sustainability

MDPI

Article

Bridging the Gap: Exploring the Role of Locus of Control in the Transition from Environmental Concerns to Organic Product Consumption in North Portugal, a SmartPLS Study

Lucía Penalba-Sánchez [1,2,*], Elisa Di Gregorio [1], Raquel Claro [1,3], Mafalda Pinto [4], Elisabete Pinto [4,5] and Patrícia Oliveira-Silva [1]

1 Human Neurobehavioral Laboratory (HNL), Research Centre for Human Development (CEDH), Faculty of Education and Psychology, Universidade Católica Portuguesa, 4169-005 Porto, Portugal; posilva@ucp.pt (P.O.-S.)
2 Institute of Cognitive Neurology and Dementia Research (IKND), Otto-von-Guericke-University Magdeburg (OVGU), 39120 Magdeburg, Germany
3 University Medical Center (UMC) Utrecht Brain Center, Utrecht University, 3584 CX Utrecht, The Netherlands
4 Universidade Católica Portuguesa, CBQF—Centro de Biotecnologia e Química Fina—Laboratório Associado, Escola Superior de Biotecnologia, 4169-005 Porto, Portugal; ecbpinto@ucp.pt (E.P.)
5 Unidade de Investigação em Epidemiologia (EPIUnit), Instituto de Saúde Pública da Universidade do Porto, 4050-600 Porto, Portugal
* Correspondence: lucia.penalbasanchez@med.ovgu.de

Abstract: (1) Background: Exploring the drivers of organic food consumption is crucial for designing pro-environmental marketing strategies. This study aims to investigate elements associated with organic product consumption in North Portugal, with a particular focus on food sustainability. (2) Methods: A self-reported questionnaire was administered to 295 participants to examine (1) personal motivations, such as beliefs about the impact of consuming organic products on health, concerns about soil, and self-perception of control; (2) attitudes towards contextual motivations, including the value of time, price, labels, and taste; and (3) the frequency of organic product consumption. A partial least squares model was employed to explore the relationship between participants' motivations and behavior. (3) Results: Perceiving organic food as healthy was positively associated with higher organic product consumption. Positive attitudes towards cost-effective products, spending less time purchasing products, and a high locus of control did not moderate this relationship. While soil concerns were not significantly associated with the consumption of organic products overall, this association was significant in participants with a higher locus of control. A low locus of control was associated with a positive attitude towards pesticides. (4) Conclusions: The findings suggest that bridging the gap between concerns about soil conditions and pro-environmental behavior involves perceiving oneself as an agent of change and becoming proactive at an individual level. Resources to enhance individuals' environmental curiosity and literacy may increase their locus of control, fostering a more accurate attitude towards pesticides and, consequently, an increase in organic product consumption. Additionally, companies could strengthen the association between organic food and better health by investing in marketing. These strategies have the potential to positively impact food sustainability.

Keywords: organic product consumption; pro-environmental behavior; soil degradation; soil erosion; soil concerns; environmental literacy; attitude towards pesticides; health concerns; locus of control; self-empowerment; marketing strategies

Citation: Penalba-Sánchez, L.; Di Gregorio, E.; Claro, R.; Pinto, M.; Pinto, E.; Oliveira-Silva, P. Bridging the Gap: Exploring the Role of Locus of Control in the Transition from Environmental Concerns to Organic Product Consumption in North Portugal, a SmartPLS Study. *Sustainability* **2024**, *16*, 1405. https://doi.org/10.3390/su16041405

Academic Editors: Daniela Di Santo and Alessio Tesi

Received: 12 January 2024
Revised: 3 February 2024
Accepted: 6 February 2024
Published: 7 February 2024

1. Introduction

Climate change along with unsustainable land practices are threatening the soil's fertility in Europe [1]. Despite the significant efforts made by environmentalists, soil degradation and erosion are issues that need to be actively addressed [2,3]. According to the Food and

Agriculture Organization of the United Nations (FAO), the world's soils have reached either a moderate or high level of degradation, and by 2050, 90% of soil could become extremely degraded [4]. Portugal, especially the northern region, is one of the most affected countries; apart from the conventional practices and massive use of pesticides, the recent and recurrent wildfires represent a relevant driver of soil erosion and degradation [5].

Stopping the soils from being contaminated, washed away, and becoming sterile is a responsibility that involves farmers' practices as well as consumers' ones. The consumption of organic products is considered a pro-environmental behavior (PEB) that contributes to changing demand and shapes the farming management of the lands. Exploring the drivers of organic food consumption is essential to enable the development of marketing strategies to increase pro-environmental behaviors.

Research in the field, conducted in European countries, e.g., in France, Romania, the United Kingdom (UK), Poland, and Norway, and a systematic review summarizing the general worldwide motivations behind organic food consumption [6] indicate that the most relevant enhancers of organic food consumption are perceiving organic products as healthy [7], being concerned about the environment [8,9], and finding organic tastier than conventional food [8]. Conversely the most prominent barriers are high prices [10–12], mistrust, a lack of availability of the products [11,13], a lack of time to purchase products in specific sections or organic shops, and a shortfall of information on the labels regarding the environmental and health benefits [10,14].

Although the above-mentioned drivers are seen as relevant in the general population, evidence suggests that pro-environmental behaviors are context-dependent [15] and should be explored considering characteristics such as the region. For instance, a study conducted in Germany concluded that the consumer's place of residence had an impact on the willingness to spend more for organic, e.g., participants living in the Eastern part were less willing to pay higher prices for organic products than in other areas of the country [16].

