Food Literacy as a Resilience Factor in response to health-related uncertainty

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1. Introduction

During the COVID-19 pandemic, people were deprived of their freedom, not able to engage in physical and social activities, and worried about their health. Uncertainty, insecurity, and confinement are all factors that may induce stress, uneasiness, fear, and depression. In general, an emotional disorder caused by climate change, natural disasters or other environmental factors is called 'solastalgia' (Albrecht, 2005). Solastalgia is translated into disgust, fear of health issues, frustration, feelings of hopelessness, isolation, psychosomatic illness, and depression (Galway *et al*., 2019; Moratis, 2021). Such environmentally-induced psychological and mental symptoms can influence well-being by affecting sleep quality (Bazzani *et al*., 2021) or even nutrition preferences (Brooks *et al*., 2020; Coppin, 2020; Dedeoğlu *et al*., 2022). Since the pandemic hit, a discussion initiated over the impact of the COVID-19 health and well-being risks on food choices (Ben Hassen *et al*., 2020; Kirk and Rifkin, 2020). Several medical studies have addressed the health and nutrition disorders associated with the sudden and huge impact of Covid-19 on people's lives (Bazzani *et al*., 2021; McAtamney *et al*., 2021; Trieste *et al*., 2021). According to the transactional model of stress and coping, people's capacity to tackle and adjust to challenges depends on the transactions or rather interactions between people and their environment (Lazarus and Folkman, 1985). Quality of life, stress and health appear to be interrelated in psychosomatic research measured by well-being and perceived stress scales (Kocalevent *et al*., 2007).

In their attempt to tackle the emerging challenges, researchers and practitioners have delved into risk management, resilience and response to unexpected, overwhelming events (Amankwah-Amoah *et al*., 2020; McAtamney *et al*., 2021; Orengo Serra and Sanchez-Jauregui, 2022). In the case of coronavirus, given that those who are more physically fit usually display less severe disease symptoms (Darren *et al*., 2006), it might be expected that people move towards more healthy, home cooked meals (Snuggs and McGreggor, 2021).

An adoptive approach is taken in this study complying with the three stages of behavioural sequence of prior scholars (Hamilton et al, 2019; Kirk and Rifkin, 2020). Following this approach, consumers firstly act upon their negative feelings when experiencing environmental constraints. They immediately *react* arguing, denying, and fighting the imposed measures. Then, consumers try to *cope* by implementing short-term solutions to reduce the impact of the constraints. Finally, they *adapt* to the new reality by formulating long-term strategies. It is further assumed that, during a prolonged confinement period, people reconcile with the fact that they cannot continue living, shopping, working, travelling, socialising (Parady *et al*.,

2021) and eating as before, yet miss their usual activities and worry about their health and the health of their loved ones. Then, in an effort to adapt to this new real-life context of uncertainty, people 'wilfully' stay longer at home realising that, since the access to healthcare is limited, they need to take care of themselves, taking as many prevention measures as possible (González *et al*., 2021). In other words, whether obliged or simply urged to stay at home, when the constraints eased, people continued to avoid engaging in outdoor activities. Research evidenced that families spend more time at home cooking and dining during the pandemic (Kirk and Rifkin, 2020). Eating with regard to weight control and health risks is related to worry rather than with pleasure (de Ridder *et al.*, 2014). In this context, this study aims to identify possible relationships between emotions caused by health risks and restrictions to outdoor activities, and well-informed decisions about food consumption.

2. Literature review

2.1 The role of emotions in shopping behaviour

Purchasing decisions are hardly ever the rational outcome of careful and exhaustive analysis of information. Often consumers are influenced by their emotions, sometimes unconsciously (Shaw and Bagozzi, 2018). Shoppers usually look for something more than simply a use for a purpose, they want to engage in an emotional experience, including fun and entertainment (Arnold and Reynolds, 2009). In more words, people shop and socialize at the same time, aiming to spend their free time meeting with family and friends, learning about new products or just enjoying the atmosphere (Fischer and Arnold, 1990).

Furthermore, primary instincts and emotions, such as fear and anxiety, can also affect purchasing decisions. People behave differently when faced with threats. For instance, food scandals may raise consumer concerns and lead them to make safer food choices (Brimer, 2004). The emotions associated with evaluating the risks and probabilities of a given phenomenon can be the reason behind a change in behaviour (Gigerenzer, 2006; Szymkowiak *et al.*, 2020).

