

Article

# Stepping Outside the Self Promotes Pro-Environmental Behaviors

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**Abstract:** Although different self-perspectives can prompt different mindsets, leading to different responses, little is known about how self-perspective impacts pro-environmental behaviors. This study explores the effect of self-perspective, i.e., either self-immersed or self-distanced perspective, on environmental attitudes and behavior. Based on an online survey of 409 respondents in the United States, we find that pro-environmental behaviors are perceived as more important and less costly from a self-distanced perspective, compared to a self-immersed one, which in turn facilitates more engagement in pro-environmental behaviors. Furthermore, a self-distanced perspective is more prevalent than a self-immersed perspective when individuals are less satisfied with and perceive less control over their pro-environmental behaviors. This study extends the self-perspective theory to research on pro-environmental behaviors, and offers useful implications for individuals to address conflicts between environmental and self-interested considerations, as well as for public policy makers and practitioners to promote more engagement in pro-environmental behaviors.

**Keywords:** self-perspective; self-immersed perspective; self-distanced perspective; satisfaction; perceived behavioral control; pro-environmental behavior

## 1. Introduction

Pro-environmental behaviors (PEBs) can be viewed as a tension between self-interest and environmental concern [1]. When environmental values or moral beliefs are not central to an individual's values, environmental concern is often overlooked, compromised with other personal considerations (e.g., cost, convenience), and rarely guides actual behaviors [2,3]. Evidence from past research on the gap between attitude and PEBs suggests that environmental importance is often peripheral to individuals' conscious PEBs at an individual level [4–6]. When individuals perceive environmental importance or consideration as other-oriented, rather than self-directed, they tend to prioritize their own benefits and discount environmental influence in making a decision from their own perspective, especially if their moral beliefs and environmental values are not strong. However, as a third-party person or an outside observer, individuals may reduce their personally instinctive desire to fulfill their own benefits and have a more positive inclination towards environmental goals. Promoting individuals to take a step back and reflect on their thoughts and feelings from a distanced and non-judgmental stance (i.e., self-distanced perspective) rather than their own subjective perspective (i.e., self-immersed perspective) may be an effective way to motivate individuals to embrace environmental considerations and engagement in PEBs.

Previous studies demonstrate that individuals form attitudes or reflect on their experience either from a self-immersed perspective, in which they visualize the event happening to themselves through their own eyes, or a self-distanced perspective, in which they see themselves in the event from the perspective of an outside observer [7,8]. The different perspectives of the self (i.e., self-immersed or self-distanced perspective) can result in different behavioral outcomes, because the distancing of the self allows individuals to reconstrue their attitudes and the meaning of behaviors instead of reacting to their personal experience directly [7]. Consistent with this, we argue that individuals' reflection on PEBs from different self-perspectives may activate different mindsets and behavioral outcomes. This important issue has yet to be examined, and therefore, we will address this void.

This study compares different influences of the self-perspective, namely the self-immersed and self-distanced perspective, on pro-environmental behaviors, with the purpose of identifying effective strategies to promote more engagement in PEBs. We contribute to existing literature in three ways. First, this study represents an initial attempt to extend the theory of self-perspective to research on PEBs. Past literature implicitly assessed PEBs and attitudes in response to the self-immersed perspective, but the self-distanced perspective remains unexplored. Second, we compare the influence of different self-perspectives on PEBs, and identify the predominance of the self-distanced perspective, relative to the self-immersed one, in promoting engagement in PEBs from a process of behavioral cognition. Third, by considering the interaction effects between behavioral situations with self-perspective, we identify the conditions under which the self-distanced perspective is more effective than that of the self-immersed one in promoting PEBs.

This research demonstrates that pro-environmental behaviors can be promoted by influencing the way that individuals think about their own feelings and behaviors. Prompting the self-distance perspective can be an effective way to induce PEBs, especially when individuals lack inner motivation or perseverance. Thus, the findings of this research offer useful implications for policy makers and practitioners to launch effective campaigns to promote more engagement in PEBs. In addition, the results of this study will help individuals to manage their own mindsets and deal with the personal dilemmas regarding conflicting inclinations between pro-environmental and self-interested choices.

## 2. Theoretical Framework

### 2.1. Self-Perspective, Self-Regulation, and PEBs

In facing challenges to deal with personal dilemmas and in attempts to reason objectively, the perspective of outside observers will be more helpful as they are not directly involved in the situation [9]. That is, in addition to analyzing their behaviors and feelings through their own eyes, individuals can also see their behaviors from others' perspectives. As opposed to self-immersion which typically occurs from an internal or first-person perspective, self-distancing occurs when individuals adopt an external perspective (i.e., an observer's perspective) and think about themselves and their entangled feelings as an object of attention [10]. Thus, embracing the self-distanced perspective is broadly seen as an ability to transcend one's egocentric viewpoint of an event [7], and to allow individuals to think objectively [11]. The self-distanced perspective has also been linked to an open and inclusive mindset, considering opposing viewpoints from others and positive interpersonal perceptions [12,13].

Essentially, the self-distanced perspective, compared to that of the self-immersed one, is believed to be more positively associated with self-regulation, which refers to the capability to regulate one's instinctive responses in accordance with the requirement of oneself or the external world [14]. Shifting from a self-immersed perspective to an outsider's viewpoint can keep individuals away from the pull of momentary distractions of external surroundings and enable them to respond with a more objective perspective [15]. This transition enhances the volitional control rather than stimulus control of one's thoughts and behaviors, which is the basis for successful self-regulation [9,16,17]. Furthermore, instead of recounting the concrete details of their experience,

the self-distanced perspective allows individuals to reconstruct their mindsets from a broader perspective and consider how others think about the issue [7]. This open and inclusive mindset provides a stronger motivation for individuals to regulate themselves to meet group standards and help them to fit in and get along with others [18].

As social behaviors, PEBs require individuals to regulate themselves, either to overcome potential behavioral obstacles or to change their habits [19,20]. Individuals who are low in self-regulation tend to prioritize their instinctual desire (e.g., saving money) but relegate environmental benefits to secondary importance. Thus, we propose that the self-distanced perspective may have a positive influence on PEBs, compared to the self-immersed one, due to the underlying role of self-regulation. It leads to our first hypothesis.

**Hypothesis 1.** *The self-distanced perspective is more positively related to PEBs, compared to the self-immersed one.*

## 2.2. Self-Perspective and Attitude

Consistent with past literature, which demonstrates that the general attitude towards a thing may not fit well with specific behaviors, we use behavior-specific attitudes in our current research [21,22]. Based on both environmental and personal considerations, we explore individuals' attitudes toward the importance and cost of PEBs. Attitude towards importance refers to the extent to which individuals put a specific PEB in a priority position, and it is the basic reason why individuals engage in the PEB. Attitude towards cost refers to the perception about economic cost related to a specific PEB and it is a self-interested perception of the PEB [23].

The self-distanced perspective may have a positive influence on attitudes towards importance, because adopting the perspective of others can influence the evaluation of perceived importance or relevance of a given behavior [24]. According to Construal Level Theory (CLT), the third-person perspective is a relatively distanced perspective of the self [25], which can motivate individuals to consider the behavior with general and abstract terms (i.e., high-level construal) rather than detailed and concrete terms (i.e., low-level construal) [14,26]. The high-level construal promotes individuals to see PEBs as more meaningful and important and thus increases achievement motivation [27,28].