Portugal, especially the northern region, is one of the European countries with a higher risk of soil degradation [4]. Despite this fact, only a small sector of the population consumes organic, in comparison to other European countries [17]. Studies conducted in North Portugal that aim to understand the enhancers of organic food consumption are limited. The existing studies were conducted including participants from all the regions in Portugal or compared Portugal with other countries. A study explored the influence of income and education on Portuguese and Spanish consumers' behavior, concluding that individuals who consume organic are more preoccupied and informed about environmental issues than individuals who consume conventional food [18]. A very recent study explored the barriers and enhancers of organic food consumption in Portugal and Turkey and the impact of the COVID-19 pandemic, revealing that, in general, the population is increasing their awareness on the importance of consuming organic, with the main drivers of consuming organic food being health and environmental concerns, and the barrier high prices [19]. Other studies focused on exploring consumer's behavior in specific cities. For instance, ref. [20] studied the similarities of organic food consumers in Lisbon and Berlin, concluding that a higher education was associated with an increased knowledge of the benefits of organic food products, a higher positive attitude, and consequently a higher consumption of organic products. These findings highlight the key role of marketers in increasing individuals' awareness and access to clear information about products [20]. Until now, there has been a lack of studies exploring consumers' motivations and behaviors in North Portugal, especially the causal relationships between motivations and actions that might shed light on the evident gap between intentions and behaviors. While there is a clear preoccupation with the general state of soils among the Portuguese population, this awareness often fails to translate into pro-environmental actions. This issue cannot be fully comprehended through monocultural studies (i.e., global studies that include a wide range of populations), as it is well established that pro-environmental and consumer behaviors are cultural and context-dependent [15]. According to the classic theory of planned behavior (TPB) by Ajzen [21], consumer behavior is influenced by beliefs and attitudes, and in this context, culture plays

a key role. Understanding the cultural values within a country, and more specifically within distinct regions of the country, can provide valuable insights into the reasons behind the gap between pro-environmental concern and pro-environmental behavior. It allows us to explore the conditions under which this relationship can be transformed. To achieve this understanding, models that examine the intricate interplay between various independent and dependent variables, especially those incorporating moderators, prove instrumental. These models might help elucidate the complexities of the relationship—discerning when the variables are linked and identifying factors that either strengthen or weaken this connection [22]. Moreover, it is crucial to acknowledge that the efficacy of marketing strategies is inherently tied to their ability to persuade the consumer. The aim of marketers is to enlighten consumers' attitudes to guide them toward a more "conscious" decision-making process. In this sense, a profound understanding of consumer patterns within a country and a sector is fundamental to enable marketers to employ strategies that encourage consumers to choose organic products more frequently [23]. Here, we investigated how motivations and barriers, previously studied in other European countries, such as environmental concerns, associating organic with healthy, knowledge, price, and labels are related with consuming organic in North Portugal. Additionally, we aimed to explore a topic less studied in consumers in Europe: "self-perception of control" or the self-belief that one's individual PEB can impact the environment and how this belief is related with a higher consumption of organic products. Given the extensive body of literature confirming the significance of "the locus of control or self-empowerment" in modulating behavior, as posited by the classic TPB, we hypothesized that this construct would play a crucial role in explaining the gap between environmental concerns and pro-environmental behaviors—a gap that demands attention.

The present study aimed to explore the following: 1. whether the individual's belief that "organic food is healthy" is associated with "consuming organic food"; 1.1. whether the variables "willingness to spend less money", "willingness to spend less time buying", "prioritizing attractive labels", and/or "prioritizing taste" strengthen the relationship between the variables in aim "1"; 2. whether individuals' "soil concerns" are associated with "consuming organic products"; 2.1. same as aim 1.1. for aim 2.; 3. the relationship between "self-perception of control" and "consuming organic products" (i.e., believing that one's individual actions can influence positively the way the lands are treated and consequently halt the soil's degradation); 4. whether a low "self-perception of control" is associated with a "positive attitude toward the use of pesticides"; and 5. whether the variables "prioritizing taste", "prioritizing attractive labels", "willingness to spend less money", "willingness to spend less time" when purchasing products, and a "positive attitude towards pesticides" are associated with a reduced "consumption of organic products". The model of the present study is graphically displayed in Figure 1.

Considering the previous studies presented in this introduction, the hypotheses of the present study are the following:

H1. *The "belief that consuming organic food is healthy" (predictor variable) is positively correlated with "consuming organic" products (outcome variable). A "positive attitude towards spending less time buying" and a "positive attitude towards cheaper products" (moderator variables) weaken the relationship between the factor and the outcome variable, i.e., between "believing that organic food is healthy" and "consuming organic". Conversely, "self-perception of control and information" about soils (moderator variables) strengthen the relationship.*

H2. *Individuals' "soil concerns" (predictor variable) are associated with "consuming organic" products (outcome variable). Overestimating "time" and "price" (moderator variables) weaken this relationship, i.e., when the importance given to time and price is high, consumption of organic food decreases even when individuals are concerned about soils. Conversely "self-perception of control" and "relevance given to information" (moderator variables) strengthen the relationship, i.e., a higher "self-perception of control" is translated into a higher "consumption of organic food" when individuals are concerned about soils.*

H3. *"A high self-perception of control" and "the relevance given to information about soils" (predictor variables) are positively correlated with the "consumption of organic products" (outcome variable).*

