



Research Article

The Silver Lining of the Pandemic! The Impact of Risk Perception of COVID-19 on Green Foods Purchase Intention

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ABSTRACT

As the COVID-19 crisis heightened consumers' risk perceptions, they have become more aware of the health benefits of consuming green foods, which are of fine quality, nutritious, and produced under sustainable principles. The present research investigated the effect of the COVID-19 pandemic on the intention to purchase green foods with the serial mediating roles of health consciousness, environmental consciousness, and attitude toward sustainable food consumption, as well as the moderating role of generations. Protection motivation theory was applied as a behavioral framework to study changes in consumer awareness, attitudes, and behavioral intentions in terms of consuming sustainable nutrition during the COVID-19 pandemic. For this purpose, this study was conducted in Turkey with 631 participants who were surveyed online. The results support our main hypothesis that the risk perception of COVID-19 is positively related to the intention to purchase green foods, indicating individuals' beliefs and motivations toward consuming healthy and environmentally friendly products. Our study further shows that risk perception of the COVID-19 pandemic had a positive effect on health and environmental consciousness and consequently affected individuals' attitudes toward sustainable food consumption. We also demonstrated a serial mediation relationship in which health consciousness, environmental consciousness, and a positive attitude toward sustainable food consumption mediated the effect of the risk perception of COVID-19 and the intention to purchase green foods. Interestingly, the findings indicate that generations do not have a significant effect on the relationship between the risk perception of a COVID-19 pandemic and the intention to purchase green food.

KEYWORDS

Green foods, sustainability, environmental consciousness, COVID-19, pandemic, health consciousness

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1. Introduction

The World Health Organization (WHO) declared COVID-19 a global pandemic at the beginning of 2020 (Bloomberg, 2022). The COVID-19 pandemic

brought many challenges to societies and organizations by impacting every aspect of life and the global economy (Klemeš et al., 2020). Individuals began to show negative associations with the virus and



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its unknown consequences (Ahorsu et al., 2020). Therefore, the risk perception of COVID-19 was associated with a greater tendency for individuals to engage in protective or preventative health behavior (Dubey et al., 2020; Kuang et al., 2020; Rabin & Dutra, 2022). Several scholars have suggested that the pandemic has caused a trend toward more sustainable consumption (Cohen, 2020; Peluso et al., 2021) and that consumer behaviors, such as nutrition habits, have started to change, which will serve as a basis for new consumption patterns (Peluso et al., 2021; Zwanka & Buff, 2021). However, to date, researchers have not investigated the association between the risk perceived as a result of COVID-19 and the intention to purchase sustainable foods.

According to Gould (1990), people who have recovered and remained well during the pandemic have had the opportunity to reflect on health behaviors. Aksoy et al. (2021) called for further studies to explore the relationship between health consciousness and COVID-19 fear. Peluso et al. (2021) encouraged further research focusing on environmental consciousness to explore the effects of pandemics on sustainable behavior. The concepts of health consciousness and environmental consciousness are very closely intertwined, as environmental concerns (e.g., air quality and water production) represent the root cause of most health problems that are associated with life quality and life expectancy. Therefore, individuals who practice environmentally friendly behaviors also improve their health, behaviors, and attitude (Zimmer et al., 1994). Muresan et al. (2021) argued that there is a new type in the culture of consumer behavior, called green consumer behavior, with a preference for products that are harmless to the environment or individual health and that produce a minimum amount of waste, which positively affects their intention to purchase green foods (Paço et al., 2008).

This study provides insight into the existing literature based on protection motivation theory (PMT), which was originally developed to explain the effects of fear appeals on health attitudes and behaviors (Rogers, 1975). The literature is scant on the effect of the mediating role of health consciousness and environmental

consciousness on the relationship between risk perception of COVID-19 and attitude toward sustainable food consumption, which, in turn, may affect the intention to purchase green foods. This study explores the effect of COVID-19 on the intention to purchase green foods, with the serial mediating roles of health and environmental consciousness as well as attitude toward sustainable foods, and the moderator role of generation. To this end, in this study we present two pathways. We propose that the risk perception of COVID-19 has a direct effect on health consciousness, which elicits positive attitudes toward sustainable food consumption, which in turn positively affects the intention to purchase green foods. Second, we argue that risk perception is directly correlated with environmental awareness, which is also associated with positive attitudes toward sustainable food consumption, resulting in the intention to consume green foods. By investigating this chain of events, this study makes a significant contribution to the literature in several ways.

This research expands the current literature by investigating the effect of the coronavirus pandemic on green food purchase intentions based on PMT, which best describes consumer behavior under extraordinary circumstances resulting from an abrupt change. PMT, which was originally developed to explain the effects of fear appeals on health attitudes and behaviors (Rogers, 1975), has an advantage for modeling pro-environmental behavior in a situation of sudden changes that trigger a rapid behavioral reaction (Sparks & Shepherd, 1992). There is a paucity of studies on the effect of risk perception on intention to purchase green foods using the PMT model with the mediating role of health consciousness, environmental consciousness, and attitudes toward sustainable food consumption. Another gap in the literature is the conflicting evidence of generation on the purchasing behavior of sustainable foods, which is the main motivation for the moderation effect of generation in this study on the relationship between the perceived risk of COVID-19 and intention to purchase green foods.

This article is organized as follows. Sections 2 and 3 lay the theoretical foundation and explore hypothe-

ses concerning the study's objectives. The methodology and results are presented in Sections 4 and 5, followed by the findings in Section 6. The article concludes with a discussion of possible future research avenues.

