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The Roles of Perceived Threat, Organic Trust, and Consumer Effectiveness in Organic Consumption Across Different Organic Products

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Abstract: With the strong growth of the organic market and continuous expansion of organic product categories, it is essential to understand the organic consumption of different product categories. Founded on the protection motivation theory, this study examined the effects of threat appraisal of conventional agricultural practices and two enablers, organic certification/trust and perceived consumer effectiveness (PCE), on organic consumption (attitude and purchase frequency) beyond food. A total of 410 responses collected from adults residing in the US through an online survey were analyzed. The analysis showed that the influence patterns of threat appraisal, organic certification/trust, and PCE were similar in attitude formation, but they were different in purchasing behaviors across different types of organic products. PCE was found to be a powerful predictor of both attitude and behavior, and, particularly, it mediated the influence of organic certification/trust and threat appraisal on purchase behavior. The results also indicated that the impacts of threat appraisal and PCE differed across product types varying from plant- or non-plant-based, freshness, and product format alteration. The results highlight the importance of organic benefit messages that enable consumers to believe in their ability to fight environmental problems to promote consumers' purchasing of diverse organic products. Our study contributes to the growing literature on organic consumption with unique findings related to the threat appraisal of conventional agriculture and diverse organic products beyond organic food or produce. The findings and discussions provide insights into organic product development and communication strategies to support an expanded array of organic products and future research.

Keywords: organic agriculture; organic consumption; threat appraisal; protection motivation; consumer effectiveness

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1. Introduction

The USDA (United States Department of Agriculture) defines organic as a food or agricultural product that "has been produced according to the USDA organic standards, which require operations to use practices that cycle resources, conserve biodiversity, and preserve ecological balance" [1]. According to the Organic Trade Association [2], the US organic market reached USD 69.7 billion in sales in 2023 after steady growth rates over the years. While the food share dominates the market at 91.5% of the sales, the non-food sector, including fiber, supplements, and personal care products, marks an average of 6% growth, surpassing the rate of the food sector. Especially personal care products saw

the biggest jump in 2023, with a 7% increase from the previous year. A similar pattern is observed globally. Growing consumers' interests in health and nutrition, animal welfare, and environmental protection are cited as the primary driver of the growth [3,4]. A broad range of agricultural products adopt organic practices, and the product categories are evidently expanding [5]. Varied applications also appear in other service sectors, such as organic markets, organic restaurants, and hotels using organic supplies [3]. However, organic consumption research has concentrated on the food category, and there is a void in research that examines the motivational factors of organic consumption across different organic products.

The accumulated studies have shown that organic consumption is associated with a unique set of factors, such as health and value motives, compared to other pro-social behaviors, such as recycling. Scholars have found that health consciousness [6,7], food safety [7–9], and pesticide risk [10,11] were linked to organic food consumption. It is apparent that health consequences related to conventional agriculture are frequently inseparable from environmental concerns [11,12]. Maslow's hierarchy of needs ranks safety as the second most immediate need of humans next to physiological needs such as food. Seeking safety and protection is a strong human instinct. Thus, an individual's threat appraisal of conventional agriculture, a risk perception directly related to organic alternative selection, may better explain organic consumption. The protection motivation theory [13], which explains people's risk-reducing actions or behaviors in response to threats or risks, suggests that organic consumption can be a remedial action to cope with environmental/health threats posed by conventional agriculture practices. The theory also suggests that, in addition to threat appraisal, organic consumption could be attributed to an individual's assessment of the remedial action's effectiveness against the threat (response efficacy) and expectancy of the individual's ability to carry out the remedy action or solve the risky problem (self-efficacy) [14].

In line with the theory's proposition, organic certification and labeling that increase consumers' trust in organic effectiveness have been documented to be a consistent predictor of organic food consumption [15,16]. Perceived consumer effectiveness (PCE), which depicts an individual consumer's belief that their actions can contribute to solving environmental/social problems, has also been found to strongly predict various environmentally friendly consumer behaviors [17,18]. Thus, these two enablers, trust in the organic certification system and PCE, in addition to threat appeal, could better explain organic consumption. Further, PCE has been found and discussed to be a unique psychological factor that enhances the relationship between attitude and behavior in pro-environmental behaviors [19,20] and mediates the relationship between environmental concern and pro-environmental behaviors [21,22]. Especially when consumers tend to underestimate the threat of conventional agricultural practices due to the risks being perceived as abstract and far [23], PCE is likely to act as a crucial factor in organic consumption.

This study aimed to examine the effects of the threat appraisal of conventional agricultural practices, organic certification/trust, and PCE on the organic consumption of various organic product categories. Particularly, we investigated their effects on both attitudes and purchase behavior to capture the unique role of PCE as a necessary behavioral mediator of organic purchase. This study's results fill the literature gap, providing insights into the influences of consumers' perceived threat and those two efficacy factors on organic consumption and how they vary by product type. They generate valuable implications and suggestions for practitioners and policymakers in formulating communication, marketing, and new product development strategies.

2. Review of Literature

2.1. Protection Motivation Theory and Environmental Risks

The protection motivation theory [13] explains how people cope with a risk or threat appraisal. Behavioral change is a function of expectancy related to the threat and consequences of the actions. A threat consists of the following three stimuli factors: (a) the magnitude of noxiousness (of a threatening event), (b) the probability of occurrence, and (c) the efficacy or effectiveness of the recommended response. These three components initiate a cognitive mediating process by which individuals form (a) the appraised severity, (b) the expectancy of exposure or vulnerability, and (c) the beliefs on the efficacy of the (recommended) coping response [13]. The last component has also been referred to as response efficacy [14]. Therefore, such cognitive evaluation of the threat/risk and the beliefs that the recommended coping response can effectively prevent the threat would determine the individual's intention to adopt or carry out the coping response (behavior change). Later development of the theory [14] incorporated a fourth component, slightly different from the other three components. Self-efficacy is an individual's expectancy of his/her ability to carry out the proposed or recommended remedy. This self-efficacy component, interacting with other components, has been found to be the most powerful predictor of protective behavior [14].