H4. *"Self-perception of control (predictor variable) and believing that information about the soils is relevant" is negatively correlated with a "positive attitude towards pesticides" (outcome variable).*

H5. *Overestimating "taste", "attractive labels", "money", "time", and "having a positive attitude towards pesticides" (predictor variables) are negatively correlated with consuming organic products (outcome variable).*

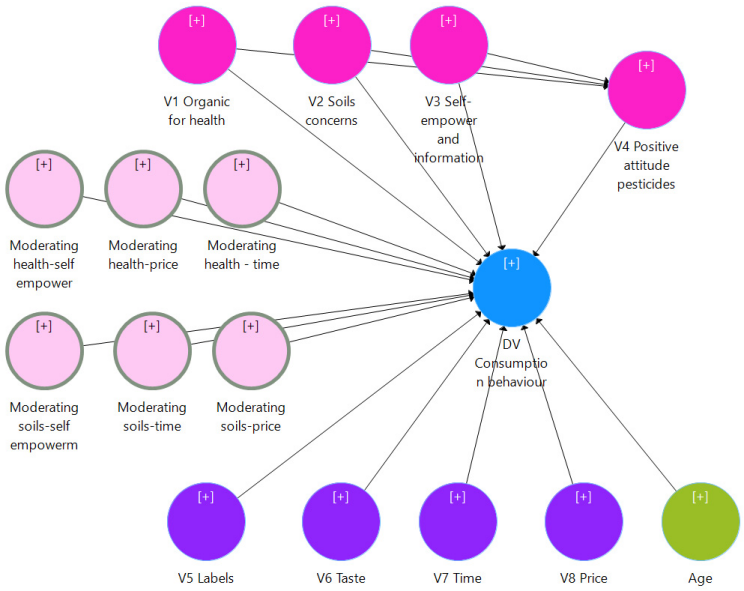

Figure 1. Study model. Note. This figure shows the model of the present study. Bright pink circles show the main independent variables or predictors, i.e., V1 = believing that organic is good for one's health; V2 = being concerned by soil degradation, erosion, and the treatment of soils; V3 = having a high self-empowerment or self-perception of control and awareness of the relevance of being informed; and V4 = having a positive attitude towards pesticides. Light pink circles show the moderating variables: self-empowerment and awareness of information, overvaluing price, and overvaluing time. Purple circles represent the secondary predictor variables, i.e., V5 = importance that individuals give to labels; V6 = overvaluing taste; V7 = overvaluing time; and V8 = overvaluing price. The blue circle shows the dependent variable or outcome variable, i.e., behavior of consuming organic products. The green circle is the covariates age and sex, controlled in this study.

2. Materials and Methods

2.1. Participants

The hypotheses were tested analyzing self-reported data from 295 participants from North Portugal. Participants lived in the regions of Porto, Vilana do Castelo, Coimbra, Aveiro, Braga, and Braganza. Data collection was conducted during February 2022–June 2022 and followed a convenience sampling technique. The selection of this method was based on its practicality and straightforward implementation, recognizing the potential limitation of achieving only a partially representative sample. The study was promoted by means of informative flyers; social media posts on LinkedIn, Facebook, and Instagram; and emails to university staff, students, friends, and neighbors. Individuals expressing interest were guided to register for the study via a Qualtrics online questionnaire.

The participation was voluntary and the only requirements to be eligible for the study were to be over 18 years old and to live in North Portugal. A total of 295 participants aged 18–65 (mean = 35.32; sd = 11.17) were included in the study: 88.5% were female, 65.8% lived in urban areas, 78% had at least a general certificate education, and 88.7% considered that their income was adequate to live without struggling.

2.2. Measures

The Qualtrics questionnaire gathered demographic details (i.e., age, gender, educational background, and level of income) and 5 Likert-type scale items related to habits of consumption of products (Table 1). Prior to the analysis, the data were downloaded from Qualtrics and cleaned. SPSS was used to conduct multiple imputation for missing values with 10 iterations. In this procedure, a simulation of missing data relative to the data available was performed. In other words, data that were available were used to make probabilistic judgements on what the missing values would be.

Table 1. Questionnaire items.

Construct	Items	Factor Loading
Belief that organic is healthy	- Consuming organic products affect the functioning of the brain (e.g., attention, memory).	0.62
	- Consuming organic food reduces the risk of cancer.	0.84
	- Consuming organic fruit and vegetables has a global impact on health.	0.87
	- When I buy a labelled product, I always read the list of ingredients.	0.37
	- Eating organic fruit and vegetables prevents some diseases.	0.73
	- Organic food has more vitamins.	0.50
Soil concerns	- I am worried about the soil's degradation.	0.96
	- I am worried about how farmers treat the soil.	0.95
Self-perception of control and awareness of the importance of being informed	- If we all start buying more organic products, the supply of these products will increase in the future.	0.90
	- I believe that the consumption of organic products would be higher if there was more information about their benefits.	0.62
	- I believe that consumers need access to more information about how their choices affect the environment.	0.63
Positive attitude pesticides	- The pesticides currently used do not cause soil's degradation.	1
Sensorial appeal (Labels)	- I tend to buy products that have a more attractive label.	1
Sensorial appeal (prioritizing taste)	- The taste of food is the main attribute I consider when buying food.	1
Lack of willingness to spend time purchasing (time)	- I take into consideration the time spent shopping and therefore I prefer shops close to work and/or home.	1
Willingness to pay lower prices (price)	- I usually buy the food that is cheaper.	1
Frequency purchase organic food	- If you usually buy organic products, how often do you consume each class of products? (Note: if you do not usually buy organic products, tick never for all products)	
	Clothes,	0.52
	Flour,	0.76
	Fruit and vegetables,	0.62
	House products,	0.70
	Hygienic products,	0.75
	Nuts,	0.67
	Oil,	0.50
	Pasta,	0.71
	Quinoa,	0.66
	Rice,	0.51
	Wine,	0.65
	Global:	0.78
	- If I have a choice, I always buy organic.	0.70

Note. The table displays the constructs assessed, the items included in each construct, and the factor loading assessed using SmartPLS.

