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# Consumers' willingness to pay for health claims during the COVID-19 pandemic: A moderated mediation analysis

Lara Bou Fakhreddine [a,*], Marian García Martínez [b], Mercedes Sánchez [a], Berta Schnettler [c]

[a] Department of Business, Public University of Navarra, Edificio Madroños, Campus Arrosadia, 31006, Pamplona, Spain
[b] Kent Business School, University of Kent, Canterbury, Kent CT2 7PE, United Kingdom
[c] Facultad de Ciencias Agropecuarias y Medioambiente, Bioren-UFRO, Universidad de La Frontera, Chile

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ABSTRACT

The COVID-19 pandemic has posed a substantial threat to people's lives and raised health concerns. This research explores the mediating role of consumers' attitudes towards health claims in the relationship between consumers' interest in health claims and their willingness to pay (WTP) for health claims in extra virgin olive oil (EVOO). Additionally, we examine the moderation effect of COVID-19 risk perception in the relationship between consumers' interest in and attitudes towards health claims. Data were collected through an online survey in three countries: Spain, the UK and Chile. Findings confirm the mediating role of consumers' attitudes towards health claims. Furthermore, the relationship between consumers' interest and their attitudes towards health claims was stronger when COVID-19 risk perception was higher.

## 1. Introduction

In December 2019, numerous pneumonia cases appeared in China, later identified as the novel coronavirus called severe, acute respiratory syndrome coronavirus 2 (SARS-CoV-2, also known as COVID-19) [1]. The World Health Organization (WHO) declared that the emergence of the COVID-19 pandemic has resulted in 6.3 million deaths worldwide [2]. The initial appearance of COVID-19 and its spread in 2020 changed the lives of millions of people [3]. During this crisis, the world has observed various international travel restrictions and closures of businesses that disrupted global human health and economic balance [3,4].

During the COVID-19 pandemic, negative emotions such as fear and anxiety emerged which led to an increase in people's risk perception [5]. This caused them to shift their attitudes toward a healthier diet to boost their immune systems [6]. Hence, consumers have changed how they make food choices with a renewed interest in food labels to better understand the healthiness of food purchases [7,8]. In an attempt to promote healthy eating, nutrition information has been introduced through nutrition labeling policies and regulations [9,10]. Consumers who use product's nutrition information tend to have healthier eating habits [11]; however, some consumers find this information difficult to understand [12]. To facilitate understanding, the European Food Safety Authority (EFSA) has introduced new front-of-package (FoPL) labels, such as health claims. This allows people to make informed choices by identifying which foods have beneficial effects and to avoid misleading nutrition information (Regulation (EU) 1924/2006). Hence, due to time constraints on shopping and the social distancing regulation introduced to curb the COVID-19 pandemic, consumers have been more interested in easy-to-interpret food labels (e.g., health claims) [13]. COVID-19 is not only a risk to global human health but also for the social and economic balance in each affected country [14]. Thus, the consequences of pandemics are often felt by the global economy such as business closures and a rising unemployment rate that may have influenced consumers' willingness to pay (WTP) for health claims [4]. Furthermore, the availability of healthy food may become crucial, as the demand for these products may increase, raising prices [15]. Consequently, a high unemployment rate coupled with rising prices has been observed and might affect consumers' WTP for health claims [16].

Several studies have examined the effect of health claims on consumers' WTP [17–20]. Evidence on consumers' WTP a premium price for health-enhancing features is mixed: some of the results indicate that appropriately displayed [21] and communicated health claims can increase WTP [22–24]. Hellyer et al. (2012) [22] report that presenting a health claim on the product increases WTP, particularly for those who

* Corresponding author.
*E-mail addresses:* lara.boufakhreddine@unavarra.es (L. Bou Fakhreddine), M.Garcia@kent.ac.uk (M.G. Martínez), mersan@unavarra.es (M. Sánchez), berta.schnettler@ufrontera.cl (B. Schnettler).

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do not have prior knowledge about the ingredients. However, Vecchio et al. (2016) [25] did not find an effect of health claims on WTP for organic food products. Few studies have explored the effect of the COVID-19 pandemic on consumers' WTP. For instance, Meixner and Katt (2020) [16] examined the impact of the pandemic on consumers' WTP for beef with an emphasis on safety and country of origin, not health claims. Additionally, Wang et al. (2020) [26] investigated consumers' WTP for food reserves amid the COVID-19 pandemic. Regardless of the extant literature that has been studying consumers' WTP, to the best of our knowledge this is the first study that analyzes the effect of COVID-19 risk perception in order to provide knowledge about consumers' attitudes towards health claims and their WTP during a health crisis. Additionally, it is crucial to investigate consumers' attitudes towards health claims and their WTP a premium price for such health features during a health crisis [27]. Given the above, the purpose of this study was to investigate, first, whether consumers' attitudes toward health claims are a potential mediator between interest in health claims and consumers' WTP. Second, to explore whether COVID-19 risk perception moderates the relationship between consumers' interest and attitudes towards health claims. A case study is conducted using extra virgin olive oil (EVOO) as the reference product. To respond to this objective, a survey was conducted in three different countries Spain, the UK, and Chile during the COVID-19 pandemic.

The selection of countries was based on several criteria. The UK was chosen as a country where healthy eating has received wide public attention, and where the population's interest in health claims could be expected to be high [28]. Additionally, EVOO is a well-established product in the UK market [29]. Spain was selected because the Spanish population follows the Mediterranean diet, which involves healthy eating habits and values health claims [30]. Furthermore, Spain is the main producer of EVOO [31]. Regarding Chile, it is South America's second-largest producer of EVOO [32]. However, the diet quality in Chile is far from optimal, and there is room for improvement towards healthy eating [33]. Furthermore, the COVID-19 risk perception was higher in the UK than in Spain [34] and regarding Chile, the perceived seriousness of the COVID-19 pandemic was high [35,36]. Additionally, our study considered both developed countries (e.g. UK and Spain) and a developing country with epidemic levels of obesity (e.g. Chile) to determine whether the impacts of health claims on consumers' WTP were constant in these different contexts [37].

This paper contributes to the literature on consumers' WTP for health claims in different ways. First, the effect of health claims on consumer's WTP especially in the case of EVOO is under-explored, previous researchers have focused on consumers' purchasing intention for products carrying health claims, and the clarity and understanding of health claims [13,38,39]. We argue, however, that it is important to examine the mediating role of consumer attitudes towards health claims in the relationship between consumer interests and WTP for these claims. This would contribute to our understanding of how health information (e.g., health claims) affects a particular behaviour and enables the development of strategies that could be used to influence such behaviour. Second, to the best of our knowledge, no previous study has empirically explored the effects of consumers' interest in health claims on their attitudes and WTP for health claims during a pandemic context such as the COVID-19. However, research has shown that consumers' interest and attitudes towards health claims can increase their WTP for them in a setting where there is no health crisis [17–20]. This is an important context to take into consideration, as it allows for understanding consumers' attitudes and WTP for health claims during potential health crises. Third, combining data from three different countries contributes to understanding deeply consumers' preferences for health claims in different cultural contexts amid a health crisis.

The remainder of the article is structured as follows. The next section explains the theoretical background for our hypotheses followed by a description of the methodology and data analysis. We then present our results followed by the discussion and conclusions in the final section.

## 2. Background and research hypotheses

### 2.1. Consumers' interest and attitudes towards health claims

Health claims have been considered to be a credence attribute [40] (i.e., an attribute that cannot be evaluated even when the product is in use or after consumption) that may affect consumers' decision-making and their attitudes [41–43]. Researchers have found that increased use of these health claims could modify a credence attribute into a search attribute, thus reducing the difference between the perceived and actual value of EVOO [44]. From a theoretical viewpoint, reducing the uncertainty about a positive attribute, as in the case of the healthy features of EVOO, could increase demand for the same quality level [45,46]. Thus, these health claims are very relevant to consumers since they direct their decisions and fulfil their needs [47]. Several studies have investigated how consumers react to health claims on food products [48–51]. Consumers should have positive attitudes towards foods with health claims in order for them to perceive health claims positively [52]. First, consumers that follow a healthy diet have more interest in nutritionally relevant health messages such as health claims [53,54]. In other words, they use these messages to make inferences about the healthiness of the product, thus, generating a positive attitude towards these claims.

Considering WTP for health claims on EVOO, some literature has suggested interest in health claims as a factor worth investigating in this context [52,55,56]. Consumers' interest in health claims reflects their need for information on the food product [56]. Information-related actions are initiated by identifying an information need [57]. When the current level of information is perceived as insufficient for a particular situation, a need for information arises and the search for information is initiated [58]. Individuals with a higher need for information tend to make more efforts in seeking information [57]. This need is also related to the motivation to process information and various theories of learning [59]. In relation to health claims, the need for information is guided by the interest in the health aspects of food, as consumers who believe in the relevance of healthy eating tend to be more engaged in reading health-related information [60]. Health claims have been identified as adding value to food products, such as in the dairy sector [61], whereas their ability to add value to EVOO has been explored with conflicting results [62–65]. Several studies have investigated the importance of health claims for consumers purchasing EVOO products. Boncinelli et al. (2017) [62] found from a study conducted on Italian consumers that health claims play a marginal role in the selection of EVOO products compared to origin and organic attributes. By contrast, Perito et al. (2019) [63] examined Italian consumers' preferences for a varied set of product attributes and found that health claims were a fundamental attribute of interest for EVOO consumers. Additionally, Pichierri et al. (2020b) [65] through an experimental study with Italian participants investigated consumers' responses to different health claims. They found that the likelihood of consumers purchasing a product increased when they were exposed to positive health messages. De Gennaro et al. (2021) [66] found that Italian consumers are interested in and value health claims on EVOO. Thus, we posed the following hypothesis.

**H1**. Consumers' interest in health claims has a positive influence on consumers' attitudes towards health claims on EVOO.