The self-distanced perspective may also have an influence on attitude towards cost, because motivating individuals to consider the event from an open and objective perspective can reduce the egocentric or self-serving bias [17]. Furthermore, the experience and feeling from the third-person perspective tends to be deliberate and inferred, compared to that from a person's own perspective, which is immediate and readily available [29], so that individuals may decrease the perception of economic cost in the self-distanced perspective. Thus, we posit:

**Hypothesis 2a.** *The self-distanced perspective is more positively related to attitude towards importance of PEBs, compared to the self-immersed one.*

**Hypothesis 2b.** *The self-distanced perspective is more negatively related to attitude towards cost of PEBs, compared to the self-immersed one.*

## 2.3. Attitude and Behavior

Attitudes are evaluative predispositions which have consequences for the way that individuals act towards a given object [30]. Predicting behaviors from attitude is based on a general notion of consistency [31]. That is, an individual who has a positive attitude towards the environment and has less egocentric considerations, is expected to behave in an environmentally friendly way [32]. Consistent with past literature on importance and cost towards PEBs [23,33,34], we propose that:

**Hypothesis 3a.** *Attitude towards importance is positively related to PEBs.*

**Hypothesis 3b.** *Attitude towards cost is negatively related to PEBs.*

The self-distanced perspective facilitates pro-environmental behaviors via the function of autonomous self-regulation. Self-regulation can guide PEBs directly, because it denotes the monitoring of one's own behavior and adapting that behavior so that it reflects one's goal or expectation [35,36]. Self-regulation can also motivate PEBs indirectly via attitudinal factors. Individuals with more self-regulation also tend to display higher pro-environmental attitudes, and consequently positive attitudes lead to individuals' positive responses to PEBs [37,38]. Combining these arguments, we argue that the self-distanced perspective influences PEBs not only directly, but also indirectly, via the role of attitudes towards importance and cost. Thus,

**Hypothesis 4a.** *The effect of the self-distanced perspective on PEBs, compared to that of the self-immersed one, is more significantly mediated by attitudes towards importance.*

**Hypothesis 4b.** *The effect of the self-distanced perspective on PEBs, compared to that of the self-immersed one, is more significantly mediated by attitudes towards cost.*

#### 2.4. Self-Perspectives and Perceived Control Situations

If the self-distanced perspective, compared to the self-immersed one, has a stronger influence on PEBs due to self-regulation, the situations requiring self-regulation may interact with the self-perspective. In order to assess the effect of inner motivation and situational factors which are associated with self-regulation, we consider two variables respectively; satisfaction with PEBs and perceived behavioral control over PEBs.

Satisfaction is theorized as a positive psychological consequence, which could impact an affective variable such as attitude [39]. More specifically, as an outcome-specific cognition, satisfaction has been identified as potentially powerful in enhancing PEB in the long-term, because it generates intrinsic positive beliefs that lead people to behave in a pro-ecological manner [40–42]. As such, satisfaction differs from extrinsic motives, or instrumental actions which a person engages in to achieve rewards such as money or material gains, social reputation, etc. [43]. Satisfaction is based on interest in PEB itself and is non-conflicting with one's instinctive responses, thus it decreases the requirement of self-regulation [42]. Given that the self-distanced perspective may facilitate PEBs and attitudes due to self-regulation, we assume that satisfaction with PEBs may weaken the prevalence of the self-distanced perspective, compared to that of the self-immersed one. Accordingly:

**Hypothesis 5a.** *The effect of the self-distanced perspective on attitude towards importance, compared to that of the self-immersed one, is stronger when individuals are less satisfied with PEBs.*

**Hypothesis 5b.** *The effect of the self-distanced perspective on attitude towards cost, compared to that of the self-immersed one, is stronger when individuals are less satisfied with PEBs.*

**Hypothesis 5c.** *The effect of the self-distanced perspective on PEBs, compared to that of the self-immersed one, is stronger when individuals are less satisfied with PEBs.*

The influence of self-perspectives on PEBs and its associated attitude might also depend on perceived behavioral contexts, as manifested in perceived behavioral control (PBC). Perceived behavioral control measures the person's belief of how easy or difficult it is to perform a behavior, and it explains the effect of non-volitional factors on behavioral outcomes [44]. A high level of perceived control will strengthen the intention to perform the behavior [45], and increase trust, effort,

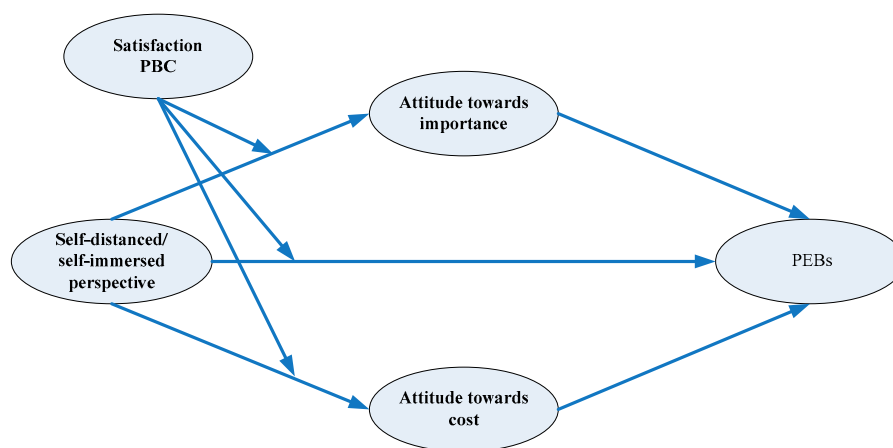
and perseverance [46–48]. However, if individuals encounter situations which are uncontrollable, i.e., lower PBC, they may decrease effort, lack perseverance, and feel a stronger need for self-regulation. Thus, the self-distanced perspective which is closely related to self-regulation may have a significant effect on PEBs, compared to a self-immersed one, when PBC is low rather than high. Thus:

**Hypothesis 6a.** *The effect of the self-distanced perspective on attitude towards importance, compared to that of the self-immersed one, is stronger when individuals have less control over PEBs.*

**Hypothesis 6b.** *The effect of the self-distanced perspective on attitude towards cost, compared to that of the self-immersed one, is stronger when individuals have less control over PEBs.*

**Hypothesis 6c.** *The effect of the self-distanced perspective on PEBs, compared to that of the self-immersed one, is stronger when individuals have less control over PEBs."*

We display the research model in Figure 1.



**Figure 1.** Research model.

### 3. Data and Methods

#### 3.1. Data Collection

PEBs include multiple domains, frequencies, and aspects [49]. To identify appropriate PEBs, 15 urban respondents were judgmentally selected and asked to list PEBs that come to their minds, and then a different set of respondents (120 students who were randomly selected from a large urban state university) were asked in free-format to indicate their frequency of behavior for the set of PEBs that were generated by the 15 respondents. Based on these ratings, this study selected three PEB items that are widely recognized as relevant for urban residents and perceived as different from each other: (1) Using reusable shopping bags; (2) recycling; and (3) commuting by bike, walking, or public transit. These PEBs are closely related to urban air pollution, waste disposal, and fossil-fuels usage, and also correspond to the three main PEB domains suggested by Whitmarsh and O’Neill [50].

