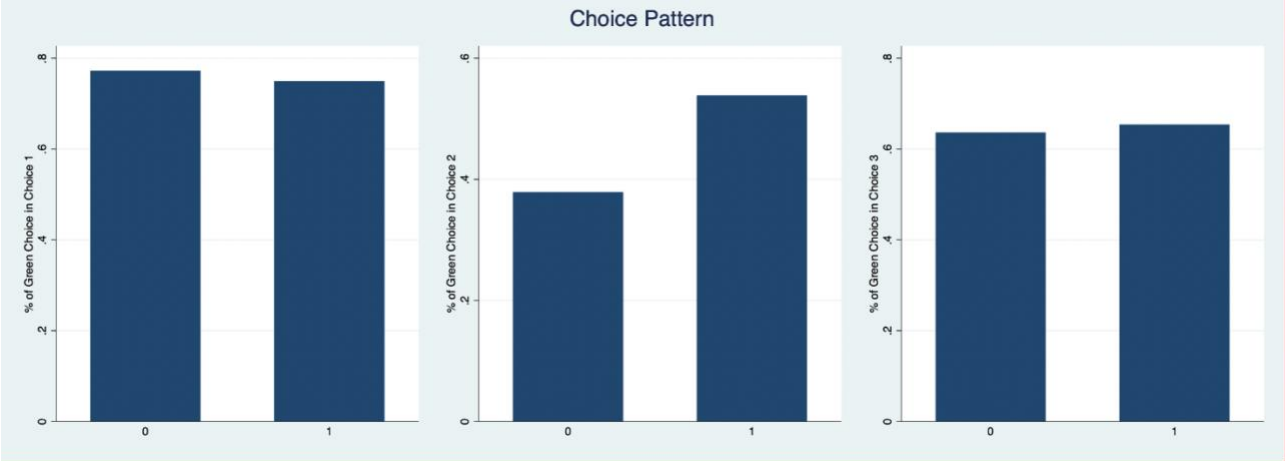
3.3 The Variables

3.3.1 Green Choice and Default Acceptance

In the first part of the experiment, participants in the treatment and control groups had to choose three products. Each choice was composed of three possible options: the green product alternative, the conventional alternative, and the possibility of inserting the name of the preferred brand. By "green product" this study means products with an alternative design such that fewer physical resources are required during their life cycles, thus having a low environmental impact (Sdrolia and Zarotiadis, 2019). These are usually non-toxic, made of recycled materials and/or minimally packaged. In the shopping task, green products were distinguishable from conventional

products because of the "Bio" label placed on their package[8]. Figure 3 displays the percentage of green choices taken for each choice by the treatment and control groups. While in choice 1 and 3 the percentage of green choices is relatively high and similar for both groups, amounting to approximately 80% and 60% respectively, this is not true for choice 2. In fact, in the control group, about 40% of choices were green, whereas in the treatment group about 60% of choices were green.

Figure 3 – The Choice Path per Treatment Condition



The Figure represents the percentage of green and non-green products chosen over the three choices of the shopping task. The 0 columns refer the number of conventional products chosen, while the 1 columns refer the amount of green products chosen.

Green choice is measured as the number of green products chosen, regardless of the condition each participant was assigned to. When subjects chose to insert their preferred alternative brand, their decision was coded as either green or conventional based on how the product scores in terms of environmental impact. Thus, the green choice measure is a continuous variable that takes values ranging from 0 to 3, depending on how many green products were selected for the three choices they were given. Table 3 shows the descriptive statistics for the main variables of this study. The average number of green products chosen in the shopping task amounts to 1.856.

Default acceptance represents whether participants stick to the default option they were assigned to or deviated and chose one of the other two options. For instance, for an individual assigned to the green (conventional) default, default acceptance would be sticking to the green (conventional) alternative instead of choosing any of the other options. Default acceptance is thus a binary variable, taking value of 1 if participants stick to the pre-assigned default, a value of 0 if they did not. In the

[8] The pictures used can be found in Appendix A.

sample, 22.9% of individuals decided to stick to the default they were assigned to instead of opting out and choosing another option (Table 3).

Table 3 – Descriptive Statistics of Main Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Green Choice	118	1.856	.981	0	3
Default Acceptance	118	.229	.422	0	1
Environmental Attitude	118	3.576	1.059	0	4.733
			Freq.	Percent	Cum.
Buy Control					
Never			9	7.83	7.83
Sometimes			61	53.04	60.87
About half the time			17	14.78	75.65
Most of the time			27	23.48	99.13
Always			1	0.87	100.00
Brand Control			Freq.	Percent	Cum.
Never			18	15.65	15.65
Sometimes			71	61.74	77.39
About half the time			22	19.13	96.52
Most of the time			3	2.61	99.13
Always			1	0.87	100.00
Eco Control			Freq.	Percent	Cum.
Very low			4	3.48	3.48
Low			41	35.65	39.13
Average			48	41.74	80.87
High			21	18.26	99.13
Very High			1	0.87	100.00

Summary statistics for the main of the sample. Green Choice is a continuous variable with values ranging from 0 to 3. Default Acceptance is the treatment condition and a dummy variable taking value of 0 if participants were assigned to the conventional default and value of 1 if they were assigned to the green default. Environmental Attitude is a continuous variable with values ranging from 0 to 5. Buy Control, Brand Control and Eco Control are categorical variables. The categories are displayed in the Table.

By not assuming that people always choose the opposing category when rejecting a choice, this study makes sure that green choice and default acceptance are not redundant. Participants rejecting a green (conventional) product could select another green (conventional) product. Thus, after coding the free choices, it was possible to infer the amount of product choices from the same category as the default (i.e. the number of green options chosen after rejecting the green default and the number of conventional options chosen after rejecting the conventional default). With a total of 8 alternative brands selected, exactly 50% of choices belonged to the same category as the default participants were assigned to and were thus re-coded as such.

3.3.2 Environmental Attitude

Participants' attitude towards the environment was measured using the New Ecological Paradigm Scale. The origin of the NEP dates back to the 1960s and 1970s, when social psychologists conjectured that awareness and concern towards the environment was growing. Thus, to better understand the trajectory of the change, Dunlap et al. (2000) developed a 12-item instrument capturing: *i)* the beliefs about humans' ability to destroy the balance of nature, *ii)* whether the growth of societies is limited, *iii)* and the fairness of humanity ruling over nature (Anderson, 2012).
However, due to a number of shortcomings, such as a lack of internal consistency among individual responses, low correlation between the scale and behavior, and outdated wording of statements, the original NEP was corrected two years later. The revised NEP is composed of 15 statements which respondents are asked to assert their agreement or disagreement with through a 5-point Likert scale. The new scale embodies a wider ecological perspective, accounting for a broader and more systematic range of environmental problems threatening the modern world. Responses to the 15 statements are then used to construct different statistical measures of environmental concern.

Since the correlation measured by Dunlap et al. (2000) between each item in the NEP scale is relatively strong (between corr = 0.33 and corr = 0.62), the 15 statements measure a single construct (i.e. the scale is internally valid). The previous is further supported by the fact that the removal of any of the items causes a reduction of the alpha value, which decreases the chances of rejecting a null hypothesis that is true. The revised NEP scale has a Cronbach's alpha value of 0.83 (against the original NEP scale's value of 0.81). Furthermore, as reported by its creators, the scale significantly correlates with other similar measures, such as the 13-item instrument of perceived seriousness of world ecological problems (corr = 0.61), the 10-item self-reported pro-environmental behaviors (corr = 0.31). In the sample used for this study, the scale reliability coefficient for the NEP is 0.73.

To turn the 15-items into a statistical instrument, a two-step procedure was followed. First, the items with opposing poles on the Likert scales had to be adapted. Thus, statements 1, 3, 5, 7, 9, 11, 13, and 15 were recoded such that the values 1 and 5, 2 and 4, 4 and 2, and 5 and 1 were swapped. Second, the environmental attitude (EV) measure was generated as the mean of the 15 statements for each individual. Higher values for the EV measure mean more positive preferences towards the environment. Table 3 shows that the average value for the EV measure in the entire sample is 3.576.

3.3.3 Demographics and Product-Related Controls

To control for the shopping task related factors and general purchasing habits, different variables were created. After the shopping task, subjects had to answer three questions concerning the products they were faced with. First, they were asked to score how frequently they buy the products that were shown on a 5-point scale from never to always. Second, they were asked to score how frequently they change brands for the products showed on a 5-point scale from never to always. Third, they were asked to self-report how green they consider their shopping overall on a 5-point scale from not very green to extremely green. Three categorical variables with values ranging from 1 to 5 were generated and these corresponded to the Buy control, the Brand Control, and the Eco control in Table 3. In the sample, approximately 53% of individuals sometimes buy the products used for the shopping task, and over 60% sometimes changes the brands they purchase for these product categories. Most of the sampled individuals have a low (35.65%) or average (41.74%) percentage of eco-friendly products in their shopping overall. Finally, at the end of the survey, participants were asked to report their gender, age, maximum education level achieved, employment status, nationality and place of residence. This information was used to generate 6 demographics variables used to account for individual differences[9].

3.4 The Models

First, to test for the effects of environmental attitudes on the number of green choices taken and the tendency to stick to the assigned default, the following model was estimated:

$$X_i = \beta_0 + \beta_1 * EVMeasure_i + \delta_i + \gamma_i + \varepsilon_i \quad (1)$$

Where $EVMeasure$ is the main independent variable and refers to the average score over the 15 statements of the NEP scale for each subject i. δ_i is included to account for demographic characteristics, while γ_i controls for product-related preferences during the shopping task. The outcome variable X_i can take the form of either $Green\ Choice$ or $Default\ Acceptance$. When $X_i = Green\ Choice$, Model (1) is a linear OLS regression. Instead, when $X_i = Default\ Acceptance$, Model (1) is a linear probability model. This is because $Green\ Choice$ is a continuous variable, while $Default\ Acceptance$ is a dummy variable, taking value of 1 when subjects stick to the pre-assigned default and value of 0 if they opt out and choose another option.