### 2.2. The mediating role of consumers' attitudes towards health claims

Product information is one of the extrinsic cues that have been determined to influence consumers' WTP for health claims on EVOO [47,67]. The marketing literature has focused on the effects of price, organic certification and country of origin as some of the main cues influencing this behaviour [43,68]. More recently, health information has been found to influence choice and consumers' attitudes towards EVOO [48,69]. Some evidence suggests that health information increases consumer awareness about the healthiness of EVOO and

generates more positive attitudes towards it [44,65]. Previous research suggests a direct relationship between consumers' interest in health claims and their WTP [70,71]. In general, consumers consider health to be an important aspect of food quality and therefore may be expected to have high WTP for healthy food products [72]. However, consumers cannot directly recognize a product's credibility attributes, unlike its taste [73]. Therefore, the successful marketing of food products requires making consumers aware of their health benefits [74]. Consumers have marginal knowledge about the ingredients used in food products; hence, inferences on health depend on providing information to build the link between food and health [31]. Several empirical studies have revealed that health claims influence consumers' WTP [18,20,72]. Health claims represent a rarely used legal tool [75] that could be helpful in designing comprehensive labelling to increase consumers' knowledge about product quality and their WTP. Furthermore, evidence from previous research indicates that food products carrying health claims are seen healthier than food without claims [11,76–78] for which consumers are willing to pay a premium [31,79–82]. In this regard, Miskolci et al. (2014) [83] indicated that most consumers are willing to pay a premium price for the health aspects of food products. Chege et al. (2019) [84] studied the determinants of the WTP for healthy foods and concluded that presenting nutritional information about the product positively affects WTP. In the same line, Menozzi et al. (2020) [85] found that consumers are willing to pay premiums for health claims by interviewing 2500 fish consumers in five European countries. Additionally, Rizzo et al. (2020) [69] showed that the presence of health claims determines an average premium price for organic EVOO which is 78.9% of its total premium price.

Building on the previous literature [48,51,86], we propose that consumers' attitudes mediate the relationship between the interest in health claims and their WTP. Attitudes have been defined as acquired predispositions [87], psychological propensities [88] and evaluative judgements [89] about things that direct behaviour towards those things. Attitudes towards health claims have been studied extensively in recent years [51,55,90–92]. Furthermore, consumers' attitudes and beliefs determine their responses to health claims. In a study by Verbeke et al. (2009) [93], the attitude towards food products with health benefits had the strongest effect on how positively health claims were evaluated. Consumers' positive attitudes towards the relationship between diet and health may be crucial in shaping demand for food products with health claims. For instance, consumers that are generally more vulnerable to suffering from diet-related diseases or follow a healthy diet may be more interested in health claims than in other attributes of products [94]. As health claims are strictly linked to a healthy diet [82], consumers' attitudes towards health claims can positively affect their WTP [18,71]. For instance, Hirogaki et al. (2013) [18], indicate that consumers' positive attitudes drive them to pay a higher premium for these health claims. If consumers give high importance to health claims, this reflects positively on their attitudes [20]. In other words, consumers place a greater value on those health claims which create positive attitudes towards them. Therefore, these attitudes drive consumers to pay higher premiums for health claims. Hence, we hypothesise that.

**H2**. Consumers' attitudes towards health claims mediate the relationship between their interest in health claims and WTP for them.

### 2.3. The moderating effect of COVID-19 risk perception

People's behaviour under threat may depend on how they perceive risk [95]. Slovic (1987, 2016) [95,96] defines risk perceptions as the subjective judgment that people make about risks considering their size and complexity. A large body of literature from the field of Judgment and Decision Making [97,98] has shown that different factors (e.g., cognitive or emotional) might influence risk perception. In other words, risk perception is basically an individual's perspective about how dangerous something seems, based on evaluations of threats and prior experience, among other things [99,100]. Moreover, risk perception is a fundamental predictor of preventive behaviours. For example, Bruine De Bruin & Bennett (2020) [101] indicated that individuals who perceived risk related to COVID-19 as high revealed that they were more likely to follow protective behaviours. In other words, an individual's attitude and behaviour are likely to be affected by pandemics and disasters [102–104]. Thus, as revealed in the literature on the development of individual attitudes, these attitudes are not stable across time and change under unpredictable disturbances [105–107]. For example, under epidemic conditions, consumers become more health conscious and try to boost their immune systems [7]. Hence, during the COVID-19 pandemic consumers adopted healthier eating habits to protect themselves from the virus [6].

According to the Protection Motivation Theory (PMT), individuals perceive risk by first identifying it, determining its severity and their vulnerability to the risk and then finding the best coping strategies to protect their health [108,109]. PMT was proposed by Rogers (1975) [110] to explain how emerging health issues such as pandemics influence individuals' attitudes and behavioural changes. Furthermore, during pandemics, major food safety problems emerge, so consumers' risk perception dominates other factors when purchasing food products [111]. Consumers feel a greater degree of risk about buying food that may harm their wellbeing [112]. Dryhurst et al. (2020) [34] found across all national surveys that the risk perception of COVID-19 was uniformly high. Also, it is present before making a buying decision, when consumers judge whether certain products are safe or unsafe for their health [113]. Thus, consumers evaluate the quality of the product through cues such as the packaging [114] and nutritional labels and claims [27]. Hence, risk perception is an important factor in preventive health behaviour such as the use of health claims [27]. In a recent study by Italy's Agricultural Research and Economic Council (CREA), the consumption of healthy food such as EVOO increased by 21.5% during the pandemic. Rodríguez-Pérez et al. (2020) [115] found that the Spanish adult population had adopted healthier dietary behaviours during the COVID-19 confinement by adhering to the Mediterranean diet, in which the EVOO is a primary component. Therefore, when the COVID-19 risk perception is higher, consumers are more likely to be interested in healthy eating and in health claims. However, the interest in health claims requires that consumers' have a positive attitude towards them [94]. Based on the above, the following hypothesis is developed.

**H3**. COVID-19 risk perception moderates the relationship between interest in health claims and consumers' attitudes, such that COVID-19 risk perception strengthens the positive relationship between interest in health claims and consumers' attitudes. Our conceptual model is presented in Fig. 1.

## 3. Methodology

### 3.1. Data collection

The data was collected through an online survey in three countries: Spain, Chile, and the United Kingdom. The survey was first drawn up in English and for the translation process to Spanish with cultural adjustments made for Chilean Spanish, we were assisted by an expert translator. The Spanish survey was carried out with a Spanish company called "Intercampo" through an online access panel. A sample of 1,533 individuals was gathered from the 26th of February till the March 8, 2021. Moreover, to guarantee the representativeness of the sample, it was created by Nielsen Area and habitat size in five sections. Regarding Chile, 1199 individuals were surveyed using the Qualtrics internet panel from the 28th of April till the May 30, 2021. For the United Kingdom sample, an online survey in Qualtrics was designed and we obtained completed responses from 1,288 individuals in panels maintained by

Prolific Academic in the United Kingdom. Prolific Academic is an online survey platform widely used in consumer behavior research [116] and it maintains panels of respondents who have agreed to take online surveys for compensation, and we asked for samples that were generally representative of the UK population. All the respondents in three countries were chosen randomly and were older than 18. Before the final version of the survey, a pilot study was conducted between 30 and 40 individuals in each country, to ensure that respondents understood the questions and that no semantic and measurement issues existed. After adding responses from the pilot study and removing some fixed-pattern responses, our final sample totaled 4,036 valid cases: 1,533 from Spain, 1,199 from Chile, and 1,304 from the United Kingdom. The survey on average took approximately 13 min per interviewee in three countries. The purpose of the study was stated in the first section of the survey and respondents were asked to answer a set of questions.

### 3.2. Survey and measures

The questionnaire was divided into four sections, in which the first section included questions related to the importance given to different product attributes (e.g., health claims), and consumers' attitudes towards health claims. Consumers' interest in health claims was estimated as continuous variables by a five-point Likert scale. Specifically consumers were asked the following question "When you buy a product, how much importance do you give to the following aspects (price, brand, health claims etc.)? Please rate on a scale of 1–5, with 5 indicating the highest level of importance" [43,94]. For consumers' attitudes, the participants were asked to indicate on a five-point Likert scale (ranging from 1 = "strongly disagree" to 5 = "strongly agree") their level of agreement with six statements [69].

The second section included questions to assess consumers' WTP for health claims on EVOO as shown in Appendix 1. Regarding the selection of health claims type, four different categories of health claims for EVOO have been approved by the European Food Safety Authority (EFSA), as shown in Appendix 2. Three of the four claims are considered to be functional health claims (Art.13 (1) of Regulation (EC) No. 1924/2006), while the other is considered to be a disease risk reduction claim (Art.14 of Regulation (EC) No. 1924/2006). In our study, the health claim considered is the following: "*Olive oil polyphenols help to the preservation of blood lipids from oxidative stress*". To further explain the selection of this health claim, the EVOO is rich in antioxidant molecules called polyphenols, which defend against oxidative stress brought on by free radicals. Our dependent variable was measuring consumers' WTP for health claims placed on EVOO, and it took the form of a continuous value following the contingent valuation method. This survey-based methodology allows researchers to directly measure hypothetical investments people are willing to make in order to receive potential benefits or reduce losses [117]. The fact that the monetary values are elicited from people's stated preferences under a hypothetical scenario is one of the reasons that limit the effectiveness of this method [118]. However, several studies have suggested including attitudes to extend the conventional economic models, as a way to improve the efficiency of contingent valuation [117,119]. The descriptive analysis for the WTP variable is presented in Table 5 along with the main differences between the three countries considered. Specifically, WTP values were measured by asking consumers the maximum percentage they are willing to pay for health claims on EVOO.

The third section consisted of questions related to COVID-19 risk perception [34]. COVID-19 risk perception was used as a moderation variable and was measured following Dryhurst et al. (2020) [34] scale that combines cognitive, affective, and temporal-spatial dimensions useful to acquire a deep measure of risk perception [120,121]. The questions included items, first, capturing the participants' perceived seriousness of the COVID-19 pandemic on a five-point Likert scale (ranging from 1 = "Not at all risky" to 5 = "Very risky"). Second, asking about the perceived likelihood of catching the virus themselves over the next six months, and perceived likelihood of their family and friends contracting the virus. These two above questions were measured on a five-point Likert scale (ranging from 1 = "Not at all likely" to 5 = "very likely"). And finally, the level of agreement with two statements on a five-point Likert scale (ranging from 1 = "Strongly disagree" to 5 = "Strongly agree"). The questions are shown in Appendix 3.