Previous studies show that the fewer first-person pronoun individuals use, the stronger their tendency is to distance themselves from their subjective experience or judgement (i.e., self-distanced perspective) [51,52]. Thus, we manipulated different self-perspectives, i.e., the self-immersed vs. self-distanced perspective, by either “I” or “people” worded items in the questionnaire. In total, 120 university students were told that they would be asked to indicate which perspective they adopted while thinking of pro-environmental behaviors. It was also clarified to them that a self-immersed perspective corresponds to the perspective of an involved participant, whereas a

self-distanced perspective corresponds to the perspective of an external observer. Subsequently, they were randomly assigned to different self-perspective groups, based on the version of the questionnaire they received (“I” vs. “people” version). The questionnaire measured participants’ attitude towards three pro-environmental behaviors under study, and specific items include “It is important for me to do . . . /It is important for people to do . . . ” and “Engaging in . . . costs me or saves me money/Engaging in . . . costs people or saves people money”. Additionally, a question at the end of the questionnaire asked the respondents to indicate the extent of their self-perspective, i.e., “When you ponder these questions, how do you put yourself in the situation?”, on a scale from “1 = immersed in own perspective” to “7 = distanced—other’s perspective”. The findings support the intended manipulations of self-immersed and self-distanced perspectives. The mean value of self-perspective in the “people” version questionnaire (Mean value = 4.62, SD = 1.27) was much higher than that in the “I” version questionnaire (Mean value = 3.28, SD = 0.83), indicating that respondents think about their attitudes and response to PEBs more from a self-distanced perspective than a self-immersed one ( $t = 2.26, p < 0.05$ ), consistent with the findings of Grossmann and Kross [52]. Further, the pre-test also helped us finalize the set of PEBs included in the study, check the validity of the constructs, and confirm the measurement scales, as well as clarify and shorten the survey. The survey was modified based on the results of the pre-test and finalized to collect the data for the study.

The main survey data was collected using an online survey design via Amazon Mechanical Turk (MTurk). Participants were urban residents of the United States who were over 18 years old and could support themselves financially. In total, 409 individuals participated in the survey and they were randomly assigned to different self-perspective groups based on either the “I” or “people” version of the questionnaire. We inferred that the subjects responded attentively to the survey, based on detailed unprompted responses to the last item of the questionnaire (“Do you have any feedback concerning the survey”).

### 3.2. Measurement

Items were developed to measure the frequency of the three PEBs, and the corresponding attitudes, satisfaction, and perceived behavioral control for each of these three PEBs. Frequency of behavior was measured using the question “What percentage of the time do you do each of the following? (Choose the closest option)”. The answers were measured on a seven-item scale: 0–5%, 6–20%, 21–35%, 36–50%, 51–65%, 66–80%, and 81–100%. The specific categories were developed by categorizing the open-ended question responses from the pre-test respondents. A higher score indicates a stronger tendency to engage in a specific PEB.

Since we sought to symmetrically link behavior, attitudes, satisfaction, and perceived behavioral control (PBC), we needed to use behavior-specific attitudes, satisfaction, and PBC. This meant that we investigated respondents’ attitudes with respect to the perceived importance and perceived cost of each of the three PEBs under study. By so doing, we measured the attributions of the importance and cost. For example, we measure the attitude toward the cost of recycling and we also captured the importance given to the practice of recycling. This is a more direct and precise way of measuring attitudes than by assessing the individuals’ general attitudes toward pro-environmental behavior. Thus, attitudes were measured with a three-item scale, adapted from Whitmarsh and O’Neill [50], by the question “It is important for me to do . . . /It is important for people to do . . . ” and each PEB under study was mentioned (e.g., recycling), ranging from “1 = not at all important” to “7 = extremely important”. A higher score indicates a more intense perceived importance towards a specific PEB. Similarly, attitudes towards cost in the “I”/“people” version questionnaire were measured by questions “Engaging in . . . costs me or saves me money/Engaging in . . . costs people or saves people money”, and each PEB under study was mentioned (e.g., recycling), ranging from “1 = costs a lot of money” to “7 = saves a lot of money”, adapted from Ertz et al. [23]. A higher score indicates the perception of PEBs as being less costly.

Satisfaction was also measured using a three-item scale, adapted from Chen et al. [53], which assesses respondents' satisfaction with regards to their performing of each PEB, e.g., "I am satisfied with the degree to which I do . . . ", and each PEB under study was mentioned (e.g., recycling), ranging from "1 = strongly disagree" to "7 = strongly agree." A higher score signifies a more intense satisfaction with each PEB. Similarly, perceived behavioral control was also measured behavior-specific for each of the three PEBs under study, adapted from Swaim et al. [54], by using the question "I am currently in a position where I can decide whether or not to do . . . ", and the relevant behavior was then mentioned (e.g., recycling), ranging from "1 = strongly disagree" to "7 = strongly agree". A higher score signals a stronger perception of control by the respondent over their PEBs.

Social expectation as a control variable was assessed with the question "Society expects me to do . . . /Society expects people to do . . . " and the relevant behavior was then mentioned (e.g., recycling) on a scale ranging from "1 = strongly disagree" to "7 = strongly agree".

We also measured the demographic variables, such as age, gender, and socioeconomic status, as they may have an influence on PEBs [55–60].

## 4. Results and Discussions

### 4.1. Sample Characteristics

In total, 206 individuals responded to the self-immersed perspective ("I" version of the questionnaires) and 203 responded to the self-distanced perspective ("people" version). Demographic characteristics of the respondents are presented in Table 1. The Mann-Whitney U test between the two groups indicated no significant differences in terms of their demographic variables, so the differences of demographic background did not appear to cause any biases. The findings indicate that participants of the survey seem to be broadly representative of the population (see Table 1).

**Table 1.** Demographic characteristics of survey samples.

| Variables            | Value              | Self-Immersed Perspective |            | Self-Distanced Perspective |            |
|----------------------|--------------------|---------------------------|------------|----------------------------|------------|
|                      |                    | Frequency                 | Percentage | Frequency                  | Percentage |
| Gender               | Male               | 128                       | 62.1%      | 112                        | 55.2%      |
|                      | Female             | 78                        | 37.9%      | 91                         | 44.8%      |
| Age                  | 18–24              | 24                        | 11.7%      | 20                         | 9.9%       |
|                      | 25–29              | 55                        | 26.7%      | 46                         | 22.7%      |
|                      | 30–39              | 71                        | 34.5%      | 70                         | 34.5%      |
|                      | 40–49              | 26                        | 12.6%      | 37                         | 18.2%      |
|                      | 50–59              | 16                        | 7.8%       | 20                         | 9.9%       |
|                      | 60 and over        | 14                        | 6.8%       | 10                         | 4.9%       |
| Socioeconomic Status | Lower class        | 26                        | 12.6%      | 33                         | 16.3%      |
|                      | Low-middle class   | 59                        | 28.6%      | 54                         | 26.6%      |
|                      | Middle class       | 95                        | 46.1%      | 90                         | 44.3%      |
|                      | Upper-middle class | 24                        | 11.7%      | 26                         | 12.8%      |
|                      | Upper class        | 2                         | 1.0%       | 0                          | 0%         |

To ascertain if the participants were influenced by social desirability bias (or social norm), we examined the social expectation reported by the two groups of participants. The group differences were assessed using the independent-samples Mann-Whitney U test (since the distribution of social expectation did not meet the normality assumption indicated by Kolmogorov-Smirnov;  $Z = 0.078$ ,  $p < 0.001$ ). The test result was not statistically significant ( $Z = -1.554$ ,  $p = 0.120$ ), which suggests that our participants did not respond to different versions of the questionnaires in a biased way. Thus, we were able to eliminate the concern about social desirability bias (or social norm).