[9] Refer to Tables 1 and 2 in The Sample sub-section for descriptive statistics on these variables.

Second, to test for the effects of default allocation on the number of green choices and the tendency to stick to the assigned default, the following model was estimated:

$$(2) \qquad X_i = \beta_0 + \beta_1 * EVMeasure_i + \beta_2 * GreenDefault_i + \delta_i + \gamma_i + \varepsilon_i$$

Where everything remains the same as in Model (1), except for the inclusion of $GreenDefault$, that is, the treatment effect. $GreenDefault$ is a dummy variable taking value of 1 when subjects are assigned to the green default and value of 0 when they are assigned to the conventional default.

Finally, to test for the joint effect of environmental attitudes and default allocation on the number of green choices and the tendency to stick to the assigned default, the following model was estimated:

$$(3) \qquad X_i = \beta_0 + \beta_1 * EVMeasure_i + \beta_2 * GreenDefault_i + \beta_3 * EVMeasure_i * GreenDefault_i + \delta_i + \gamma_i + \varepsilon_i$$

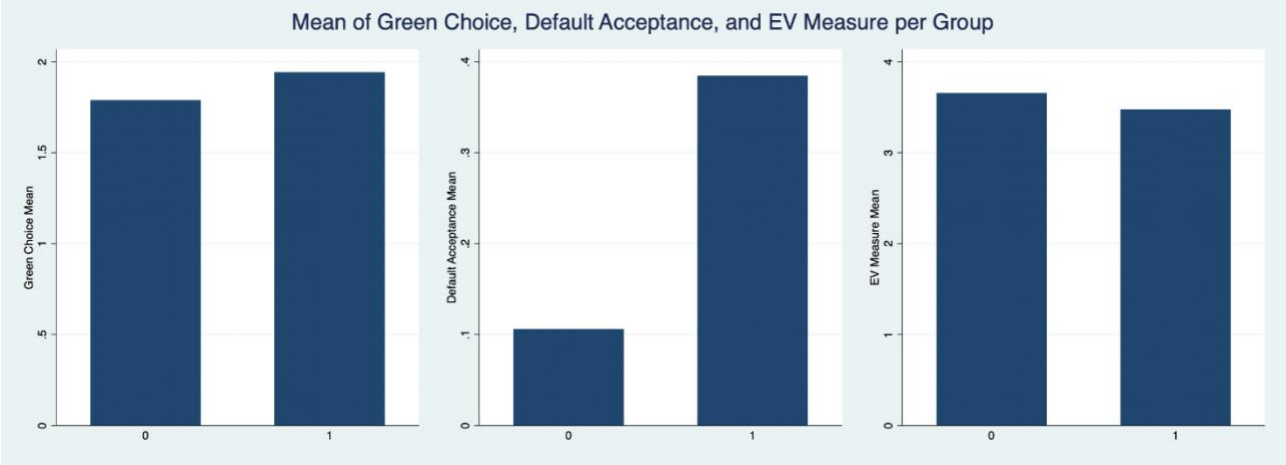
Where the only difference with Model (2) is the inclusion an interaction term between environmental attitudes and default allocation. $EVMeasure_i * GreenDefault_i$ measures the effect of environmental attitudes on the number of green choices and default acceptance for those assigned to the green default and those assigned to the conventional default. The purpose of Model (3) is to investigate whether higher environmental attitudes positively moderate the effect that default allocation has on the outcome variables.

4 Results

Figure 4 displays the mean values of the main variables for the treatment and control groups. Both green choice and default acceptance have higher mean values for the green default relative to the conventional default. The average number of green choices amounts to approximately 1.7 for the control condition and 1.9 for the treatment condition. The differences in default acceptance are more pronounced, with only 10% of individuals sticking to the conventional default and almost 40% sticking to the green default. From the histograms of Figure 4, it seems that most of those that opted out from the conventional default chose the green product over typing a preferred alternative, thus leading to an increase in the average number of green choices for the control group. The average EV measure value for the green and conventional defaults are very similar, with the green default EV

measure being slightly lower than the conventional one[10]. To test for the statistical significance of the individual and joint effect of environmental attitudes and green defaults on people's green choices and tendency to stick to a pre-assigned default, this study estimates different OLS regressions and linear probability models[11]. The results for each output variable are reported in the following two subsections.

Figure 4 – Green Choice, default Acceptance and EV per Treatment Condition



The Figure shows the mean values of the main variables for both the treatment (green) and control (conventional) groups. The 0 columns refer to the conventional group, while the 1 columns refer to the green group.

4.1 Green Choice

The effects of different levels of environmental attitudes and default allocation on the number of green choices individuals take is investigated by estimating OLS regressions with robust standard errors, of which results are displayed in Table 4.

First, the individual influence of environmental attitudes is analyzed in columns (1) to (3). Moving from the left to the right side of the Table, different control variables are introduced. The baseline model (i.e. the specification without controls) in Column (1) does not show any statistically significant effect of environmental attitudes on the number of green choices. However, when accounting for demographic characteristics, the coefficient turns positive and marginally significant (Column (2)). Thus, higher scores in the environmental attitude measure result in a higher number of

[10] A histogram illustrating mean values for each NEP scale statement per condition can be found in Appendix B.
[11] The equations of the estimated models can be found in Appendix B subsection 3.

green choices made. More specifically, a one-point increase in the environmental attitude measure leads individuals to make approximately half a green choice more (0.423 higher green choices, P-Value < 0.1). Column (3) includes the product, brand and shopping eco-friendliness related control variables to the estimation of Column (2). The coefficient decreases in magnitude and loses statistical significance.

Then, the impact of green default on the number of green choices taken is investigated in columns (4) to (6). The environmental attitude measure was included in all specifications as a control. Again, moving from Column (4) to (5) to (6), demographics and the shopping task control variables are included. The results show that default allocation does not affect the number of green choices taken by participants. In fact, even if the standard error of the regression coefficient decreases moving from Column (1) to Column (2), indicating higher estimates precision, none of the coefficients of green default are statistically significant at the conventional significance levels.

While better environmental attitudes (which are translated in higher EV scores) positively influence green choices, the default to which individuals are assigned to does not. Furthermore, controlling for demographic characteristics of the sample improves the precision of the estimates by reducing the standard errors of the regression coefficients, and in some cases, it makes them statistically significant. However, for all models of Column (1) to Column (6), the inclusion of product-related control variables decreases the precision of the estimates.

Finally, to investigate whether environmental attitudes moderate the effect of default allocation on the number of green choices, an interaction term was included in the estimations. Results are displayed in Columns (7), (8), and (9), and additional controls are added moving from the left to the right side of Table 4. Column (7) demonstrates that for respondents allocated to the green default, compared to respondents in the conventional default, a one-point increase in the measure of environmental attitude leads to a 0.304 decrease in the number of green choices (P-Value <0.05). This result provides evidence for the fact that the effect of green default allocation on the number of green choices is not linear but is indeed moderated by the level of environmental attitudes. The non-linearity of the relationship, in turn, explains why green default allocation does not affect the number of green choices in Columns (4) to (6). Most importantly, it appears that the moderating effect of environmental attitudes is negative: for individuals exposed to the green default compared to those given the conventional default, higher levels of environmental attitudes result in a lower number of green choices.