The protection motivation theory has been applied to the context of health behavior persuasion to explain people's behavior changes or coping behavior to a risk. For example, a smoker may not quit smoking if the person believes smoking-related health consequences are trivial, unlikely to happen to him/her, unlikely to be reduced by quitting, and/or the person feels unable to quit [14]. Similarly, public opinion studies on various social issues (e.g., technologies and drinking) assume risk perceptions cause subsequent risk-reducing actions or behaviors [23]. The theory has also explained various pro-environmental behaviors such as waste disposal, energy conservation, reuse, and recycling as coping behaviors in response to perceived threats caused by environmental contamination [17,24]. In addition, environmental threat appraisal has been found associated with consumers' intention to engage in pro-environmental behaviors such as water conservation [25] and green consumerism [26].

In this study, we applied the theory to better explain organic consumption. Buying organic is conceptualized as coping behavior in response to the threat perception of conventional farming. The unique nature of the threat related to conventional farming suggests that consumers' threat appraisal represents both the estimated harm and vulnerability to the unquantified yet recognized harm [26]. A previous study on water shortage threat also reported that the severity and susceptibility of harm/risk merged into one factor [25].

2.2. Threat from Conventional Farming

Threat appraisal (risk perception) is the base trigger of protective behavior. Human threat appraisal is not a perfect estimation of risk because it includes bias and discounting. Stereotyping generally affects risk judgment in such a way that the subjective conditions associated with a similar, representative case, not an actual probability of the risk, will determine the judgment of a risk [27]. Even if a risk is associated with a low probability, people will overestimate the risk if relevant information is readily available or memorable (e.g., a recent event and newspaper coverage). Along with personal experience (e.g., history of no car accidents), the available information regarding the risks may also cause an underestimation of the risk to themselves (e.g., no automobile accident history causes an underestimation of the risk even with information) [28]. Therefore, how people feel about the risk, especially the risk to themselves, rather than the probability of the risk, is a

more powerful predictor of both their risk tolerance and subsequent environmental risk-reducing behaviors.

Consumers associate a relatively high level of risks with the consumption of conventionally grown produce [29], and health risks are often inseparable from environmental risks [12]. However, environmental risk judgment is typically a result of the following three discounters: temporal delay, spatial distance, and target distance [23]. Proven risks are concentrated on people or places where farming occurs, and most consumers have not experienced their direct impacts. Environmental impacts or risks caused by conventional farming are likely to be delayed for years, if not centuries, and happen around farmlands or to farmers. In contrast, frequent, ongoing information about the environmental issues transmitted to the public may elevate consumers' environmental and health risk perceptions. Yet, the information typically lacks the occurrence probability of the risks posed by conventional agriculture practices and scientific backing, which may amplify the discounting effects and attenuate the risk perceptions [30]. At the same time, the involuntary nature of the agrochemical risks and a lack of scientific information about the risks may attenuate the risk perceptions [30]. Therefore, the perceived threat related to conventional farming practices is not an estimated risk; rather, it differs by individual.

The threat appraisal of conventional farming has not been examined well in organic consumption studies. Most studies examined consumers' concerns about general environmental degradation as a motivator of organic consumption, such as beliefs about overall environmental degradation [17] or climate change [31]. Only a limited number of studies have investigated related risk or threat perceptions of conventional farming, such as food safety concerns [7,8] or the fear associated with conventionally produced food [6,31].

2.3. Organic Consumption as Coping/Remedial Behavior

Organic farming could be seen as a remedial process to tackle the environmental threat posed by conventional agriculture to consumers. Although the full quantitative benefits of organic farming by the types of crops or products have not yet been substantiated and may require decades of research, consumers largely believe that organic products are generally healthier, nutritious, and sustainable [5,11]. However, the organic standard and label requirements do not imply that organic foods are healthier [32].

The promise of delivering environmental benefits is the main appeal for consumers to purchase organic products [3]. The precise definitions or operationalization of environmental concern or benefit differ across studies, and research findings related to the effects of environmental concerns and/or beliefs on organic consumption have been mixed. Many studies have cited that environmental concern is the primary motive for organic food purchases [5,9,33]. However, its effect has not been consistent in predicting organic purchases, especially when health motives were examined simultaneously [6].

Health concerns geared toward personal well-being have been frequently cited in organic food studies. Organic consumers are more concerned about their health than their counterparts [6,7]. Organic consumers consider conventionally produced food to be impure and contaminated; hence, they seek organic food [11]. Hence, some have pointed out that food safety is the most apparent reason for buying organic foods [7,12]. Pesticide risk perception was found to be negatively related to trust in the safety of fruits and vegetables grown conventionally, and consumers with a low level of trust tend to hold less positive attitudes towards organic fruits and vegetables [10]. Interestingly, when both environmental and health concerns were considered, environmental concern was found unrelated to 'organic identity' (i.e., the degree to which one identifies oneself as an organic consumer) and organic purchase, while health concerns and food safety were predictors of 'organic identity' [9]. Similarly, other scholars have also reported that health concerns

better predicted organic consumption than environmental concerns [6,12]. Additionally, in many studies, food safety and health concerns are alternately framed as nutritional benefits, pesticide exposure, or both [11,34].

From the defined structures of word associations of consumer responses, Chen and Wei [35] found that organic cotton consumption was to achieve the 'personal value of security'. Through a focus group, Ditlevsen, Sandøe, and Lassen [11] concluded that consumers' organic food purchase was individualized consumption for health to protect themselves from environmental pollution rather than their reflection of wholistic concerns for the health of soil, plant, and animals (i.e., the health of the eco-system). Therefore, protection from health risks or safeguarding oneself from the possible harmful effects of conventional agricultural practices would influence attitudes towards organic products and consumption behavior. Therefore, we hypothesize that

Hypothesis 1a. *The perceived environmental threat of conventional farming (threat appraisal) positively influences attitudes towards organic products.*

Hypothesis 1b. *The perceived environmental threat of conventional farming (threat appraisal) positively influences organic product consumption.*

2.4. Organic Certification and Trust

The 'response efficacy' proposed by the protection motivation theory denotes the effectiveness of a proposed remedy or a risk-reducing action. Assuring and trusting the organic production/distribution system will likely aid organic purchasing decision making. Previous research suggests that consumers' knowledge about the environmental impact of organic farming processes and certification labeling influences the purchasing of organic products [15,36–38]. Oh and Abraham [36] found that highly knowledgeable consumers about organic cotton were more resistant to the price increase than less knowledgeable consumers. Even additional labels pertinent to ethical content along with organic certification positively influenced consumers' attitudes toward organic cotton clothing [36].