2.3. Data Analysis

Tests of normality indicated that the variables were not normally distributed ($p < 0.001$; Kolmogorov–Smirnov and Shapiro–Wilk). Smart partial least square (PLS) v.3 was used for the analysis [24]. SmartPLS (v3) is a software that allows a factor and path analysis to be performed to explore different latent variables simultaneously. This approach is suitable for non-normal data [25,26]. SmartPLS has also been reported to be more robust than regression to assess the mediation of variables [27].

The steps performed using smart PLS were the following: [i] a confirmatory factor analysis and [ii] a path analysis (to assess the relationship between predictor and outcome variables). In both steps, a PLS algorithm and a bootstrapping were performed. The former was used to assess the construct reliability and validity and the latter to test the statistical significance of the paths. These two steps are explained in more detail in the following paragraphs.

[i] A PLS algorithm for confirmatory factor analysis enables the outer factors to be determined. Outer factors of 0.3 or above were considered appropriate to study PEB in a factor analysis in smart PLS, meaning that the indicators or items are related to the factor. The bootstrapping analysis report shows the t-statistics of the variables within each factor. Values below 1.96 indicate a low relationship between some indicators and the factors. These items should be deleted or added in another factor. After cleaning the model, Cronbach's alpha, RHO-A, and composite reliability were explored.

[ii] A path analysis was performed to assess the association between the factors and the outcome variable. The output of the PLS algorithm plot shows the weights or relationship between variables. Additionally, its report indicates some useful information, e.g., whether there is collinearity between variables. Finally, bootstrapping was performed to assess the statistical significance between variables.

3. Results

In the present section, the results of steps [i] and [ii] introduced in the Section 2 are displayed.

[i] Factor analysis

All those indicators that reflected a low construct validity, i.e., presented outer loading values < 0.3 in the PLS algorithm and t-values < 1.96 in the bootstrapping, were deleted from the model. These indicators were the following: Within the factor "consumption behavior" the variables "Since the start of the pandemic COVID-19, I feel safer buying non-organic food" and "Since the beginning of the COVID-19 pandemic, I feel safer buying packaged food" were removed. Within the factor "extrinsic motives", "sales", "taste", and "time" were excluded. Within the variable "pesticides" the item "Pesticides are necessary to ensure that there is sufficient production of food and other products for all" was also deleted from the model. The construct validity and reliability scores' alpha Cronbach levels > 0.65, rho A > 0.8, and composite reliability > 0.76 indicated that the model was optimal to conduct a PLS regression analysis.

Discriminant validity of the factors, indicative of independence between factors, was met, i.e., correlations showed values below 1.

In total, 9 constructs and 29 indicators were included (see Table 1).

[ii] Path analysis (regression)

H1 assessed the impact of the factor "self-perception that organic products are healthier" on increasing the "consumption of organic products". Additionally, it explored whether this relationship was strengthened or weakened by the moderator variables "positive attitude towards spending less time buying", "positive attitude towards cheaper products", and "self-perception of control and of the importance of information about soils". The results indicated that "self-perception of relevance of organic food in one's health" is positively correlated with "the consumption of organic products" (f2 = 0.08; B = 0.301; t = 4.10; $p < 0.001$). The moderator variables did not have an effect between the following variables: the moderator value of "willingness to spend less time purchasing" (B = −0.05; t = 0.8;

p = 0.2), the value of "overestimating cheaper products" (B = −0.004; t = 0.04; p = 0.48), and "self-perception of control and information" (B = 0.07; t = 0.87; p = 0.19). Hence, these results suggest that H1 is partially accepted; believing that organic food is good for health explains an increase in organic products consumption.

H2 explored the impact of "soil concerns" on the frequency of "consumption of organic products". Additionally, it investigated a possible moderating effect of the variables "time", "price", and "self-perception of control". The results showed that soil concerns are only slightly associated (i.e., marginal significance) with a higher consumption of organic products (B = 0.09; t = 1.1; p = 0.082); however, when these two variables are moderated by "self-empowerment and information", the "consumption of organic products" increases (f2 = 0.02; B = 0.163; t = 1.9; p = 0.02). Conversely, the moderator variables "price" and "time" do not strengthen the relationship between "soil concerns" and "consumption of organic products", (B = 0.07; t = 57; p = 0.28) and (B = 0.001; t = 0.016; p = 0.49).

H3 aimed to determine whether "self-perception of control and believing that information about soils is relevant" is associated with the "consumption of organic products". The results confirmed this relationship between the variables (f2 = 0.02; B = 0.21; t = 2.4; p = 0.008).

H4 assessed the relationship between a "positive attitude towards pesticides" and "self-perception of control and believing that information about soils is relevant". Expectedly, the results showed a negative association between these variables. In other words, the more positive the participants' opinions are about pesticides, the less they are empowered and the less they think that information about soils is important (f2 = 0.35; B = −0.58; t = 8.31; p < 0.001).