Table 4 – Regression Estimates for Green Choice

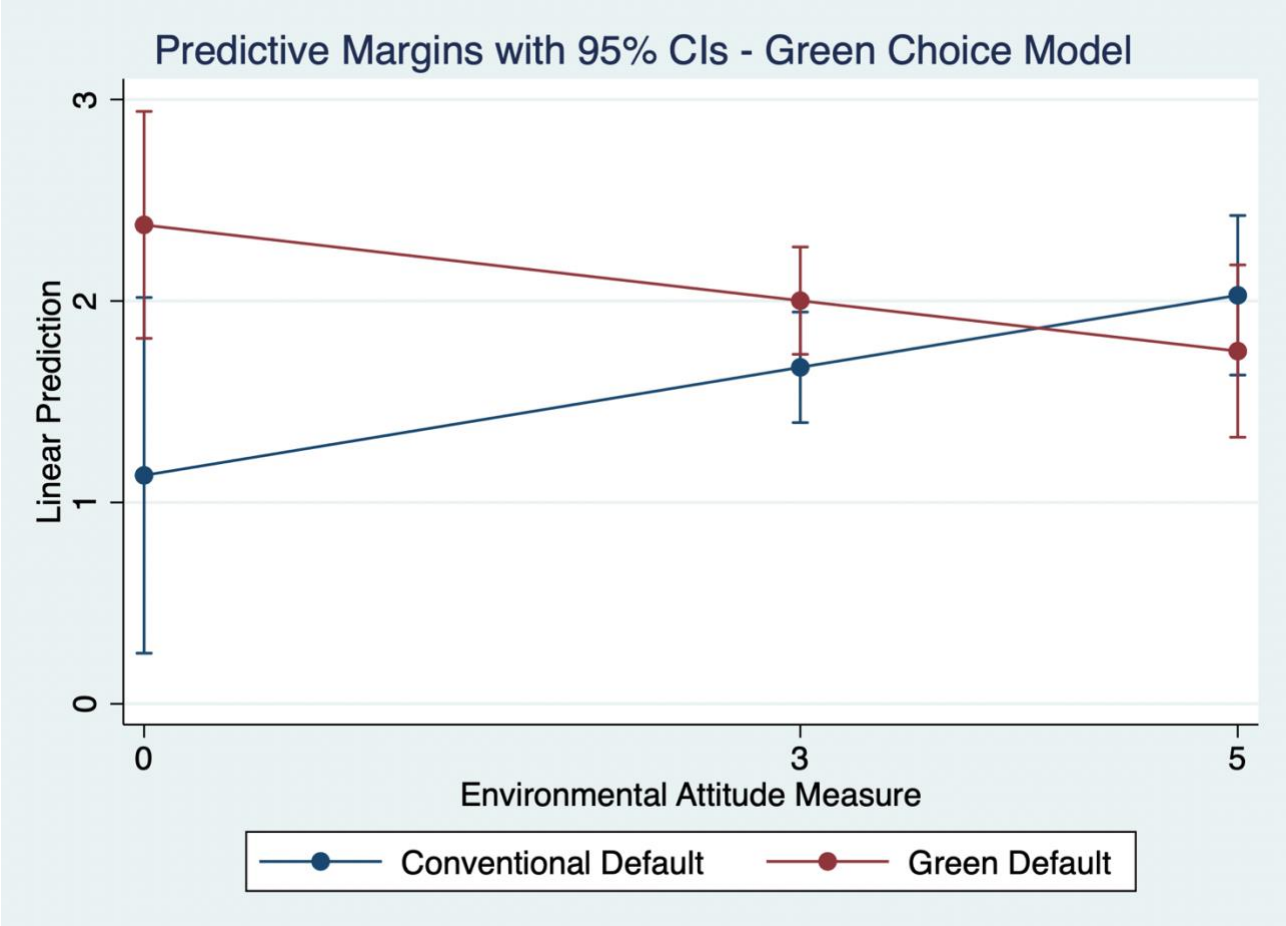
	Green Choice								
	Hypothesis 1.a			Hypothesis 2.a			Hypothesis 3.a		
	(1) Baseline	(2) Demographic Controls	(3) Shopping Task Controls	(4) Baseline	(5) Demographic Controls	(6) Shopping Task Controls	(7) Baseline	(8) Demographic Controls	(9) Shopping Task Controls
Environmental Attitude	-0.008	**0.423***	0.297	-0.002	0.425*	0.296	0.179	0.233	0.261
	(0.093)	(0.223)	(0.230)	(0.090)	(0.225)	(0.231)	(0.118)	(0.354)	(0.310)
Green Default				0.154	0.074	0.091	**1.243****	-1.290	-0.176
				(0.186)	(0.178)	(0.180)	(0.529)	(1.646)	(1.657)
Environmental Attitude * Green Default							**-0.304****	0.356	0.070
							(0.529**)**	(0.427)	(0.422)
Age		0.053***	0.064*		0.054***	0.068*		0.053***	0.069
		(0.015)	(0.035)		(0.016)	(0.036)		(0.016)	(0.045)
Gender		-0.239	-0.225		-0.235	-0.218		-0.217	-0.215
		(0.202)	(0.208)		(0.204)	(0.209)		(0.205)	(0.213)
Education:									
Associate Degree		-0.175	-0.231		-0.181	-0.248		-0.167	-0.250
		(0.586)	(0.668)		(0.596)	(0.684)		(0.609)	(0.563)
Bachelor's degree		-1.160**	-0.878		-1.160**	-0.896		-1.090**	-0.891
		(0.485)	(0.581)		(0.473)	(0.594)		(0.497)	(0.774)
Graduate Degree		-0.412	-0.400		-0.406	-0.399		-0.403	-0.402
		(0.391)	(0.416)		(0.386)	(0.411)		(0.389)	(0.337)
Prefer Not to Say		-0.505	-0.768*		-0.497	-0.774*		-0.481	-0.776*
		(0.418)	(0.455)		(0.412)	(0.452)		(0.422)	(0.427)
Employment:									
Employed, 40 + hrs/week		-0.384	-0.155		-0.390	-0.169		-0.373	-0.168
		(0.285)	(0.295)		(0.289)	(0.297)		(0.298)	(0.312)
Not employed, looking for. work		0.391*	0.505**		0.394*	0.511**		0.364	0.505*
		(0.226)	(0.240)		(0.225)	(0.237)		(0.227)	(0.270)
Not employed, NOT looking for work		-0.015	0.054		-0.017	0.048		-0.021	0.047
		(0.263)	(0.266)		(0.264)	(0.266)		(0.260)	(0.252)
Prefer Not to Say		-1.087**	-0.780		-1.091**	-0.781		-1.137**	-0.791
		(0.481)	(0.640)		(0.497)	(0.659)		(0.490)	(0.492)
Nationality:									
Belgian		0.242	-0.195		0.188	-0.254		0.120	-0.270
		(0.339)	(0.515)		(0.370)	(0.518)		(0.372)	(1.049)
German		0.962***	0.776**		0.956***	0.771**		0.961***	0.770**
		(0.316)	(0.339)		(0.322)	(0.348)		(0.325)	(0.361)
Other		0.217	0.093		0.221	0.096		0.251	0.100
		(0.203)	(0.214)		(0.202)	(0.212)		(0.207)	(0.211)
Prefer Not to Say		1.021*	0.994		1.054*	1.071		1.171**	1.061

		(0.549)	(0.949)		(0.568)	(0.965)		(0.570)	(1.532)
Residence:									
Other		-0.070	-0.184		-0.065	-0.177		-0.053	-0.175
		(0.196)	(0.224)		(0.195)	(0.223)		(0.195)	(0.214)
Buy Control:									
Sometimes			-0.470			-0.463			-0.458
			(0.402)			(0.408)			(0.438)
About Half Times			-0.750			-0.762			-0.762
			(0.494)			(0.501)			(0.503)
Most Times			-0.284			-0.276			-0.277
			(0.437)			(0.443)			(0.462)
Always			-1.416			-1.526			-1.569
			(1.193)			(1.203)			(1.786)
Brand Control:									
Sometimes			0.221			0.215			0.213
			(0.274)			(0.280)			(0.334)
About Half Times			0.408			0.396			0.391
			(0.353)			(0.358)			(0.372)
Most Times			1.465***			1.471***			1.465**
			(0.327)			(0.331)			(0.615)
Eco-Friendly Control									
Sometimes			-0.299			-0.235			-0.260
			(0.523)			(0.513)			(0.996)
About Half Times			0.088			0.134			0.107
			(0.466)			(0.462)			(0.985)
Most Times			0.557			0.607			0.575
			(0.515)			(0.512)			(1.005)
Always			1.930***			2.042***			2.019
			(0.435)			(0.474)			(1.318)
Constant	1.885***	-0.629	-0.150	1.796***	-0.710	-0.349	1.135**	0.014	-0.211
	(0.350)	(0.968)	(1.266)	(0.356)	(0.984)	(1.273)	(0.446)	(1.429)	(1.795)
N	118	109	109	118	109	109	118	109	109

Estimation of Equations (1), (2), and (3). For each model, three specifications are tested. Columns 81), (4) and (7) do not account forδ_i and γ_i. Columns (2), (5) and (8) include demographic controls (δ_i). Columns (3), (6), and (9) add product-related controls (γ_i). The dependent variable is the number of green choices taken during the shopping task and can take values of 0, 1, 2, and 3.
The main coefficients are bolded.
Robust standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Both the presence of an interaction effect and of a negative moderating influence of environmental attitudes is further supported by Figure 5, which displays a graph of the fitted model of Column (7). The crossing of the two lines corresponding to the treatment and control conditions indicates that default allocation depends on environmental attitudes in predicting the number of green choices. Additionally, while the conventional default line has a positive slope, the green default line has a negative one, denoting a positive and negative moderating effect of environmental attitudes respectively. Moving from Column (7) to Columns (8) and (9), the coefficient of the interaction term is no longer statistically significant at conventional significance levels. In particular, all coefficients except those for the environmental attitude measure change sign and turn from positive to negative (for the green default variable) and from negative to positive (for the interaction term), with all standard errors increasing in magnitude as more controls are included. Table 4 shows that both environmental attitudes and green default allocation are positively related to the number of green choices, but the former negatively moderates the effect of the latter on the outcome variable.

Figure 5 – Margins Plot of Model 3



4.2 Default Acceptance

To analyze the individual and joint effect of environmental attitudes and default allocation on the tendency of individuals to stick to the pre-assigned default, linear probability models were estimated. To account for different tendencies to stick to the default, standard errors were clustered at the individual level. Results are displayed in Table 5.

First, the individual influence of default allocation on the tendency of individuals to do not opt out from the pre-assigned default is investigated in Columns (1) to (3). Again, moving from Column (1) to (2), demographic controls are added, whereas moving from Column (2) to (3), shopping task control measures are included. Across the 3 specifications, all coefficients of green default are positive and statistically significant. The standard errors of the regression coefficients slightly increase moving from the left to the right side of the table, while the magnitude of the effect decreases. Column (3) shows that respondents in the green default have a 21.2 percentage points higher probability of sticking to the pre-assigned default than respondents in the conventional group (P-Value < 0.05). Thus, Table 5 demonstrates that higher environmental attitude scores as well as green default allocation increase the probability that a person sticks to the pre-assigned default. In line with what observed in Table 4, the inclusion of demographic controls seems to improve the estimates' precision. Instead, product, brand and shopping eco-friendliness variables do not significantly affect the estimates.