Therefore, when people lack knowledge or are uncertain about the risk, trust in organic production plays an essential part in organic purchases [15]. Consumers can be skeptical about whether the products truly qualify for organic labeling and the integrity of certifying agencies or organic agriculture [15,39] or retailers [40]. Such skepticism in product claims or the organic certification system can undermine the value of organic and discourage consumption. McFadden and Huffman [16] reported that organic consumers were willing to spend more on organic produce items than their conventional counterpart only when verifiable information about the benefits of organic production was provided. Such effect was more significant among infrequent buyers of organic than frequent buyers [41]. Both knowledge about the organic label attributes and the degree of trust in the label content were found to predict organic food purchases [15]. Interestingly, the organic label itself was found to have an independent influence on perceived well-being as well as on perceived health benefits [42]. The authors [42] interpreted the results as consumer heuristics attached to the organic certification label that could alter the expected benefits of organic food. Therefore, the literature consistently supports the positive impact of organic certification and trust on organic perception and consumption behaviors.

Hypothesis 2a. *Organic certification and trust positively influence attitudes toward organic products.*

Hypothesis 2b. *Organic certification and trust positively influence organic product consumption.*

2.5. Perceived Consumer Effectiveness

Organic consumption may require a condition where consumers believe that purchasing organic products effectively addresses larger environmental problems—self-efficacy [18,43]. A consumer's concern about environmental issues may not lead to pro-environmental purchasing, but if he/she strongly believes that his/her behavior can help combat environmental problems, they are more likely to engage in such behavior [22]. Similarly, scholars who investigated pro-environmental consumer behaviors found a powerful effect of one's personal belief that individual actions can produce remedies to environmental degradation [17]. This self-efficacy concept has often been termed perceived consumer effectiveness (PCE) in consumer behavior studies [18,44]. The PCE is defined as the consumers' belief that they, as individuals, can help solve [environmental] problems [43] (p. 217).

PCE has effectively explained consumers' pro-environmental behaviors, such as energy use, recycling, and organic purchases [17,44]. While some studies have investigated PCE as one of the variables that parallel environmental concerns or beliefs, it has been argued and proven that PCE is a unique behavioral motivator, separate from the environmental concerns or attitudes, that directly impacts behaviors [44,45]. A consumer who is very concerned about an environmental issue but feels helpless in his/her ability to solve the environmental problem may exhibit a very favorable attitude but low scores in purchasing behavior [20]. Consistent with the assertion, Vermeir and Verbeke [18] found that attitudes toward sustainable food consumption did not predict corresponding behavior. However, when PCE was included, the relationship between attitude and behavior became significant. Since PCE denotes action-oriented beliefs, it is likely to mediate the relationships between threat appraisal/organic efficacy and attitudes/behaviors, especially behaviors. Previous studies have also reported that PCE mediated the relationship between environmental concern and household conservation behavior [21] and environmental purchasing [22], and between perceived retailer CSR and consumers' positive interactions with the retailer [46].

Hypothesis 3a. *The relationship between the threat of conventional farming and attitudes towards organic products is mediated by perceived consumer effectiveness.*

Hypothesis 3b. *The relationship between organic certification/trust and attitudes towards organic products is mediated by perceived consumer effectiveness.*

Hypothesis 3c. *The relationship between the threat of conventional farming and organic purchase is mediated by perceived consumer effectiveness.*

Hypothesis 3d. *The relationship between organic certification/trust and organic purchase is mediated by perceived consumer effectiveness.*

3. Methods

A quantitative approach using an online survey method was utilized. A self-completion type of questionnaire was developed on the Qualtrics survey platform, and the participants recruited from the MTurk crowdsourcing were directed to the survey. MTurk allows for a larger and demographically diverse participant pool and flexible research design with ease and at reasonable cost [47]. Only the adults residing in the United States were able to participate in the study to increase the internal validity. The survey started with an informed consent process, and the measurement items for the main variables followed. In addition, the instrument also included questions related to demographic information. Given the nature of crowdsourcing, where respondents tend to complete the survey at rapid speed with inattention to maximize the monetary return [47], we estimated

the minimum response time needed to complete the survey to filter out invalid responses. A total of 460 responses were completed, among which 50 recorded less than 3 min of completion time or completed with a significant number of missing values were discarded. A total of 410 responses were included in the analysis.

The items that measured the threat appraisal included three items covering various aspects of pollution caused by conventional agriculture practices (e.g., how harmful do you think chemical runoffs from conventional farming are?). Each item was measured on a 5-point scale (1: harmless–5: extremely harmful). A scale of organic certification and trust was developed to assess the degree to which an individual perceives the organic certification and distribution system as effective and trustworthy (4-item measurement) based on the literature [15,39,40]. The PCE scale was adapted from Vermeir and Verbeke [18] and measured by five statements depicting the beliefs that an individual consumer can contribute to the solutions to environmental problems. These statements accompanied a 5-point Likert-type scale (1: strongly disagree–5: strongly agree). We used a slider response format for all Likert-type scales. Respondents could answer more accurately using the slider input, with ten decimal points between every number along with the starting point placed in the middle (neutral) [48]. Table 1 shows each scale's measurement items and reliability coefficient. All of the scales achieved better than acceptable reliability coefficients, ranging from 0.74 to 0.87, indicating that the internal consistency of the items of each scale achieved a good or better reliability ranking. Therefore, the summed scores of the measures were used in further analyses.

Table 1. Reliabilities of the measurements.