The fourth section was related to health and COVID-19. For example, consumers were asked about their eating habits during the pandemic by selecting multiple responses. And finally, the last section involved socio-demographic and lifestyle questions. The socio-demographic factors: age, gender, income, education and country were analyzed as control variables since they are widely used in the literature as predictors of consumers' WTP [19,43,72]. The sample characteristics can be seen in Table 1.

### 3.3. Data analyses

A Principal Component Analysis (PCA) was applied to the measurement of model validity test using the IBM SPSS statistics, version 25 as shown in Appendix 3. Since consumers' attitudes towards health claims and COVID-19 risk perception variables were measured by scales of different items, a PCA was executed to load the items of each scale. Furthermore, regarding COVID-19 risk perception, all the items were included, since the factor loadings ranged from 0.496 to 0.809, which is above the threshold level of 0.50 [122]. By contrast, for consumers' attitudes, three different items were considered from the initial scale (see Appendix 3). The items for COVID-19 risk perception with factor loading less than 0.5 were omitted to preserve the internal consistency of the construct tested. Moreover, Cronbach's alpha was calculated to test the internal consistency. Though it is argued that Cronbach's alpha should be greater than 0.70, in our study the minimum cut-off value of greater than 0.6 was attained as proposed by Ref. [122]. Composite reliability (CR) was computed to check the internal consistency and the strength of the associations of the constructs and was far above the recommended threshold level of 0.70 [123]. Additionally, each variable acquired an average variance extracted (AVE) value of above 0.50.

Then, we tested our hypotheses by employing Path Analytics Procedures [124] and bootstrapping analysis to estimate the significance of both mediation and moderated mediation models [125]. We employed the conditional process modelling PROCESS macro for SPSS [126]. PROCESS macro has been used in various studies to assess the moderated mediation models [127,128]. Specifically, the PROCESS macro

**Table 1**
Sample characteristics.

| Spain (N = 1,533) | UK (N = 1,304) Sample % | | | Chile (N = 1,199) |
|---|---|---|---|---|
| **Gender** | Female | 49.3 | 51.9 | 32.2 |
| | Male | 50.7 | 48.1 | 67.8 |
| **Age** | 18–35 years of age | 24.6 | 30.3 | 68.1 |
| | 36–49 years of age | 27.1 | 24.1 | 18.5 |
| | 50–65 years of age | 321 | 34.7 | 12.1 |
| | 66+ | 16.2 | 10.9 | 1.3 |
| **Education** | Upper secondary or equivalent | 46.6 | 34.8 | 78.3 |
| | University or higher degree | 52.7 | 65.2 | 19.8 |
| **Income (Per month)_** | Less than 1,000 € or 1,500£ | 13.5 | 22.1 | 50.3 |
| | Between 1,001 €- 4,000 € or 1,501 £- 4,500 £ | 79.8 | 67.8 | 28.8 |
| | More than 4,000 € or 4,500£ | 6.7 | 10.1 | 20.9 |

enabled us to assess the mediation analysis (Hayes model4[1]) and moderated mediation analysis (Hayes model 7) developed by the PROCESS macro for SPSS developed by Refs. [126,129]. We relied on the bootstrap Confidence Intervals (CIs) to assess the significance of the effects based on 5000 random samples [129]. When the CIs do not contain zero, the effect is significant. Additionally, all the variables were mean-centered in the analyses. Finally, slope analysis was performed to determine the nature of the moderation effect.

## 4. Results

The demographic characteristics of the samples can be seen in Table 1. The study population consisted of 49.3% females and 50.7% males in Spain, 51.9% females and 48.1% males in the UK, and 32.2% females and 67.8% males in Chile. Participants ranged from 18 to 93 years of age. Concerning education in Spain and the UK 52.7% and 65.2% have a university or higher degree, respectively. However, the highest percentage of education in Chile was for the upper secondary or equivalent level 78.3%. Regarding income, the highest percentage was for the income level between 1,001 €- 4,000 € and 1,501 £- 4,500 £ in Spain (79.8%) and the UK (67.8%). For Chile, the highest percentage was for the income level of less than 1,000 € and 1,500£ (50.3%).

### 4.1. Direct and indirect effects

To test the H1 hypothesis that consumers' interest in health claims has a positive influence on their attitudes towards health claims on EVOO, and the H2 hypothesis that consumers' attitudes towards health claims mediate the relationship between the interest in health claims and WTP for them, we conducted a simple mediation analysis (Model 4) [126]. Bootstrapping was set to 5,000 resamples. After controlling for age, education, income, gender, and country, we found a significant direct effect [$\beta = 0.48$, 95% Boot CI (0.47, 0.51), $p < 0.001$] for consumers' interest in health claims on their attitudes towards health claims and an indirect effect [$\beta = 0.60$, 95% Boot CI (0.31,0.88), $p < 0.001$] of consumers' interest in health claims on their WTP for them. Since both the effects are significant (no zero included in the 95% CI), hence H1 and H2 are supported. Regarding the control variables, only age is negatively significant for the consumers' attitudes towards health claims [$\beta =$ -0.02, 95% Boot CI (−0.03,0.001), $p < 0.05$] and their WTP [$\beta =$ -0.09, 95% Boot CI (−0.11,-0.05), $p < 0.001$]. However, education and gender are positively significant. Concerning the countries, only in the UK is there a positive and significant relationship between consumers' attitudes to health claims [$\beta = 0.17$, 95% Boot CI (0.09,0.25), $p < 0.001$] and their WTP [$\beta = 3.92$, 95% Boot CI (2.63,5.20), $p < 0.001$]. The model explained 10% of the variance in WTP for health claims. The results of bootstrapping are shown in Table 2.

BootSE, bootstrapped standard error; Boot CI, bootstrapped confidence Interval; LL, lower 95% level confidence interval; UL, upper 95% level confidence interval; Bootstrap sample size = 5000. **$p < 0.05$, ***$p < 0.001$.

### 4.2. Assessment of moderated mediation effects

Next, we tested for moderated mediation hypothesis H3 (Table 3), concerning the moderation effect of COVID-19 risk perception (PROCESS model 7) [124,126]. Specifically, COVID-19 risk perception moderated the relationship between consumers' interest and attitudes towards health claims [$\beta = 0.02$, 95% Boot CI (0.01, 0.04), $p < 0.05$]. Furthermore, as we found that consumers' interest in health claims had a direct effect on WTP for them [$\beta = 1.22$, 95% Boot CI (0.75, 1.68), $p < 0.001$], we tested for an alternative model (PROCESS model 8) [124, 126] where COVID-19 risk perception is assumed to moderate the direct effect of consumers' interest in health claims and their WTP for them. Findings showed that this moderation was not significant [$\beta = -0.30$, 95% Boot CI (−0.65; 0.05), $p > 0.05$]. Furthermore, our results were confirmed by the significant index of moderated mediation [$\beta = 0.33$, 95% Boot CI (0.01, 0.07), $p < 0.001$], which suggested that the indirect effect of consumers' interest in health claims on WTP for them was linearly related to COVID-19 risk perception [125]. This moderated mediational model explained 36% of the variance in consumers' attitudes towards health claims and their WTP (see Fig. 1).

The examination of the conditional effect of consumers' interest in health claims on their attitudes at the different levels of the COVD-19 risk perception is shown in Table 4. Finally, we performed the simple slope analysis, plotting the relation between consumers' interest in health claims and their attitudes towards health claims at low (−1 SD) and high (+1 SD) levels of COVID-19 risk perception in Fig. 2. When COVID-19 risk perception was low, the relationship between consumers' interest in health claims and their attitudes towards health claims was significant [$\beta = 0.46$, BootSE = 0.02, 95% Boot CI (0.43, 0.49)]. This relationship was significantly stronger among consumers with a high level of COVID-19 risk perception [$\beta = 0.51$, BootSE = 0.02, 95%Boot CI (0.48, 0.54)].

### 4.3. Differences between countries

To examine the differences among consumers' WTP for health claims between the three countries a one-way analysis of variance (ANOVAs) was carried out. The ANOVA results were significant ($p < 0.001$) as shown in Table 5. Post hoc comparisons also indicated that ratings were significantly different between consumers' WTP for health claims for each of the three countries ($p < 0$ 0.001 and $p < 0.05$ for each) (Results were executed and are available upon request). Chile has the highest mean for WTP for health claims (M = 16.2%). Also, the descriptive analyses related to COVID-19 risk perception and consumers' interest in health claims are shown in Table 6. Furthermore, there is a significant difference for the COVID-19 risk perception and consumers' interest in health claims in each of the three countries as shown in Table 6. Specifically, Chile has the highest mean for Question 1 (M = 3.64), 3 (M = 2.93) and 4 (M = 4.35) related to COVID-19 risk perception. However, for Question 2, Spain is the highest (M = 2.63) and for Question 5 the UK (M = 4.59). On the other hand, consumers' interest in health claims is the highest in Spain (M = 3.85).

## 5. Discussion

Health claims have been suggested as one of the most cost-effective policies to promote healthier eating habits at the population level [24]. Furthermore, the emergence of the COVID-19 pandemic was a stressful event that may have increased consumers' risk perception and, therefore, drive them to follow healthier eating habits and spend more on product healthy features such as health claims [3]. Thus, understanding how consumers' interest in health claims and attitudes are affected by a health crisis can provide useful insights for both policy makers and the food industry. In this context, the present work evaluated the effect of COVID-19 risk perception on providing knowledge about consumers' attitudes towards health claims and their WTP during a health crisis. Specifically, first, we analyzed whether consumers' attitudes toward health claims mediated the relationship between their interest in health claims and consumers' WTP for them. Second, whether the COVID-19 risk perception moderated the relationship between consumers' interest in health claims and their attitude towards them in a case study of EVOO.

H1 posited that consumers' interest in health claims has a positive impact on consumers' attitudes towards health claims on EVOO. Our

[1] Process macro in Spss is a path analysis modeling tool. The researcher relies on different models numbered from 1 to 92 to estimate moderation, mediation, and moderated mediation models. Thus, depending on the path analysis and the relationship between variables the model number is chosen (Hayes,2017).