Table 5 – Regression Estimates for Default Acceptance

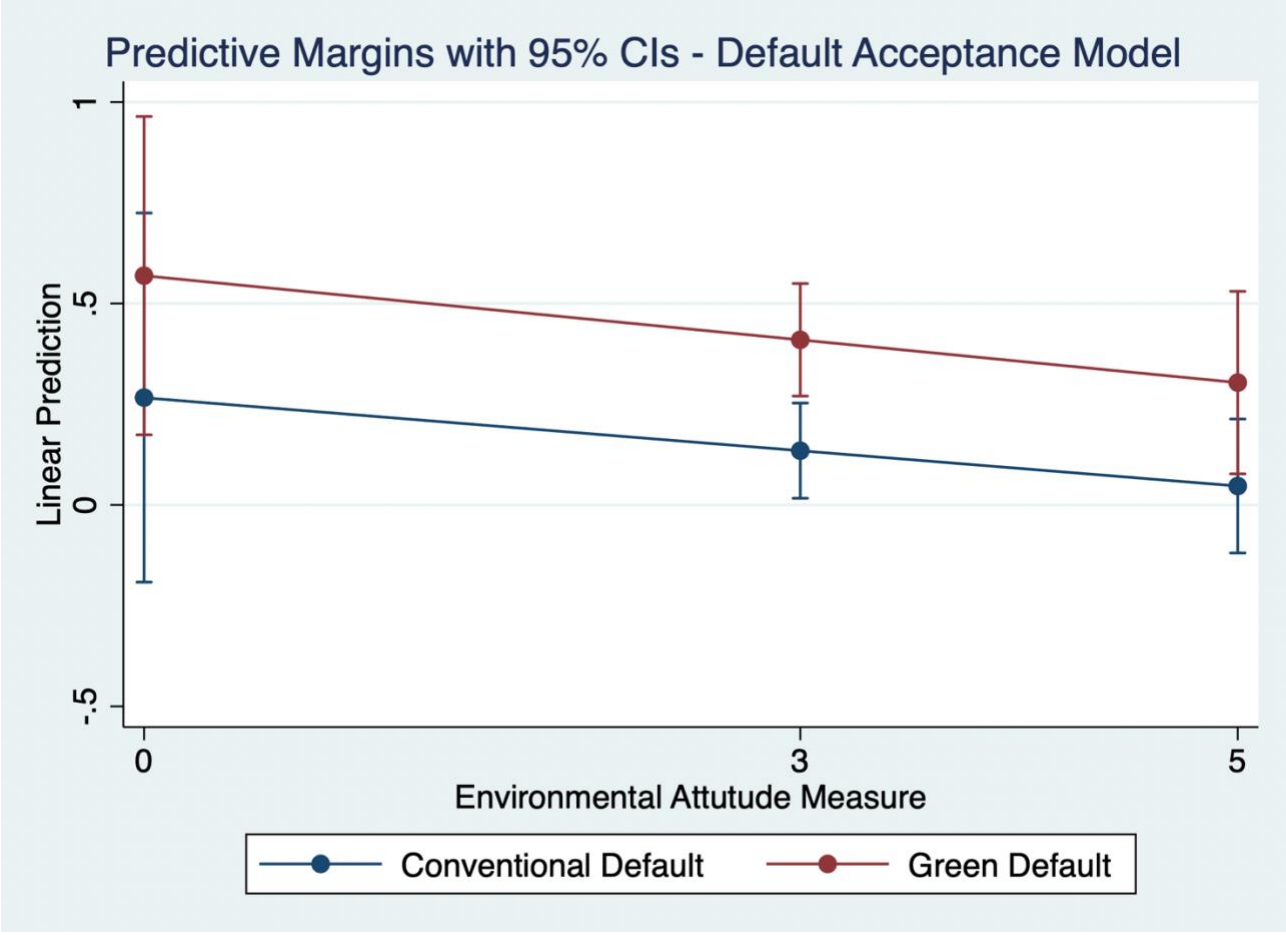
	Default Acceptance					
	Hypothesis 2.b			Hypothesis 3.b		
	(1) Baseline	(2) Product Controls	(3) Shopping Task Controls	(4) Baseline	(5) Product Controls	(6) Shopping Task Controls
Environmental Attitude	**-0.049**	**0.212****	**0.214****	-0.044	0.047	0.088
	(0.041)	(0.082)	(0.090)	(0.061)	(0.103)	(0.109)
Green Default	**0.270*****	**0.219*****	**0.212****	0.303	-0.960	-0.752
	(0.079)	(0.079)	(0.086)	(0.305)	(0.596)	(0.669)
Environmental Attitude * Green Default				**-0.009**	**0.308****	**0.252**
				(0.083)	(0.154)	(0.171)
Age		-0.002	-0.007		-0.003	-0.004
		(0.006)	(0.016)		(0.006)	(0.016)
Gender		-0.020	0.021		-0.004	0.032
		(0.086)	(0.095)		(0.088)	(0.098)
Education:						
Associate Degree		-0.363	-0.427		-0.351	-0.434
		(0.226)	(0.262)		(0.233)	(0.267)
Bachelor's degree		-0.473***	-0.258		-0.412**	-0.241
		(0.172)	(0.225)		(0.187)	(0.232)
Graduate Degree		-0.295*	-0.293		-0.292*	-0.303
		(0.160)	(0.187)		(0.171)	(0.192)
Prefer Not to Say		-0.417**	-0.420**		-0.403**	-0.425*
		(0.164)	(0.209)		(0.177)	(0.215)
Employment:						
Employed, 40 + hrs/week		-0.027	0.018		-0.012	0.023
		(0.129)	(0.150)		(0.131)	(0.152)
Not employed, looking for work		0.132	0.148		0.106	0.128
		(0.100)	(0.104)		(0.098)	(0.106)
Not employed, NOT looking for work		0.101	0.129		0.097	0.126
		(0.105)	(0.125)		(0.106)	(0.125)
Prefer Not to Say		-0.242*	-0.266**		-0.281**	-0.300**
		(0.124)	(0.124)		(0.117)	(0.126)
Nationality:						
Belgian		0.426***	0.247		0.367**	0.189
		(0.159)	(0.226)		(0.156)	(0.222)
German		0.037	0.162		0.041	0.161
		(0.141)	(0.154)		(0.134)	(0.151)
Other		0.020	0.068		0.046	0.081
		(0.081)	(0.089)		(0.081)	(0.091)
Prefer Not to Say		0.274*	0.674		0.374**	0.638
		(0.159)	(0.416)		(0.163)	(0.409)
Residence:						

Other		0.021	0.059		0.031	0.066
		(0.070)	(0.085)		(0.069)	(0.084)
Buy Control:						
Sometimes			-0.335			-0.320
			(0.222)			(0.220)
About Half Times			-0.224			-0.224
			(0.256)			(0.257)
Most Times			-0.206			-0.210
			(0.238)			(0.240)
Always			0.013			-0.142
			(0.499)			(0.486)
Brand Control:						
Sometimes			0.153			0.147
			(0.110)			(0.112)
About Half Times			0.423***			0.405***
			(0.127)			(0.131)
Most Times			0.158			0.137
			(0.121)			(0.119)
Eco-Friendly Control:						
Sometimes			0.162			0.071
			(0.241)			(0.239)
About Half Times			0.090			-0.009
Most Times			(0.243)			(0.237)
Sometimes			0.103			-0.010
			(0.254)			(0.251)
Always			0.162			0.079
			(0.161)			(0.184)
Constant	0.286*	-0.421	-0.447	0.266	0.205	0.052
	(0.160)	(0.394)	(0.584)	(0.231)	(0.483)	(0.677)
N	113	113	113	113	113	113
N_clust	113	113	113	113	113	113

Estimation of Equations (1), (2), and (3). For each model, three specifications are tested. Columns 81), (4) and (7) do not account for δ_i and γ_i. Columns (2), (5) and (8) include demographic controls (δ_i). Columns (3), (6), and (9) add product-related controls (γ_i). The dependent variable is a dummy that takes value of 1 if subjects stick to the pre-assigned default and a value of 0 otherwise. The main coefficients are bolded.
Standard errors in parentheses adjusted for clustering at individual level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0,01$

Finally, the joint effect of different levels of environmental attitude and green default allocation on the tendency to stick to the pre-assigned default is analyzed in Columns (7) to (9). Column (7) represents the estimations for the baseline model and it displays no statistically significant result. Instead in Column (8), the coefficient of the interaction term is positive and statistically significant (P-Value < 0.05). For those individuals allocated to the green default, compared to those allocated to the conventional default, a one-point increase in the measure of environmental attitude increases the probability of sticking to the pre-assigned default by 30.8 percentage points (P-Value < 0.05).

Figure 6 – Margins Plot of Model 3



However, contrary to what observed in Table 4, the relationship between default allocation, environmental attitudes and the probability of default acceptance does not seem to follow an unilinear path. This can be deduced from two factors: first, the interaction term coefficients are different in all 3 specifications and statistically significant only in one (Column (8)); second, for all estimates of Columns (7) to (9), the coefficients for the environmental attitude measure and green default

allocation decrease in magnitude and turn statistically insignificant compared to the specification of Columns (1) to (6). The fact that environmental attitudes do not moderate the influence of default allocation on default acceptance is further supported by Figure 6, which shows that the conventional and green groups lines do not cross like they do in Figure 5. Thus, both environmental attitudes and green default allocation positively influence the probability of sticking to the pre-assigned default, with weak or no apparent moderating effect of the former on the relationship between the latter and default acceptance.

5 Discussion and Limitations

With the increasing pressure that globalization and industrialization put on the environment, finding ways to cope with the depletion of resources, pollution and, more generally, environmental deterioration is a priority of the 21st century. Among the many solutions thus far adopted, the exploitation of behavioral tools is becoming more and more common. In particular, scientists believe that by adjusting the architecture of a choice they can indeed incentivize people to make more sustainable decisions and be eco-friendlier overall. For this reason, conventional default settings have started to be substituted for their greener counterparts, and such changes have shown to be quite effective in achieving the desired goal (Rhedlin and Sunstein, 2016; Pichert and Katsikopoulos, 2008). The main concern of this paper centers around the investigation of whether default tools are powerful by themselves or whether they need to be paired with positive environmental attitudes to produce successful results. Following the discoveries made by Johnson and Goldstein (2003), the attitude-conditionality character of default options is analyzed by decomposing what is expected to affect people's green choices (i.e. environmental attitudes and the assignment to a particular default) and investigating each factor independently, and then jointly.