H5—The importance given by individuals to nice "labels" (B = −0.03; t = 0.542; p = 0.29) and good "taste" (B = 0.05; t = 0.932; p = 0.176) are not negatively associated with consuming organic; however, "overestimating cheaper products" (f2 = 0.05; B = −0.22; t = 3.68; p <0.001), "time" (f2 = 0.013; B = −0.10; t = 1.63; p = 0.05), and positive opinions about pesticides (f2 = 0.012; B = −0.12; t = 1.72; p = 0.04) are. Although these latter variables are statistically significant, they did not achieve practical significance; a positive attitude towards cheaper products presents a weak size effect and the rest (time and pesticides) present a very weak size effect.

As previously reported, effect sizes between variables that are statistically significant present a small (Cohen's f2 = 0.02) or medium effect (Cohen's f2 = 0.1), except for the negative relationship between the predictor variables "self-perception of control" and "perceiving information on the soils as relevant" and the outcome variable "positive attitude towards pesticides", which presents a large effect size (Cohen's f2 = 0.35).

4. Discussion

The land in North Portugal is degrading at a devastating pace. Consumers have a potential role in protecting the soils by making better purchasing choices. Our study aimed to shed light on the drivers and barriers of consumption of organic products in North Portugal. Additionally, and inspired by the TPB, our research contributes novelty to the literature by investigating the moderating role of locus of control or self-empowerment in the relationship between motivations and organic product consumption. The findings from our study provide a more precise characterization of consumers in North Portugal.

The findings showed that individuals that belief that organic food is healthy tend to consume more organic products than those who do not. Additionally, elements such as a positive attitude towards cheap products and towards spending less time buying alongside a high self believe that one's PEB can contribute to the preservation of soils do not strengthen nor weaken this relationship. These results corroborate the ones reported in previous studies conducted in other regions of Portugal and in other countries [6,7].

Additionally, contrary to recent studies conducted in other countries [7,28,29], individuals' soil concerns in North Portugal are not strongly associated with consuming organic products. A recent study showed that the Portuguese population is aware of the importance

of protecting the environment; however, this awareness is not reflected in the behavior of consuming organic food [16]. Aligned with these findings, our results showed that being concerned about the state of the soils is not enough to increase the consumption of organic food; however, when these concerns are combined with believing that one's individual actions can make a change in the environment and with the importance that people give to being informed, the consumption of organic food increases. Another study identified different types of consumers: the ones concerned about health, the ones led by lifestyle such as convenience, and the "chore environmentalists". This latter group is characterized by being highly aware of environmental issues, self-empowered, and willing to consume more organic products. Our data reflect that some of our participants are part of this hard environmentalist group or at least approach it. Not only are they aware of the soil's current state, but they are also committed to changing it and preserving it [30].

It is worth noting that having a high self-perception alone showed a direct positive impact on the consumption of organic products, i.e., without being moderated by any variable. In other words, participants with higher levels in these indicators consume more organic products, regardless of their level of concerns about the current soil state. As revealed by the previous literature, an awareness of environmental challenges is highly relevant for influencing consumers' decision making [31,32]. Our construct "self-empowerment or self-control" is a mix of commitment and believing in the power of being informed. This variable seems to be key in consumers' pro-environmental behavior.

Expectedly, individuals that believe that pesticides are not harmful consume less organic food. The present findings align with those reported in [33], indicating that individuals holding less-favorable views toward organic fruits and vegetables tend to perceive fewer risks and more benefits associated with pesticides. Our results further highlight that individuals with a low self-perception of control and who believe that information about soil conditions is irrelevant to consumers exhibit a more positive outlook on pesticide use. These outcomes convey a distinct message: educators, governments, and businesses should collaboratively strive to inspire and persuade North Portuguese citizens to adopt a proactive stance, emphasizing that significant changes invariably commence with individual transformations.

As reported in several studies and corroborated by the present one, external factors such as time and price play a role in the consumption of organic products; however, they are not as relevant as the other factors, considered "chore values" (health-related, soil concerns, and perception of control) [8,11,12]. The design of labels and taste did not seem to be associated with any profile of consumer in North Portugal. This might mean that part of the sample driven by labels and taste are conventional consumers while another part are organic ones. Future studies should investigate more in depth the types of labels and taste that attract different consumers in North Portugal, using multimodal techniques, i.e., EEG, peripheral measures, and self-reported questionnaires. This would guide producers and marketers to implement strategies to increase organic product sales.

Our data indicate that there are three distinct consumer patterns in North Portugal. The first pattern involves individuals that strongly associate "organic products" with a "healthy life". The second pattern comprises consumers who are aware of the relevance of protecting the soils but are not proactive. Finally, the third pattern is composed of core environmentalists who are both aware and take action. Considering these patterns, especially patterns one and two, various practical implications could be highlighted (see Figure 2).

For pattern one, marketers could enhance the behavior of these consumers and extend this positive association to additional consumers that do not have this mental association formed yet. Given that our data show the ease with which Portuguese individuals form an association between organic and healthy, our strategy involves providing clear and explicit information on product labels regarding health benefits. Companies should invest in verifying the health aspects of each product, adjusting or reducing additional resources in label design, price adjustments, or product placement considerations.