2. Theoretical Background

2.1. Risk Perception of COVID-19

The fear of COVID-19 has become a global threat, which is believed to have appeared as a result of the high evaluation of risk factors in individuals. Cori et al. (2020) defines risk perception as the instinctive evaluations of threats to which individuals either are or have a chance of being exposed to that incorporate unpleasant effects associated with a certain cause. A recent study showed elevated fear perception when directly exposed to media information, and that the fear of COVID-19 might occur before being infected by the disease itself (Tsoy et al., 2021). According to Dubey et al. (2020, p.783), mass fear of COVID-19, named 'corona phobia,' emerged due to the unpredictable nature of the disease and perceived risk of catching the infection, leading to "negative psychological responses including maladaptive behaviors, emotional distress, and avoidance reaction among common people." Turner and Underhill (2012) state that emotions not only predict behavioral outcomes but also enhance preventive behaviors through risk perception. Whereas risk determines how consumers make decisions, risk aversion refers to changing plans or actions to avoid or eliminate threats (Sun et al., 2021).

2.2. Protection Motivation Theory

PMT "is a theory of behavioral change that attempts to explain the cognitive mediation process in terms of threat and coping appraisal" (Wu et al., 2005, p.127). PMT was first proposed by (Rogers, 1975) to study behavioral change during health-related risks, where fear is characterized as a motivational state toward risk avoidance. According to PMT, both environmental and personal factors contribute to the perceived health threat, and a potential threat initiates two cognitive processes: threat appraisal and coping appraisal. Threat appraisal evaluates the factors associated with a behavior that poses a danger. The three factors of threat appraisal are rewards accompanying the action (intrinsic and extrinsic), the severity of the threat, and

the individual's vulnerability to the potential danger. The coping appraisal process is the ability to endure and prevent the threatened danger (self-efficacy and response efficacy) balanced with the costs associated with protective behavior (response costs) (Floyd et al., 2000). Threat appraisal and coping appraisal processes combine to form protection motivation. Therefore, the adoption of any type of behavior stems from the motivation to protect, which constitutes the intention to act, and eventually the action itself (Wu et al., 2005).

3. Hypothesis Development

3.1. Risk Perception and Intention to Purchase Green Foods

According to De León-Martínez et al. (2020), perceived risk (i.e., beliefs about potential harm) (Brewer et al., 2007) must be presumed as the vulnerability of a community and its capability to react to an unfamiliar situation to neutralize the potential harm. When evaluating risk, fear becomes an unavoidable element, and it is one of the characteristics of the COVID-19 pandemic. As levels of public concern increase, fear becomes even less manageable. Dootson et al. (2016, p. 5) suggested that "People may develop coping strategies to address the dissonance they experience when social norms are not sufficient to dictate under all circumstances." Negative emotions such as fear, threats, and risks can act as motivators in their lives and decisions (Aksoy et al., 2021) by leading individuals to pay more attention to themselves and their loved ones (Sun et al., 2021). Being aware of the potential risks in health situations (i.e., COVID-19-pandemic) is the best method to help prevent the spread of the disease (Alqahtani et al., 2021; Chatterjee & Kar, 2020; Dubey et al., 2020). Harper et al. (2021) reported that the fear of COVID-19 was the only obvious predictor of positive behavior change during the pandemic.

PMT states that humans have instinctive abilities to detect and monitor perceived threats and respond accordingly (Kothe et al., 2019) In the threat appraisal of PMT, the amount of severity and vulnerability factors together measure the 'fear arousal' (Rippetoe & Rogers, 1987). This study argues that the higher the perceived severity (to what extent COVID-19 will cause damage) and perceived vulnerability (how

much can one control the damage) factors combined, the higher the motivation will be to adopt certain health behaviors. Researchers have also confirmed that greater perceived vulnerability predicts more engagement in preventative behaviors (Dryhurst et al., 2020; Ibuka et al., 2010). Other factors such as changes in food consumption patterns due to fear may serve as a protective motivating factor during the pandemic (Gstraunthaler & Day, 2008). This may be the case because evidence suggests that the virus was transmitted by crossing through species barriers as a result of the commercialization of wildlife for consumption, possibly causing consumers to become more sensitive about food-related health issues. (Sun et al., 2021). Hence, based on both recent research and PMT, this study argues that the perceived threat of COVID-19 will lead individuals to prefer green foods that are safer, more nutritious, and sustainable than conventional products as preventative health behavior (Xie et al., 2020). Therefore, the negative associations of COVID-19 increase individuals' risk perceptions, and one way to avoid or minimize the risk is to increase greener food consumption. Accordingly, we advanced the following hypothesis:

H1: The risk perception of the COVID-19 pandemic is positively related to the intention to purchase green foods.

3.2. Risk Perception of COVID-19 and Health Consciousness

During the COVID-19 pandemic, many people suffered from health-related issues, and unfortunately, some faced life-threatening health scares and/or deaths of loved ones. Regular updates on the number of infected people and deaths fueled citizens' fear as "...each death takes on enormous weight and increases fear and bewilderment" (Cori et al., 2020, p.4). Those who recovered and remained well during the pandemic had the opportunity to reflect on their health behaviors, including their diet. Gould (1990, p.228) defined health consciousness as the degree to which the individual attends to his or her health and is willing to take actions to achieve a healthier state (Shimul et al., 2021).

Health-conscious consumers are concerned about

their well-being and try to maintain a healthy life by engaging in healthy behaviors (Michaelidou & Hassan, 2008). The literature suggests that the perceived risk of a disease is considered to be a motivator of change (Shimul et al., 2021). The perceived risk is magnified when individuals' health consciousness is compromised, suggesting that consumers' heightened awareness of harmful diseases, such as COVID-19, is likely to affect their decision-making process and influence their self-behavioral intentions (Chou et al., 2020). Thus, this study argues that a higher perceived risk of COVID-19 will lead to a greater motivation to protect one's health, and a state of increased health awareness. Therefore,

H2a: Risk perception of the COVID-19 pandemic has a positive effect on health consciousness.