Measurements	**Cronbach's α Coefficient**
Threat appraisal	
How harmful do you think chemical runoffs from conventional farming (non-organic) are?	0.87
How harmful do you think air pollution from conventional farming (non-organic) is?	
How harmful do you think water pollution from conventional farming (non-organic) is?	
Organic certification/trust	
It is worth it for the USDA (United States Department of Agriculture) to run the organic certification program to tackle environmental issues.	0.74
Organic agricultural production has a great impact on the environment.	
I believe in the integrity of the USDA organic certification program.	
I trust that the middlemen and retailers adhere to the USDA organic certification rules.	
Perceived consumer effectiveness	
It is worth it for individual consumers to do something about environmental protection.	0.82
Organic products (e.g., grains, produce, and cotton-made goods) enable me to protect the environment.	
My effort in conserving the eco-system has a significant impact on the environment.	
Each consumer behavior can have a positive effect on society's environment by purchasing organic products sold by a socially responsible company.	
What I do and consume can solve all environmental problems.	

A favorability scale (very unfavorable–very favorable) was used to measure global attitudes toward various organic product categories. The measure assesses the summary evaluation of organic products and has been commonly used in organic consumption studies [7,12]. For food items, examples were given to clarify the categories (e.g., whole-food items: grains, fresh/frozen vegetables and fruits, and fresh/frozen meat). Again, a 5-point Likert-type scale on a slider was used to achieve accuracy and variance. Organic purchase was measured by the frequency of organic purchases during the past month or

year. Because purchase frequency differs for food and non-food items, we asked for the purchase frequency during the 'past year' for cotton and body care-related items and the 'past month' for food and grocery items to simplify the respondents' memory retrieval. The product categories for the attitude and behavior measures were slightly different to capture attitudes towards products with limited availability and past purchases of the most available organic food categories in more detail. We used the slider tool but without decimal points for the purchase measure. We used regression analyses using SPSS 29 software to analyze the data.

4. Results

Table 2 shows the characteristics of the respondents. Among the 400 respondents who responded to the gender question, 202 were males and 198 were females. About 62% of the respondents were between 18 and 40 years old. The majority (73.4%) were white, followed by Black, Asian, and other races. Most respondents (82.9%) reported that they were employed. The household income generally followed the US population's pattern reported in the US census, yet the distribution tended to lean toward lower income ranges. According to the US census, the median income in the US was USD 74,580 in 2022, and the median of the sample fell between USD 40,000 and 59,000. About 37% of general US households report more than USD 100,000 in income, while only 9.5% of the respondents were in that category.

Table 2. Characteristics of the sample.

Description	*n*	%	Description	*n*	%
Age			Income		
18–30	128	31.0	Less than 20,000	49	12.0
31–40	128	31.2	20,000–39,999	95	23.2
41–50	77	18.8	40,000–59,000	107	26.1
51–60	36	8.8	60,000–79,999	66	16.1
61–70	24	5.9	80,000–99,999	46	11.2
71–80	1	0.2	100,000 and over	39	9.5
Total	393	95.9	Total	402	98.0
Gender			Employment status		
Female	198	48.3	Paid employee	274	66.8
Male	202	49.3	Self-Employed	66	16.1
Total	400	97.6	Not Employed/Temporary Layoff	4	1.0
Race			Not Employed/Looking	19	4.6
White	301	73.4	Retired	9	2.2
Black	41	10.0	Disabled	7	1.7
Asian	37	9.2	Other	16	3.9
Other	23	5.7	Prefer not to answer	5	1.2
Total	402	98.0	Total	400	97.6

$n = 410$.

H1 and H2 proposed the influence of threat appraisal and organic certification/trust on attitudes toward and purchase frequency of organic products. We used a series of regression analyses to test the hypotheses and to capture the influences of the studied variables across different types of organic products. To test H3s, the three-model approach was applied following Baron and Kenny's mediation test procedure [49]. The first regression model regresses the dependent variables on the independent variables. The second model regresses the mediator on the independent variable(s). The third model regresses the dependent variable on both independent variables and the mediator. Mediation holds when (1) the independent variable is significant in the first model, (2) the independent

variable is significant in the second model, and (3) the mediator variable is significant in the third model, and the independent variable becomes less significant than in the first model [49].

Attitude towards organic products. A series of regression analyses indicated that two variables, organic certification/trust and threat appraisal, were significantly related to attitudes across all product categories (Model 1 in Table 3). Therefore, H1a and H2a were accepted. For the mediation tests involving the three models [49], the first model corresponded to the analysis for H1a and H2a. The second regression model showed the significant impacts of both independent variables (threat appraisal and organic certification/trust) on the proposed mediator, PCE (Model 2). With attitudes as the dependent variable, when the mediator was added to the first model (Model 3), the beta coefficients of the previously significant independent variables tended to decrease across all product categories. However, all independent variables remained significant. Therefore, H3a and H3b were rejected. This implies that the threat appraisal and organic certification/trust increase the belief that individual consumers' ability to contribute to the environment (PCE), yet it was not a mediator indicating that the belief directly influences the attitudes towards organic products. Table 3 summarizes the tests.

Table 3. Regression and mediation analyses—attitudes.

Dependent Variable (Attitudes Towards Organic)	**Model 1 X1 + X2 = Y**		**Model 2 X1 + X2 = M**		**Model 3 X1 + X2 + M = Y**			**Indirect Effect**	
	β1	**β2**	**β1**	**β2**	**β1**	**β2**	**βm**	**X1**	**X2**
Cotton clothing	0.49 **	0.19 **	0.61 **	0.24 **	0.30 **	0.12 *	0.32 **	0.19	0.07
	Adjusted R^2 = 0.37		Adjusted R^2 = 0.58		Adjusted R^2 = 0.42				
	F (2, 381) = 112.57 **		F (2, 369) = 257.11 **		F (3, 365) = 90.24 **				
Cotton sheets and towels	0.39 **	0.23 **			0.20 **	0.17 **	0.30 **	0.19	0.06
	Adjusted R^2 = 0.29				Adjusted R^2 = 0.34				
	F (2, 382) = 78.84 **				F (3, 366) = 62.89 **				
Whole-food items (e.g., grains, fresh/frozen vegetables and fruits, and fresh/frozen meat)	0.37 **	0.26 **			0.23 **	0.22 **	0.21 **	0.14	0.04
	Adjusted R^2 = 0.30				Adjusted R^2 = 0.32				
	F (2, 383) = 83.40 **				F (3, 367) = 58.92 **				
Food—processed/altered (e.g., bread, jam, and chicken nuggets)	0.44 **	0.16 **			0.31 **	0.12 *	0.19 **	0.13	0.04
	Adjusted R^2 = 0.28				Adjusted R^2 = 0.29				
	F (2, 383) = 75.13 **				F (3, 367) = 51.66 *				
Market	0.39 **	0.24 **			0.20 **	0.17 **	0.31 **	0.19	0.07
	Adjusted R^2 = 0.30				Adjusted R^2 = 0.34				
	F (2, 384) = 82.41 **				F (3, 368) = 64.63 **				
Restaurants	0.43 **	0.20 **			0.17 **	0.13 **	0.39 **	0.21	0.07
	Adjusted R^2 = 0.31				Adjusted R^2 = 0.38				
	F (2, 384) = 86.74 **				F (3, 368) = 75.81 **				