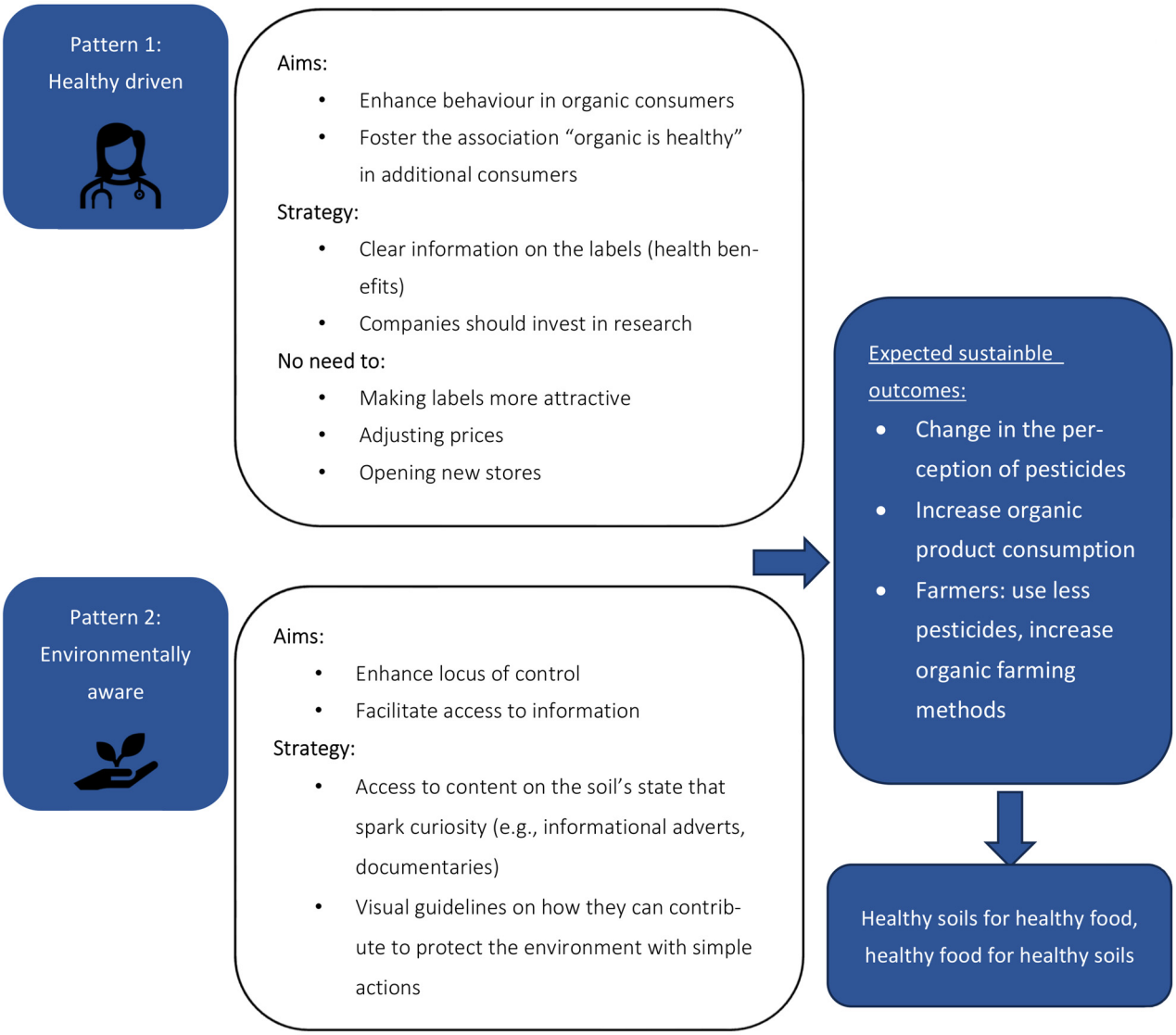

Figure 2. Strategies targeting two types of consumers and expected environmental outcomes. Note. This figure illustrates two common consumer patterns in North Portugal along with strategies to guide marketers. It also reflects the expected shift towards sustainable and environmentally friendly agricultural practices.

For pattern two, our aim is to foster locus of control or self-empowerment, encouraging individuals not only to be aware but also to take action. This requires instilling a belief that their actions can effect change. Additionally, marketers should aim to provide access to information on how to protect soils. Our strategies include offering content that sparks curiosity and informs individuals about the state of the soil, e.g., influential leaders advertising products and talking about the importance of consuming organic; we also propose providing specific visual guidelines on how individuals can contribute to protecting the environment through simple actions.

These guidelines anticipate a rise in the consumption of organic products as a direct result of altered attitudes and understanding of the soil's state among consumers. These changes are expected to impact farming practices positively, including a reduction in pesticide usage and an increase in the adoption of organic farming methods. This reflects a shift towards sustainable and environmentally friendly agricultural practices.

Limitations

This study is subject to certain limitations. First, the construct of "self-empowerment and information" only assessed the impact that self-control along with believing in the relevance of information have on consuming organic. Whether participants that think that information is important were actually informed was not evaluated. Future studies could assess whether people who believe in the relevance of information are informed and have access to information. This would be insightful to guide marketers in the correct direction. Second, our study focused exclusively on exploring consumer behavior in North Portugal. Although we acknowledge that pro-environmental behavior is context-dependent, this decision limited the generalization of our results. Future studies that explore the differences among sectors and regions within Portugal are encouraged. Third, the convenience sampling method constrains the possibility of ensuring a diverse representation of the population in North Portugal. Probability sampling methods could facilitate the inclusion of a more balanced sample in terms of gender, age groups, educational background, and socioeconomic status.