Health and life-threatening events increase the probability of changing our habits (Güney and Sangün, 2021), thus leading to instinctive and intuitive emotional reactions (Slovic and Peters, 2006). More specifically, during the Covid-19 outbreak people have to live under constant pressure, fearing for their lives (Mertens *et al.,* 2020), feeling anxiety, depression or distress (Choi *et al.*, 2020; Gómez-Salgado *et al*., 2020; Lakhan *et al.,* 2020), anger, insecurity, confusion or even emotional isolation (Dania and Novziransyah, 2021; Gundersen

et al., 2021; Pereira and Oliveira, 2020; Smith *et al.,* 2021). Everyday activities, such as shopping, carry more risk than before (Szymkowiak *et al.*, 2020). People are looking for ways to protect themselves and reduce risk, fearing being infected (Szymkowiak *et al*., 2020). Interestingly, First and Brozina (2009), in their study on cultural influences of motivation for organic food consumption, found that "Croatian consumers displayed homogeneous collective awareness, in that they almost unanimously considered health as prime consumption motive." This interpretation explains why households have changed their way of spending rather uniformly as news about Covid-19 ramifications spread (Kirk and Rifkin, 2020). Nevertheless, there is hardly any evidence of variation in behaviour between different income levels. Instead, demographic characteristics, such as age and family structure, showed higher levels of heterogeneity in spending during the pandemic (Baker *et al*., 2020). More specifically, young people started mass buying and stockpiling food at a later point in time than older people (Eger *et al*., 2021). Further to the above, Quevedo-Silva *et al*. (2016) recognised three dimensions of the food buying decision-making process: *situation, food and consumer characteristics, such as income, age, sex, education, personality, mood, status, culture, family stage and habits.* Di Renzo *et al*. (2020) have underscored the stress caused by the media's continuous coverage of Covid-19 jointly with the increase of indoor activities, such as digital education, smart working, and stockpiling of food.

2.2 Nutrition during the pandemic

Several researchers have highlighted the psychological impact of the pandemic (Brooks *et al.*, 2020; Papandreou *et al.*, 2020; Varatharaj *et al.* 2020; Pierce *et al.*, 2020) manifested in different ways: anger, annoyance, fear, frustration, guilt, helplessness, isolation, loneliness, nervousness, sadness, worry, and even, depression. Psychological distress was higher in countries with stricter constraints (Brooks *et al.*, 2020). The immediate consequence of this was panic buying (Omar *et al.*, 2021; Herjanto *et al.* 2021) and hoarding of food, especially of long-life foods, like milk, pasta, rice and canned vegetables and of raw and semi-processed materials for food preparation (Nicola *et al.*, 2020). During the pandemic, consumers have shown contradictory nutritional behaviours either to improve their physical health (weight control/body figure) or to improve their mental health by raising their mood (Laguna *et al.*, 2020). In many countries, negative emotions have led to increased food consumption, especially with so-called 'emotional food' (Coppin, 2020) and 'comfort food' (Salazar-Fernández *et al*., 2021), which tends to be rich in salt, fat and sugar, like sweets, chocolate, ice cream, and salty snacks (Scarmozzino and Visioli, 2020; Stocchi *et al.*, 2021).

Food shopping incorporates both educational and cultural elements (Kittler *et al.*, 2017). The decision of purchasing a food product is based on knowledge and competences, relevant to medical, health or dietary factors, including yet not limited to organoleptic characteristics, caloric intake, specific ingredients and preservatives. Food and nutrition literacy complement health literacy to meet the complex health demands of today (Truman *et al.*, 2020).

Further to the above, shopping for food has also cultural implications. Very often, the packaging of numerous products (chocolates, wine, and biscuits) is covered by photos of famous paintings and monuments or logos representing specific trends or artistic movements (Tellström *et al.*, 2006). Undisputedly, food shopping holds great social relevance; buying and consuming food of any kind (from starred restaurants in the most luxurious streets to stalls located in the poorest alleys of the suburbs) allows and enhances social, emotional, and work relationships (Schmalz *et al.*, 2019). Moreover, food purchasing behaviour in terms of store selection has been studied in relation to workplace and residence proximity (Bodor *et al.*, 2008; Palau-Saumell *et al*. 2021).