#### 4.2. Measurement Model

Factor loadings, Cronbach's alphas, composite reliability, and average variance extracted (AVE) were used to check the reliability and validity of the data. We used software SPSS and SmartPLS to analyze the measurement model with all the scales. Seen from Table 2, results from confirmatory factor analysis (CFA) indicate that the factor loading for each item is larger than 0.7 in both the self-immersed and self-distanced perspective. The composite reliability and Cronbach's alpha for each construct are larger than 0.7 and 0.6, respectively, meeting the recommended benchmarks for reliability [61]. Also, the AVE value for each construct exceeds 0.5, and its square roots is higher than the correlation coefficient index of each construct with other ones (See Tables 3 and 4). Thus, the reliability and validity of each construct in both the self-immersed and self-distanced perspective in our survey were well gauged, and the measurement model in this research is solid.

**Table 2.** Reliability and validity of psychometrical constructs measurement.

| Variables    | Self-Immersed Perspective |                  |                            | Self-Distanced Perspective |                  |                            |
|--------------|---------------------------|------------------|----------------------------|----------------------------|------------------|----------------------------|
|              | Composite Reliability     | Cronbach's Alpha | Average Variance Extracted | Composite Reliability      | Cronbach's Alpha | Average Variance Extracted |
| Importance   | 0.90                      | 0.89             | 0.77                       | 0.84                       | 0.83             | 0.59                       |
| Cost         | 0.75                      | 0.72             | 0.58                       | 0.77                       | 0.76             | 0.52                       |
| Satisfaction | 0.71                      | 0.70             | 0.56                       | 0.89                       | 0.87             | 0.64                       |
| PBC          | 0.75                      | 0.66             | 0.64                       | 0.78                       | 0.62             | 0.57                       |
| PEBs         | 0.80                      | 0.77             | 0.66                       | 0.79                       | 0.75             | 0.60                       |

**Table 3.** Mean values, standard deviations, and correlation coefficient index of the self-immersed perspective.

| Variables    | Mean               | SD   | Importance | Cost    | Satisfaction | PBC     | PEBs |
|--------------|--------------------|------|------------|---------|--------------|---------|------|
| Importance   | 11.58              | 4.71 | 0.87       |         |              |         |      |
| (less) Cost  | 13.64 <sup>1</sup> | 2.83 | 0.38 **    | 0.76    |              |         |      |
| Satisfaction | 15.44              | 3.65 | 0.23 **    | 0.18 ** | 0.75         |         |      |
| PBC          | 16.61              | 3.20 | 0.25 **    | 0.31 ** | 0.25 **      | 0.80    |      |
| PEBs         | 10.48              | 4.88 | 0.67 **    | 0.34 ** | 0.22 **      | 0.21 ** | 0.81 |

Notes: SD = standard deviation, PBC = perceived behavioral control, PEBs = pro-environmental behaviors. The square roots of the average variance extracted are on the diagonal; the off-diagonal cells indicate the correlation coefficient between variables. \*\*  $p < 0.01$  (two-tailed test). <sup>1</sup> The higher the number, the more saving (less costly).

**Table 4.** Mean values, standard deviations, and correlation coefficient index of the self-distanced perspective.

| Variables    | Mean               | SD   | Importance | Cost    | Satisfaction | PBC     | PEBs |
|--------------|--------------------|------|------------|---------|--------------|---------|------|
| Importance   | 12.83              | 4.18 | 0.77       |         |              |         |      |
| (less) Cost  | 14.72 <sup>1</sup> | 2.88 | 0.25 **    | 0.72    |              |         |      |
| Satisfaction | 15.18              | 4.10 | 0.03       | 0.21 ** | 0.80         |         |      |
| PBC          | 16.15              | 3.47 | 0.08       | 0.28 ** | 0.42 **      | 0.75    |      |
| PEBs         | 11.59              | 4.80 | 0.44 **    | 0.39 ** | 0.55 **      | 0.39 ** | 0.77 |

Notes: SD = standard deviation, PBC = perceived behavioral control, PEBs = pro-environmental behaviors. The square roots of the average variance extracted are on the diagonal; the off-diagonal cells indicate the correlation coefficient between variables. \*\*  $p < 0.01$  (two-tailed test). <sup>1</sup> The higher the number, the more saving (less costly).

#### 4.3. Hypothesis Test

Before conducting the regression analysis, all constructs were checked for the assumptions of homoscedasticity, normality, and multicollinearity, as suggested by Cohen et al. [62]. The Levene's



statistical value for equality of variance of each construct meets the recommended threshold suggested by Brown and Forsythe [63], eliminating concerns about heteroscedasticity. The statistical values of tolerance and variance inflation factor (VIF) indicate that the data do not have multicollinearity issues, according to Hair et al. [64]. However, the normality test based on the Kolmogorov-Smirnov test rejected the original assumption of normal distribution, as suggested by West [65]. Thus, we used nonparametric tests and the partial least squares structural equation model (PLS-SEM) to test the hypotheses.

#### 4.3.1. Comparison between Different Self-Perspectives

We used independent-samples Mann-Whitney U test to compare the differences for key constructs in different self-perspectives. Instead of comparing the mean value between two groups, the Mann-Whitney U test compares the mean rank (i.e., median), and the suggested significant value for rejecting the null hypothesis is also 0.05 [66]. The results display that the mean rank of PEBs is much higher when individuals responded to the self-distanced perspective (mean rank = 218.05), compared to the self-immersed one (mean rank = 192.14),  $Z = -2.221$ ,  $p = 0.026$ . Thus, H1 was supported. Respondents consider PEBs as more important from the self-distanced perspective (mean rank = 220.90), compared to the self-immersed one (mean rank = 189.33),  $Z = -2.707$ ,  $p = 0.007$ . Furthermore, the self-distanced individuals perceive PEBs as less costly (i.e., more saving, mean rank = 227.54) than in self-immersed ones (mean rank = 182.79),  $Z = -3.854$ ,  $p = 0.000$ . Thus, H2 was also supported.