Note. X1—organic certification and trust, X2—threat appraisal; * $p < 0.05$; ** $p < 0.01$. The indirect effects were calculated according to the method suggested by Judd and Kenny [50].

Organic product purchase. Another series of regression analyses with the organic purchase frequency as the dependent variable showed that organic certification/trust significantly influenced the purchase frequencies of all organic product categories (Model 1 in Table 4). However, the threat appraisal significantly influenced the purchase of only organic grain and produce categories that are plant-based food. That is, threat appraisal was an influential factor for plant-based organic food purchases but not for other product types such as meat or cotton-based products. Organic certification/trust was influential for the purchasing of all product types. Therefore, while H2b was accepted, H1b was partially accepted. The second model shows that both threat appraisal and organic certification/trust significantly predicted PCE (Model 2). With purchase frequency as the dependent variable, when PCE was added to the first model (Model 3), the effect of threat

appraisal on the grain products category purchase became insignificant and less significant for the fruits and vegetables category. Therefore, H3c was supported. Similarly, when the mediator, PCE, was added to the model, the previously significant influence of organic certification/trust became insignificant or less significant for all product categories, except for organic meats/dairy. This result implies that organic certification and trust in the organic distribution system make consumers confident about their own contribution to the environment; hence, consumers purchase organic products. However, meat purchases were directly influenced by organic certification/trust and PCE independently. These results led us to reject the total mediation hypothesis, yet the results show a pattern of partial mediation. The mediation size seemed larger for cotton products than for other product categories. H3d was partially accepted. Table 4 summarizes the results.

Table 4. Regression and mediation analyses—organic purchase.

Dependent Variables (Organic Purchase—Frequency)	Model 1 X1 + X2 = Y		Model 2 X1 + X2 = M		Model 3 X1 + X2 + M = Y			Indirect Effect	
	β1	β2	β1	β2	β1	β2	βm	X1	X2
Cotton clothing	0.40 **	0.02	0.61 **	0.24 **	0.10	−0.00	0.50 **	0.30	-
	Adjusted R^2 = 0.17		Adjusted R^2 = 0.58		Adjusted R^2 = 0.27				
	F (2, 377) = 38.63 **		F (2, 369) = 257.11 **		F (3, 363) = 46.49 **				
Cotton other than clothing	0.38 **	0.06			0.13 †	−0.03	0.41 **	0.35	-
	Adjusted R^2 = 0.16				Adjusted R^2 = 0.24				
	F (2, 379) = 37.78 **				F (3, 365) = 39.70 **				
Grains or grain products (e.g., popcorn, dry pasta, bread, etc.)	0.35 **	0.15 **			0.10	0.07	0.40 **	0.25	0.08
	Adjusted R^2 = 0.19				Adjusted R2 = 0.26				
	F (2, 382) = 43.26 **				F (3, 366) = 43.82 **				
Fruits, vegetables, and legumes	0.32 **	0.22 **			0.09	0.12 *	0.40 **	0.23	0.10
	Adjusted R^2 = 0.22				Adjusted R^2 = 0.29				
	F (2, 383) = 55.24 **				F (3, 367) = 51.59 **				
Meats and dairy	0.40 **	0.08			0.20 **	−0.03	0.37 **	0.20	-
	Adjusted R^2 = 0.19				Adjusted R^2 = 0.26				
	F (2, 380) = 46.12 **				F (3, 366) = 43.43 **				
Body care and cosmetics	0.38 **	0.05			0.17 *	−0.05	0.36 **	0.21	-
	Adjusted R^2 = 0.16				Adjusted R^2 = 0.21				
	F (2, 377) = 36.21 **				F (3, 363) = 34.18 **				

Note. X1—organic certification and trust, X2—threat appraisal; † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$. The indirect effects were calculated according to the method suggested by Judd and Kenny [50].

5. Discussion

We found that both the threat appraisal of conventional agriculture and the beliefs about organic certification/trust predicted the attitudes toward all of the organic product categories that we included in this study. Because the mediation effect of PCE in attitude formation was not found for all product types, the result suggests that PCE was an independent predictor in forming favorable attitudes towards organic products.

For purchasing, however, the threat influence was only significant for plant-based food purchases. The threat appraisal did not influence the purchases of organic cotton, non-plant-based food, and other applied products. The abstract threat that consumers did not actually experience might cause consumers to discount its effect, but its effect seems significant for plant-based products. It could also be that the freshness or minimal processing of the plant-based products denotes the naturalness or wholesomeness, which may lead consumers to avoid the threat posed by conventional agriculture practices. Organic certification/trust, however, significantly predicted the purchase of all organic product categories studied. The concentrated organic sales in plant-based product categories [51] could be attributed to consumers' risk perceptions of conventional agriculture. This may be because the plant-based ones have no or minimal processing from the farmland or a plant-based diet

is associated with healthy eating or lifestyle [52]. The threat may be recognized and considered in the attitude formation of all organic products, yet it seems disregarded when it comes to purchasing 'unhealthy' items.