5.1 Discussion and Implications

The results have demonstrated that people that hold better attitudes towards the environment make a higher amount of green choices compared to those that hold worse attitudes. However, whether individuals were assigned to the green or conventional default does not seem to account for variations in the number of green choices made during the experiment (no statistically significant coefficients in Columns (4) to (6) of Table 4). Thus, while the first findings are in line with previous research and basic economic theory describing that preferences for a certain topic explain behavior

and actions on that particular topic[12] (Alexopoulos and Sapp, 2006; Hedegaard et al., 2021), the second findings suggest that defaults cannot singlehandedly nudge individuals to make a green choice as it was initially expected. Thus, whereas this research provides support for *Hypothesis 1.a*, it does not to find any evidence in favor of *Hypothesis 2.a*. It is important to mention that the results do not suggest that there is no default effect at all. In fact, and contrary to the current theoretical claims first backed by Kaiser, Byrka and Hartig (2010), defaults' effectiveness appears to be attitude-conditional. When people are given a green default, the higher the attitudes they hold towards the environment the lower the number of green choices they made during the shopping task. On the same note, for subjects assigned to the conventional default, the higher the environmental attitudes they hold the higher the number of green choices they took. Thus, environmental attitudes levels serve as moderators for the effect of default allocation on the number of green decisions individuals make. This finding is in sharp contrast with most of the literature in the field. For instance, Taube and Vetter (2019) conducted a similar experiment to that of this study and found no moderating effect of attitudes, while Johnson and Goldstein (2003), Sunstein and Reisch (2014) and Sunstein and Thaler (2003) found a positive moderating effect. One could argue that it is illogical to conclude that pairing green defaults and more positive environmental attitudes produces a negative effect on the number of eco-friendly decisions, but it could actually indicate the presence of a ceiling effect[13]. If, for instance, people that present extremely high levels of environmental attitudes always choose the green product, regardless of which condition they were initially assigned to, then allocation to a green default does not affect the number of green choices they make (i.e. there is no treatment effect on these individuals). On the contrary, allocation to a green default has an impact on people with low values of environmental attitude. Thus, the treatment effect reduces the gap between people with low levels of environmental attitude and people with high levels of environmental attitude, resulting in a regression estimate with a higher intercept and a smaller slope. This finding is the opposite of what was expected and formulated in *Hypothesis 3.a*.

Default effectiveness is not only translated into a higher number of green choices, but it can also be interpreted as the extent to which individuals decide to stick to a certain pre-assigned default. The probability models estimations showed that both more positive environmental attitudes as well as the allocation to a green default positively influence the probability to accept such default. These results demonstrate that environmental attitudes and default allocation add up in predicting the

[12] This is true under the assumption of rationality.
[13] A ceiling effect occurs when subjects' scores cluster toward the high end of the observed measure (Everitt, 2010), causing a weak treatment effect.

tendency of the experimented subjects to stick to the default they were assigned to, thus providing evidence in favor of *Hypothesis 1.b* and *Hypothesis 2.b*. Since defaults are usually randomly determined (Brown and Krishna, 2004), default acceptance is conceptually unrelated to people's attitudinal goals. That is, accepting a default can be considered an eco-friendly action only if the default consists of a green choice. For instance, people that hold strong attitudes towards the environment are probability not more likely to accept the green energy default compared to people with weak environmental attitudes. Following this reasoning and connecting it to this study's results, default effectiveness in terms of default acceptance appears to be attitude-unconditional. Even though for the participants that were assigned to the green default, compared to those in the conventional default, better attitudes towards the environment resulted in a higher probability of sticking to the pre-assigned default in Model 8 of Table 5, Figure 6 shows that attitudes do not moderate the influence of default allocation on default acceptance (therefore no evidence supporting *Hypothesis 3.b* was found).

Thus, two conflicting views of default effectiveness emerge from the analysis and make answering the central question that this research addresses quite challenging. If on the one hand it was shown that defaults are attitude-conditional when predicting green choices, on the other hand it was demonstrated that they are attitude-unconditional when predicting the probability to accept a pre-assigned default. This inconsistency stems from the two different definitions of default effectiveness provided, and the fact that they are not redundant, meaning that the truthfulness of one does not imply the truthfulness of the other. In fact, real life decisions do not consist of only two choices, making it necessary to consider green choices, default acceptance and their respective default effects separately. Furthermore, this study finds that attitudes are neither random nor inconclusive. Individuals' environmental attitudes were linearly related to both the number of green choices and the tendency to stick to the pre-assigned default, with an effect size of considerable magnitude. In particular, higher environmental attitudes translated in individuals making half a green choice more and approximately a 20 percentage points increase in the probability of accepting a default. Thus, attitudes should be accounted for during choice architecture and special attention should be placed not only on contextual factors (i.e. defaults) but also on individual factors (i.e. preferences).

5.2 Limitations

This study presents different limitations. First, the measures for environmental attitudes were placed after the shopping task to avoid priming choices for green products. However, the opposite problem could have emerged: subjects' scores for the environmental attitude statements may have

been influenced by the choices they took in the first part of the experiment. Figure 2 shows that even though the number of green choices and default acceptance differ (systematically) between treatment and control groups, the measure for environmental attitude remains approximately the same (even if green choice presents small differences in the two groups, such difference is larger than that displayed for the environmental attitude measure).

Second, Dunlap (2008) himself criticized the NEP scale for being too technical and ambiguous, causing individuals to attribute different interpretations to its statements based on their levels of ecological knowledge. If the wording or meaning of the NEP statements was misunderstood is something that is beyond the experimenter control. However, if that is the case, validity problems may emerge.

Finally, the abstractness of the shopping task represents an obstacle for the achievement of ecological validity. The task did not involve any money stake and both the green and conventional products were systematically chosen to have similar prices. Moreover, additional problems may have been caused by the introduction of the *free choice* (i.e. possibility of coming up with their own preferred brand for the product categories presented in the experiment). Participants found out about the free choice after deciding whether to stick to the default or not. If they opted for *"none of the previous"*, the extra effort that would take to think about and type-in another product brand may had induced subjects to defer such choice, go back and (randomly) select one of the two already specified products. If this was the case, then both the green choice and default acceptance variables would be biased. However, free choice was added to the shopping task with the belief of improving the experiment's validity. In fact, by automatically assuming that the rejection of a green (conventional) default results in making a non-green (green) choice would bias results even more than some random choices would.

Since green choice, default acceptance and the environmental attitude measure all appear to well describe the theoretical concepts that the study aimed to capture and randomization into two conditions solves for self-selection related problems, the experiment seem to be internally valid. This gain in internal validity comes at the expenses of external validity. First, and most importantly, the sampling method generated a rather homogenous sample in terms of demographic characteristics. Such sampling bias makes it difficult to generalize the results to the Dutch population. Then, and as already mentioned, the ecological validity of the experiment cannot be other than limited due the

unrealistic nature of the shopping task (grocery shops have several options per product category instead of only 2 and prices are an important decision factor).

6 Future Research

The present study proposes 4 recommendations meant to improve future research on default effectiveness. First, because of the unrealistic nature of the shopping task, this research suffers of poor ecological validity. Thus, in order to improve on this, more life-like situations should be used to evaluate people's decisions. Furthermore, by conducting a lab experiment instead of a survey, the experimenters will be able to better control for any confounding factor. Second, while this study successfully investigates the moderating effect of environmental attitudes on the relationship between default allocation and choices, it is still far from being able to apply the findings to real life situations. With the purpose of better understanding what the actual consequences of introducing a green default in the real world are, a no default should be included and used as a comparison point against the green and conventional defaults. Third, researchers should be open to the possibility that factors other than attitudes act as moderators of default effects. Johnson et al. (2002) found that socio-demographic characteristics as well as experience do not affect the relationship between defaults and people's participation in an online survey. Moreover, Agnew and Szykman, (2005) and Bronchetti et al. (2011) demonstrated that money allocation plans and financial literacy reduce the influence of defaults on monetary investment decisions. Other potential moderators that future research should pay particular attention to include people's goals, values and behavioral intentions (Gifford and Nilsson, 2014). Finally, it is worthwhile for future research to deeper analyze the mechanisms that drive default effectiveness. More specifically, defaults are successful in incentivizing a certain behavior mainly because of three forces: *i)* they are perceived as *implicit suggestions* from experts, *ii)* they allow individuals to avoid the *extra effort* in deciding whether to trade economic for environmental goods, and *iii)* they are the *reference point* for which, if no deviation happens, neither gains nor losses occur and thus people's loss aversion does not kick in. This study's results do not provide evidence suggesting that one of these forces dominates in driving default effectiveness. It could be that the implicit suggestions side of defaults determine their success in situations where uncertainty is involved, while the extra effort effect comes into play when more morally challenging decisions are to be taken. Overall, it is desirable that future research focuses on discovering the nature of default effectiveness instead of merely analyzing its conditionality on attitudes, goals, intentions etc.

7 Conclusion

The concern for environmental deterioration has gained increased importance in the past decade and has thus been the central topic of many papers. Among the several strategies developed with the goal of minimizing the human impact on the environment, the use of defaults has proven to be successful. The attractiveness of defaults stems from the nonfinancial and nonmandatory alterations of the choice architecture that produces deferral in decision making. However, the debate around whether defaults are effective independently of people's preferences or whether they are not is a point to be clarified if such behavioral tools are to be applied in the real world.

For this purpose, the present study makes use of an online survey composed of a simulated shopping task and 15 statements assessing respondents' environmental attitudes to analyze the potential attitude-conditionality nature of default effectiveness. The effect of the main independent variables, that is environmental attitudes and green default allocation, on the number of green choices and the probability to stick to the pre-assigned default is both independently and jointly introduced in regression estimates. The results demonstrate that the number of green choices taken during the shopping task is predicted by the interaction of attitudes and green default allocation. In line with the view of attitude-conditionality, this study finds a negative moderating effect of environmental attitude on the assignment to a green default. Even though this finding may seem illogical, it actually indicates that the presence of a default deemed as green reduces the difference in the number of green choices taken by people with higher and lower environmental attitudes. Furthermore, default acceptance is predicted by the additive effect of both green default allocation and environmental attitudes (i.e. green default and environmental attitudes independently affect the probability to stick to a pre-assigned default), indicating that the nature of default success is attitude-unconditional.