#### 4.3.2. The Influence of Self-Perspectives on PEBs

In order to further verify the influence of self-perspectives on PEBs, we used the partial least squares structural equation model (PLS-SEM) to explore the relationship among self-perspectives, attitudes, and PEBs, together with age, gender, socioeconomic status, and social expectation as control variables. The research model explains 35.99% of variance in PEBs. We used dummy variables to represent different self-perspectives (0 = self-immersed perspective and 1 = self-distanced perspective) in the regression model, and in the bootstrapping process, and we input 1000 resamples to calculate the  $t$  value and the significance of each path. Path estimates of the structural model are shown in Table 5. The findings demonstrate that the self-distanced perspective, compared to the self-immersed one, is positively related to attitudes towards importance and (less) cost, which in turn have a positive influence on PEBs. Thus, H3 was confirmed. However, the direct main effect of the self-distanced perspective, compared with the self-immersed one, on PEBs is not significant. Thus, we inferred that attitudes towards importance and cost may be mediators on the relationship.

Table 5. Path estimates in the research model.

| Independent Variables | Dependent Variables | $\beta$ Coefficients | Standard Error | $t$ Value |
|-----------------------|---------------------|----------------------|----------------|-----------|
| Self-perspective      | Importance          | 0.168 (**)           | 0.030          | 5.569     |
| Self-perspective      | Cost                | 0.212 (**)           | 0.027          | 7.776     |
| Self-perspective      | PEBs                | 0.038 (n.s.)         | 0.025          | 1.519     |
| Importance            | PEBs                | 0.470 (**)           | 0.024          | 19.893    |
| Cost                  | PEBs                | 0.120 (**)           | 0.028          | 4.347     |
| PBC                   | Importance          | 0.165 (**)           | 0.037          | 4.469     |
| PBC                   | Cost                | 0.266 (**)           | 0.032          | 8.193     |
| PBC                   | PEBs                | 0.119 (**)           | 0.027          | 4.335     |
| Satisfaction          | Importance          | 0.108 (**)           | 0.033          | 3.247     |
| Satisfaction          | Cost                | 0.131 (**)           | 0.034          | 3.884     |
| Satisfaction          | PEBs                | 0.273 (**)           | 0.024          | 11.385    |

Notes: 0 = self-immersed perspective, 1 = self-distanced perspective, PBC = perceived behavioral control, PEBs = pro-environmental behaviors. \*\*  $p < 0.01$  (two-tailed test).

To test the mediation effect further, we used PROCESS macro to calculate the direct, indirect, and total effects of the self-distanced perspective, compared to the self-immersed one, on PEBs. We also input 1000 resamples in the bootstrapping process to evaluate standard error, and 95% coefficient intervals. The bootstrapping results indicate that the indirect main effect of the self-distanced perspective, compared to the self-immersed one, on PEBs through importance is significant ( $\beta = 0.689$ ,  $SE = 0.240$ , 95% CIs: [0.244, 1.179]). The indirect effect of the self-distanced perspective, compared to the self-immersed one, on PEBs through cost is also significant ( $\beta = 0.279$ ,  $SE = 0.123$ , 95% CIs: [0.094, 0.603]). However, the direct main effect of the self-distanced perspective, compared to the self-immersed one, on PEBs is not significant ( $\beta = 0.374$ ,  $SE = 0.371$ , 95% CIs: [-0.355, 1.103]), i.e., the importance and cost fully mediate the relationship between the main effect of the self-distanced perspective, compared to the self-immersed one, on PEBs. Thus, H4 was supported.

#### 4.3.3. Moderation Test

To further examine the main effect of the self-distanced perspective, compared to that of the self-immersed one, we focused on the perceived situation which requires the self-regulation of PEBs. Specifically, we tested the interaction effects between self-perspectives with satisfaction and perceived behavioral control on PEBs. With the PROCESS approach, by using 1000 resamples in the bootstrapping setting, we were able to verify the moderated mediation influence of satisfaction and perceived behavioral control, as suggested by Muller et al. [67]. That is, the positive effect of the self-distanced perspective, compared to that of the self-immersed one, on PEBs via importance and cost differs depending on the different levels of satisfaction and PBC. The results show that self-perspective interacts with satisfaction to have an influence on importance ( $\beta = -0.266$ ,  $SE = 0.113$ , 95% CIs: [-0.488, -0.043]), but not on cost ( $\beta = 0.009$ ,  $SE = 0.072$ , 95% CIs: [-0.133, 0.151]). The moderated mediation effect of self-perspective interacting with satisfaction via importance on PEBs is significant ( $\beta = -0.142$ ,  $SE = 0.062$ , 95% CIs: [-0.259, -0.017]), but via cost is not significant ( $\beta = 0.003$ ,  $SE = 0.028$ , 95% CIs: [-0.045, 0.061]). Similarly, self-perspective interacts with perceived behavioral control to have an influence on importance is significant ( $\beta = -0.273$ ,  $SE = 0.130$ , 95% CIs: [-0.529, -0.017]), but not on cost ( $\beta = -0.042$ ,  $SE = 0.081$ , 95% CIs: [-0.202, -0.117]). The moderated mediation effect of self-perspective interacting with perceived behavioral control on PEBs via importance is significant ( $\beta = -0.146$ ,  $SE = 0.070$ , 95% CIs: [-0.287, -0.006]), but via cost is not significant ( $\beta = -0.015$ ,  $SE = 0.330$ , 95% CIs: [-0.075, 0.057]). Thus, H5 and H6 were partially supported because of the insignificant interaction of self-perspective with satisfaction and perceived behavioral control on cost. These findings are discussed in the following section.

#### 4.4. Discussion of Results

The findings clearly demonstrate the superior effectiveness of the self-distanced perspective, compared to the self-immersed one, for inducing PEBs. We identify the cognitive psychological mechanism and conditions under which the self-distanced perspective is more effective than the self-immersed one for promoting PEBs.

First, we confirm that different self-perspectives can produce different pro-environmental behavioral outcomes. The self-distanced perspective, compared to the self-immersed one, is more effective in promoting PEBs due to its activation of self-regulation. Individuals could self-distance to transcend their egocentric viewpoint towards a more objective perspective, regulating their instinctive responses in accordance with the self. Furthermore, the self-distanced perspective allows individuals to consider how others think about the issue, enhancing the motivation to regulate themselves to meet social standards, and thus promotes more engagement in PEBs.

Second, this research explores why the self-distanced perspective facilitates PEBs, compared to the self-immersed one, from a process of behavioral cognition, namely attitudes. The findings show that the self-distanced perspective enables individuals to perceive PEBs as more important and less costly. Perceived importance implies the basis of a common value to address an environmental

issue [50], even though some studies suggest that individuals may also be motivated by financial considerations [68–70]. The self-distanced perspective elicits the holistic mindset and attention more than concrete one, contributing to the enhanced perception of importance and meaning of PEBs. In addition, the self-distanced perspective, compared to the self-immersed one, makes individuals perceive PEBs as less costly. The self-distanced perspective motivates individuals to think about PEBs from an un-egoistic perspective, and also elicits a deliberate and inferred perception of economic cost. Thus, it will create a perception that PEBs are less costly, which in turn motivates more engagement in PEBs.

Third, the interaction effects of self-perspective with behavioral situations indicate that the role of the self-distanced perspective, compared to the one of the self-immersed perspective, is more effective when individuals are less satisfied with and feel as if they have less control over their own PEBs. Satisfaction as an inner motivation decreases the demands for self-regulation, because it is consistent with and based on the interest of PEBs. Similarly, perceived behavioral control increases individual effort and perseverance, reducing the need for self-regulation. Furthermore, these feelings implicitly increase individuals' perception from one's own/the actor's perspectives, rather than from others' or the observer's perspective. Accordingly, the main effect of the self-distanced perspective, relative to the self-immersed one, will be weakened in these situations.