5. Conclusions

The fertility of our soils is at risk due to a widespread deficiency in pro-environmental practices on a global scale. Consumer choices play a pivotal role in shaping the behaviors of farmers, retailers, and marketers, and vice versa. Consequently, examining the drivers behind the consumption of organic products within diverse populations can offer valuable insights. By understanding these motives, stakeholders can implement strategies to enhance pro-environmental and ethical practices, thereby encouraging consumers to elevate their engagement with organic products.

Our study showed that the main drivers of organic product consumption in North Portugal are believing that organic is healthy, feeling that one can make individual changes to protect the environment, and believing in the power of information. The main barriers are having a positive attitude towards pesticides and a willingness to spend less time and money on purchasing products. The appeal to attractive labels and to taste does not seem to be associated with organic food consumption nor conventional. These results have great implications for researchers and retailers, for instance, in developing neurophysiological protocols to explore how the design of labels affects decision making when purchasing, developing advertisements that make more individuals associate organic products with being healthy, and providing explicit information regarding the health benefits of the products in the labels.

Author Contributions: All authors designed the study, the questionnaire, collected data, and wrote or edited parts of the article; L.P.-S. analyzed the data and wrote the manuscript; E.D.G. helped substantially in writing the introduction; E.P. and P.O.-S. reviewed the manuscript and supervised the study. All authors have read and agreed to the published version of the manuscript.

Funding: The authors would like to gratefully acknowledge the Northern Regional Operational program (NORTE 2020) for funding this study within the Project Healthy Soils for Healthy Food (Hsoils4Food) (grant ref.: NORTE-01-0145-FEDER-000066). They would also like to give a special thanks to all the participants who kindly provided their time and effort.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethical Committee Board for Health of the Universidade Católica Portuguesa (Project n º 171-CES/UCP). Approval date: 11 January 2022.

Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.

Data Availability Statement: Details of the data and how to request access are available from lucia.penalbasanchez@med.ovgu.de at the Human Neurobehavioral Laboratory (HNL), Research Centre for Human Development (CEDH), Faculdade de Educação e Psicologia, Universidade Católica Portuguesa, Porto.

Conflicts of Interest: All authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