These results are not contradicting as attitude-(un)conditionality depends on what is intended for default effect. If the default effect resides in nudging a higher number of eco-friendly choices, then default effectiveness is attitude-conditional. Instead, if the default effect is represented by the tendency to stick to the default, then default effectiveness is attitude-unconditional. Therefore, it is important to consider both contextual factors (i.e. defaults) and individual factors (i.e. preferences) during the choice architecture. Future research should focus on testing default effectiveness under more life-like circumstances, as well as being open to the possibility of having other (or more) factors acting as moderators of default effects. Furthermore, it is worthwhile to analyze what are the driving forces for the success of defaults and whether such forces are situation-based.

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Appendix A – The Survey

Survey Flow

Block: Introduction (1 Question)
Standard: shopping task (1 Question)

BlockRandomizer: 1 -

Standard: Shopping task conventional (9 Questions)
Standard: shopping task green (9 Questions)

Standard: Environemental attitude (16 Questions)
Standard: EV (16 Questions)
Standard: Demographics (6 Questions)
Standard: End of survey (1 Question)

Page Break

Start of Block: Introduction

Q31 Welcome to this survey!

I am Camilla, a master student at Erasmus University in Rotterdam. I need your help for my research project, and I thank you in advance for taking the time to participate.
The survey takes about 5 minutes to complete.

Please answer all questions by following your gut as there is no right or wrong answer. Every information you provide is extremely valuable to me and will be treated confidentially and evaluated anonymously.

Best Regards,

Camilla

Page Break

Start of Block: shopping task

Q48 You go to the supermarket to buy the following products: paper towel, muesli cereal, and green lemon tea. For each product you are given two alternatives or a free choice. Please indicate your preferred choice.

Page Break

End of Block: shopping task

Start of Block: Shopping task conventional

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q6 = 3

Q7 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q8 = 3

Q9 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q10 = 3

Q11 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Q12 How often do you buy the previous products?

- never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

Q13 How often do you change the brands for the previous products?

- never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

Q14 How high is the percentage of eco-friendly products in your shopping overall?

- Very Low (1)
- Low (2)
- Average (3)
- High (4)
- Very High (5)

End of Block: Shopping task conventional

Start of Block: shopping task green

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q39 = 3

Q40 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q41 = 3

Q42 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Please choose your preferred option:

Option 1

Option 2

None of the previous

Display This Question:

If Q43 = 3

Q44 Please, insert the name of an alternative option (brand name, description of product, etc.) that you would rather choose.

_____

Q45 How often do you buy the following products?

- never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

Q46 How often do you change the brands for the following products?

- never (1)
- Sometimes (2)
- About half the time (3)
- Most of the time (4)
- Always (5)

Q47 How high is the percentage of eco-friendly products in your shopping overall?

- Low (1)
- Very Low (2)
- Average (3)
- High (4)
- Very High (5)

End of Block: shopping task green

Start of Block: Environmental attitude

Q15 We are approaching the limit of the number of people the earth can support.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q16 Humans have the right to modify the natural environment to suit their needs.

	strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q17 When humans interfere with nature it often produces disastrous consequences.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q18 Human innovation will ensure that we do NOT make the earth unlivable.

	strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q19 Humans are severely abusing the environment.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q20 The earth has plenty of natural resources if we just learn how to develop them.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q21 Plants and animals have as much right as humans to exist.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q22 The balance of nature is strong enough to cope with the impacts of modern industrial nations.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q57 Please validate your continued participation by selecting all the responses.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	☐	☐	☐	☐	☐

Q23 Despite our special abilities, humans are still subject to the laws of nature.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q24 The so-called “ecological crisis” facing humankind has been greatly exaggerated.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q25 The earth is like a spaceship with very limited room and resources.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q26 Humans were meant to rule over the rest of nature.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q27 The balance of nature is very delicate and easily upset.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q28 Humans will eventually learn enough about how nature works to be able to control it.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

Q29 If things continue on their present course, we will soon experience a major ecological catastrophe.

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)
I: (1)	○	○	○	○	○

End of Block: Environmental attitude

Start of Block: Demographics

Q50 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Other (3)
- ○ Prefer not to say (4)

Q51 What is your age?

_____

Q52 Highest level of education completed?

- Less than high school degree (1)
- High school degree or equivalent (2)
- Some college but no degree (3)
- Associate degree (4)
- Bachelor degree (5)
- Graduate degree (6)
- Prefer not to say (7)

Q53 What is your employment status?

- Employed, contractual working under 40 hours per week (1)
- Employed, contractual working 40 or more hours per week (2)
- Not employed, looking for work (3)
- Not employed, NOT looking for work (4)
- Retired (5)
- Disabled, not able to work (6)
- Prefer not to say (7)

Q54 What is your nationality?

- Dutch (1)
- Belgian (2)
- German (3)
- Other (4)
- Prefer not to say (5)

Q55 What city do you live in?

- Rotterdam (1)
- Capelle (2)
- Other (3)
- Prefer not to say (4)

End of Block: Demographics

Start of Block: End of survey

Q56 Thank you very much for taking part pf the survey. Your help is appreciated!

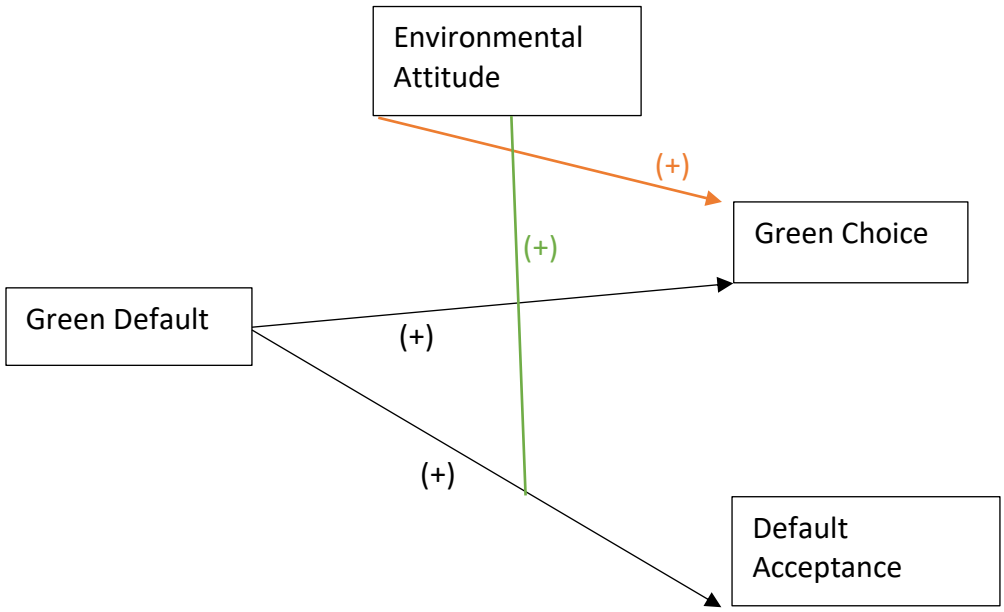
Need survey respondents? Click this link to receive credits that earn you free respondents at SurveySwap.io. --> https://surveyswap.io/sr/4a5VkyJBcDDmSLGF

End of Block: End of survey

Appendix B – Additional Material

1 Hypotheses Overview

Figure 7 – Hypotheses Overview

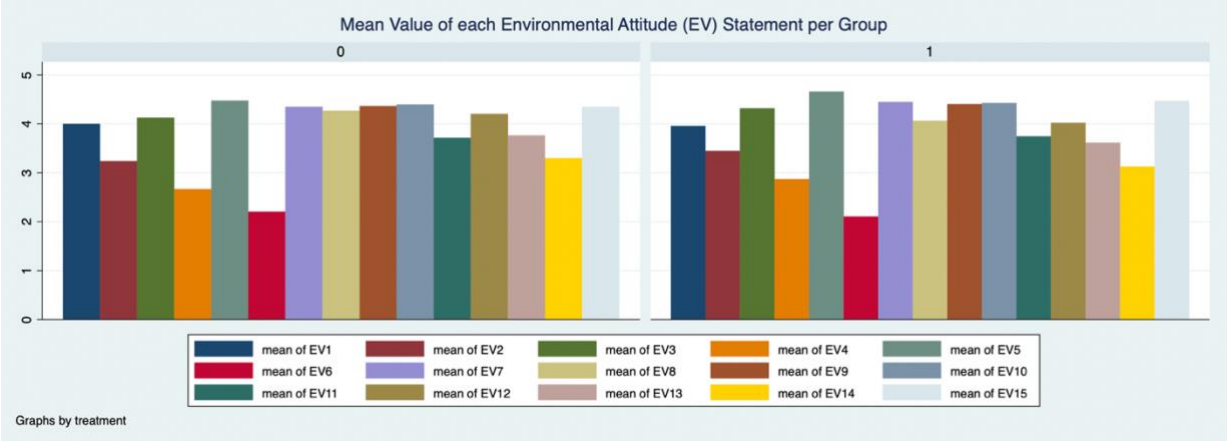


Each colored line refers to one of the hypotheses formulated in Section 2. First, the orange lines represent the relationships that *H1.a* and *H1.b* seek to investigate. More specifically, this study expects to find a positive relationship between environmental attitudes and both default acceptance and the number of green choices. Second, the black lines refer to *H2.a* and *H2.b* and show that being assigned to a green default is expected to induce more green choices and increased likelihood of sticking to the pre-assigned default. Finally, the green line refers to *H3.a* and *H3.b*. The green plus sign indicates that environmental attitudes are expected to positively moderate the effect that being assigned to a green default has on green choices and default acceptance, compared to being assigned to a conventional default.

2 Environmental Attitudes Statements

Figure 8 displays the mean scores for each EV statement for both treatment and control groups. The histogram shows that for each of the 15 statements of the NEP scape, the mean score is very similar between the two conditions.