3.3. Risk perception of COVID-19 and environmental consciousness

Fine particulate matter known as PM2.5, Nitrogen Dioxide (NO₂), and greenhouse gases emitted from energy production, transportation, industry, and agriculture are major air pollutants that are toxic to human respiratory systems and are emitted into the atmosphere due to human-generated actions (Ali & Islam, 2020). Several studies have indicated a direct relationship between the chances of complications arising from COVID-19 and long-term exposure to air pollution (Rupani et al., 2020; Fiasca et al., 2020). While Sun et al. (2021) show a positive relationship between air quality and the mildness of COVID-19 symptoms, other studies demonstrate a direct effect of humidity, air pollution, and air temperature on the spread rate of the coronavirus, severe infections, and higher levels of mortality (Lal et al., 2020; Travaglio et al., 2021).

Past research has suggested a strong correlation between perceived risk factors of environmental catastrophes and environmentally conscious attitudes (Johnson et al., 2004; Li, 2021). Environmental consciousness is defined as an individual's behavior in relation to environmental matters (Souza et al., 2020), which can be characterized by waste separation as well as reduced water and energy consumption (Severo et al., 2018).

Based on existing literature, we propose that people who have a high fear of COVID-19 will be more concerned with increased viral transmission rates and the higher risk of health complications that might arise due to environmental pollution. Therefore, the following is proposed:

H2b: Risk perception of the COVID-19 pandemic has a positive effect on environmental consciousness.

3.4. Health Consciousness and Attitude Toward Sustainable Food Consumption

Scholars have suggested a positive association between health consciousness and the adoption of a healthy lifestyle (Shimul et al., 2021). Apart from certain behaviors arising from increased health awareness, such as wearing facemasks, frequently washing hands, and social distancing, there has also been an evolution in food consumption patterns during the pandemic (Shimul et al., 2021).

Hassen et al. (2020) demonstrated radical changes in the way consumers eat, shop, and interact with food, showing a clear pattern toward healthier food consumption and a reduction in food waste during the pandemic. Snuggs and McGregor (2021) showed an increase in the importance of health, price, weight control, and natural food consumption, leading to better planned and more nutritious meals. Hence, it is evident that health consciousness has been reflected in consumers' attitudes toward sustainable foods, where attitude is defined as an individual overall evaluation of a behavior based on values, cognitions, and emotions (Hoyer et al., 2001).

Based on recent studies that have suggested a positive association between being health-conscious and adopting a healthy lifestyle (Shimul et al., 2021), this study argues that a highly health-conscious individual is more likely to develop positive attitudes toward sustainable food consumption.

3.5. Environmental Consciousness and Attitude Toward Sustainable Food Consumption

The mandatory lockdown during the pandemic has caused factories and businesses to slow down production and minimize human mobility (Sarkis et al., 2020). The minimal use of transportation and lower levels of

manufacturing production have decreased overall carbon emission levels, which has led to greater air quality, reduced water pollution, and improved water bodies around the world (Saadat et al., 2020). Air pollution has shown the biggest decline rate since the Second World War (Rupani et al., 2020). The rapid improvement of Mother Nature during the pandemic has demonstrated the magnitude of the consequences of human actions on the environment, hence stressing the importance of sustainable consumption.

Sustainable consumption behaviors include purchasing sustainable products along with recycling waste, living a simpler lifestyle, and preferring transportation that is less harmful to the environment (Kowalska et al., 2021). The term 'sustainable food' is widely used by many scholars and companies that have many factors at play (Reisch et al., 2013). Food sustainability factors include sustainable agriculture that involves organic and low carbon food production (Reganold et al., 1990), low environmental impact reducing greenhouse gas emissions (Smith & Gregory, 2013), upholding animal welfare to protect animals' health and wellbeing (Ackers, 2022; Broom, 2010), protection of public health including more plant-based and less red meat consumption (Masset et al., 2014), and fair-trade conditions (Oosterveer & Sonnenfeld, 2011).

The pandemic's origin is believed to have been caused by the exploitation of animals, as the primary cases of COVID-19 were linked with animal-to-human transmission originating from live animal markets in Wuhan, China (Rupani et al., 2020). Research suggests that people have become more aware of the threat of contagious diseases that are transmitted from wild animals, such as bats or snakes, which can be potential carriers of the virus (Eslami & Jalili, 2020). Another crucial concern is the amount of water consumed in traditional agriculture practices, (Gómez-Llanos et al., 2020), accounting to 70% of water abstractions worldwide (Lipponen & Nikiforova, 2017).

Becker et al. (1977) described health consciousness and environmental consciousness as the readiness of people to take action. PMT argues that how much 'action' or preventative behavior people are willing to engage in depends on how high the perceived

'rewards' will be. Higher intrinsic (perceived health benefits for one's own body) and extrinsic rewards (perceived environmental benefits) will result in greater motivation to purchase sustainable food. Thus, this study argues that health and environmentally conscious individuals will be highly aware of the damage caused both to their bodies and the environment due to traditional agricultural practices. Accordingly, they will develop a positive attitude toward natural, high-quality, nutritious foods that maintain healthy ecosystems. Therefore, the following hypothesis is proposed:

H3: Health consciousness has a positive effect on attitudes toward sustainable food consumption.

H4: Environmental consciousness has a positive effect on attitudes toward sustainable food consumption.

3.6. Attitude Toward Sustainable Food Consumption and Intention to Purchase Green Foods

According to the coping appraisal process in PMT, individuals are more likely to engage in preventive behaviors if they have greater self-efficacy (perceived ease) for executing the behavior and believe it to be more efficacious (perceived effectiveness) (Liao et al., 2010; Nan & Kim, 2014). Positive attitudes toward sustainable food behavior increased during the COVID-19 pandemic (Muresan et al., 2021; Severo et al., 2021; Sun et al., 2021). This suggests likely increases in the perceived benefits of consuming sustainable foods as a way to minimize damages. Research has shown that environmental and health benefits are the two main reasons that consumption behavior is evolving toward green foods (Wandel & Bugge, 1997).