In addition to food shopping, meal preparation and eating with family and friends are significant cultural elements in several countries (Ben Hassen *et al*., 2020; Lo Monaco and Bonetto, 2018; Park, 2004). Fresh food raw materials of high quality and elaborate cooking are decisive factors of consumer satisfaction and well-being (Sheikhesmaeili and Hazbavi, 2019). During the pandemic, access to restaurants was limited if not prohibited. Being forced to stay at home and unable to carry out their usual activities (e.g. to reach their physical workplace and socialise, to meet with family and friends, to practice sports and recreational activities, to visit restaurants, cafes, cinemas and theatres, to attend parties, anniversaries and celebrations, to travel, and go shopping), many people saw cooking as a way to deal with the pandemic restrictions and as a means of protection (Di Renzo *et al*., 2020; Armstrong *et al*., 2021).

Further to the above, careful, knowledgeable meal preparation and slow food preferences are considered positive signs of food literacy (Armstrong *et al*., 2021; Trieste *et al*., 2021). Food literacy refers to knowledge of nutritional requirements and culinary skills based on cultural, health and environmental awareness (Trieste *et al*., 2021).

3. Conceptual framework – Research hypotheses

The high health-risk environment caused by Covid-19 and the restrictions imposed on human activities created an atmosphere of fear, anxiety and insecurity. Solastalgia, being a complex

term related to the human-ecosystem health nexus, can better explain the mechanisms behind behaviours under uncertain, unusual conditions and the accompanying emotions people feel when facing unexpected, risk-laden situations that may affect people's sense of well-being (Moratis, 2020). This research adopts a risk-resilience approach to link external risk factors (like Covid-19) with changes in mood (caused by missing and worry feelings). Risk factors are seen as stimuli that induce stress and mood disorders that generate - in turn - food consumption patterns. In other words, in their effort to cope and adapt to risk-laden stimuli, stressful human organisms respond with their health-safe food choices (Liu and Zheng, 2019). Hence, this study's conceptual framework is based on the generic stimulus-organism-response (S-O-R) model (Chen and Lee, 2018; Latiff *et al*., 2020; Lee *et al*., 2020) and is visualised in Figure 1.

– Please insert Figure 1 about here –

According to the S-O-R paradigm - introduced by Mehrabian and Russell in 1974 - stimuli are antecedents of emotional status (organism) yielding evaluation measures (response) (Chen *et al*., 2018). Within the proposed research framework, the following research hypotheses (RHi) are generated:

RH 1. *Missing usual activities has a positive impact on fresh food preferences.*

RH 2. *Missing usual activities has a positive impact on the propensity towards diverse food.*

RH 3. *Missing usual activities has a positive impact on the propensity towards quality food.*

RH 4. *Worrying about health has a positive impact on fresh food preferences.*

RH 5. *Worrying about health has a positive impact on the propensity towards quality food.*

RH 6. *Worrying about health has a positive impact on the propensity towards diverse food.*

4. Materials and methods

To test the aforementioned research hypotheses, an online survey was designed using a 5-point Likert-scaled questionnaire. Participants were asked which specific activities they missed the most during lockdown and to what extent. Questions also addressed health worries, the changes in food preferences, and the changes in the criteria of food selection. The questions are all listed in the Appendix.

4.1 Data collection

Data collection lasted from April 2020 until June 2020, in three European countries: Italy, Greece and the United Kingdom. The questionnaires were disseminated through emails and social media. Snowball sampling was used. Snowball is a type of convenience sampling that is based on networking and referrals (Lee *et al*., 2016; Parker *et al*., 2019). Friends and colleagues acted as referrers that forwarded the questionnaire to their friends and colleagues. Following similar survey designs (Peštek *et al*., 2018), certain precautions were taken to tackle common method bias (Podsakoff *et al*., 2003; Podsakoff and Organ, 1986); respondents were assured of their anonymity and non-clustered questions (items) were used to prevent any visible pattern (Bais *et al*., 2020). In total, 1298 responses have been collected, out of which 1265 were usable.

4.2 Sample characteristics

The respondents were Italian, Greek and British residents. The sample breakdown by country, gender, age, income, occupation, and education level is shown in Tables 1.1 to 1.6.

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4.3 Data analysis

The hypothesised relationships were tested with exploratory factor analysis, followed by confirmatory factor analysis and structural equation modelling. There is an ongoing debate on whether exploratory and confirmatory analyses should be used in a complementary or mutually exclusive mode (Hair *et al*., 2014; Hurley *et al*., 1997). Gerbing and Hamilton (1996) stated that "most uses of confirmatory factor analyses are, in actuality, partly exploratory and partly confirmatory in that the resultant model is derived in part from theory and in part from a respecification based on the analysis of model fit". According to Hair *et al*. (2013), "CFA cannot be conducted properly without a measurement theory", whereas "in EFA, theory is not needed to derive factors, nor is the ability to define constructs ahead of time". Nevertheless, several scholars use both methods on the same data sets, particularly when a conceptual model with novel constructs is proposed and tested, due to lack of measurement models (Chen *et al*., 2012; Marsh *et al*., 2009).