**Table 2**
Test of the mediational model (Hayes, Model 4).

| | Consumers' attitudes towards health claims | | | WTP | | |
|---|---|---|---|---|---|---|
| | β | BootSE | 95% Boot CI (LL; UL) | β | BootSE | 95% Boot CI (LL; UL) |
| Consumers' interest in health claims | 0.48*** | 0.12 | 0.47; 0.51 | 1.22*** | 0.24 | 0.75;1.68 |
| Consumers' attitudes towards health claims | | | | 1.22*** | 0.27 | 0.69;1.74 |
| Age | −0.02** | 0.01 | −0.03; −0.001 | −0.09*** | 0.01 | −0.11; −0.05 |
| Education | 0.05** | 0.03 | 0.02;0.13 | 0.13 | 0.47 | −0.77; 1.05 |
| Income | 0.02 | 0.04 | −0.04;0.08 | 0.31 | 0.69 | −0.66;1.27 |
| Gender | 0.14*** | 0.03 | 0.08;0.19 | −0.44 | 0.44 | −1.30;0.42 |
| Chile (base) | | | | | | |
| Spain | 0.02 | 0.34 | −0.05;0.08 | 0.35 | 0.56 | −0.75;1.46 |
| UK | 0.17*** | 0.04 | 0.09;0.25 | 3.92*** | 0.63 | 2.63;5.2 |
| R | 0.60 | | | 0.26 | | |
| $R^2$Mediation effect | 0.36 | | | 0.10 0.60*** | 0.14 | 0.31;0.88 |

**Table 3**
Test of the moderated mediation model.

| | Consumers' attitudes towards health claims (Model 7) | | | WTP (Model 8) | | |
|---|---|---|---|---|---|---|
| | β | BootSE | 95% Boot CI (LL; UL) | β | BootSE | 95% Boot CI (LL; UL) |
| Consumers' interest in health claims | 0.49*** | 0.01 | 0.46; 0.50 | 1.10*** | 0.25 | 0.62;1.59 |
| Consumers' attitudes towards health claims | | | | 1.30*** | 0.28 | 0.75;1.86 |
| Covid-19 risk perception | 0.01 | 0.01 | −0.02;0.03 | −0.13 | 0.23 | −0.59;0.31 |
| Consumers' interest in health claims x Covid-19 risk perception | 0.02** | 0.01 | 0.01;0.04 | −0.30 | 0.18 | −0.65;0.05 |
| Age | −0.02** | 0.00 | 0.02; 0.13 | −0.10*** | 0.02 | −0.12; −0.06 |
| Education | 0.07** | 0.03 | −0.01;0.09 | 0.21 | 0.48 | −0.75; 1.17 |
| Income | 0.02 | 0.03 | −0.04;0.08 | 0.35 | 0.51 | −0.66;1.36 |
| Gender | 0.11*** | 0.28 | 0.06;0.17 | −0.14 | 0.46 | −1.05;0.77 |
| Chile (base) | | | | | | |
| Spain | −0.01 | 0.04 | −0.08;0.06 | 0.16 | 0.59 | −1.01;1.32 |
| UK | 0.17*** | 0.04 | 0.09;0.25 | 3.5*** | 0.69 | 2.16;4.85 |
| R | 0.60 | | | 0.61 | | |
| $R^2$ | 0.36 | | | 0.36 | | |
| Index of moderated mediation | 0.03 | 0.02 | 0.02;0.07 | 0.03 | 0.02 | 0.02;0.07 |

BootSE, bootstrapped standard error; Boot CI, bootstrapped confidence Interval; LL, lower 95% level confidence interval; UL, upper 95% level confidence interval; Bootstrap sample size = 5000. **p < 0.05, ***p < 0.001.

**Table 4**
Estimates and bootstrapped 95% confidence interval.

| | Levels of COVID-19 risk perception | β(BootSE) | 95% Boot CI (LL; UL) |
|---|---|---|---|
| Direct effect | | | |
| Indirect effect | −1 SD | 0.46***) 0.02) | (0.43;0.49) |
| | +1 SD | 0.51*** (0.02) | (0.48;0.54) |

Conditional indirect effect of consumers' interest in health claims on WTP for health claims at values of the COVID-19 risk perception (model 8). BootSE, bootstrapped standard error; Boot CI, bootstrapped confidence interval; LL, lower 95% level confidence interval; UL, upper 95% level confidence interval. **p < 0.05, ***p < 0.001.

**Table 5**
Descriptive of WTP for health claims.

| Country | Mean | SD | N P-value |
|---|---|---|---|
| | | | 0.000 |
| Spain | 11.6% | 10.40 | 1533 |
| UK | 10.2% | 11.76 | 1294 |
| Chile | **16.3%** | 18.06 | 1199 |

SD: Standard deviation. N: Total sample number.

results led to the acceptance of H1 and suggest that consumers' interest in health claims is positively related to their attitudes towards health claims. This is in line with previous studies that showed how consumers' positive attitudes towards foods with health claims motivate them to perceive health claims positively [44,65]. Furthermore, our results confirmed that reducing uncertainty by presenting health claims on the product triggers positive attitudes towards these healthy features [55].

Additionally, H2 argued that consumers' attitudes towards health claims mediate the relationship between their interest in health claims and the WTP for those claims. Thus, our findings revealed that consumers' attitudes towards health claims were a significant predictor of WTP for health claims. Additionally, these attitudes significantly mediated the relationship between consumers' interest in health claims and WTP for them. This result confirms that health claims are helpful in enhancing consumers' positive attitudes, which in turn increase their WTP [31,55]. Furthermore, consumers' attitudes towards health claims had a strong effect on how positively health claims were evaluated which in turn increased WTP. In other words, if the consumers are strongly interested in health claims, this reflects positively on their attitudes [20,93]. Thus, consumers value these health claims more, creating positive attitudes towards them and, therefore, motivating them to pay a higher premium for health claims [20,72].

Furthermore, the H3 highlights the role of COVID-19 risk perception as a moderator of the relationship between consumers' interest and their attitudes towards health claims. Specifically, we found that the relationship between consumer's interest and their attitudes towards health claims was stronger when COVID-19 risk perception was higher. Our results are in line with Bruine De Bruin & Bennett (2020) [101] who found people who perceived higher risk related to COVID-19 revealed that they were more likely to follow protective behaviours. Moreover, our results confirmed that when COVID-19 risk perception is higher, consumers are more likely to be interested in healthy eating, therefore, in health claims which in turn increases their WTP for health claims. This could be explained by the Protection Motivation Theory, where

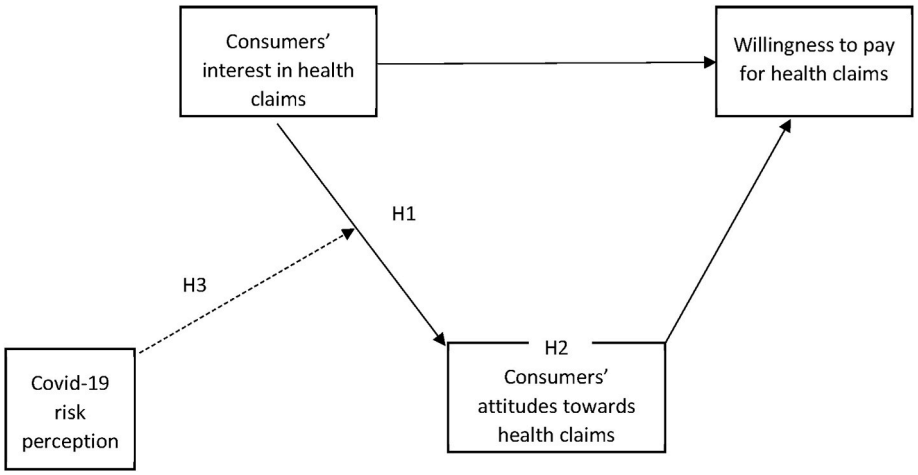


**Fig. 1.** Conceptual model.

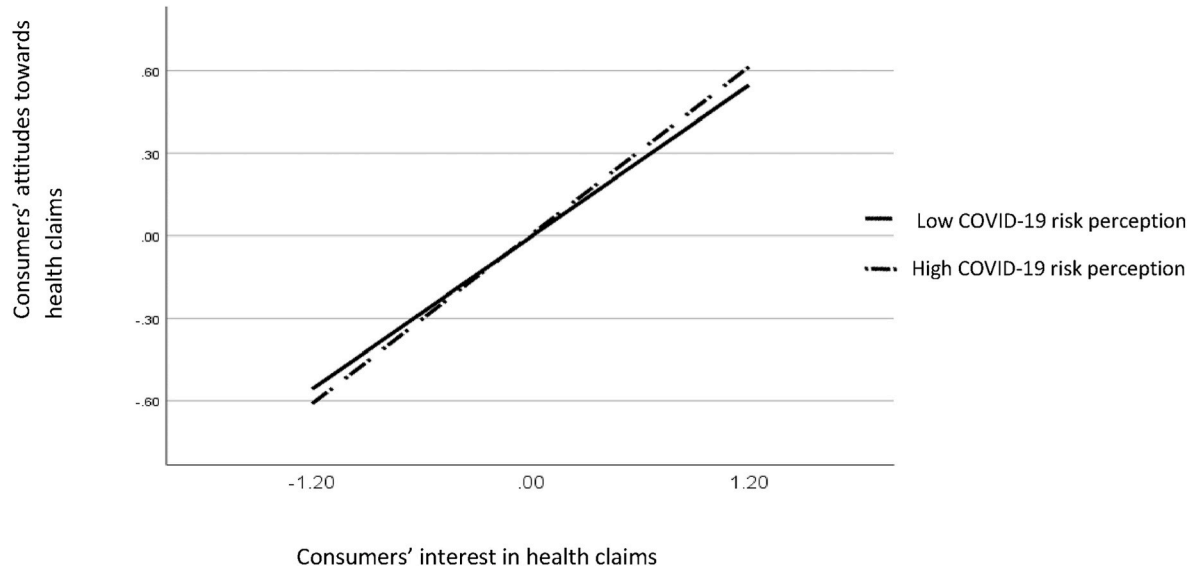


**Fig. 2.** Plot of the relationship between consumers' interest in health claims and their attitudes towards health claims at low and high levels of COVID-19 risk perception.

individuals perceive the risk by first identifying it, determining its severity and their vulnerability to it and then finding the best coping strategies to protect their health [108,109]. Because of the severity of epidemic conditions, consumers became more health-conscious and sought to boost their immune systems by adopting healthier eating habits to protect themselves from the virus [6,7]. Furthermore, consumers start judging if the food is safe or not [111]. Thus, consumers obtain inferences about a product's quality through cues such as health claims [27,114].