The concept of 'green consumerism' has emerged under the principle of sustainable consumption, with green foods simply referring to foods that offer environmentally sustainable features (Bartikowski & Berens, 2021), which include but are not limited to organic foods. In a broader definition, green foods refer to foods that are safe, high quality, organically grown, contain natural ingredients, and are nutritious (Lijuan, 2003). They are also foods that contain recyclable or reusable content, do not pollute the

environment, and are produced with concern for humane animal treatment (Ueasangkomsate & Santi-teerakul, 2016). Hence, the literature has classified green foods into two categories: 1) organic foods that require official certification and 2) foods that are concerned with safety, environmental hazards, health issues, and animal welfare (Rezai et al., 2012). The 'green consumer' is defined as a person who purchases products with the intent of minimizing harm caused to the environment (Kowalska et al., 2021).

In the present study, we posit that consumers who have a favorable attitude toward sustainable food consumption will have a higher motivation to purchase products that are produced under the principles of sustainable food development, and hypothesize that:

H5: A positive attitude toward sustainable food consumption has a significant effect on the intention to purchase green foods.

3.7. Serial Mediation Chains

Based on the previous arguments, this study proposes two series of mediating relationships. First, as individuals' perceived threat of COVID-19 increases, their awareness of health issues also increases, which results in adopting positive attitudes toward sustainable consumption. Consequently, there is an increase in consumers' intention to purchase 'green foods', which are produced according to the guidelines of sustainable food development. This leads to the following hypothesis:

H6a: The significant effect of risk perception of COVID-19 on the intention to purchase green foods is serially mediated by health consciousness and attitude toward sustainable food consumption.

Second, a high perceived risk of COVID-19 will lead to higher environmental consciousness. As consumers realize that environmental issues go hand in hand with sustainable food production, their heightened environmental concerns trigger positive attitudes toward consuming sustainable food. Since green foods are part of sustainable development, consumers' willingness to purchase green foods will also increase as a result. Hence, we propose the following hypothesis:

H6b: The positive effect of the risk perception of COVID-19 on the intention to purchase green foods is serially mediated by environmental consciousness and attitude toward sustainable food consumption.

3.8. Moderating Effect

Past research has found mixed results regarding the association between generations and pro-environmental behaviors. For instance, [Van Liere and Dunlap \(1980\)](#) reported that older consumers tend to exhibit lower levels of environmental awareness and are less likely to support pro-environmental actions. [Royne et al. \(2011\)](#) demonstrated that younger generations are more concerned about environmentally-related issues than older generations. According to an online survey, globally socially conscious consumers tend to be younger, with 63% of all respondents under the age of 40 [Nielsen \(2012\)](#). Similarly, [Zimmer et al., 1994](#)) noted that younger consumers are more concerned about environmental issues.

By contrast, [Peluso et al. \(2021\)](#) demonstrated that older consumers remained more optimistic during the rise of contagion, which in turn provoked more pro-environmental attitudes and a higher purchase of sustainable products. [Xie et al. \(2020\)](#) revealed that older generations showed more positive attitudes toward the consumption of organic food. However, [Squires \(2019\)](#) found no statistically significant difference among generations in the number of green products purchased. Scholars have noted that research on generations and environmental attitudes has been inconsistent and have called for further investigation [\(Royne et al., 2011\)](#). Thus, the coexistence of conflicting evidence on generation membership and sustainable purchase and limited research on risk perception on the intention to purchase green foods with the moderating effect of generation set the foundation for the current hypothesis. To assess the differences, we classify the generations according to the year of birth: more than 56 years old (Baby Boomers), 41–56 years old (Generation X), 25–40 years old (Generation Y), and 18–24 years old (Generation Z). Based on this premise, we evaluate the following hypothesis:

H7: Generation moderates the relationship between the risk perception of the COVID-19

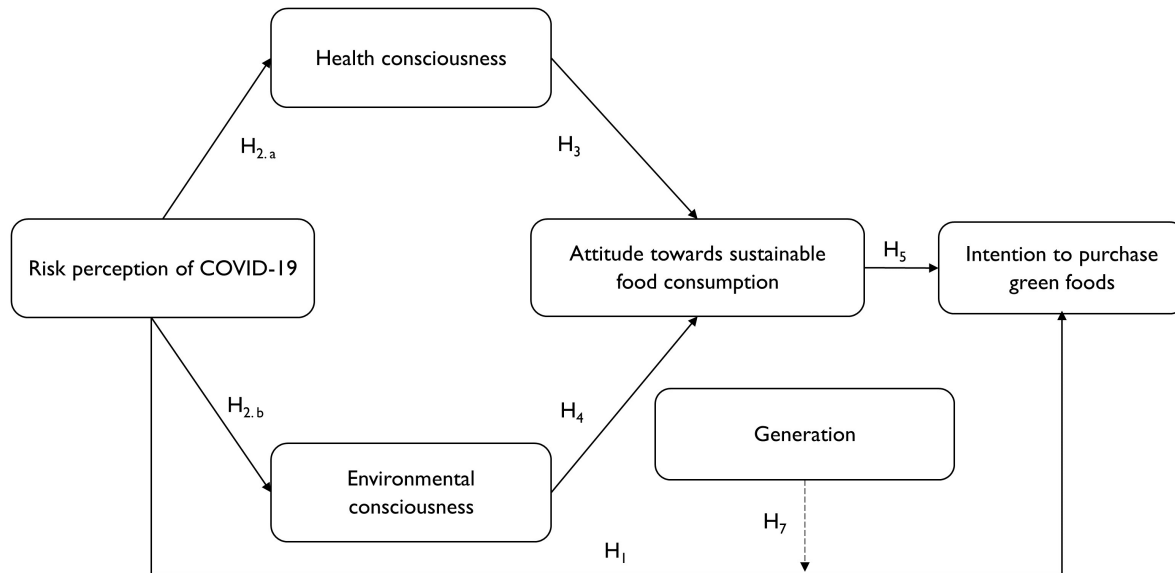
pandemic and the intention to purchase green food.