The consistent, significant influence of organic certification/trust on organic purchasing suggests that consumers' trust in organic certification and distribution is essential in the purchasing of all types of organic products. The abstract and distant nature of the threat from conventional farming may cause consumers to rely on the certification system or use organic labels as a heuristic cue for risk prevention [39]. This is explained by the human risk judgment tendency to favor certainty in risk assessment [27]. This result supports the previous finding that suggests the organic label itself has a separate explanatory power of organic purchasing, which somehow further changes consumers' expectations of product quality and performance [15,42].

The mediation analysis demonstrated how the threat appraisal and organic certification/trust influence attitude and organic purchase differently. The PCE mediation effect between organic certification/trust and organic purchases was evident except for the meats/dairy category. It suggests that the way organic certification/trust is effective for plant-based organic purchases is by enhancing consumers' beliefs about their roles in protecting the environment. This was not observed in attitude formation. Therefore, PCE appears to be the missing 'key' to the attitude–behavior gap in organic consumption [18]. This result is consistent with the previous finding that individuals with a higher level of PCE displayed a more consistent attitude–behavioral intention correlation than those with a lower PCE [19]. Without communicating the benefits of organic agriculture and enabling consumers by emphasizing that individuals can make a difference, consumer purchasing of expanded arrays of organic products may not be promoted.

Further, organic certification/trust remained a direct influencer of purchasing meats/dairy products, indicating that organic certification/trust of non-plant-based food may not interact with PCE. Organic certification/trust itself seems to have an independent influence on purchasing these products, and so does PCE. Although we did not examine what exact product characteristics made different protection motivation patterns, the results provide a clue that the product variations cause different consumer assessments and perceptual tendencies related to environmental threats, health, trust, and self-efficacy. Our results indicate that organic certification/trust empowers consumers to believe their actions can contribute to the environment and leads to their consumption of plant-based food and cotton products, while organic certification remains a direct factor of meat/dairy products consumption.

The mediation effect of PCE for the threat influence was interesting to note. The mediation of PCE between the threat appraisal and fruits/vegetable purchases was more obvious than the one for grain products purchase. Both products are plant-based, yet purchasing produce products was directly influenced by the threat appraisal, which suggests that freshness or time taken from the farm to the store might automatically remind consumers of health and thus influence consumers' susceptibility to the environmental threat. In contrast, purchasing processed plant-based products such as popcorn or bread requires a self-efficacy perception.

Certain product types or forms could determine consumers' 'effectiveness' or 'organic worthy' perceptions. Scholars have noted consumers' reliance on heuristics in 'green' consumption [42,53]. Consumers tend to use dichotomous heuristics, such as sustainable and not sustainable [53]. In addition to consumers' confusion between organic and natural labels [16], it has been found that consumers consider healthy, organic, green, and local food broadly similar [34,52]. Our results exemplify that such perception may be true for

fresh, unaltered organic foods and may have limited explanatory power for other products that tend to change the format through extended processing and supply chains.

The finding related to the differential protection motivation effect across product categories also warns us about the limited interpretation and applicability of the findings related to health and environmental concerns. Most of the organic consumption studies investigated attitudes or intentions to purchase organic products, frequently without the product categories specified [8,9,31], and others used fresh produce items for experiments [6,10,41]. We suspect that the strong response to the health and environmental benefits of organic products found in these studies may be the results of the products that respondents were presented with or the term "organic food" automatically being interpreted as fresh produce. We would also like to note that the differential result of plant-based food or fresh/intact products could be related to the purchase frequency or virtue–vice characteristics [51]. Consumers buy more plant-based organic products, especially fresh produce, than organic vice or meat products [51].

The existing literature in various fields clearly indicates that health and environmental implications are inseparable, especially when related to farming practices. The inconsistent results related to the health and environmental motives in the current literature could be due to the inconsistent and separate conceptualization of the motives in addition to the utilization of certain organic products. We examined organic consumption as a risk-coping behavior against the threat of conventional agriculture, which carries a combination of health and environmental motivations. Our results indicate that consumers seem to discount the threat posed by conventional agriculture practices when purchasing non-plant-based organic food, while it is recognized in attitude formation. We suggest that further research could firmly develop a theory of organic consumption incorporating environmental threat, product characteristics, consumer effectiveness, and ecological value perceptions related to organic attributes. Further, developing systematic, valid, and reliable measurements can consolidate the confusion in the literature and facilitate future research incorporating diverse organic products.

We would also like to point out some limitations of this study. Although the respondents showed a similar demographic profile to the general US population, the income level showed a discrepancy. In addition, we discarded many responses, especially those with a short response time. We did this to increase the validity of the data to compensate for the nature of cloud sourcing, but it could have impacted the results in a way. Furthermore, we used purchase frequency as a measure of organic consumption instead of dollar spending or the amount of consumption. Our interpretation related to the purchase frequency and cost factors calls for an alternative measure of consumption to re-examine the variables and hypotheses. Further, if our research model were to give incorrect predictions, such as overestimating or underestimating the effects of the variables investigated in this study, it may cause companies, policymakers, and consumers to make misleading decisions. For example, if companies rely heavily on threat appraisal to motivate consumers' organic purchases, this may lead to an unnecessary level of consumers' fear. If we overestimated the influence of organic certification/trust, companies may overinvest in certification programs while ignoring other factors like product quality and other ethical considerations. Replicating this research with diverse organic products will confirm the research findings and establish the external validity of the findings.

6. Conclusions

The aim of this study was for us to investigate the roles of the threat from conventional farming practices, organic certification and trust, and PCE in the consumption of various organically produced products. This study fills the research gap identified and contributes

to the growing organic consumption literature and current knowledge on consumer behavior for different types of organic products. In conclusion, the influence patterns of threat appraisal, organic certification/trust, and PCE on purchase behavior vary across different product categories, while their influences seem consistent for attitude formation. Organic certification/trust is effective in promoting the purchase behavior of all organic product types, but threat appraisal may only influence plant-based food purchases, at least currently. Their influences on purchase behavior are largely through enabling consumers to perceive that their actions can contribute to solving environmental problems, except for meats/dairy products. The findings of this study highlight the mediating role of PCE as a behavioral motivator in plant-based organic consumption. We provided rich discussions on the product differences found in this study in relation to the halo effect commonly found in the organic food consumption literature and the risk-discounting tendency associated with the distance from the farmland and alteration of the product formats. Our study also generated valuable recommendations for organic product developers and marketers. Current consumers' awareness or assessment of the conventional farming risk could be biased, and, therefore, communication strategies for an extended array of organic products could emphasize the environmental benefits of organic farming, even if the products are not directly from the farmland, rather than eliciting conspicuous behavior or health consciousness. This will enhance the consumers' perceived self-efficacy in environmental protection and promote the consumption of a diverse range of organic products.