References

1. Reeve, J.R.; Hoagland, L.A.; Villalba, J.J.; Carr, P.M.; Atucha, A.; Cambardella, C.; Davis, D.R.; Delate, K. Organic Farming, Soil Health, and Food Quality: Considering Possible Links. *Adv. Agron.* **2015**, *137*, 319–367. [CrossRef]
2. Nascimento, L.; Kuramochi, T.; Iacobuta, G.; den Elzen, M.; Fekete, H.; Weishaupt, M.; van Soest, H.; Roelfsema, M.; Vivero-Serrano, G.; Lui, S.; et al. Twenty years of climate policy: G20 coverage and gaps. *Clim. Policy* **2022**, *22*, 158–174. [CrossRef]
3. Slimi, C.; Prost, M.; Cerf, M.; Prost, L. Exchanges among farmers' collectives in support of sustainable agriculture: From review to reconceptualization. *J. Rural Stud.* **2021**, *83*, 268–278. [CrossRef]
4. Benassi, F.; Bonifazi, C.; Heins, F.; Lipizzi, F.; Strozza, S. Comparing Residential Segregation of Migrant Populations in Selected European Urban and Metropolitan Areas. *Spat. Demogr.* **2020**, *8*, 269–290. [CrossRef]
5. Parente, J.; Girona-García, A.; Lopes, A.R.; Keizer, J.J.; Vieira, D.C.S. Prediction, validation, and uncertainties of a nation-wide post-fire soil erosion risk assessment in Portugal. *Sci. Rep.* **2022**, *12*, 2945. [CrossRef]
6. Hughner, R.S.; McDonagh, P.; Prothero, A.; Shultz, C.J.; Stanton, J. Who are organic food consumers? A compilation and review of why people purchase organic food. *J. Consum. Behav.* **2007**, *6*, 94–110. [CrossRef]
7. Soroka, A.; Wojciechowska-Solis, J. Consumer motivation to buy organic food depends on lifestyle. *Foods* **2019**, *8*, 581. [CrossRef]
8. Padel, S.; Foster, C. Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *Br. Food J.* **2005**, *107*, 606–625. [CrossRef]
9. Baudry, J.; Péneau, S.; Allès, B.; Touvier, M.; Herçberg, S.; Galán, P.; Amiot, M.; Lairon, D.; Méjean, C.; Kesse-Guyot, E. Food choice motives when purchasing in organic and conventional consumer clusters: Focus on sustainable concerns (the nutrinet-santé cohort study. *Nutrients* **2017**, *9*, 88. [CrossRef]
10. Penalba-Sánchez, L.; Di-Gregorio, E.; Claro, R.; Pinto, M.; Pinto, E.; Oliveira-Silva, P. Understanding the motives behind the consumption of organic products in North Portugal: A focus group study. *Front. Sustain. Food Syst.* **2023**, *7*, 1316634. [CrossRef]
11. Chiciudean, G.O.; Harun, R.; Ilea, M.; Chiciudean, D.I.; Arion, F.H.; Ilies, G.; Muresan, I.C. Organic Food Consumers and Purchase Intention: A Case Study in Romania. *Agronomy* **2019**, *9*, 145. [CrossRef]
12. Fle, C.; Smaranda, A.C.; Bocăneț, V. Values and Planned Behavior of the Romanian Organic Food Consumer. *Sustainability* **2020**, *12*, 1722. [CrossRef]
13. Vittersø, G.; Tangeland, T. The role of consumers in transitions towards sustainable food consumption. the case of organic food in Norway. *J. Clean. Prod.* **2015**, *92*, 91–99. [CrossRef]
14. Aitken, R.; Watkins, L.; Williams, J.; Kean, A. The positive role of labelling on consumers' perceived behavioural control and intention to purchase organic food. *J. Clean. Prod.* **2020**, *255*, 120334. [CrossRef]
15. Boeve-de Pauw, J.; van Petegem, P. A Cross-Cultural Study of Environmental Values and Their Effect on the Environmental Behavior of Children. *Environ. Behav.* **2013**, *45*, 551–583. [CrossRef]
16. Hempel, C.; Hamm, U. Local and/or organic: A study on consumer preferences for organic food and food from different origins. *Int. J. Consum. Stud.* **2016**, *40*, 732–741. [CrossRef]
17. Iller, H.; Schlatter, B.; Trávníček, J.; Kemper, L.; Lernoud, J. (Eds.) *The World of Organic Agriculture Statistics and Emerging Trends*, 21st ed.; Research Institute of Organic Agriculture (FiBL) and IFOAM–Organics International: Frick, Switzerland; Bonn, Germany, 2020.
18. Pérez Flores, A.M.; Muñoz Sánchez, V.M.; Leal SaragoÃ§a, J.M.; Rodríguez Baltazar, M.S.; Ramos, I.J. Análisis comparativo de consumidores de verduras y frutas ecológicas en España y Portugal. *Agric. Soc. Y Desarro.* **2020**, *17*, 277–299. [CrossRef]
19. Guiné, R.P.; Florença, S.G.; Costa, D.T.; Çelik, S.; Ferreira, M.; Cardoso, A.P.; Çetin, S.; Costa, C.A. Comparative Study about the Consumption of Organic Food Products on Samples of Portuguese and Turkish Consumers under the COVID-19 Pandemic Context. *Agronomy* **2022**, *12*, 1385. [CrossRef]
20. Marreiros, C.G.; Dionísio, A.; Lucas, M.R. Does country matter in urban organic food products consumption? *Int. J. Consum. Stud.* **2021**, *45*, 1–13. [CrossRef]
21. Ajzen, I. From intentions to actions: A theory of planned behavior. In *Action-Control: From Cognition to Behavior*; Kuhl, J., Beckman, J., Eds.; Springer: Heidelberg, Germany, 1985; pp. 11–39. [CrossRef]
22. Ummar, R.; Shaheen, K.; Bashir, I.; Haq, J.; Bonn, M.A. Green Social Media Campaigns: Influencing Consumers' Attitudes and Behaviors. *Sustainability* **2023**, *15*, 12932. [CrossRef]
23. Chwiałkowska, A.; Bhatti, W.A.; Glowik, M. The influence of cultural values on pro-environmental behavior. *J. Clean. Prod.* **2020**, *268*, 122305. [CrossRef]
24. Ringle, C.M.; da Silva, D.; Bido, D.D.S. Modelagem de Equações Estruturais com Utilização do Smartpls. *Rev. Bras. Mark.* **2014**, *13*, 56–73. [CrossRef]
25. Rouf, M.A.; Akhtaruddin, M. Factors affecting the voluntary disclosure: A study by using smart PLS-SEM approach. *Int. J. Law Manag.* **2018**, *L60*, 1498–1508. [CrossRef]
26. Gede, I.; Jaya, N.M.; Hermina, N.; Sunengsih, N. CB-SEM and VB-SEM: Evaluating Measurement model of Business Strategy of Internet Industry in Indonesia. *Int. J. Sci. Eng. Res.* **2019**, *10*, 878–883. Available online: http://www.ijser.org (accessed on 21 December 2022).

27. Molinillo, S.; Vidal-Branco, M.; Japutra, A. Understanding the drivers of organic foods purchasing of millennials: Evidence from Brazil and Spain. *J. Retail. Consum. Serv.* **2020**, *52*, 101926. [CrossRef]
28. Dhir, A.; Sadiq, M.; Talwar, S.; Sakashita, M.; Kaur, P. Why do retail consumers buy green apparel? A knowledge-attitude-behaviour-context perspective. *J. Retail. Consum. Serv.* **2021**, *59*, 102398. [CrossRef]
29. Tandon, A.; Dhir, A.; Kaur, P.; Kushwah, S.; Salo, J. Why do people buy organic food? The moderating role of environmental concerns and trust. *J. Retail. Consum. Serv.* **2020**, *57*, 102247. [CrossRef]
30. Lockie, S.; Lyons, K.; Lawrence, G.; Grice, J. Choosing organics: A path analysis of factors underlying the selection of organic food among Australian consumers. *Appetite* **2004**, *43*, 135–146. [CrossRef] [PubMed]
31. Cerri, Z.; Testa, F.; Rizzi, F. The more I care, the less I will listen to you: How information, environmental concern and ethical production influence consumers' attitudes and the purchasing of sustainable products. *J. Clean. Prod.* **2018**, *175*, 343–353. [CrossRef]
32. Zepeda, L.; Deal, D. Organic and local food consumer behaviour: Alphabet theory. *Int. J. Consum. Stud.* **2009**, *33*, 697–705. [CrossRef]
33. Saba, A.; Messina, F. Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Qual. Prefer.* **2003**, *14*, 637–645. [CrossRef]