4. Research Method

4.1. Sample and Data Collection

The data were collected from people exclusively living in Turkey using an online survey. Turkey was ranked in the top 10 for the largest number of cases in total [\(Worldmeter, 2022\)](#). The questionnaire was created in English as the original language of the scales and translated into Turkish by a bilingual researcher. Afterward, a draft questionnaire was created based on a thorough check of expressions, clarity, and wording. The entire questionnaire was evaluated by peers, and following revisions based on their feedback, the final questionnaire was produced. An online questionnaire was used to avoid physical interpersonal interaction as a consequence of the distance-measuring effect during the COVID-19 pandemic [\(Welsch et al., 2021\)](#).

Non-probability convenience sampling was used to reach respondents by sharing the survey on social media (i.e., Facebook), and the respondents were asked to share it with their friends, which made a further contribution to the data collection process and tool to recruit respondents for social science research [\(Zhang et al., 2020\)](#). The data collection process took place between November 30, 2021, and December 31, 2021. A total of 665 completed responses were received. 20 unengaged cases that exhibited a low standard deviation of <0.5 [\(Charalampi et al., 2019\)](#), and 14 unengaged responses based on screening question were eliminated, resulting in a total of 631 responses. Of all the respondents, 47.1% were female, and 52.9% were male. Furthermore, 48.2% consisted of Millennials, 45.6% were Generation X, and Generation Z and Baby Boomers represented a very small portion of the sample (3.6% and 2.5%, respectively). The majority of the respondents were married (35.3%), 27.4% were divorced or separated, 25.7% were widowed, 10.9% were single, and 50.1% had no children, while 48.8% had two or fewer children living with them in the household. Most of the respondents held either a high school diploma (41.7%) or a bachelor's degree (54%). Regarding monthly income, 32% of respondents earned ≤ 250 USD, 30.7% reported an annual income between 251–500 USD, 30.3% indicated an annual income between 501 and 750 USD, and 7.1% had a monthly income higher than



H₂a: Risk perception of COVID-19 → Health consciousness → Attitude towards sustainable food → Intention to purchase green food

H₂b: Risk perception of COVID-19 → Environmental consciousness → Attitude towards sustainable food → Intention to purchase green food

Figure 1. Research Conceptual Model

700 USD (Table 1).

4.2. Measurement

This research relied on a questionnaire adopted from prior studies (Xie et al., 2020; Yıldırım & Güler, 2020; Severo et al., 2021; Peluso et al., 2021; Aksoy et al., 2021; Sultan et al., 2021). The questionnaire had three sections. The first section described the study's goals and provided a definition of "green foods" to make it easier for responses to answer. The second section included the demographic questions. Last, the third section featured research model measurement items. The research constructs were measured using 7-point Likert scales ranging from strongly disagree (1) to strongly agree (7). Risk perception of COVID-19 (RPC) was measured by adopting two items from Xie et al. (2020) and eight items from Yıldırım and Güler (2020). A sample item is, "I have a high likelihood of acquiring COVID-19 compared to other people."

In keeping with the conceptualization of Severo et al. (2021), environmental consciousness (EC) was measured by adopting six items from Peluso et al. (2021). An illustrative item is, "During the COVID-19 pandemic, "I am more concerned about wasting the resources of our planet." Seven items were adopted

from Peluso et al. (2021) to measure health consciousness (HC). A sample item is, "During the COVID-19 pandemic, I am more self-conscious about my health."

Attitude toward sustainable food consumption (ASC) was measured by adopting two items from Aksoy et al. (2021) and one item from Peluso et al. (2021). An illustrative item is, "During the COVID-19 pandemic, I choose foods carefully to ensure they are environmentally friendly." Intention to purchase green food (IGF) was measured by adopting five items from Sultan et al. (2021). A sample item is, "I will gladly buy more green food if I could find it." Table 2 shows the items for each construct. Finally, a screening question was also added in the form of a reversed question, "During the COVID-19 pandemic, eating environmentally sustainable foods is bad," to help identify respondents who were not engaged.

4.3. Assessing the Measurement Model

To conduct confirmatory factor analysis and the validity and reliability assessment of the measurement scale, Smart-PLS 3.0 was used. Cronbach's alpha scores were between the ranges of 0.816–0.903, implying adequate internal consistency and reliability. The item loadings were utilized to determine the convergent

Table 1. Descriptive Statistics of the Survey Respondents (n = 631)

Demographics	Category	N	%
Gender	Female	297	47.1
	Male	334	52.9
Generation	Gen Z: 18–24 years	23	3.6
	Millennials: 25–40 years	304	48.2
	Gen X; 41–56 years	288	45.6
	Baby boomers; more than 56 years.	16	2.5
Marital Status	Single (never married)	69	10.9
	Married	223	35.3
	Divorced/Separated	173	27.4
	Widowed	162	25.7
	Engaged	4	0.6
Number of children in household	No children	316	50.1
	2 or less children	308	48.8
	3–4 children	7	1.1
Living Place	City	277	43.9
	Town	172	27.3
	Village country	182	28.8
Education Level	Primary (elementary) education	4	0.6
	Secondary school	4	0.6
	High school diploma	263	41.7
	Bachelor degree	341	54
	Master degree	16	2.5
	PhD	3	0.5
Household income per month	Less than or equal to \$250	202	32
	\$251–500	194	30.7
	\$501–750	191	30.3
	\$751–1000	13	2.1
	\$2001–2500	6	1
	More than \$1250	25	4

validity; all the items ranged between 0.742 and 0.907 (Table 2), which confirms adequate convergent validity, as the item's loadings were statistically significant. The composite reliability and rho_A for the five measurement variables were above the threshold of 0.7 (Hair, 2006) (Table 3). The square root of average variance extracted (AVE) values were greater than the correlation coefficients between measurement variables, confirming discriminant validity (Fornell & Larcker, 1981). Variance inflation factor (VIF) values were less than 5, which confirmed the absence of collinearity or multicollinearity Hair et al. (2018) .