In addition, independent samples Kruskal-Wallis (non-parametric) tests were performed across residents of the three countries, across age groups, by gender, income, occupation and by education level. Furthermore, moderation analysis was performed to test possible moderating effects of the demographic variables on the hypothesized relationships.

5. Results

The suitability of data for structure detection has been first tested using Bartlett's and Kaiser-Meyer-Olkin tests. Bartlett's test of sphericity was found statistically significant (approx. Chi-square: 6640.895, df=210, $p<0.001$) and Kaiser-Meyer-Olkin (KMO) value has been found equal to 0.800, which is considered 'meritorious' (Hutcheson and Sofroniou, 1999). Following this, varimax rotation is performed (see Table 2.1).

– Please insert Table 2.1 about here –

The rotated component matrix indicates the existence of five factors. The total variance explained is found equal to 53,668 %. In natural sciences total variance extracted is expected to reach 95%, whereas in social sciences values between 50 and 60% are quite common (Hair *et al.*, 2014: p. 107). Harman's test was used for common method bias. Total variance extracted by one factor equals 18.137 %, well under the threshold value of 50% (Podsakoff and Organ, 1986). Reliability analysis was then performed to test the internal consistency of the proposed scales. Cronbach's alpha reliability coefficients are higher than the acceptable threshold value of 0.6 (Hair *et al*., 2014: p. 123) for all constructs except for quality food propensity (see Table 2.2). A primary reason for the moderate reliability value of quality food propensity is that the scale has only two items. Scale reliability is sensitive to the number of items (Hair *et al*., 2014: p.123). Future research should add more items to increase the scale reliability of the construct that represents the preference of consumers toward branded, certified food products.

– Please insert Table 2.2 about here –

Next, confirmatory factor analysis (CFA) has been used to test "how well measured variables represent a smaller number of constructs" (Hair *et al.*, 2014: p. 602), see Fig. 2. Composite reliability (CR) values were all found acceptable ranging between 0.6 and 0.8 and average variance extracted (AVE) values within the range of 0.36 and 0.56.

– Please insert Table 3 about here –

Discriminant validity reflects the extent to which a construct is truly distinct from other constructs both in terms of how much it correlates with other constructs and how distinctly measured variables represent only this single construct. In other words, high discriminant validity provides evidence that a construct is unique and captures some phenomena that other measures do not (Hair *et al.*, 2014: pp. 624-625). In Table 3 the diagonal values are the square roots of AVE values. The under diagonal values reflect the correlations between the constructs. To confirm discriminant validity, the diagonal values have to be higher than the off diagonal values. All max squared correlations are found lower than the respective AVE values. AVE values for Miss, Food preference-Fresh and Food preference-Diff are found less

than 0.50. AVE values should generally be higher than 0.5, yet lower values are accepted, when composite (or construct) reliability is higher than 0.6, since the convergent validity of the construct is considered adequate (Fornell and Larcker, 1981; Rasool *et al*., 2021). It is also noted that AVE is a far more conservative measure and, therefore, reliability can be established through CR alone (Malhotra and Dash, 2016). Furthermore, in recent literature, a new criterion is used for testing discriminant validity that is called Heterotrait-Monotrait (HTMT) ratio (Henseler *et al*., 2015). HTMT analysis offers an alternative control when facing lack of disriminant validity with the conventional analyses, particularly in the attempt to operationalise novel variables and introduce new measurement scales (Chakraborty, 2021; Lefrid, 2021; Lyu *et al*., 2022). To confirm the discriminant validity and, thus, exclude multicollinearity issues, the value of the HTMT ratio for all constructs in the model should be under 0.85 (Henseler *et al*., 2015). HTMT analysis of the survey data is displayed in Table 4. All HTMT ratio values are well below the threshold value. For the CFA analysis master validity AMOS plug-in was used (Gaskin *et al*., 2019).

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Next, structural equation modelling has been used to test the research hypotheses. Structural equation modelling is "a multivariate technique combining aspects of factor analysis and multiple regressions that enables the researcher to simultaneously examine a series of interrelated dependence relationships among the measured variables and the latent constructs, as well as between several latent constructs" (Hair *et al.*, 2014: p. 546).