Regarding consumers' WTP for health claims, the findings revealed that it is significantly different between each of the three countries. Chile has the highest mean for WTP for health claims followed by Spain and the UK. This could be explained by the fact that Chilean consumers perceived a higher risk from COVID-19 than the Spanish and British ones as shown in Table 6. Also, Chile recently implemented several structural and individual-level public health policies centered on improving lifestyles and community healthy eating habits [130]. This is in line with other studies that found the perceived seriousness of the COVID-19 pandemic was high in Chile [35]. As a result of the COVID-19 confinement consumers' became more interested in healthy eating [36]. However, consumers' interest in health claims is the highest in Spain, this may be explained by the fact that the Spanish diet is a healthy Mediterranean diet based mainly on EVOO as a fundamental component, thus Spanish consumers value healthy eating and health claims more than the other countries considered [114].

## 6. Conclusions and limitations

This research assessed the moderation effect of COVID-19 risk perception on the relationship between consumers' interest and attitudes towards health claims, and how this interplay affects the final consumers' WTP for health claims. The results showed that the relationship between consumers' interest and attitudes towards health claims is stronger when the COVID-19 risk perception is higher. Additionally, the findings show that consumers' attitudes mediated the relationship between their interest in health claims and their WTP. Furthermore, there is a significant difference in the WTP for health claims between the three countries considered. Thus, the COVID-19 pandemic did differently affect consumers' interest in and attitudes towards health claims, which in turn triggered consumers to adopt healthier eating habits and increase their WTP for health features of the EVOO such as health claims.

**Table 6**
Descriptive analysis for COVID-19 risk perception and consumers' interest in health claims.

| | Country | Mean | SD | N | Minimum | Maximum | P-value |
|---|---|---|---|---|---|---|---|
| ***Covid-19 risk perception*** | | | | | | | |
| 1.How risky do you think COVID-19 is? | Spain | 3.56 | 0.66 | 1514 | 1 | 4 | 0.000 |
| | UK | 3.46 | 0.73 | 1299 | 1 | 4 | |
| | Chile | **3.64** | 0.63 | 1177 | 1 | 4 | |
| 2. How likely do you think it is that you will be directly and personally affected by COVID-19 in the next 6 months? (Catching COVID-19) | Spain | **2.63** | 0.78 | 1399 | 1 | 4 | 0.000 |
| | UK | 2.41 | 0.73 | 1203 | 1 | 4 | |
| | Chile | 2.59 | 0.71 | 1141 | 1 | 4 | |
| 3. How likely do you think it is that your friends and family will be directly and personally affected by COVID-19 in the next 6 months? (Catching COVID-19) | Spain | 2.82 | 0.73 | 1390 | 1 | 4 | 0.000 |
| | UK | 2.58 | 0.72 | 1200 | 1 | 4 | |
| | Chile | **2.93** | 0.68 | 1151 | 1 | 4 | |
| How much do you agree or disagree with the following statements? 4. COVID-19 will NOT affect many people in the country I'm currently living in. | Spain | 4.03 | 1.19 | 1533 | 1 | 5 | 0.000 |
| | UK | 4.13 | 0.95 | 1304 | 1 | 5 | |
| | Chile | **4.35** | 1.00 | 1199 | 1 | 5 | |
| How much do you agree or disagree with the following statements? 5.Getting sick with the COVID-19 can be serious | Spain | 4.43 | 0.93 | 1533 | 1 | 5 | 0.000 |
| | UK | **4.59** | 0.65 | 1304 | 1 | 5 | |
| | Chile | 4.55 | 0.79 | 1199 | 1 | 5 | |
| ***Consumers' interest in Health Claims*** | | | | | | | 0.000 |
| | Spain | **3.85** | 1.02 | 1533 | 1 | 5 | |
| | UK | 2.75 | 1.07 | 1304 | 1 | 5 | |
| | Chile | 3.43 | 1.24 | 1199 | 1 | 5 | |

A limitation of our study is that additional variables such as consumers' understanding of health claims and WTP for different types of health claims (e.g., functional health claims, risk reduction claims) might be neglected in our model. Another limitation is the bias of the results, in other words, the hypothetical context (e.g., Contingent valuation questions) yields higher values for WTP than the non-hypothetical method (e.g., auction) [131]. Additionally due to the cross-sectional nature of our study, it is challenging to acquire knowledge about causal inferences. Thus, future studies may consider non-hypothetical contexts such as virtual supermarkets to overcome results bias limitations. Despite this limitation, gathering data through an online survey was a suitable way to acquire more knowledge about consumers' WTP for health claims from three different countries. Thirdly, our study focused only on one product, EVOO and that is known as a healthy product. Further research is necessary for understanding how the presence of health claims affects consumers' WTP for products perceived as less healthy [31]. Finally, most of the Chilean sample consisted of males and younger people, which may explain the highest mean of consumers' WTP in this country.

Even with its limitations, this study has various theoretical and practical implications. Regarding the research implications, this is the first study to consider the effect of COVID-19 pandemic on the consumers' interest and attitudes towards health claims, which in turn affect their WTP for health claims. Previously, researchers investigated consumers' WTP for health claims in a normal context. Additionally, this study presented the linkage between consumers' interest in health claims and their attitudes while addressing their risk perception during the pandemic. Third, our research tested a model that uncovered predictors of consumers' WTP for health claims during the pandemic.

For the practical implications, the results of this study provide policy makers and the agro-food sector working on EVOO with relevant information about consumers' interest in health claims, assisting them in designing new policies and marketing strategies, while promoting healthy food choices during COVID-19 pandemic. Also, it is costly to develop and market products carrying health claims [132], thus, studying consumers' WTP for such claims is important to food manufacturers, as it helps them estimate the amount of profit they can expect from selling their products [133]. Hence, the outcomes of our study are expected to improve knowledge about the added value of health claims on EVOO and to support producers in the communication of those healthy features that matter the most to consumers, especially during a health crisis as shown by our findings. Furthermore, producers can develop their strategies relying on the learning of factors influencing the WTP for health claims such as consumers' interest and attitudes towards health claims, their COVID-19 risk perception, and that health claims might be a useful tool to reduce consumers' risk perception by the creation of positive judgment about products during risky situations such as pandemics.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Data will be made available on request.

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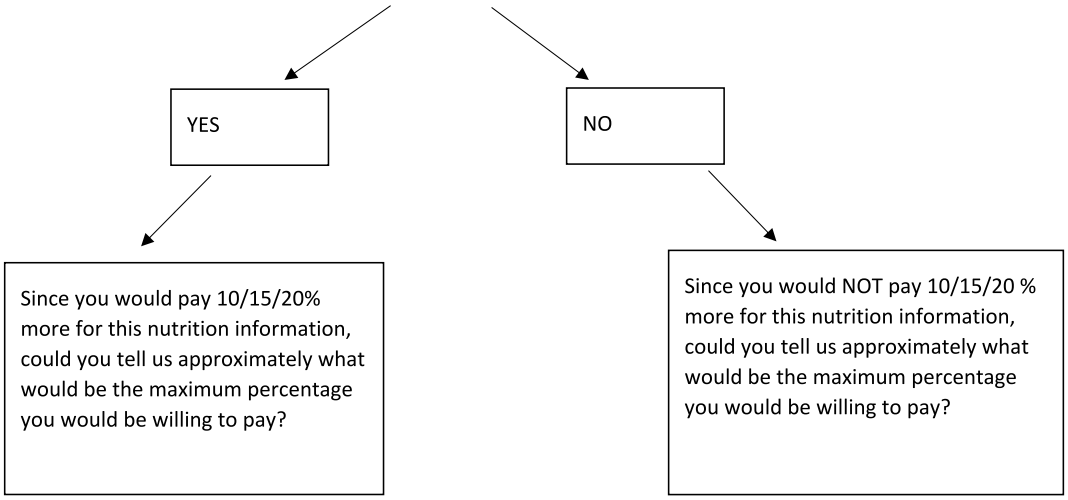
## Appendix 1: Questions to analyse consumers' WTP for health claims in EVOO

The European Food Safety Agency (EFSA) in 2011 recognized the heart-healthy properties of the consumption of EVOO, stating that the polyphenols in olive oil contribute to the protection of blood lipoproteins from oxidation (known as LDL or "bad cholesterol"). This confirms that EVOO consumption helps to reduce cholesterol levels.

Would you be willing to pay 10/15/20% more (i.e., these percentages were divided randomly for each individual) if the EVOO carries a health claim that guarantees the high content of polyphenols (antioxidants) and its beneficial properties in relation to the prevention of cardiovascular disease?

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## Appendix 2. Authorised health claims for olive oil

| Nutrient/food category | Claim text |
|---|---|
| Olive oil polyphenols | *Olive oil polyphenols contribute to the protection of blood lipids from oxidative stress* |
| Oleic acid | *Replacing saturated fats in the diet with unsaturated fats contributes to the maintenance of normal blood cholesterol levels. Oleic acid is an unsaturated fat* |
| Vitamin E | *Vitamin E contributes to the protection of cells from oxidative stress* |
| Monounsaturated and/or polyunsaturated fatty acids | *Replacing saturated fats with unsaturated fats in the diet has been shown to lower/reduce blood cholesterol. High cholesterol is a risk factor in the development of coronary heart disease* |

Source: European Commission (Available at: http://ec.europa.eu/food/safety/labelling_nutrition/claims/register/public/?event=search).