Figure 8 – Average Score for each NEP Statement



3 Additional Results

The following section presents the estimates for equations (1), (2), and (3). The difference between Tables 4/5 and Tables 6/7 stems from the coding of the dependent variables. In Table 6, green choice is a dummy variable taking value of 1 if participants chose the green product for 2 out of the 3 choices they were presented. In Table 7, default acceptance is a categorical variable with values ranging from 0 to 3. A value of 0 means that subjects never stick to the default, a value of 1 means that they stick only for 1 of the 3 choices, a value of 2 means that they stick for 2 of the 3 choices, and a value of three means that they stick to the pre-assigned default for all 3 choices.

Columns (1) to (3) of Table 6 display the estimates for the individual influence of environmental attitudes on green choices. Similar to Table 4, the only significant coefficient is that of Column (2). A one-point increase in the measure of environmental attitudes leads to an increase in the probability of making a green choice by 21.6 percentage points (P-Value < 0.5). While in Table 4 these results were only marginally significant, Table 6 shows more precise estimates.

Columns (7) to (9) of Table 6 display the moderating role of environmental attitudes on the relationship between green defaults and green choices. Contrary to Table 4, none of the coefficient is statistically significant. Thus, it seems that when green choice is coded as a dummy variable, environmental attitudes do not moderate the effect of green defaults as much as they did when green choice was coded as a continuous variable. This is further supported by Figure 9, which shows that the two lines barely cross and their confidence intervals are overlapping.

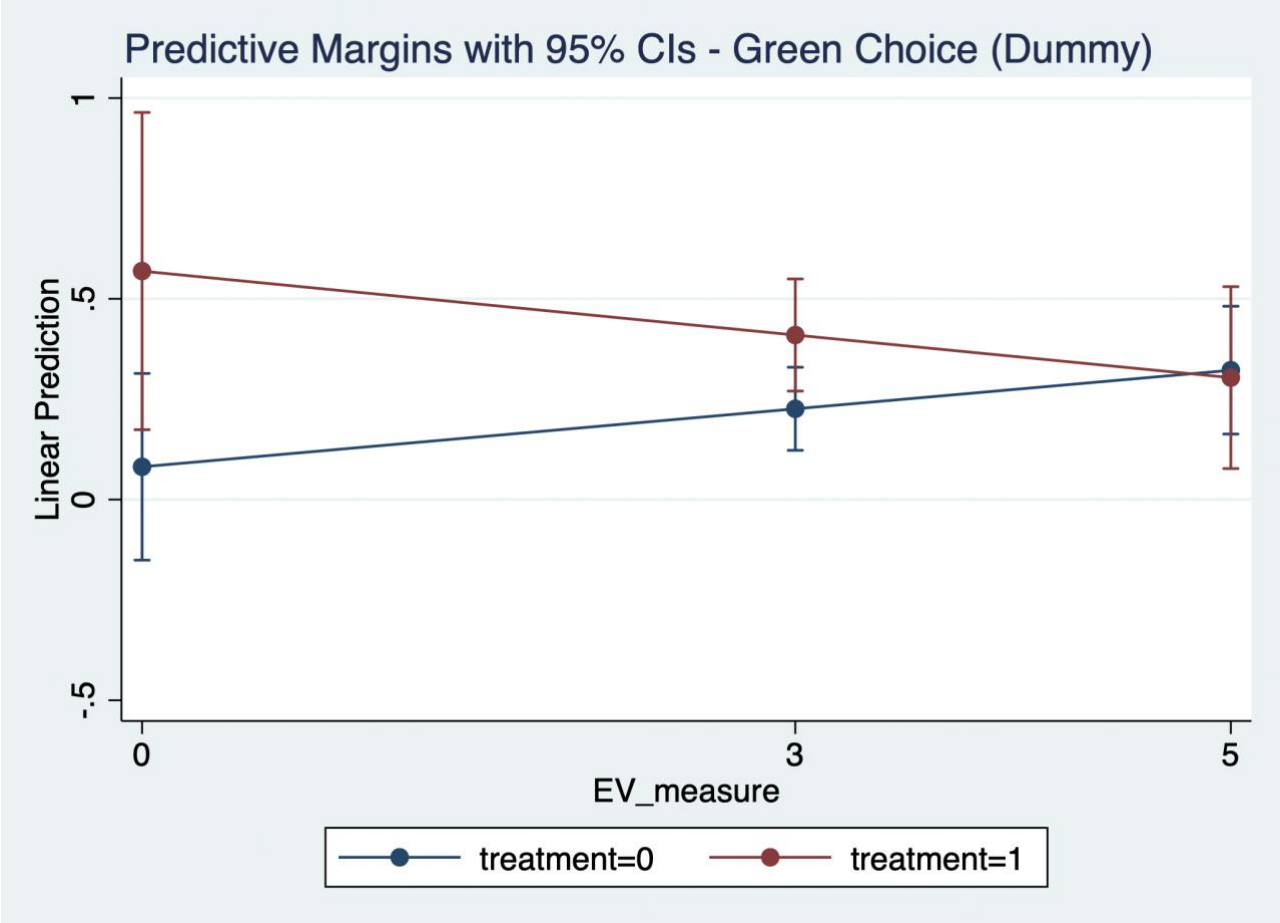
Table 6 – Regression estimates for Green Choice as a Dummy Variable

	Green Choice								
	Hypothesis 1.a			Hypothesis 2.a			Hypothesis 3.a		
	(1) Baseline	(2) Demographic Controls	(3) Shopping Task Controls	(4) Baseline	(5) Demographic Controls	(6) Shopping Task Controls	(7) Baseline	(8) Demographic Controls	(9) Shopping Task Controls
Environmental Attitude	-0.017	**0.216****	0.165	-0.012	0.217**	0.164	0.048	0.059	0.091
	(0.045)	(0.105)	(0.111)	(0.042)	(0.105)	(0.109)	(0.033)	(0.163)	(0.139)
Green Default				0.125	0.068	0.080	**0.487****	-1.060	-0.472
				(0.087)	(0.089)	(0.091)	(0.231)	(0.810)	(0.835)
Environmental Attitude * Green Default							**-0.101**	0.294	0.145
							(0.065)	(0.212)	(0.224)
Female		-0.055	-0.047		-0.051	-0.041		-0.036	-0.035
		(0.097)	(0.101)		(0.098)	(0.101)		(0.100)	(0.103)
Age		0.028***	0.030*		0.030***	0.034**		0.029***	0.036**
		(0.007)	(0.016)		(0.007)	(0.017)		(0.007)	(0.016)
Education:									
Associate Degree		-0.144	-0.169		-0.150	-0.184		-0.138	-0.188
		(0.300)	(0.316)		(0.308)	(0.325)		(0.318)	(0.330)
Bachelor's degree		-0.668***	-0.434		-0.668***	-0.450		-0.610***	-0.440
		(0.209)	(0.266)		(0.200)	(0.275)		(0.217)	(0.281)
Graduate Degree		-0.315*	-0.303		-0.310*	-0.302		-0.307*	-0.308
		(0.172)	(0.203)		(0.165)	(0.197)		(0.173)	(0.200)
Prefer Not to Say		-0.471**	-0.609***		-0.463**	-0.615***		-0.450**	-0.618***
		(0.190)	(0.227)		(0.183)	(0.224)		(0.193)	(0.227)
Employment:									
Employed, 40 + hrs/week		-0.021	0.092		-0.027	0.079		-0.012	0.082
		(0.129)	(0.128)		(0.133)	(0.132)		(0.140)	(0.138)
Not employed, looking for. work		0.062	0.135		0.065	0.140		0.040	0.129
		(0.131)	(0.134)		(0.129)	(0.130)		(0.126)	(0.129)
Not employed, NOT looking for work		-0.070	-0.033		-0.072	-0.038		-0.075	-0.040
		(0.120)	(0.125)		(0.120)	(0.124)		(0.117)	(0.124)
Prefer Not to Say		-0.409***	-0.230*		-0.414***	-0.231		-0.451***	-0.251*
		(0.129)	(0.138)		(0.134)	(0.142)		(0.129)	(0.137)
Nationality:									

Belgian		0.322*	0.063		0.273	0.011		0.217	-0.021
		(0.179)	(0.257)		(0.191)	(0.258)		(0.189)	(0.269)
German		0.339*	0.323*		0.333*	0.318*		0.337*	0.317*
		(0.187)	(0.181)		(0.193)	(0.188)		(0.191)	(0.189)
Other		-0.016	-0.037		-0.011	-0.033		0.014	-0.026
		(0.090)	(0.091)		(0.091)	(0.090)		(0.093)	(0.090)
Prefer Not to Say		0.001	-0.094		0.032	-0.027		0.128	-0.048
		(0.174)	(0.350)		(0.191)	(0.369)		(0.200)	(0.377)
Residence:									
Other		-0.092	-0.133		-0.087	-0.126		-0.078	-0.122
		(0.098)	(0.097)		(0.098)	(0.096)		(0.097)	(0.095)
Buy Control:									
Sometimes			-0.419**			-0.413**			-0.405*
			(0.190)			(0.199)			(0.204)
About Half Times			-0.404*			-0.414*			-0.413*
			(0.216)			(0.221)			(0.225)
Most Times			-0.188			-0.181			-0.183
			(0.212)			(0.219)			(0.224)
Always			-0.608			-0.704			-0.792
			(0.575)			(0.584)			(0.588)
Brand Control:									
Sometimes			0.110			0.105			0.101
			(0.126)			(0.132)			(0.135)
About Half Times			0.216			0.205			0.195
			(0.145)			(0.147)			(0.151)
Most Times			0.713***			0.718***			0.706***
			(0.221)			(0.219)			(0.206)
Eco-Friendly Control:									
Sometimes			-0.162			-0.106			-0.158
			(0.184)			(0.185)			(0.209)
About Half Times			-0.045			-0.004			-0.061
			(0.175)			(0.174)			(0.202)
Most Times			0.186			0.229			0.164
			(0.215)			(0.217)			(0.240)
Always			1.029***			1.126***			1.078***
			(0.198)			(0.225)			(0.233)
Constant	0.374**	-0.790	-0.399	0.302*	-0.865*	-0.573	0.082	-0.266	-0.288
	(0.168)	(0.483)	(0.543)	(0.161)	(0.490)	(0.561)	(0.117)	(0.673)	(0.622)
N	118	109	109	118	109	109	118	109	109

Robust standard errors in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 9 – Margins Plot of Model 3 for Binary Green Choice



Columns (1) to (3) of Table 7 display the estimates of green default on default acceptance. Like in Table 5, all coefficients remain statistically significant. The participants that were allocated to the green default, compared to those that were allocated to the conventional default, stick to the default they were assigned to approximately 0.57 times more (P-value > 0.01).