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In structural equation modelling certain improvements (removal of certain items and error covariances) lead to a best fit solution (see Fig. 3) monitoring the goodness of fit indices (GOF). Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) values are pursued to reach and even exceed the generally accepted threshold value of 0.92, Standardised Root Mean squared Residual (SRMR) values should be lower than 0.08 and Root Mean Square

Error of Approximation (RMSEA) values are preferably lower than 0.07 (see e.g. Hair *et al.*, 2014: p. 584).

GOF indices for the identified structural model (best-fit solution) are quite satisfactory: CFI = 0.924, TLI = 0.905, RMSEA = 0.051 and SRMR = 0.0480, while the chi-square to degrees of freedom ratio equals 4.274. (X^2=521.416 df=122 p<0.001). For the chi-square to degrees of freedom ratio there is a debate among researchers (Kline, 2016). However, values between 2 and 5 are usually acceptable (Tabachnick and Fidell, 2007; Wheaton *et al*, 1977).

Convergent validity can also be evaluated from the measurement model by determining whether each manifest variable estimate is significant (Anderson and Gerbing, 1982; Malhotra and Dash, 2016). All factor loadings were statistically significant (p < 0.01), while the majority of their values lie between 0.6 and 0.7, thus establishing convergent validity.

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As shown in Figure 3, all research hypotheses are supported. Two stress factors have emerged. The first factor reflects stressful emotions related to deprivation of daily routines, while the second factor reflects stressful emotions related to health worries. Evidence proves that people, when missing their everyday routines and feeling their health is at risk, shift to fresh, diverse, and quality foods. Diverse food propensity represents dedicating more time to shopping and cooking food of higher quality and cost. A second variable named "quality food propensity" reflects the preference of consumers toward branded and certified food products.

The hypotheses were tested by covariance-based structural equation modelling (CB-SEM) using the AMOS 24 module of SPSS (IBM) for graphical representation indicating satisfactory fit (high values of goodness-of-fit indices). However, there were certain deviations from the threshold values of reliability and validity tests. Therefore, sample data was further used to perform some additional analyses that might enrich the findings of this study.

Independent samples Kruskal-Wallis (non-parametric) tests were performed across residents of the three countries, across age groups, by gender, income, occupation and by education level. The statistically significant comparisons are shown in the following figures (Fig. 4.1, 4.2, 4.3, 4.4, 4.5 and 4.6).

– Please insert Figure 4.1 about here –

Significant differences were found between Italy and Greece with regard to fresh food preference. More particularly, Greek residents have shown higher propensity toward fresh food during the lockdown than Italian and British residents. Significant differences were also found between British and Italian residents and between British and Greek residents with regard to quality food preference. Italian and Greek participants have prioritised quality certified or branded food more than British participants.

Comparisons of emotions by age showed that older participants worried about their health and the health of their relatives and missed their regular activities more than younger ones. Older respondents preferred less diverse and more quality foods (Fig. 4.2).

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Comparisons of emotions by income showed non-significant differences among groups. Lower-income participants showed less preference for fresh and quality foods (Fig. 4.3). Comparisons of emotions by gender using Mann-Whitney testing showed higher emotions on the side of females (Fig. 4.4). Differences in preferences by gender were statistically non-significant.

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Comparisons of data by occupation showed that retired and self-employed participants worried more about their health. Retirees and homemakers missed their routines more than the other occupation groups. Housekeepers and retired people do not seem to resort to diverse food choices, whereas students and homemakers show less interest in quality certified food products (Fig. 4.5).

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Comparisons of data by education level showed that high-school graduates missed their routine activities less than lyceum and university graduates. Lower education participants preferred fresh and quality food less than higher education ones. In pair-wise comparisons the gap was wider between high-school and lyceum graduates (Fig. 4.5).

Next, moderation analysis was performed in SPSS using Hayes' PROCESS_v4.0 macro (Hayes, 2022; Igartua and Hayes, 2021). What was tested, in particular, was the moderating effect of the demographic variables on the hypothesized relationships (see Fig. 5.1 and Fig. 5.2).

– Please insert Figure 5.1 about here –

– Please insert Figure 5.2 about here –

Income is found to moderate the relationship between worrying and quality food preferences ($R= 0.2429$, $p<0.001$). Moderation effect is visualised in figure 6.1 below.

Country is found to moderate the relationship between missing and diverse food preferences ($R= 0.2306$, $p<0.001$). Moderation effect is visualised in figure 6.2 below.

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Interestingly, the combined moderating effect of income and occupation is different between the retired participants and the groups of the unemployed, homemakers, and self-employed, whereas students and payroll workers are rather indifferent (see Fig. 6.3).