5. Results

5.1. Hypothesis Testing

To evaluate the hypothesized structural model, Table 4 represents the results of the analysis using PLS-SEM, focusing on the examination of R^2 , β coefficient as well as t-values. These statistics were attained from bootstrapping using the 5000 subsamples approach in addition to the effective size of (f^2) (Hair et al., 2018). The results demonstrate that RPC is positively related to IGF ($\beta = 0.15$, $p < 0.05$), explaining 54.1% of its observed variance. RPC has a positive effect on HC ($\beta = 0.72$, $p < 0.05$), and EC ($\beta = 0.64$, $p < 0.05$), explaining 51.5% and 40.3% of its observed variance, respectively.

Table 2. Measurement Model

Construct dimensions and indicators	λ
<i>Risk perceptions of COVID-19 pandemic (PRC)</i>	
RPC2: I have a high likelihood of acquiring COVID-19 compared to other persons	0.866*
RPC3: I have a high likelihood of acquiring other diseases (e.g., diabetes/asthma)	0.825*
RPC4: I have a high likelihood of dying from COVID-19	0.897*
RPC5: I often worry about contracting COVID-19	0.907*
RPC6: I often worry about a family member contracting COVID-19	0.747*
<i>Environmental consciousness (EC)</i>	
EC1: During the COVID-19 pandemic, I am more concerned about wasting the resources of our planet	0.892*
EC2: During the COVID-19 pandemic, I worry even more about the natural resources for future generations.	0.779*
EC3: The COVID-19 pandemic made me realize, even more, the environmental impact caused on the planet	0.852*
EC6:6. My purchase habits were more affected by my concern for my environment during the COVID-19 pandemic.	0.822*
<i>Health consciousness (HC)</i>	
HC1: During the COVID-19 pandemic, I self-reflect about my health more	0.806*
HC2: During the COVID-19 pandemic, I am more self-conscious about my health	0.796*
HC3: During the COVID-19 pandemic, I am more attentive to my inner feelings about my health	0.825*
HC4: During the COVID-19 pandemic I am constantly examining my health	0.742*
HC5: During the COVID-19 pandemic, I am more alert to changes in my health	0.901*
HC7: During the COVID-19 pandemic, my purchase habits are affected more by concern for my health	0.79*
<i>Attitude towards sustainable food consumption (ASC)</i>	
ASC1: During the COVID-19 pandemic, I choose foods carefully to ensure they are environmentally friendly	0.875*
ASC2: During the COVID-19 pandemic it is important to me that the products I consume in this period do not harm the environment	0.876*
ASC3: During the COVID-19 pandemic, giving up foods that harm the environment is useful.	0.838*
<i>Intention to purchase of green food products (IGF)</i>	
IGF1: I will gladly buy more green food if I could find it	0.753*
IGF2: I check if foods are green before buying them	0.781*
IGF4: I often recommend green food to a friend/relative	0.843*
IGF5: I will continue to buy green food in the future	0.833*

Note: *, $P < 0.05$, Item excluded as a result of low loadings: PRC1, RPC7, RPC8, RPC9, RPC10, EC4, EC5, HC6, IGF3