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References

1. United States Department of Agriculture (USDA) Agricultural Marketing Service. USDA Certified Organic: Understanding the Basics. Available online: https://www.ams.usda.gov/services/organic-certification/organic-basics (accessed on 3 March 2025).
2. Organic Trade Association (OTA). US Organic Marketplace Posts Record Sales in 2023. Available online: https://ota.com/about-ota/press-releases/us-organic-marketplace-posts-record-sales-2023 (accessed on 14 May 2024).
3. Shin, Y.H.; Im, J.; Jung, S.E.; Severt, K. Motivations behind consumers' organic menu choices: The role of environmental concern, social value, and health consciousness. *J. Qual. Assur. Hosp. Tour.* **2019**, *20*, 107–122. [CrossRef]
4. Leonidou, L.C.; Eteokleous, P.P.; Christofi, A.-M.; Korfiatis, N. Drivers, outcomes, and moderators of consumer intention to buy organic goods: Meta-analysis, implications, and future agenda. *J. Bus. Res.* **2022**, *151*, 339–354. [CrossRef]
5. Moser, A.K. Buying organic—Decision-making heuristics and empirical evidence from Germany. *J. Consum. Mark.* **2016**, *33*, 552–561. [CrossRef]
6. Jose, H.; Kuriakose, V. Emotional or logical: Reason for consumers to buy organic food products. *Br. Food J.* **2021**, *123*, 3999–4016. [CrossRef]
7. Michaelidou, N.; Hassan, L.M. The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *Int. J. Consum. Stud.* **2008**, *32*, 163–170. [CrossRef]

8. Lee, H.-J.; Hwang, J. The driving role of consumers' perceived credence attributes in organic food purchase decisions: A comparison of two groups of consumers. *Food Qual. Prefer.* **2016**, *54*, 141–151. [CrossRef]
9. Hansen, T.; Sørensen, M.I.; Eriksen, M.-L.R. How the interplay between consumer motivations and values influences organic food identity and behavior. *Food Policy* **2018**, *74*, 39–52. [CrossRef]
10. Saba, A.; Messina, F. Attitudes towards organic foods and risk/benefit perception associated with pesticides. *Food Qual. Prefer.* **2003**, *14*, 637–645. [CrossRef]
11. Ditlevsen, K.; Sandøe, P.; Lassen, J. Healthy food is nutritious, but organic food is healthy because it is pure: The negotiation of healthy food choices by Danish consumers of organic food. *Food Qual. Prefer.* **2019**, *71*, 46–53. [CrossRef]
12. Magnusson, M.K.; Arvola, A.; Koivisto Hursti, U.-K.; Åberg, L.; Sjödén, P.-O. Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behaviour. *Appetite* **2003**, *40*, 109–117. [CrossRef]
13. Rogers, R.W. A protection motivation theory of fear appeals and attitude change. *J. Psychol.* **1975**, *91*, 93–114. [CrossRef] [PubMed]
14. Maddux, J.E.; Rogers, R.W. Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *J. Exp. Soc. Psychol.* **1983**, *19*, 469–479. [CrossRef]
15. Daugbjerg, C.; Smed, S.; Andersen, L.M.; Schvartzman, Y. Improving eco-labelling as an environmental policy instrument: Knowledge, trust and organic consumption. *J. Environ. Policy Plan.* **2014**, *16*, 559–575. [CrossRef]
16. McFadden, J.R.; Huffman, W.E. Willingness-to-pay for natural, organic, and conventional foods: The effects of information and meaningful labels. *Food Policy* **2017**, *68*, 214–232. [CrossRef]
17. Shafiei, A.; Maleksaeidi, H. Pro-environmental behavior of university students: Application of protection motivation theory. *Glob. Ecol. Conserv.* **2020**, *22*, e00908. [CrossRef]
18. Vermeir, I.; Verbeke, W. Sustainable food consumption: Exploring the Consumer "attitude—Behavioral intention" gap. *J. Agric. Environ. Ethics* **2006**, *19*, 169–194. [CrossRef]
19. Gul, S.; Ahmed, W. Enhancing the theory of planned behavior with perceived consumer effectiveness and environmental concern towards pro-environmental purchase intentions for eco-friendly apparel: A review article. *Bull. Bus. Econ. (BBE)* **2024**, *13*, 784–791. [CrossRef]
20. Gupta, S.; Ogden, D.T. The attitude-behavior gap in environmental consumerism. *APUBEF Proc.* **2006**, *3*, 199–206.
21. Segev, S. Modelling household conservation behaviour among ethnic consumers: The path from values to behaviours. *Int. J. Consum. Stud.* **2015**, *39*, 193–202. [CrossRef]
22. Stojanova, S.; Zečević, M.; Culiberg, B. From words to deeds: How do knowledge, effectiveness, and personal relevance link environmental concern and buying behavior? *J. Nonprofit Public Sect. Mark.* **2023**, *35*, 329–353. [CrossRef]
23. Fleury-Bahi, G. Environmental risk: Perception and target with local versus global evaluation. *Psychol. Rep.* **2008**, *102*, 185–193. [CrossRef]
24. Janmaimool, P. Application of protection motivation theory to investigate sustainable waste management behaviors. *Sustainability* **2017**, *9*, 1079. [CrossRef]
25. Mankad, A.; Greenhill, M.; Tucker, D.; Tapsuwan, S. Motivational indicators of protective behaviour in response to urban water shortage threat. *J. Hydrol.* **2013**, *491*, 100–107. [CrossRef]
26. Rodríguez-Priego, N.; Montoro-Ríos, F.J. How cultural beliefs and the response to fear appeals shape consumer's purchasing behavior toward sustainable products. In *Sustainability in Innovation and Entrepreneurship: Policies and Practices for a World with Finite Resources*; Leal-Millan, A., Peris-Ortiz, M., Leal-Rodríguez, A.L., Eds.; Springer International Publishing: Cham, Switzerland, 2018; pp. 47–62. [CrossRef]
27. Tversky, A.; Kahneman, D. Judgment under uncertainty: Heuristics and biases. *Science* **1974**, *185*, 1124–1131. [CrossRef] [PubMed]
28. Slovic, P.; Fischhoff, B.; Lichtenstein, S. Accident probabilities and seat belt usage: A psychological perspective. *Accid. Anal. Prev.* **1978**, *10*, 281–285. [CrossRef]
29. Williams, P.R.; Hammitt, J.K. Perceived risks of conventional and organic produce: Pesticides, pathogens, and natural toxins. *Risk Anal.* **2001**, *21*, 319–330. [CrossRef]
30. Ritson, C.; Kuznesof, S. Food consumption, risk perception and alternative production technologies. In *An Ecological and Societal Approach to Biological Control*; Springer: Dordrecht, The Netherlands, 2006; Volume 2, pp. 47–64.
31. Pang, S.M.; Tan, B.C.; Lau, T.C. Antecedents of consumers' purchase intention towards organic food: Integration of theory of planned behavior and protection motivation theory. *Sustainability* **2021**, *13*, 5218. [CrossRef]
32. Guilabert, M.; Wood, J.A. USDA certification of food as organic: An investigation of consumer beliefs about the health benefits of organic food. *J. Food Prod. Mark.* **2012**, *18*, 353–368. [CrossRef]
33. Scalvedi, M.L.; Saba, A. Exploring local and organic food consumption in a holistic sustainability view. *Br. Food J.* **2018**, *120*, 749–762. [CrossRef]
34. Rodríguez-Bermúdez, R.; Miranda, M.; Orjales, I.; Ginzo-Villamayor, M.J.; Al-Soufi, W.; López-Alonso, M. Consumers' perception of and attitudes towards organic food in Galicia (Northern Spain). *Int. J. Consum. Stud.* **2020**, *44*, 206–219. [CrossRef]