## Appendix 3. Measurement and Factor loadings for the variables

| Variables | Loadings | AVE | CR | α | Measurement |
|---|---|---|---|---|---|
| **WTP** | | | | | Continuous variables, maximum WTP [134](López-Mosquera & Sánchez, 2012) |
| **Attitudes towards health claims** | | 0.631 | 0.837 | 0.748 | 5-point Likert scale: with 5 indicating the highest level of agreement [69] (Rizzo et al., 2020) |
| 1.They catch my attention | **0.785** | | | | |
| 2.My eyes go directly to the nutritional panel | **0.824** | | | | |
| 3.The information is sometimes subjective and not scientifically proven | 0.252 | | | | |
| 4.I do not worry about the healthy properties of food yet, when I am older maybe I will think differently | −0.460 | | | | |
| 5.Eating foods with healthy properties is important to me | **0.774** | | | | |
| 6.It is a form of advertising | 0.040 | | | | |
| **COVID-19 risk perception (COVID)** | | 0.500 | 0.733 | 0.596 | 5-point Likert scale: with 5 indicating the highest level of agreement/risky/probability [34] (Dryhurst et al., 2020) |
| 1. How risky do you think COVID-19 is? | **0.496** | | | | |
| 2. How likely do you think it is that you will be directly and personally affected by COVID-19 in the next 6 months? (Catching COVID-19) | **0.770** | | | | |
| 3. How likely do you think it is that your friends and family will be directly and personally affected by COVID-19 in the next 6 months? (Catching COVID-19) | | | | | |
| How much do you agree or disagree with the following statements? | **0.809** | | | | |
| 4. COVID-19 will NOT affect many people in the country I'm currently living in. | **0.512** | | | | |
| 5. Getting sick with COVID-19 can be serious. | **0.504** | | | | |
| Importance of health claims \|(HC) | | | | | Continuous variable: 5-point Likert scale: with 5 indicating the highest level of importance 94 (Banterle & Cavaliere, 2014; Petrovici et al., 2012) |

## References

[1] W. Tan, X. Zhao, X. Ma, W. Wang, P. Niu, W. Xu, G. Wu, A novel coronavirus genome identified in a cluster of pneumonia cases—Wuhan, China 2019–2020, China CDC Weekly 2 (4) (2020) 61–62.

[2] World Health Organization, 2022. Weekly epidemiological update on COVID-19-27 July 2022. https://www.who.int/publications/m/item/weekly-epidemiological-update-on-covid-19–27-july-2022. (Accessed 26 June 2022).

[3] J. Sheth, Impact of Covid-19 on consumer behavior: will the old habits return or die? J. Bus. Res. 117 (2020) 280–283.

[4] S. Aday, M.S. Aday, Impact of COVID-19 on the food supply chain, Food Quality and Safety 4 (4) (2020) 167–180.
[5] A.E. Attema, O. L'Haridon, J. Raude, V. Seror, Beliefs and risk perceptions about COVID-19: evidence from two successive French representative surveys during lockdown, Front. Psychol. 12 (2021) 1–16.
[6] C.J.C. Nicomedes, R.M.A. Avila, An analysis on the panic during COVID-19 pandemic through an online form, J. Affect. Disord. 276 (2020) 14–22.
[7] L. Laguna, S. Fiszman, P. Puerta, C. Chaya, A. Tárrega, The impact of COVID-19 lockdown on food priorities. Results from a preliminary study using social media and an online survey with Spanish consumers, Food Qual. Prefer. 86 (2020) 104028.
[8] M. Shammakh, R.T. Ali, T. Shaari, The relationship of health and nutrition claims towards purchasing choices among consumers in shah alam, selangor, J. Nutr. Sci. Vitaminol. 66 (2020) S222–S225.
[9] A. Annunziata, A. Mariani, Do consumers care about nutrition and health claims? Some evidence from Italy, Nutrients 11 (11) (2019) 1–16.
[10] Z. Talati, S. Pettigrew, C. Hughes, H. Dixon, B. Kelly, K. Ball, C. Miller, The combined effect of front-of-pack nutrition labels and health claims on consumers' evaluation of food products, Food Qual. Prefer. 53 (2016) 57–65.
[11] P. Ballco, V. Caputo, T. de-Magistris, Consumer valuation of European nutritional and health claims: do taste and attention matter? Food Qual. Prefer. 79 (2020) 103793.
[12] S. Campos, J. Doxey, D. Hammond, Nutrition labels on pre-packaged foods: a systematic review, Publ. Health Nutr. 14 (2011) 1496–1506, 08.
[13] V. Stancu, L. Lähteenmäki, K.G. Grunert, The role of time constraints in consumer understanding of health claims, Food Qual. Prefer. 104261 (2021).
[14] E. Lewis, U. Colón-Ramos, J. Gittelsohn, L. Clay, Food-seeking behaviors and food insecurity risk during the coronavirus disease 2019 pandemic, J. Nutr. Educ. Behav. 54 (2) (2022) 159–171.
[15] C.M. Galanakis, The food systems in the era of the coronavirus (COVID-19) pandemic crisis, Foods 43 (2020) 445–472.
[16] O. Meixner, F. Katt, Assessing the impact of COVID-19 on consumer food safety perceptions—a choice-based willingness to pay study, Sustainability 12 (18) (2020) 7270.
[17] F. Akaichi, C. Revoredo Giha, K. Glenk, J. Gil, How consumers in the UK and Spain value the coexistence of the claims low fat, local, organic and low greenhouse gas emissions, Nutrients 12 (1) (2020) 120.
[18] M. Hirogaki, Estimating Consumers' willingness to pay for health food claims: a conjoint analysis, International Journal of Innovation, Management and Technology 4 (6) (2013).
[19] B. Plasek, Á. Temesi, The credibility of the effects of functional food products and consumers' willingness to purchase/willingness to pay– review, Appetite 143 (2019) 104398.
[20] Z. Talati, R. Norman, S. Pettigrew, B. Neal, B. Kelly, H. Dixon, K. Ball, C. Miller, T. Shilton, The impact of interpretive and reductive front-of-pack labels on food choice and willingness to pay, Int. J. Behav. Nutr. Phys. Activ. 14 (1) (2017) 1–10.
[21] D. Oliveira, L. Machín, R. Deliza, A. Rosenthal, E.H. Walter, A. Giménez, et al., Consumers' attention to functional food labels: insights from eye-tracking and change detection in a case study with probiotic milk, LWT–Food Sci. Technol. 68 (2016) 160–167.
[22] N. Hellyer, I. Fraser, J. Haddock-Fraser, Food choice, health information and functional ingredients: an experimental auction employing bread, Food Pol. 37 (3) (2012) 232–245, https://doi.org/10.1016/j.foodpol.2012.02.005.
[23] S. Marette, J. Roosen, S. Blanchemanche, E. Feinblatt-Meleze, Functional food, uncertainty and consumers' choices: a lab experiment with enriched yoghurts for lowering cholesterol, Food Pol. 35 (5) (2010) 419–428.
[24] L. Lähteenmäki, Claiming health in food products, Food Qual. Prefer. 27 (2) (2013) 196–201.
[25] R. Vecchio, E.J. Van Loo, A. Annunziata, Consumers' willingness to pay for conventional, organic and functional yogurt: evidence from experimental auctions, Int. J. Consum. Stud. 40 (3) (2016) 368–378.
[26] E. Wang, N. An, Z. Gao, E. Kiprop, X. Geng, Consumer food stockpiling behavior and willingness to pay for food reserves in COVID-19, Food Secur. 12 (4) (2020) 739–747.
[27] F. Karakaya, S. Saracli, Impact of perceived risk of food nutrients and serving size on consumer involvement with food labels, Nutr. Food Sci. 48 (4) (2018) 549–560.
[28] K.G. Grunert, J. Wills, L.F. Celemín, L. Lähteenmäki, J. Scholderer, S. Storcksdieck genannt Bonsmann, Socio-demographic and attitudinal determinants of nutrition knowledge of food shoppers in six European countries, Food Qual. Prefer. 26 (2) (2012) 166–177.
[29] Centre for the Promotion of Imports from Developing Countries, The European market potential for olive oil, Available online, https://www.cbi.eu/market-information/processed-fruit-vegetables-edible-nuts/olive-oil/market-potential. (Accessed 24 May 2022).
[30] E. Carrillo, S. Fissban, L. Lähteenmäki, P. Varela, Consumers' perception of symbols and health claims as health-related label messages. A cross-cultural study, Food Res. Int. 62 (2014) 653–661.
[31] P. Ballco, F. Jurado, A. Gracia, Do health claims add value to nutritional claims? Evidence from a close-to-real experiment on breakfast biscuits, Food Qual. Prefer. 85 (2020) 103968.
[32] Oliveoiltimes, 2022. Olive oil producers in Chile hail a record yield. https://www.oliveoiltimes.com/production/olive-oil-producers-in-chile-hail-a-record-yield/99901 (Accessed 26 June 2022).
[33] V. Pinto, L. Landaeta-Díaz, O. Castillo, L. Villarroel, A. Rigotti, G. Echeverría, Assessment of diet quality in Chilean urban population through the alternate healthy eating index 2010: a cross-sectional study, Nutrients 11 (4) (2019) 1–15.
[34] S. Dryhurst, C. Schneider, J. Kerr, A. Freeman, G. Recchia, A. van der Bles, et al., Risk perceptions of COVID-19 around the world, J. Risk Res. 23 (7–8) (2020) 994–1006.
[35] M. Landa-Blanco, C.J. Mejía, A.L. Landa-Blanco, C.A. Martínez-Martínez, D. Vásquez, G. Vásquez, P. Moraga-Vargas, Y. Echenique, G.M. Del Cid, B. D. Montoya, Coronavirus Awareness, Confinement Stress, and Mental Health: Evidence from Honduras, Chile, Mexico and Spain. Social Science and Medicine, Costa Rica, 2021, p. 277.
[36] M.B. Ruiz-Roso, P. Padilha, C. de, D.C. Mantilla-Escalante, N. Ulloa, P. Brun, D. Acevedo-Correa, W.A.F. Peres, M. Martorell, M.T. Aires, L. Cardoso, O. de, F. Carrasco-Marín, K. Paternina-Sierra, J.E. Rodriguez-Meza, P.M. Montero, G. Bernabè, A. Pauletto, X. Taci, F. Visioli, A. Dávalos, Confinamiento del Covid-19 y cambios en las tendencias alimentarias de los adolescentes en Italia, España, Chile, Colombia y Brasil, Nutrients 12 (6) (2020) 1807.
[37] J. Yan, K. Tian, S. Heravi, P. Morgan, Asymmetric demand patterns for products with added nutritional benefits and products without nutritional benefits, Eur. J. Market. 50 (9–10) (2016) 1672–1702.
[38] M. Hoque, J. Xie, S. Nazneen, Effect of labelled information and sensory attributes on consumers' intention to purchase milk, South Asian Journal Of Business Studies 7 (3) (2018) 265–286, https://doi.org/10.1108/sajbs-02-2018-0021.
[39] M. Pichierri, A. Peluso, G. Pino, G. Guido, Health claims' text clarity, perceived healthiness of extra-virgin olive oil, and arousal: an experiment using FaceReader. Trends, Food Science & Technology 116 (2021) 1186–1194.
[40] M.R. Darby, E. Karni, 'Free competition and the optimal amount of fraud', J. Law Econ. 16 (1973) 67–86.
[41] D. Petrovici, A. Fearne, R.M. Nayga, D. Drolias, Nutritional knowledge, nutritional labels, and health claims on food: a study of supermarket shoppers in the Southeast of England, Br. Food J. 114 (6) (2012) 768–783.
[42] J. Steinhauser, U. Hamm, Consumer and product-specific characteristics influencing the effect of nutrition, health and risk reduction claims on preferences and purchase behavior - a systematic review, Appetite 127 (2018) 303–323.
[43] A. Yangui, M. Costa-Font, J.M. Gil, Revealing additional preference heterogeneity with an extended random parameter logit model: the case of extra virgin olive oil, Spanish J. Agric. Res. 12 (3) (2014) 553–567.
[44] L. Roselli, M.L. Clodoveo, F. Corbo, B. De Gennaro, Are health claims a useful tool to segment the category of extra-virgin olive oil? Threats and opportunities for the Italian olive oil supply chain, Trends Food Sci. Technol. 68 (2017) 176–181.
[45] A. Coppola, Il problema della valutazione economica dell'intervento pubblico per la qualita, in: F. De Stefano (Ed.), Qualita e valorizzazione nel mercato dei prodotti agroalimentari, ESI, Napoli, 2000.
[46] P. Nelson, Information and consumer behavior, J. Polit. Econ. 78 (1970) 311–329.
[47] P. Ballco, A. Gracia, Do market prices correspond with consumer demands? Combining market valuation and consumer utility for extra virgin olive oil quality attributes in a traditional producing country, J. Retailing Consum. Serv. 53 (2020) 101999. May 2019.
[48] A. Lombardi, D. Carlucci, C. Cavallo, B. De Gennaro, T. Del, G. Giannoccaro, A. Paparella, L. Roselli, R. Vecchio, G. Cicia, Do consumers understand health claims on extra-virgin olive oil? Food Res. Int. 143 (2021) 110267.
[49] J.M. Wills, D.B. Schmidt, F. Pillo-Blocka, G. Cairns, Exploring global consumer attitudes toward nutrition information on food labels, Nutr. Rev. (2009) 67.
[50] J.M. Wills, S. Storcksdieck Genannt Bonsmann, M. Kolka, K.G. Grunert, Symposium 2: nutrition and health claims: help or hindrance: European consumers and health claims: attitudes, understanding and purchasing behaviour, Proc. Nutr. Soc. 71 (2) (2012) 229–236.
[51] I. Žeželj, J. Milošević, Ž. Stojanović, G. Ognjanov, The motivational and informational basis of attitudes toward foods with health claims, Appetite 59 (3) (2012) 960–967.
[52] M. Dean, P. Lampila, R. Shepherd, A. Arvola, A. Saba, M. Vassallo, E. Claupein, M. Winkelmann, L. Lähteenmäki, Perceived relevance and foods with health-related claims, Food Qual. Prefer. 24 (1) (2012) 129–135.
[53] A. Cavaliere, E. De Marchi, A. Banterle, Does consumer health-orientation affect the use of nutrition facts panel and claims? An empirical analysis in Italy, Food Qual. Prefer. 54 (2016) 110–116.
[54] K.R. Dörnyei, T. Gyulavári, Why do not you read the label? - an integrated framework of consumer label information search, Int. J. Consum. Stud. 40 (1) (2016) 92–100.
[55] P. Ballco, A. Gracia, Tackling nutritional and health claims to disentangle their effects on consumer food choices and behaviour: a systematic review, Food Qual. Prefer. 101 (2022) 104634. October 2021.
[56] Y. Hung, K.G. Grunert, C. Hoefkens, S. Hieke, W. Verbeke, Motivation outweighs ability in explaining European consumers' use of health claims, Food Qual. Prefer. 58 (2017) 34–44.
[57] C. Prabha, L.S. Connaway, L. Olszewski, L.R. Jenkins, What is enough? Satisficing information needs, J. Doc. 63 (1) (2007) 74–89.
[58] J. Krikelas, "Information-seeking behavior: patterns and concepts", Drexel Libr. Q. 19 (2) (1983) 5–20.
[59] A. Weiler, Information-seeking behavior in generation Y students: motivation, critical thinking, and learning theory, J. Acad. Librarian 31 (2005) 46–53.
[60] M. Wandel, Food labeling from a consumer perspective, Br. Food J. 99 (1997) 212–219.