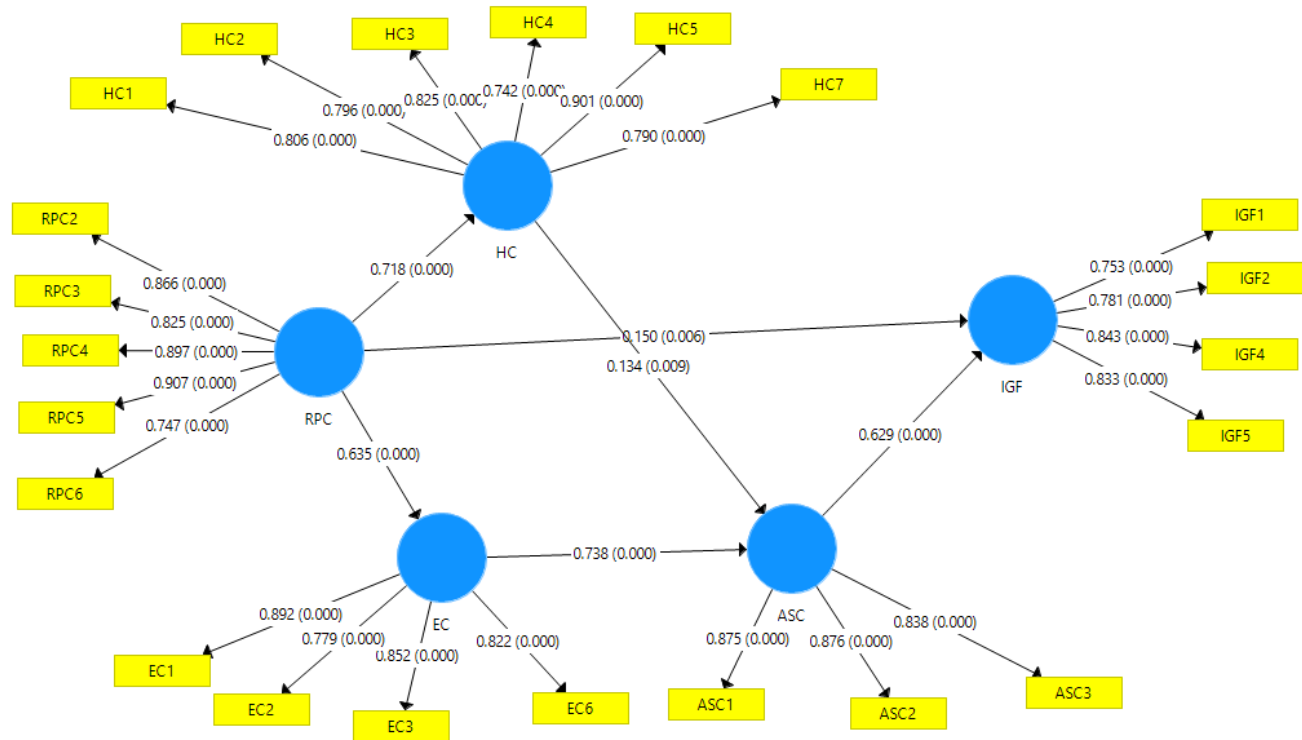


Figure 2. The Structural Model

Table 3. Inter-construct correlation, Convergent, and Discriminant validity

Constructs	CA	rho_A	CR	AVE	ASC	EC	HC	IGF	RPC
ASC	0.829	0.829	0.898	0.745	*0.863				
EC	0.857	0.867	0.903	0.701	0.842	*0.837			
HC	0.896	0.905	0.920	0.658	0.711	0.783	*0.811		
IGF	0.816	0.821	0.879	0.645	0.727	0.696	0.647	*0.803	
RPC	0.903	0.915	0.928	0.723	0.656	0.635	0.718	0.563	*0.85

Note: **CA** = Cronbach’s alpha, **CR** = Composite reliability, **rho_A** = Reliability indicator, **AVE** = Average variance extracted. * Diagonal bold values are the square roots of the AVE.

Both HC and EC have a positive effect on ASC ($\beta = 0.13, p < 0.05$); ($\beta = 0.74, p < 0.05$) respectively, where HC and EC explains 71.6% of ASC observed variance. ASC has a positive effect on IGF ($\beta = 0.63, p < 0.05$), explaining 54.1% of its observed variance.

To present the actual extent of the perceived effect by using substantive significance (f^2), which reflects the effect size (Hulland, 1999), the results show that all path indirect effects are substantive (see Table 3): RPC-HC ($f^2 = 1.064$), RPC-EC ($f^2 = 0.676$), and EC-ASC ($f^2 = 0.742$), and ASC-IGF ($f^2 = 0.491$). However, the direct effects PRC-IGF ($f^2 = 0.028$) and HC-ASC

($f^2 = 0.024$) are small (Cohen, 1988). Therefore, the observed results strongly support hypotheses H1, H2a, H2b, H3, H4, and H5.

Regarding the mediation effect, the study results (Table 4) support the role of health consciousness and attitudes toward sustainable food consumption as mediator variables that explain the effect of the COVID-19 pandemic risk perception on the intention to purchase green food ($\beta = 0.060, p < 0.05$). Further, the results confirm the hypothesized mediating role of environmental consciousness and attitude toward sustainable food consumption between Covid-19 pan-

Table 4. Results of Path Analysis

Hypothesis	β Value	t statistics	P value	f^2	R^2	Result
Direct effect						
H ₁	0.15	2.74	0.006	0.028	0.541	Supported
H2a	0.72	22.31	0.000	1.064	0.515	Supported
H2b	0.64	16.51	0.000	0.676	0.403	Supported
H3	0.13	2.60	0.009	0.024	0.716	Supported
H4	0.74	14.66	0.000	0.742	0.716	Supported
H5	0.63	9.99	0.000	0.491	0.541	Supported
Indirect effect						
H6a	0.060	2.358	0.018	–	–	Supported
H6b	0.294	7.541	0.000	–	–	Supported

demographic risk perception and intention to purchase green food ($\beta = 0.294$, $p < 0.05$). Therefore, H6a and H6b are supported. The interaction effect of generation on the relationship between risk perception of COVID-19 and intention to purchase green foods is not significant ($\beta = -0.007$, $p > 0.05$). Thus, H7 is not supported.

6. Discussion

Our findings offer insight into the consumption patterns of consumers during the pandemic by demonstrating the effect of the risk perception of COVID-19 on the intention to purchase green foods. Ahorsu et al. (2020) stated that people show fear as a reaction to being afraid of an unprecedented event, which acts as a motivation to re-evaluate the significance of their well-being. In line with previous findings, we confirmed the first hypothesis that individuals' fear of COVID-19 led them to a greater intention to consume green foods.

Our second and third hypotheses reinforce the notion that the risk perception of COVID-19 has a positive effect on both health and environmental consciousness. Since the COVID-19 pandemic is a health crisis, it is inevitable that psychological attention to one's health will increase during this period. However, it is plausible that although health and the environment might appear to be two separate concepts, in reality, they are closely interlinked, as many health complications stem from environmental issues. Therefore, people who aim to adopt a healthy lifestyle appear more likely to have increased environmental consciousness along with health consciousness. However, given effect size significance levels, risk perception of COVID-19 may have larger effect on health

consciousness than on environmental consciousness. Future research is needed to confirm this finding but the result has face validity, as it is natural for people's primary concern to be their physical health during a crisis related to health issues.

The results of our third and fourth hypotheses demonstrate a crucial finding in this study by showing that environmental consciousness in combination with health consciousness has an impact on positive attitudes toward sustainable food consumption, suggesting that environmentally-related concerns (i.e., excessive water consumption and water pollution, climate change due to greenhouse gas emission, waste), along with physical health concerns, serve as motivating factors in adopting favorable attitudes toward sustainable products.

We based our fifth hypothesis on two notions. First, attitudes have been proven to be a crucial antecedent of physical activity intentions and behavior (Chatzisarantis et al., 2005). Second, the green concept is rapidly spreading among citizens, in parallel with the conservation of agricultural development and sustainability (Rezai et al., 2012). In conjunction with these arguments, our findings demonstrate that positive attitudes toward sustainable food consumption lead to the intention to purchase green foods that are developed under sustainable principles.

The two serial mediation effects we present in hypotheses H6a and H6b support our stance that, during an unusual and cataclysmic event, individuals' perceived fear causes them to become more focused

on health and environmental issues, as both concepts are very closely linked with one another. Their increased sensitivity to the health and safety of themselves and loved ones appears likely to encourage a favorable attitude toward consuming sustainable food. This, in turn, increases their motivation to consume green foods as a preventive behavior.