6. Discussion

The present study investigated the propensity towards food choices of people who, due to extraordinary events such as the Covid-19 pandemic, are deprived of their daily routines, i.e. moving freely, meeting other people, taking a holiday, receiving personal care services, participating in recreational activities and eating at restaurants, and simultaneously feel that their health is threatened.

The empirical results of this research supported the hypotheses *RH 1, RH 2, RH 3, RH 4, RH 5, RH 6*, confirming that when people miss their usual activities and worry about their personal health and that of their relatives, their food preferences change. Recent studies have shown that concerns about hunger, the environment, the economy, landfills and water scarcity are significant dimensions of marketing consumers' social awareness of socially responsible food consumption (Rasool *et al*., 2021). This study evidenced a change in consumption in terms of quality rather than quantity, in contrast to the usual anticipation that, in times of high stress and psychological pressure people find refuge in comfort foods, rich in sugar and calories (Di Renzo *et al*., 2020).

The analysis was conducted in the lockdown period, when out-of-home consumption shifted indoors, giving way to the preparation of home-cooked meals and comfort food. The research hypotheses were demonstrated through an analysis conducted on a sample from different geographical origins: Italy, England and Greece. The investigation of this population of consumers allowed us to understand certain relationships between the feelings of anxiety, fear

and stress that health emergency triggered to most individuals, and their food consumption behaviour.

These findings accord well with those of other scholars who argue that consumers experiencing a risk to health and living under constraints, choose fresh and elaborate food, prioritising safety and quality specifications (Güney and Sangün, 2021; Marinković and Lazarević, 2021; Mirosa *et al*., 2021; Troudi and Bouyoucef, 2020). The validated structural paths in the model indicate that people miss, among other things, their regular shopping activities, which serve both utilitarian and leisure purposes. Under lockdown constraints, consumers tend to become more "environmentally sensitive" and buy fresh food in small quantities, probably from local producers (Rasool *et al*., 2021; Resciniti *et al*., 2020), which are more likely to be available in nearby stores under safer shopping conditions that are easy to access on foot and require a brief in-store stay. These findings corroborate prior research findings that address sustainable development issues in that neighbourhood food venues are environmentally friendly and socially responsible (Ang *et al*., 2021; Rasool *et al*., 2021; Saha *et al.*, 2020). Furthermore, mobility restrictions during epidemics, such as Coronavirus, can boost online purchasing (Grashuis *et al.*, 2020; Hillen, 2021; Kumar and Shah, 2021; Szolnoki *et al.,* 2021). Future research could compare e-shopping with brick-and-mortar purchasing of foods.

7. Conclusion

This study has provided a quantitative analysis of the relationships between food consumption and the emotions caused by health risks and constraints. It has been tested and confirmed that when people are deprived of their everyday routines and feel their health being threatened by an unknown, unprecedented factor, they modify their food choices aiming to adapt and survive or, in other words, they become resilient.

7.1 Research implications

The identified relationships could be used as a first step toward assessing the impact of emotions attributed to worries and missed habits on the food choices of people living under stressful conditions. For healthcare experts and nutritionists, the findings of this study could be useful to improve predictions, diagnoses, and decision-making. Food brands are acknowledged as particular elements of food quality in the model. Marketing practitioners can

use this research as an opportunity to include risk-based thinking and revise their marketing and brand development strategies accordingly.

Several preliminary studies were recently published aiming to conceptualise the effects of epidemics on human behaviour. The sudden and overwhelming impacts of unexpected, widely spread phenomena, like epidemics and natural disasters, raised the need for consumer behavioural studies. As such, this study identified certain relationships and compared behaviours among demographic groups. Academics and practitioners may rely on these findings and further identify similar behavioural patterns in other sectors. Managers and marketers need to collaborate toward incorporating or rather "embracing" the element of surprise in their business and marketing plans.

Furthermore, the results of this research can also be used for academic purposes, as the theoretical contributions are many. First, the results of the present research, confirm that stress and negative emotional states influence eating behaviour, in line with prior pertinent research (Caso *et al*., 2020; Hill *et al*., 2018; Reichenberger *et al.*, 2018; Torres and Nowson, 2007). Interestingly, the findings contrast with the majority of relevant literature that negative emotions, particularly anxiety and fear, lead to overconsumption of junk food, i.e. foods with high sugar or fat content (Boylan *et al*., 2017). During the same period, other studies have confirmed that, during the first lockdown period, consumption of homemade pizza, bread, and homemade desserts increased, whilst the consumption of junk foods, such as salty snacks and sugary drinks decreased (Di Renzo *et al*., 2020). Thus, the question of whether the types of food consumed worsened or improved, and what social psychological factors influenced this, remains open.