[61] F. Bimbo, A. Bonanno, R. Viscecchia, Do health claims add value? The role of functionality, effectiveness and brand, Eur. Rev. Agric. Econ. 43 (5) (2016) 761–780.
[62] F. Boncinelli, C. Contini, C. Romano, G. Scozzafava, L. Casini, Territory, environment, and healthiness in traditional food choices: insights into consumer heterogeneity, Int. Food Agribus. Manag. Rev. 20 (1) (2017) 143–157.
[63] M.A. Perito, G. Sacchetti, C.D. Di Mattia, E. Chiodo, P. Pittia, I.S. Saguy, E. Cohen, Buy local! Familiarity and preferences for extra virgin olive oil of Italian consumers, J. Food Prod. Market. 25 (4) (2019) 462–477.
[64] M. Pichierri, A. Peluso, G. Pino, G. Guido, Communicating the health value of extra-virgin olive oil: an investigation of consumers' responses to health claims, Br. Food J. 123 (2) (2020) 492–508.
[65] M. Pichierri, G. Pino, A.M. Peluso, G. Guido, The interplay between health claim type and individual regulatory focus in determining consumers' intentions toward extra-virgin olive oil, Food Res. Int. 136 (2020) 109467.
[66] B.C. De Gennaro, L. Roselli, F. Bimbo, D. Carlucci, C. Cavallo, G. Cicia, T. Del Giudice, A. Lombardi, A. Paparella, R. Vecchio, Do Italian consumers value health claims on extra-virgin olive oil? J. Funct.Foods 81 (2021) 104461.
[67] J.B.E.M. Steenkamp, Conceptual model of the quality perception process, J. Bus. Res. 21 (4) (1990) 309–333.
[68] R. Bernabéu, M. Díaz, Preference for olive oil consumption in the Spanish local market, Spanish J. Agric. Res. 14 (4) (2016), e0108.
[69] G. Rizzo, M. Borrello, G.D. Guccione, G. Schifani, L. Cembalo, Organic food consumption: the relevance of the health attribute, Sustainability 12 (2) (2020).
[70] M. Banovic, M.J. Reinders, A. Claret, L. Guerrero, A. Krystallis, A cross-cultural perspective on impact of health and nutrition claims, country-of-origin and eco-label on consumer choice of new aquaculture products, Food Res. Int. 123 (2019) 36–47.
[71] L. Casini, C. Contini, N. Marinelli, C. Romano, G. Scozzafava, Nutraceutical olive oil: does it make the difference? Nutr. Food Sci. 44 (6) (2014) 586–600, https://doi.org/10.1108/NFS-09-2013-0102.
[72] T. Ali, J. Ali, Factors affecting the consumers' willingness to pay for health and wellness food products, Journal of Agriculture and Food Research 2 (2020) 100076.
[73] N. Urala, L. Lähteenmäki, Attitudes behind consumers' willingness to use functional foods, Food Qual. Prefer. 15 (7–8) (2004) 793–803.
[74] P. Kotler, G. Armstrong, L. Harris, N. Piercy, Principles of Marketing European Edition, sixth ed., Pearson Prentice Hall, Upper Saddle River, 2013.
[75] Commission Regulation (EC), No 1924/2006 of the European parliament and of the Council on nutrition and health claims made on foods. Available online. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006R1924-20141213. (Accessed 24 June 2022).
[76] J. Aschemann-Witzel, U. Hamm, Do consumers pre- fer foods with nutrition and health claims? Results of a pur- chase simulation, J. Market. Commun. 16 (2010) 47–58.
[77] J. Aschemann-Witzel, K.G. Grunert, H.C. van Trijp, S. Bialkova, M.M. Raats, C. Hodgkins, G. Wasowicz-Kirylo, J. Koenigstorfer, Effects of nutrition label format and product assortment on the healthfulness of food choice, Appetite 71 (2013) 63–74.
[78] W. Moon, S.K. Balasubramanian, A. Rimal, "Health claims and consumers' behavioral intentions: the case of soy-based food", Food Pol. 36 (4) (2011) 480–489.
[79] P. Ballco, T. De Magistris, Spanish consumer purchase behaviour and stated preferences for yoghurts with nutritional and health claims, Nutrients 11 (11) (2019) 2742–2760.
[80] J. Barreiro-Hurlé, A. Gracia, T. de-Magistris, Does nutrition information on food products lead to healthier food choices? Food Pol. 35 (3) (2010) 221–229.
[81] F. Jurado, A. Gracia, Does the valuation of nutritional claims differ among consumers? Insights from Spain, Nutrients 9 (2) (2017).
[82] L. Van Wezemael, V. Caputo, R.M. Nayga Jr., G. Chryssochoidis, W. Verbeke, European consumer preferences for beef with nutrition and health claims: a multi-country investigation using discrete choice experiments, Food Pol. 44 (2014) 167–176.
[83] S. Miškolci, Consumer preferences and willingness to pay for the health aspects of food, Acta Univ. Agric. Silvic. Mendelianae Brunensis 59 (4) (2014) 167–176.
[84] C.G.K. Chege, K.W. Sibiko, R. Wanyama, M. Jager, E. Birachi, Are consumers at the base of the pyramid willing to pay for nutritious foods? Food Pol. 87 (2019) 101745.
[85] D. Menozzi, T.T. Nguyen, G. Sogari, D. Taskov, S. Lucas, J.L.S. Castro-Rial, C. Mora, Consumers' preferences and willingness to pay for fish products with health and environmental labels: evidence from five European countries, Nutrients 12 (2020) 2650.
[86] A. Tudoran, S.O. Olsen, D.C. Dopico, The effect of health benefit information on consumers health value, attitudes and intentions, Appetite 52 (3) (2009) 568–579.
[87] M. Fishbein, I. Ajzen, Belief, Attitude, Intention and Behavior: an Introduction to Theory and Research, Addison-Wesley, Reading, MA, 1975.
[88] A.H. Eagly, S. Chaiken, The Psychology of Attitudes, Harcourt Brace College Publishers, Fort Worth, 1993 (TX).
[89] S.N. Aikman, S.L. Crites Jr., L.R. Fabrigar, Beyond affect and cognition: identification of the informational bases of food attitudes, J. Appl. Soc. Psychol. 36 (2006) 340–382.
[90] V. Hémar-nicolas, H. Putri, S. Angka, A. Olsen, How cartoon characters and claims influence children's attitude towards a snack vegetable – an explorative cross-cultural comparison between Indonesia and Denmark, Food Qual. Prefer. 87 (2021) 104031.
[91] Y. Hung, W. Verbeke, Consumer evaluation, use and health relevance of health claims in the European Union, Food Qual. Prefer. 74 (2019) 88–99.
[92] F. Lalor, C. Madden, K. Mckenzie, P.G. Wall, Opinions and Perspectives Health claims on foodstuffs: a focus group study of consumer attitudes, J. Funct.Foods 3 (1) (2011) 56–59.
[93] W. Verbeke, J. Scholderer, L. Lähteenmäki, "Consumer appeal of nutrition and health claims in three existing product concepts", Appetite 52 (3) (2009) 684–692.
[94] A. Banterle, A. Cavaliere, Is there a relationship between product attributes, nutrition labels and excess weight? Evidence from an Italian region, Food Pol. 49 (2014) 241–249.
[95] P. Slovic, 'Perceived risk, trust and democracy', Risk Anal. 13 (1993) 675–682.
[96] P. Slovic, Understanding perceived risk: 1978–2015, Environment 58 (1) (2016) 25–29.
[97] G.F. Loewenstein, E.U. Weber, C.K. Hsee, N. Welch, "Risk as feelings", Psychol. Bull. 127 (2) (2001) 267–286.
[98] J.S. Lerner, Y. Li, P. Valdesolo, K.S. Kassam, Emotion and decision making, Annu. Rev. Psychol. 66 (2015) 799–823.
[99] Z. Pieniak, W. Verbeke, J. Scholderer, K. Brunsø, S.O. Olsen, Impact of consumers' health beliefs, health involvement and risk perception on fish consumption: a study in five European countries, Br. Food J. 110 (9) (2008) 898–915.
[100] T. Zaleskiewicz, J. Traczyk, "Emotions and Financial Decision Making," in Psychological Perspectives on Financial Decision Making, in: T. Zaleskiewicz, J. Traczyk (Eds.), Springer, New York, NY, 2020, pp. 107–133.
[101] W. Bruine De Bruin, D. Bennett, Relationships between Initial COVID-19 risk perceptions and protective health behaviors: a national survey, Am. J. Prev. Med. 59 (2020) 157–167.
[102] Teng, P. & Anthony, M., Shreshta, M., Nair, T., Lassa, J. (2015) Public stockpling and food security. https://www.files.ethz.ch/isn/191682/PB150603_Public-Stockpiling.pdf.
[103] Rajesh P. (2018). Food security: issues and perspectives. https://www.researchgate.net/publication/328635147_Food_Security_Issues_and_Perspectives.
[104] A. Cogato, F. Meggio, M.D.A. Migliorati, et al., Extreme weather events in agriculture: a systematic review, Sustainability (2019) 11.
[105] E. Fehr, K. Hoff, Introduction: tastes, castes and culture: the influence of society on preferences, Econ. J. (2011), https://doi.org/10.1111/j.1468-0297.2011.02478.x, 121,396– 396.
[106] Y. Chuang, L. Schechter, Stability of experimental and survey measures of risk, time, and social preferences: a review and some new results, J. Dev. Econ. 117 (2015) 151–170.
[107] Kuroishi Yusuke, Sawada Yasuyuki, On the stability of preferences: experimental evidence from two disaster, Center for International Research on the Japanese Economy (2019). http://www.crepe.e.u-tokyo.ac.jp/results/2019/CREPEDP61.pdf.
[108] K.J. Harris, F. Ali, K. Ryu, Foodborne illness outbreaks in restaurants and patrons' propensity to return, Int. J. Contemp. Hospit. Manag. 30 (3) (2018) 1273–1292.
[109] K.J. Harris, R.B. DiPietro, K.S. Murphy, G. Rivera, Critical food safety violations in Florida: relationship to location and chain vs. non-chain restaurants, Int. J. Hospit. Manag. 38 (2014) 57–64.
[110] R.W. Rogers, "A protection motivation theory of fear appeals an attitude change", J. Psychol. 91 (1) (1975) 93–114.
[111] R. Barrena, M. Sa, Differences in Consumer Abstraction Levels as a Function of Risk Perception 61 (1) (2010) 34–59.
[112] D. Faour-Klingbeil, T.M. Osaili, A.A. Al-Nabulsi, M. Jemni, E.C.D. Todd, The public perception of food and non-food related risks of infection and trust in the risk communication during COVID-19 crisis: a study on selected countries from the Arab region, Food Control 121 (2021) 107617.
[113] J. Kozup, Risks of Consumer Products Consumer Perception of Product Risks and Benefits, Springer, 2017, pp. 23–38.
[114] G. Das, S.P. Jain, D. Maheswaran, R.J. Slotegraaf, R. Srinivasan, Pandemics and marketing: insights, impacts, and research opportunities, J. Acad. Market. Sci. (2021) 835–854.
[115] C. Rodríguez-Pérez, E. Molina-Montes, V. Verardo, R. Artacho, B. García-Villanova, E.J. Guerra-Hernández, M.D. Ruíz-López, Changes in dietary behaviours during the COVID-19 outbreak confinement in the Spanish COVIDiet study, Nutrients 12 (6) (2020) 1–19.
[116] E. Peer, S. Samat, L. Brandimarte, A. Acquisti, Beyond the Turk: alternative platforms for crowdsourcing behavioral research, J. Exp. Soc. Psychol. 70 (2017) 153–163.
[117] R.C. Mitchell, R.T. Carson, Using Surveys to Value Public Goods: the Contingent Valuation Method, Resources for the Future/Johns Hopkins University Press, Washington D.C, 1989.
[118] D. Kahneman, J.L. Knetsch, Contingent valuation and the value of public goods: reply, J. Environ. Econ. Manag. 22 (1992) 90–94.
[119] C.L. Spash, Non-economic motivation for contingent values: rights and attitudinal beliefs in the willingness to pay for environmental improvements, Land Econ. 82 (4) (2006) 602–622.
[120] S. van der Linden, The social-psychological determinants of climate change risk perceptions: towards a comprehensive model, J. Environ. Psychol. 41 (2015) 112–124.
[121] B. Xie, M.B. Brewer, B.K. Hayes, R.I. McDonald, B.R. Newell, Predicting climate change risk perception and willingness to act, J. Environ. Psychol. 65 (2019) 101331.
[122] J.F. Hair, W.C. Black, B.J. Babin, R.E. Anderson, R.L. Tatham, Multivariate Data Analysis, seventh ed., Pearson Education Limited, Upper Saddle River, NJ, USA, 2009.