Columns (4) to (6) display the estimates of the moderating effect of environmental attitudes on the relationship between green defaults and default acceptance. On the one hand, the coefficient of Column (5) is statistically significant and positive like in table 5. On the other hand, the coefficient of Column (6) remains statistically significant, while that of Table 5 did not. For the participants that were allocated to the green default, compared to those that were allocated to the conventional default, a one-point increase in the measure of environmental attitude results in sticking to the pre-assigned default approximately 0.83 times more (P-Value > 0.05).

Table 7 - Regression estimates for Default Acceptance as a Continuous Variable

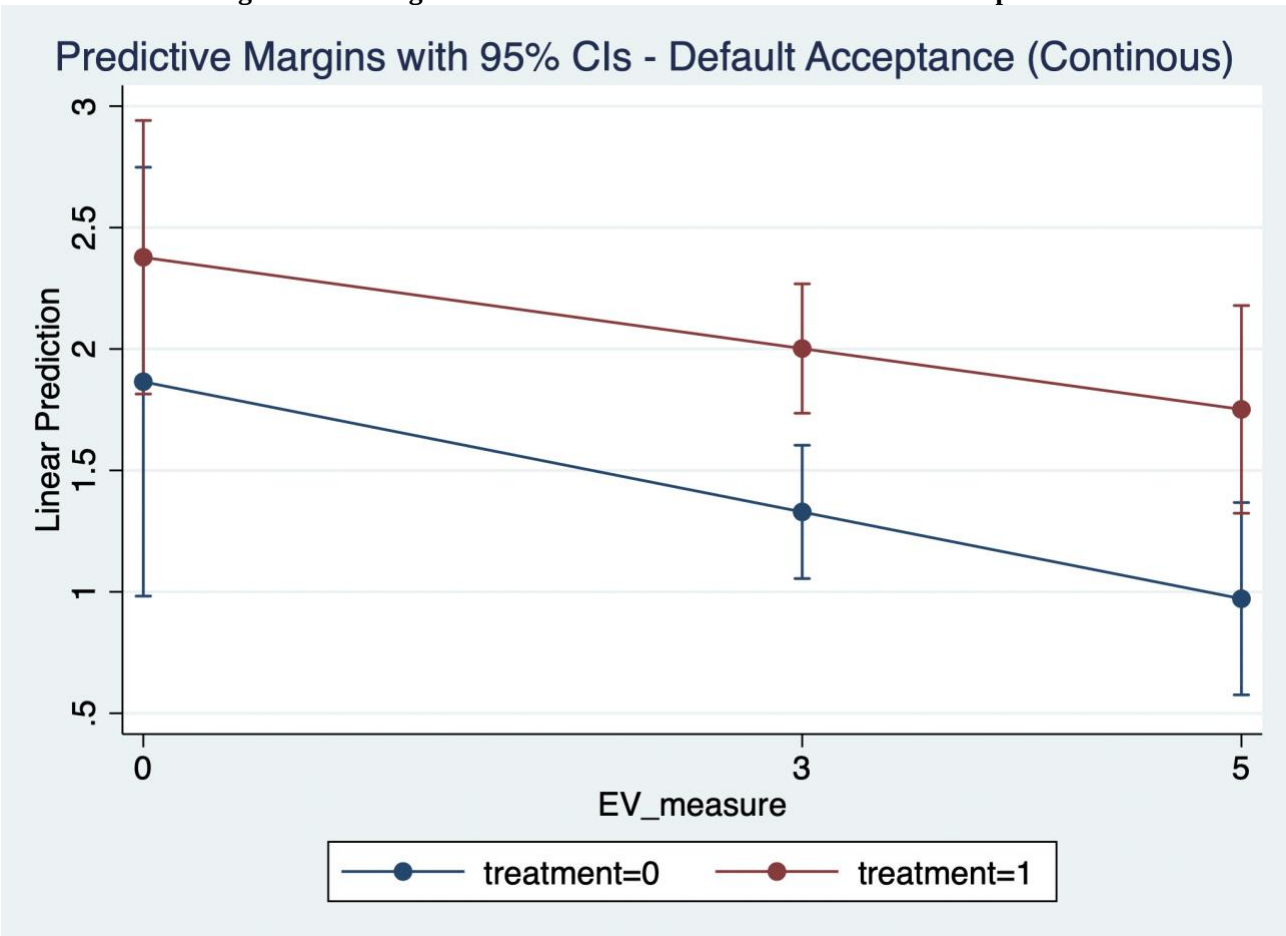
	Default Acceptance					
	Hypothesis 2.b			Hypothesis 3.b		
	(1) Baseline	(2) Product Controls	(3) Shopping Task Controls	(4) Baseline	(5) Product Controls	(6) Shopping Task Controls
Environmental Attitude	**-0.147****	0.225	0.253	-0.179	-0.228	-0.161
	(0.068)	(0.214)	(0.219)	(0.118)	(0.325)	(0.301)
Green Default	**0.704*****	**0.602*****	**0.572*****	0.512	-2.631	-2.587
	(0.184)	(0.185)	(0.203)	(0.529)	(1.614)	(1.607)
Environmental Attitude * Green Default						
Environmental Attitude				0.053	**0.844****	**0.827****
				(0.145)	(0.410)	(0.403)
Female		-0.017	0.101		0.027	0.136
		(0.218)	(0.219)		(0.214)	(0.225)
Age		-0.049***	-0.081**		-0.052***	-0.070*
		(0.018)	(0.036)		(0.016)	(0.037)
Education:						
Associate Degree		-1.063**	-1.119*		-1.030**	-1.141*
		(0.489)	(0.598)		(0.488)	(0.599)
Bachelor's degree		-0.548	-0.354		-0.383	-0.297
		(0.546)	(0.495)		(0.577)	(0.519)
Graduate Degree		-0.746***	-0.734**		-0.738**	-0.770**
		(0.273)	(0.306)		(0.294)	(0.319)
Prefer Not to Say		-0.757**	-0.563		-0.719**	-0.580
		(0.312)	(0.354)		(0.327)	(0.362)
Employment:						
Employed, 40 + hrs/week		-0.142	-0.121		-0.101	-0.107
		(0.366)	(0.415)		(0.360)	(0.409)
Not employed, looking for work		0.368	0.315		0.296	0.250
		(0.231)	(0.244)		(0.229)	(0.239)
Not employed, NOT looking for work		0.346	0.369		0.336	0.361
		(0.242)	(0.279)		(0.248)	(0.278)
Prefer Not to Say		-0.640	-0.959*		-0.747*	-1.069**
		(0.433)	(0.499)		(0.444)	(0.523)
Nationality:						
Belgian		1.234***	1.228**		1.073***	1.041*

		(0.380)	(0.532)		(0.364)	(0.526)
German		0.050	0.301		0.062	0.299
		(0.367)	(0.404)		(0.353)	(0.395)
Other		0.317	0.464**		0.389*	0.506**
		(0.197)	(0.192)		(0.198)	(0.196)
Prefer Not to Say		0.992**	2.209**		1.267**	2.091**
		(0.485)	(1.008)		(0.511)	(1.012)
Residence:						
Other		0.065	0.168		0.092	0.193
Buy Control:		(0.206)	(0.212)		(0.201)	(0.209)
Sometimes			-0.011			0.038
			(0.578)			(0.557)
About Half Times			0.117			0.117
			(0.659)			(0.640)
Most Times			0.098			0.085
			(0.604)			(0.589)
Always			1.736			1.230
			(1.193)			(1.190)
Brand Control:						
Sometimes			0.061			0.043
			(0.290)			(0.292)
About Half Times			0.714**			0.655**
			(0.316)			(0.314)
Most Times			-0.665**			-0.733**
			(0.321)			(0.349)
Eco-Friendly Control:						
Sometimes			0.782			0.485
			(0.529)			(0.536)
About Half Times			0.542			0.216
			(0.552)			(0.545)
Most Times			0.353			-0.020
			(0.593)			(0.596)
Always			-0.783*			-1.056**
			(0.452)			(0.505)
Constant	1.749***	1.872*	1.460	1.865***	3.588**	3.094*
	(0.274)	(1.022)	(1.396)	(0.446)	(1.440)	(1.749)
N	118	109	109	118	109	109
N_clust	118	109	109	118	109	109

Standard errors in parentheses adjusted for clustering at individual level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The main findings of Table 7 do not vary from what was seen in Table 5. In fact, the relationship between default allocation, environmental attitudes and the probability of default acceptance does not seem to follow an unilinear path. This is further supported by Figure 10, which shows that the two lines corresponding to the treatment and control groups are not crossing.

Figure 10 – Margins Plot of Model 3 for Continuous Default Acceptance



Overall, the estimates of Tables 6 and 7 are in accordance to what was analyzed in the main text. Environmental attitudes positively influence green choices, while green defaults per se do not. Furthermore, green defaults positively influence the tendency to stick to the pre-assigned condition, and their relationship is not moderated by environmental attitudes. The main difference with the previous results is that the attitude conditionality of default effectiveness for green choices appears to be weaker than the results displayed in Table 4.