Moreover, the research supports studies undertaken on purchasing behaviours. Based on the findings, it raises the question of whether the change in food consumption was dictated by more time at home and being able to devote time to cooking, due to isolation and restrictions, or simply the fact that working from home and spending less time away from home has moved us away from the temptations of junk food in cafes and supermarkets, vending machines at work, or the smell and temptations of fried food coming out of takeaways while walking down the street.

In addition, research has shown that under constraints and isolation, consumers tend to buy fresh food, which is more likely to be available in local stores, where shopping is safer (with shorter visits and no need to use public transportation). The referenced literature also suggests that mobility restrictions during outbreaks, such as Covid-19, can incentivise online shopping (Grashuis *et al*., 2020). Indeed, the question of online and in-store food purchasing is a topic

offered up for investigation. Future research could take advantage of any additional periods of isolation to test whether our results apply in other contexts, characterised by the severity of the emergency.

7.2 Limitations and future research directions

The findings of this study apply to behaviours related to food. Future studies would explore similar behaviours in other sectors. Food consumption aside, other aspects of daily life may be affected under stressful conditions of high risk. Additionally, the impact of pandemics or of other types of crises and disasters on product prices and consumers' income has to be taken into account when exploring patterns of buying behaviour. Hence, another line of research may examine the combined effect of financial and physical/emotional challenges on food literacy and nutrition patterns. Among the variables of the model, the brand has been included as a preferred food quality attribute. This finding, along with prior studies on food brand as a quality indicator in farming (Tselempis *et al*., 2020), opens avenues of integrated research along the food value chain.

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Annex – Survey Questions

Questionnaire item	***Pertinent references***
To measure the effect of missing usual activities:	
During this time of confinement at home, due to the coronavirus, which of the following usual activities do you miss and to what extent:	
• to move freely	Brooks *et al*., 2020
• to be amongst people	Brooks *et al*., 2020
• to go shopping	Brooks *et al*., 2020
• to engage in sport activities	Di Renzo *et al*., 2020
• to enjoy personal care services (hairdresser, beautician etc.)	Brooks *et al*., 2020; Schmalz *et al*., 2019
• to go to the restaurant	Brooks *et al*., 2020; Schmalz *et al*., 2019
• to attend places of leisure (pubs, lounge bars, recreational clubs, associations, leisure and entertainment venues, etc.)	Brooks *et al*., 2020; Schmalz *et al*., 2019
• to take trips/holidays/vacation	Brooks *et al*., 2020; Schmalz *et al*., 2019
• to participate in cultural activities (theatre, exhibitions, museums, etc.)	Brooks *et al*., 2020; Schmalz *et al*., 2019
To measure the health concerns:	
During this time of confinement at home due to the coronavirus:	
• do you worry about your personal health	Brooks *et al*., 2020
• do you worry about the health of your relatives	Brooks *et al*., 2020
To measure the change in food preferences:	
During this time of confinement at home due to the coronavirus:	
• do you consume more fresh and short-life products	Coppin, 2020; Di Renzo *et al*., 2020; Johansson *et al*., 1999
• do you consume more fruits and vegetables	Coppin, 2020; Di Renzo *et al*., 2020
• do you consume more fresh meat	Sheikhesmaeili and Hazbavi, 2019; Di Renzo *et al*., 2020
• do you consume more fresh fish	Sheikhesmaeili and Hazbavi, 2019; Di Renzo *et al*., 2020
To measure the change in propensity regarding food:	
During this time of confinement at home due to the coronavirus:	
• do you prefer products bearing a quality mark (PGI-Protected Geographic Indication, PDO-Protected Designation of Origin, e.g. Fair Trade, Bio, etc.)?	Iazzi *et al*., 2016; Troudi and Bouyoucef, 2020
• do you prefer branded food products?	Iazzi *et al*., 2016; Troudi and Bouyoucef, 2020
• do you spend more on food (than before the coronavirus)?	Troudi and Bouyoucef, 2020
• do you buy more foods of higher quality and price (than before the coronavirus)?	Iazzi *et al*., 2016; Troudi and Bouyoucef, 2020
• to what extent do you cook more elaborate or different foods (than before the coronavirus)?	Sheikhesmaeili and Hazbavi, 2019