[123] J.F. Hair, C.B. William, B. Barry, J. Rolph, E. Anderson, R.L. Tatham, Multivariate Data Analysis, Pearson, New Jersey, 2006.
[124] K.J. Preacher, D.D. Rucker, A.F. Hayes, Addressing moderated mediation hypotheses: theory, methods, and prescriptions, Multivariate Behav. Res. 42 (2007) 185–227.
[125] A.F. Hayes, An index and test of linear moderated mediation, Multivariate Behav. Res. 50 (2015) 1–22.
[126] A.F. Hayes, Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach, Guilford Publications, New York, NY, USA, 2017.
[127] Z. Khan, Y. Yang, M. Shafi, R. Yang, Role of social media marketing activities (SMMAs) in apparel brands customer response: a moderated mediation analysis, Sustainability 11 (19) (2019) 15–17.
[129] A.F. Hayes, Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach, The Guilford Press, New York, 2013.
[128] I. Portoghese, M. Galletta, F. Meloni, I. Piras, G. Finco, E. D'Aloja, M. Campagna, Dealing with COVID-19 patients: a moderated mediation model of exposure to patients' death and mental health of Italian health care Workers, Front. Psychol. 12 (2021) 1–10.
[130] L. Rodriguez-Osiac, A.C.P. Fernandes, M.F. Mujica-Coopman, P. Caro-Moya, D. Navarro-Rosenblatt, A description of Chilean food and nutrition health policies, Rev. Med. Chile 149 (10) (2021) 1485–1494.
[131] J. Loomis, P. Bell, H. Cooney, C. Asmus, A comparison of actual and hypothetical willingness to pay of parents and non-parents for protecting infant health: the case of nitrates in drinking water, J. Agric. Appl. Econ. 41 (3) (2009) 697–712.
[132] G. Brookes, Economic Impact Assessment of the European Union (EU)'s Nutrition& Health Claims Regulation on the EU Food Supplement Sector and Market. European Health Claims Alliance EHCA, 2010.
[133] D. Moro, M. Veneziani, P. Sckokai, E. Castellari, Consumer willingness to pay for catechin enriched yogurt: evidence from a stated choice experiment, Agribusiness: Int. J. 31 (2) (2015) 243–258.
[134] N. López-mosquera, M. Sánchez, Theory of Planned Behavior and the Value-Belief-Norm Theory explaining willingness to pay for a suburban park, J. Environ. Manag. 113 (2012) 251–262.