35. Chen, N.-H.; Wei, S. Ends justify means? Organic cotton products' purchasing motivations. *Agribusiness* **2012**, *28*, 440–450. [CrossRef]
36. Oh, K.; Abraham, L. Effect of knowledge on decision making in the context of organic cotton clothin. *Int. J. Consum. Stud.* **2016**, *40*, 66–74. [CrossRef]
37. Shu-Hwa, L. A case study in Hawaii: Who will pay more for organic cotton? *Int. J. Consum. Stud.* **2010**, *34*, 481–489. [CrossRef]
38. Testa, F.; Sarti, S.; Frey, M. Are green consumers really green? Exploring the factors behind the actual consumption of organic food products. *Bus. Strategy Environ.* **2019**, *28*, 327–338. [CrossRef]
39. Canova, L.; Bobbio, A.; Manganelli, A.M. Buying organic food products: The role of trust in the theory of planned behavior. *Front. Psychol.* **2020**, *11*, 575820. [CrossRef]
40. Kushwah, S.; Dhir, A.; Sagar, M. Understanding consumer resistance to the consumption of organic food. A study of ethical consumption, purchasing, and choice behaviour. *Food Qual. Prefer.* **2019**, *77*, 1–14. [CrossRef]
41. Rousseau, S.; Vranken, L. Green market expansion by reducing information asymmetries: Evidence for labeled organic food products. *Food Policy* **2013**, *40*, 31–43. [CrossRef]
42. Apaolaza, V.; Hartmann, P.; D'Souza, C.; López, C.M. Eat organic—Feel good? The relationship between organic food consumption, health concern and subjective wellbeing. *Food Qual. Prefer.* **2018**, *63*, 51–62. [CrossRef]
43. Roberts, J.A. Green consumers in the 1990s: Profile and implications for advertising. *J. Bus. Res.* **1996**, *36*, 217–231. [CrossRef]
44. Ellen, P.S.; Wiener, J.L.; Cobb-Walgren, C. The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. *J. Public Policy Mark.* **1991**, *10*, 102–117. [CrossRef]
45. Verhoef, P.C. Explaining purchases of organic meat by Dutch consumers. *Eur. Rev. Agric. Econ.* **2005**, *32*, 245–267. [CrossRef]
46. Dang, V.T.; Nguyen, N.; Pervan, S. Retailer corporate social responsibility and consumer citizenship behavior: The mediating roles of perceived consumer effectiveness and consumer trust. *J. Retail. Consum. Serv.* **2020**, *55*, 102082. [CrossRef]
47. Aguinis, H.; Villamor, I.; Ramani, R.S. MTurk research: Review and recommendations. *J. Manag.* **2021**, *47*, 823–837. [CrossRef]
48. Bosch, O.J.; Revilla, M.; DeCastellarnau, A.; Weber, W. Measurement reliability, validity, and quality of slider versus radio button scales in an online probability-based panel in Norway. *Soc. Sci. Comput. Rev.* **2019**, *37*, 119–132. [CrossRef]
49. Baron, R.M.; Kenny, D.A. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Personal. Soc. Psychol.* **1986**, *51*, 1173–1182. [CrossRef] [PubMed]
50. Judd, C.M.; Kenny, D.A. Process analysis:Estimating mediation in treatment evaluations. *Eval. Rev.* **1981**, *5*, 602–619. [CrossRef]
51. Van Doorn, J.; Verhoef, P.C. Drivers of and barriers to organic purchase behavior. *J. Retail.* **2015**, *91*, 436–450. [CrossRef]
52. Van Loo, E.J.; Hoefkens, C.; Verbeke, W. Healthy, sustainable and plant-based eating: Perceived (mis)match and involvement-based consumer segments as targets for future policy. *Food Policy* **2017**, *69*, 46–57. [CrossRef]
53. Gorissen, K.; Weijters, B. The negative footprint illusion: Perceptual bias in sustainable food consumption. *J. Environ. Psychol.* **2016**, *45*, 50–65. [CrossRef]

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