Interestingly, the study finds that the effect of interactions between self-perspective with satisfaction and PBC on PEBs is mediated by importance, but not by cost. When individuals have a positive perception of inner satisfaction and higher behavioral control level, they are likely to consider that PEBs are worthy and they can make a positive difference. As a result, they may tend to focus on the behavioral outcome and its value (or meaning) of fulfillment, and adopt a proactive strategy to achieve PEBs by prioritizing importance, regardless of the economic cost assigned to PEBs. As suggested by Ramayah et al., a positive attitude may have an overwhelming influence on PEBs, while individual convenience and cost incurred play secondary roles [71].

## 5. Conclusions

### 5.1. Theoretical Contribution

This research contributes to current literature on PEBs in three ways. First, it extends the self-perspective theory into a new domain, namely pro-environmental behaviors-PEBs. In contrast to past literature which only focuses on individual attitudes and PEBs in response to an actor's/first-person perspective (i.e., self-immersed perspective), this research for the first-time considers them in response to an observer's/others' perspective (i.e., self-distanced perspective), which offers significant implications for research and public policy. Second, this research compares the different influence of self-perspective on PEBs, thus suggesting a new path to facilitate PEBs. The self-distanced perspective, compared to the self-immersed one, makes individuals perceive PEBs as more important and less costly, which in turn promotes more engagement in PEBs. Lastly, we also identify the conditions under which the self-distanced perspective is particularly more effective than the self-immersed one. The more satisfied individuals are, and the more control they have with respect to the PEBs, the less they need self-distance to promote PEBs and sustainable actions.

### 5.2. Implications for Practice

This study finds that different perspectives in addressing the self can help channel individuals' thoughts and attitudes and thereby influence their performance of PEBs. These findings provide important implications for individuals and managers alike.

When faced with the conflict between environmental desire and self-interested motivation, individuals might fail to engage in pro-environmental behaviors [14]. This research demonstrates that different perspectives of the self can exhibit different behavioral inclinations in such a personal dilemma. As opposed to the self-immersed perspective which may result in an excessive evaluation of the benefits

and costs of PEBs, the self-distanced perspective can make individuals perceive PEBs as more important and less costly, decreasing inner conflicts between environmental protection and self-interests and thus promoting pro-environmental options. Thus, public policy makers and practitioners can achieve more effective PEB outcomes by focusing individuals' thought patterns from the self-distanced perspective, rather than the self-immersed one. Messages which increase inner monologue from others' standpoints appear to be more persuasive, especially regarding the importance and cost of PEBs. Further, different strategies can be employed for changing individuals' focus and perspective, such as emphasizing the meaning of PEBs for the society, using "people" in pro-environmental slogans, etc.

In addition, policy makers and practitioners can benefit from a closer coordination between the type of self-perspective and motivational or situational types. Our findings provide support that inner motivation and easy behavioral situations may decrease the prevalence of the self-distanced perspective, as it decreases the demand for self-regulation. This implies that different self-perspectives match with different behavioral motivation and situational perception. Self-distanced perspective or behavioral focus may play a more important role when the PEBs are arduous or need to be achieved by external regulation (i.e., social norm). In contrast, enhancing the self-immersed perspective and self-focus is likely to be effective when PEBs offer individuals an enjoyable experience and strong self-efficiency. Thus, public campaign managers may need to adopt different strategies for different types of individuals and behavioral contexts.

### 5.3. Limitations and Implications for Future Research

This study randomly assigned individuals either to the self-immersed or self-distanced perspective by cuing the words used to address the self in the questionnaire. It would be productive for future research to adopt alternative methods to represent the self-immersed and self-distanced perspective, such as designing a psychological experiment to evoke spontaneous self-distancing, as suggested by Ayduk and Kross [7], and to further verify the external generalizability and reliability of our findings. In addition, given that individuals may have different dispositions towards perspective orientation, it would also be useful to identify the personality and demographics of individuals, as suggested by Morgan et al. [72], and explore who would respond more positively to each type of self-perspective and observe their corresponding attitudinal and behavioral outcomes.

Although our findings confirm that the predominant influence of self-distanced perspective on pro-environmental attitudes and behaviors depends on motivational and situational factors, we only considered satisfaction and perceived behavioral control in the current study. We suggest that future research examines the interaction effect between self-perspective with other factors (e.g., social regulation, public infrastructures, etc.) to promote more positive and effective pro-environmental behaviors in different situational conditions.

Moreover, this study highlights three typical PEBs, namely using reusable shopping bags; recycling; and commuting by bike, walking, or public transit. However, it creates a ground for future research on other types of PEBs and their relationship with the self-respective perspective.

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## References

1. Bamberg, S.; Möser, G. Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *J. Environ. Psychol.* **2007**, *27*, 14–25. [[CrossRef](#)]