Based on PMT, our study demonstrates that fear and vulnerability toward COVID19 result in a greater perceived threat, which activates the attempt to neutralize the threat. The perceived self and environmental benefits, defined by perceived rewards, self-efficacy, and self-effectiveness, will lead to positive attitudes toward sustainable foods and a higher intention to consume green foods. Accordingly, the individual will change his/her consumption patterns as a preventive behavior.

The findings of our study did not show any significance in the purchase intentions of green foods among generations, which may be driven by several reasons. First, our sample did not include large numbers of Gen Z and Baby Boomer generation members. This may have lowered the power of the moderation test. In addition, although Baby Boomers and Millennials might have the motivation factor of purchasing power, younger generations may develop favorable intentions under the influence of peers and society. Since Gen Z and Gen Y are considered to be highly tech-savvy and extremely connected to the digital world, the use of social media and positive word-of-mouth may also have had an effect on their consumption intentions of green foods. Lastly, it can be argued that the COVID-19 pandemic has been a health crisis for everyone, regardless of generation, and that almost every person has been affected by the pandemic in one way or another. Although the perceived risk may be higher for more vulnerable people (i.e., elderly or health-compromised individuals), even the healthiest people may have an increased risk perception due to concern for their family and loved ones. Therefore, it is possible that members of every generation were motivated to choose green foods as a preventative behavior in a health crisis situation.

6.1. Managerial Implications

This study has several important managerial implications. Although the pandemic has caused great

human suffering globally, the decrease in air pollution, improved water bodies, and increased wildlife as a result of precautionary actions to combat the virus are indicators of what can be achieved if we make changes in our daily lives and consumption patterns. Hence, our findings suggest that governments and companies can use the pandemic as an opportunity to prioritize advocating the consumption of healthy and sustainable foods. As the trend toward more sustainable foods continues, businesses should strive to develop and market products that are both socially and environmentally sustainable in order to meet the demands of the newly evolving consumption habits. Market researchers can segment consumers into groups representing different nutrient consumption styles, so they can be targeted by companies with the right message. By developing effective consumer policies, it is possible to meet the demand for food that is safe, affordable, and environmentally friendly.

Apart from having a social responsibility to acknowledge environmental issues, governments, and companies also have the responsibility to help people fully comprehend the close relationship between health and environmental issues. A person who defines themselves as an 'environmentalist' should also be aware of how their health is being affected by engaging in pro-environmental behaviors. Organizations should provide communication campaigns on how citizens can support environmentally friendly practices by favoring sustainable foods over conventional foods, and incorporate action-oriented environmental marketing initiatives that promote environmental sustainability (Aljarah, 2021; Bloomberg, 2022). Furthermore, policymakers should encourage consumers to reduce the consumption of meat (especially beef), since overconsumption of red meat is also related to the increased incidence of mortality from non-communicable diseases (Muresan et al., 2021). Institutions can use the PMT framework as a guide to developing effective mild to moderate fear appeals (i.e., educating citizens regarding the potential long-term health complications related to COVID-19) to help motivate increased consumption of green products. As governments work to make green foods available, more convenient, and affordable, companies should aim to provide green foods without reducing

quality.

Notably, there is a silver lining of the pandemic on environmental sustainability, which is the miraculous healing of mature nature that might not have been possible without the pandemic. It seems that the present time is more critical than ever to develop efficient methods to boost the protection of global nature. Environmental regulations must be implemented by governments and organizations to encourage “more production with less’ in order to achieve lower rates of air pollution and less environmental damage.

6.2. Research Limitations and Future Research Directions

This study has certain limitations. The study was conducted in a timeframe that consisted of only a small part of the pandemic. A similar study can be carried out in the future to explore similar constructs and whether the experience of the pandemic has paved the way for a more sustainable world. Hence, additional extensive research during the endemic stage is needed to understand in depth the relationship between consumers’ perceptions of green foods and the reasons behind their intentions. With consumers spending billions of dollars on green products (Mckay, 2010), further research should be conducted to better understand their motivations and provide useful information for marketers to develop the correct strategies.

The present study mainly focuses on attitudes and intentions toward sustainable foods in terms of environmental impact and nutritious foods. Future studies can analyze healthiness from a holistic perspective by investigating different health aspects (i.e., exercise, smoking) and exploring different aspects of sustainability (i.e., recycling, local origin, fair trade). This study was conducted in a single country, Turkey, as it was one of the main countries that deeply felt the effects of the pandemic. In terms of the data collection method, social media (i.e., Facebook) was chosen, which resulted in a sample that did not fully represent the Turkish population. Similar research can be conducted using alternative research platforms. Further, different demographic factors, such as gender, educational background, income, and household size, can be compared to provide additional insights into consumption behavior patterns. Lastly, PMT was used as the basis for this research. However, as COVID-19

enters the endemic stage, other theories (i.e., theory of reasoned action, theory of planned behavior) may become more relevant as people adjust to the new ‘normal’. Further research should be conducted using these theories as guidelines to building models of sustainable food consumption intentions and behaviors.

7. Conclusion

The purpose of this study was to investigate the relationship between the risk perception of the COVID-19 pandemic and the intention to purchase green foods in Turkey. We used PMT as a framework to investigate consumer intentions to purchase green foods with the mediating role of health and environmental consciousness, and the attitudes toward consuming sustainable foods. The findings indicate a positive relationship between risk perceptions of COVID-19 and green food purchase intentions. Based on these findings, it can be concluded that the emergence of the COVID-19 pandemic has increased society’s recognition of the delicate relationship between humans and nature, as people have become aware of the consequences of human greed. Thus, the COVID-19 pandemic should be considered an opportunity to shift toward a more sustainable economy by implementing policies, developing and marketing products to meet green consumption demands, and adapting our consumption and production behaviors toward a more stable and sustainable future. Finally, greener production and consumption practices are essential to preventing irreversible damage to Mother Nature and to producing a safer, healthier, and better world for generations to come.

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LUMINOUS
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