2. Barbarossa, C.; Pastore, A. Why environmentally conscious consumers do not purchase green products: A cognitive mapping approach. *Qual. Mark. Res. Int. J.* **2015**, *18*, 188–209. [[CrossRef](#)]
3. Visser, M.; Gattol, V.; Helm, R.V.D. Communicating sustainable shoes to mainstream consumers: The impact of advertisement design on buying intention. *Sustainability* **2015**, *7*, 8420–8436. [[CrossRef](#)]
4. Antonetti, P.; Maklan, S. Feelings that make a difference: How guilt and pride convince consumers of the effectiveness of sustainable consumption choices. *J. Bus. Ethics* **2014**, *124*, 117–134. [[CrossRef](#)]
5. Chatzidakis, A.; Hibbert, S.; Smith, A.P. Why people don't take their concerns about fair trade to the supermarket: The role of neutralisation. *J. Bus. Ethics* **2007**, *74*, 89–100. [[CrossRef](#)]
6. Young, W.; Hwang, K.; McDonald, S.; Oates, C.J. Sustainable consumption: Green consumer behaviour when purchasing products. *Sustain. Dev.* **2010**, *18*, 20–31. [[CrossRef](#)]
7. Ayduk, Ö.; Kross, E. From a distance: Implications of spontaneous self-distancing for adaptive self-reflection. *J. Pers. Soc. Psychol.* **2010**, *98*, 809–829. [[CrossRef](#)] [[PubMed](#)]
8. Nigro, G.; Neisser, U. Point of view in personal memories. *Cogn. Psychol.* **1983**, *15*, 467–482. [[CrossRef](#)]
9. Kross, E.; Ayduk, O. Self-distancing: Theory, research, and current directions. *Adv. Exp. Soc. Psychol.* **2017**, *55*, 81–136.
10. Katzir, M.; Eyal, T. When stepping outside the self is not enough: A self-distanced perspective reduces the experience of basic but not of self-conscious emotions. *J. Exp. Soc. Psychol.* **2013**, *49*, 1089–1092. [[CrossRef](#)]
11. Beck, A.T. Cognitive therapy: Nature and relation to behaviortherapy. *Behav. Ther.* **1970**, *1*, 184–200. [[CrossRef](#)]
12. Kross, E.; Grossmann, I. Boosting wisdom: Distance from the self enhances wise reasoning, attitudes, and behavior. *J. Exp. Psychol. Gen.* **2012**, *141*, 43–48. [[CrossRef](#)] [[PubMed](#)]
13. Leitner, J.B.; Ayduk, O.; Mendoza-Denton, R.; Magerman, A.; Amey, R.; Kross, E.; Forbes, C.E. Self-distancing improves interpersonal perceptions and behavior by decreasing medial prefrontal cortex activity during the provision of criticism. *Soc. Cogn. Affect. Neurosci.* **2016**, *12*, 534–543. [[CrossRef](#)] [[PubMed](#)]
14. Chuang, Y.; Xie, X.; Liu, C. Interdependent orientations increase pro-environmental preferences when facing self-interest conflicts: The mediating role of self-control. *J. Environ. Psychol.* **2016**, *46*, 96–105. [[CrossRef](#)]
15. White, R.E.; Prager, E.O.; Schaefer, C.; Kross, E.; Duckworth, A.L.; Carlson, S.M. The “Batman Effect”: Improving perseverance in young children. *Child Dev.* **2017**, *88*, 1563–1571. [[CrossRef](#)] [[PubMed](#)]
16. Fujita, K.; Trope, Y.; Liberman, N.; Levin-Sagi, M. Construal levels and self-control. *J. Pers. Soc. Psychol.* **2006**, *90*, 351–367. [[CrossRef](#)] [[PubMed](#)]
17. Kross, E.; Bruehlman-Senecal, E.; Park, J.; Burson, A.; Dougherty, A.; Shablack, H.; Bremner, R.; Moser, J.; Ayduk, O. Self-talk as a regulatory mechanism: How you do it matters. *J. Pers. Soc. Psychol.* **2014**, *106*, 304–324. [[CrossRef](#)] [[PubMed](#)]
18. Seeley, E.A.; Gardner, W.L. The “selfless” and self-regulation: The role of chronic other-orientation in averting self-regulatory depletion. *Self Identity* **2003**, *2*, 103–117. [[CrossRef](#)]
19. Arbuthnott, K.D. Education for sustainable development beyond attitude change. *Int. J. Sustain. High. Educ.* **2009**, *10*, 152–163. [[CrossRef](#)]
20. Zhu, Q.; Li, Y.; Geng, Y.; Qi, Y. Green food consumption intention, behaviors and influencing factors among Chinese consumers. *Food. Qual. Prefer.* **2013**, *28*, 279–286. [[CrossRef](#)]
21. Fishbein, M.; Ajzen, I. Attitudes towards objects as predictors of single and multiple behavioral criteria. *Psychol. Rev.* **1974**, *81*, 59–74. [[CrossRef](#)]
22. Sarigöllü, E. A cross-country exploration of environmental attitudes. *Environ. Behav.* **2009**, *41*, 365–386. [[CrossRef](#)]
23. Ertz, M.; Karakas, F.; Sarigöllü, E. Exploring pro-environmental behaviors of consumers: An analysis of contextual factors, attitude, and behaviors. *J. Bus. Res.* **2016**, *69*, 3971–3980. [[CrossRef](#)]
24. Dolcos, S.; Albarracin, D. The inner speech of behavioral regulation: Intentions and task performance strengthen when you talk to yourself as a You. *Eur. J. Soc. Psychol.* **2014**, *44*, 636–642. [[CrossRef](#)]
25. Kross, E.; Ayduk, O.; Mischel, W. When asking “why” does not hurt distinguishing rumination from reflective processing of negative emotions. *Psychol. Sci.* **2005**, *16*, 709–715. [[CrossRef](#)] [[PubMed](#)]
26. Libby, L.K.; Eibach, R.P. Seeing meaning: Visual perspective and action identification in mental imagery. In Proceedings of the Annual Meeting of the Society for Personality and Social Psychology, Los Angeles, CA, USA, 1–3 March 2003.

27. Libby, L.K.; Eibach, R.P.; Gilovich, T. Here's looking at me: The effect of memory perspective on assessments of personal change. *J. Pers. Soc. Psychol.* **2005**, *88*, 50–62. [[CrossRef](#)] [[PubMed](#)]
28. Vasquez, N.A.; Buehler, R. Seeing future success: Does imagery perspective influence achievement motivation? *Pers. Soc. Psychol. Bull.* **2007**, *33*, 1392–1405. [[CrossRef](#)] [[PubMed](#)]
29. Zahavi, D. *Subjectivity and Selfhood: Investigating the First-Person Perspective*; MIT press: Cambridge, MA, USA, 2008.
30. Cohen, A.R. *Attitude Change and Social Influence*; Basic Books: Oxford, UK, 1964.
31. Ajzen, I.; Fishbein, M. Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychol. Bull.* **1977**, *84*, 888–918. [[CrossRef](#)]
32. Barbarossa, C.; De Pelsmacker, P. Positive and negative antecedents of purchasing eco-friendly products: A comparison between green and non-green consumers. *J. Bus. Ethics* **2016**, *134*, 229–247. [[CrossRef](#)]
33. Olson, E.L. It's not easy being green: The effects of attribute tradeoffs on green product preference and choice. *J. Acad. Mark. Sci.* **2013**, *41*, 171–184. [[CrossRef](#)]
34. Zhao, H.H.; Gao, Q.; Wu, Y.P.; Wang, Y.; Zhu, X.D. What affects green consumer behavior in China? A case study from Qingdao. *J. Clean Prod.* **2014**, *63*, 143–151. [[CrossRef](#)]
35. Onwezen, M.C.; Antonides, G.; Bartels, J. The Norm Activation Model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *J. Econ. Psychol.* **2013**, *39*, 141–153. [[CrossRef](#)]
36. Villacorta, M.; Koestner, R.; Lekes, N. Further validation of the motivation toward the environment scale. *Environ. Behav.* **2003**, *35*, 486–505. [[CrossRef](#)]
37. Pettus, A.M.; Giles, M.B. Personality characteristics and environmental attitudes. *Popul. Environ.* **1987**, *9*, 127–137. [[CrossRef](#)]
38. Warren, C.; Coghlan, A. Using character strength-based activities to design pro-environmental behaviours into the tourist experience. *Anatolia* **2016**, *27*, 480–492. [[CrossRef](#)]
39. Corral-Verdugo, V. The positive psychology of sustainability. *Environ. Dev. Sustain.* **2012**, *14*, 651–666. [[CrossRef](#)]
40. Hernández, B.; Tabernero, C.; Suárez, E. Psychosocial motivations and self-regulation processes that activate environmentally responsible behavior. In *Environmental Psychology: New Developments*; Valentín, J., Gámez, L., Eds.; Nova Science Publishers: New York, NY, USA, 2010; pp. 109–126.
41. Iwata, O. Coping style and three psychological measures associated with environmentally responsible behavior. *Soc. Behav. Pers.* **2002**, *30*, 661–669. [[CrossRef](#)]
42. Ryan, R.M.; Deci, E.L. Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *J. Pers.* **2006**, *74*, 1557–1586. [[CrossRef](#)] [[PubMed](#)]
43. Corral-Verdugo, V.; González-Lomelí, D.; Rascón-Cruz, M.; Corral-Frias, V.O. Intrinsic motives of autonomy, self-efficacy, and satisfaction associated with two instances of sustainable behavior: Frugality and equity. *Psychology* **2016**, *7*, 662–671. [[CrossRef](#)]
44. Ajzen, I.; Madden, T. Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioural control. *J. Exp. Soc. Psychol.* **1986**, *22*, 453–474. [[CrossRef](#)]
45. Ertz, M.; Huang, R.; Jo, M.S.; Karakas, F.; Sarigöllü, E. From single-use to multi-use: Study of consumers' behavior toward consumption of reusable containers. *J. Environ. Manag.* **2017**, *193*, 334–344. [[CrossRef](#)] [[PubMed](#)]
46. Wang, L.; Wang, S.; Keller, L.R.; Li, J. Thinking styles affect reactions to brand crisis apologies. *Eur. J. Mark.* **2016**, *50*, 1263–1289. [[CrossRef](#)]
47. Ajzen, I. Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *J. Appl. Soc. Psychol.* **2002**, *32*, 665–683. [[CrossRef](#)]
48. Grimmer, M.; Miles, M.P. With the best of intentions: A large sample test of the intention-behavior gap in pro-environmental consumer behavior. *Int. J. Consum. Stud.* **2017**, *41*, 2–10. [[CrossRef](#)]
49. Stern, P.C. New environmental theory: Towards a coherent theory of environmentally significant behavior. *J. Soc. Issues* **2002**, *56*, 407–424. [[CrossRef](#)]
50. Whitmarsh, L.; O'Neill, S. Green identity, green living? The role of pro-environmental self-identity in determining consistency across diverse pro-environmental behaviours. *J. Environ. Psychol.* **2010**, *30*, 305–314. [[CrossRef](#)]
51. Cohn, M.A.; Mehl, M.R.; Pennebaker, J.W. Linguistic markers of psychological change surrounding September 11, 2001. *Psychol. Sci.* **2004**, *15*, 687–693. [[CrossRef](#)] [[PubMed](#)]

52. Grossmann, I.; Kross, E. The impact of culture on adaptive versus maladaptive self-reflection. *Psychol. Sci.* **2010**, *21*, 1150–1157. [[CrossRef](#)] [[PubMed](#)]
53. Chen, Y.S.; Lin, C.Y.; Weng, C.S. The influence of environmental friendliness on green trust: The mediation effects of green satisfaction and green perceived quality. *Sustainability* **2015**, *7*, 10135–10152. [[CrossRef](#)]
54. Swaim, J.A.; Maloni, M.J.; Napshin, S.A.; Henley, A.B. Influences on student intention and behavior toward environmental sustainability. *J. Bus. Ethics* **2014**, *124*, 465–484. [[CrossRef](#)]
55. Bodur, M.; Sarigöllü, E. Environmental sensitivity in a developing country: Consumer classification and implications. *Environ. Behav.* **2005**, *37*, 487–510. [[CrossRef](#)]
56. Feng, W.; Reisner, A. Factors influencing private and public environmental protection behaviors: Results from a survey of residents in Shaanxi, China. *J. Environ. Manag.* **2011**, *92*, 429–436. [[CrossRef](#)] [[PubMed](#)]
57. Martinho, G.; Magalhães, D.; Pires, A. Consumer behavior with respect to the consumption and recycling of smartphones and tablets: An exploratory study in Portugal. *J. Clean. Prod.* **2017**, *156*, 147–158. [[CrossRef](#)]
58. Taberero, C.; Hernández, B.; Cuadrado, E.; Luque, B.; Pereira, C.R. A multilevel perspective to explain recycling behaviour in communities. *J. Environ. Manag.* **2015**, *159*, 192–201. [[CrossRef](#)] [[PubMed](#)]
59. Vicente-Molina, M.; Fernández-Sainz, A.; Izagirre-Olaizola, J. Does gender make a difference in pro-environmental behavior? The case of the Basque Country university students. *J. Clean. Prod.* **2018**, *176*, 89–98. [[CrossRef](#)]
60. Wu, C.S.; Zhou, X.X.; Song, M. Sustainable consumer behavior in China: An empirical analysis from the Midwest Regions. *J. Clean Prod.* **2016**, *134*, 147–165. [[CrossRef](#)]
61. Nunnally, J.C.; Bernstein, I.H. *Psychometric Theory*, 2nd ed.; McGraw-Hill Book Company: New York, NY, USA, 1978.
62. Cohen, J.; Cohen, P.; West, S.G.; Aiken, L.S. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*; Routledge: Abingdon, UK, 2013.
63. Brown, M.B.; Forsythe, A.B. Robust tests for the equality of variances. *J. Am. Stat. Assoc.* **1974**, *69*, 364–367. [[CrossRef](#)]
64. Hair, J.F.; Black, W.C.; Babin, B.J.; Anderson, R.E.; Tatham, R.L. *Multivariate Data Analysis*; Prentice Hall: Upper Saddle River, NJ, USA, 1998; Volume 5, p. 3.
65. West, S.G.; Finch, J.F.; Curran, P.J. Structural equation models with nonnormal variables: Problems and remedies. In *Structural Equation Modeling Concepts Issues & Applications*; Hoyle, R., Ed.; Sage Publications: Thousand Oaks, CA, USA, 1995; pp. 56–75.
66. Dowdy, S.; Wearden, S.; Chilko, D. *Statistics for Research*; John Wiley & Sons: Hoboken, NJ, USA, 2011; Volume 512.
67. Muller, D.; Judd, C.M.; Yzerbyt, V.Y. When moderation is mediated and mediation is moderated. *J. Pers. Soc. Psychol.* **2005**, *89*, 852–863. [[CrossRef](#)] [[PubMed](#)]
68. Bolderdijk, J.W.; Lehman, P.K.; Geller, E.S. Encouraging proenvironmental behaviour with rewards and penalties. In *Environmental Psychology: An Introduction*; Steg, L., van den Berg, A.E., de Groot, J.I.M., Eds.; John Wiley & Sons: Oxford, UK, 2012; pp. 233–242.
69. Bolderdijk, J.W.; Steg, L.; Geller, E.S.; Lehman, P.K.; Postmes, T. Comparing the effectiveness of monetary versus moral motives in environmental campaigning. *Nat. Clim. Chang.* **2013**, *3*, 413–416. [[CrossRef](#)]
70. Whitmarsh, L. Behavioural responses to climate change: Asymmetry of intentions and impacts. *J. Environ. Psychol.* **2009**, *29*, 13–23. [[CrossRef](#)]
71. Ramayah, T.; Lee, J.W.C.; Lim, S. Sustaining the environment through recycling: An empirical study. *J. Environ. Manag.* **2012**, *102*, 141–147. [[CrossRef](#)] [[PubMed](#)]
72. Morgan, R.K.; Hart, A.; Freeman, C.; Coutts, B.; Colwill, D.; Hughes, A. Practitioners, professional cultures, and perceptions of impact assessment. *Environ. Impact Assess. Rev.* **2012**, *32*, 11–24. [[CrossRef](#)]