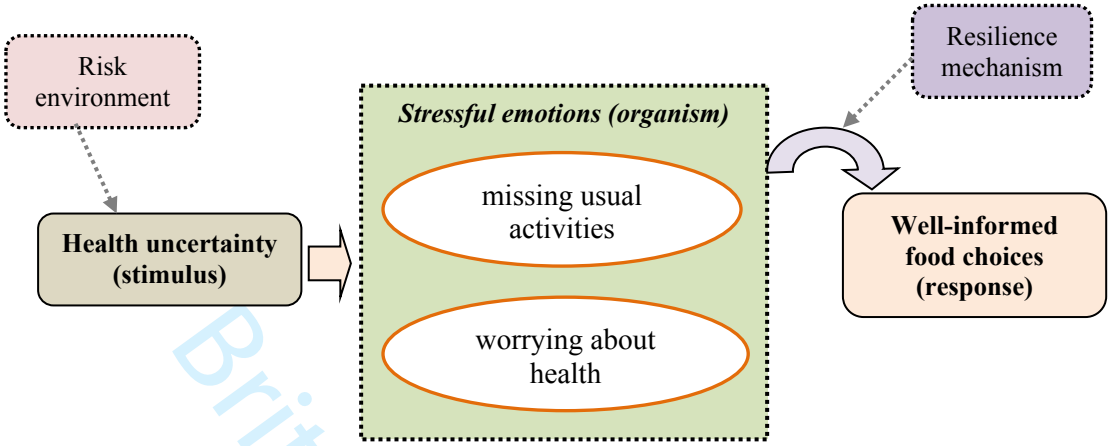

Figure 1. The conceptual framework

Table 1.1 Sample breakdown by country

Country	Frequency	Percentage (%)
Italy	1099	86.9
Greece	126	10.0
United Kingdom	40	3.2
Total	1265	100.0

Table 1.2 Sample breakdown by gender

Gender	Frequency	Percentage (%)
Males	504	39.8
Females	761	60.2
Total	1265	100.0

Table 1.3 Sample breakdown by age

Age	Frequency	Percentage (%)
Under 30	367	29.0
31-45	427	33.8
46-55	215	17.0
56-65	170	13.4
Over 65	86	6.8

Table 1.4 Sample breakdown by income

Income range (€)	Frequency	Percentage (%)
0-10000	310	24.5
10001-20000	323	25.5
20001-35000	370	29.2
35001-50000	151	11.9
More than 50000	111	8.8

Table 1.5 Sample breakdown by occupation

Country	Frequency	Percentage (%)
Student	271	21.4
Payroll employee/worker	555	43.9
Self-employed	232	18.3
Housekeeping	45	3.6
Unemployed	64	5.1
Retired	98	7.7

Table 1.6 Sample breakdown by education level

Education level	Frequency	Percentage (%)
High school	25	2.0
Senior high school (lyceum)	389	30.8
University / Master's3	851	43.9

	Components				
Items	1	2	3	4	5
Miss_leisure	,771				
Miss_restaurant	,730				
Miss_vacation	,689				
Miss_people	,664				
Miss_move_freely	,650				
Miss_culture	,596				
Miss_shopping	,588				
Miss_personal_care	,588				
Miss_sport	,463				
Food_pref_fish		,783			
Food_pref_meat		,729			
Food_pref_fruit_veg		,653			
Food_pref_fresh		,649			
food_more			,770		
qual_exp			,737		
cook_elab			,641		
Worry_health_relatives				,813	
Worry_personal_health				,769	
Food_pref_qual_mark					,786
Food_pref_brand					,684

Table 2.1 Rotated component matrix

Factor	*Cronbach's alpha*
Miss	0.829
Worry	0.695
Fresh food preference	0.689
Diverse food propensity	0.614
Quality food propensity	0.567

Table 2.2 Reliability coefficients

	Composite Reliability	Average Variance Extracted	Max Shared Variance	Miss	fFresh	Worry	fDiff	fQual
Miss	0.831	0.387	0.094	0.622				
fFresh	0.691	0.363	0.138	0.227***	0.603			
Worry	0.716	0.561	0.097	0.000	0.132**	0.749		
fDiff	0.626	0.362	0.094	0.306***	0.208***	0.180***	0.602	
fQual	0.576	0.408	0.138	0.270***	0.372***	0.312***	0.228***	0.639

Table 3. Validity Analysis

	miss	fFresh	worry	fDiff	fQual
miss					
fFresh	0,218				
worry	0,035	0,139			
fDiff	0,336	0,207	0,185		
fQual	0,244	0,425	0,321	0,207	

Table 4. HTMT Analysis

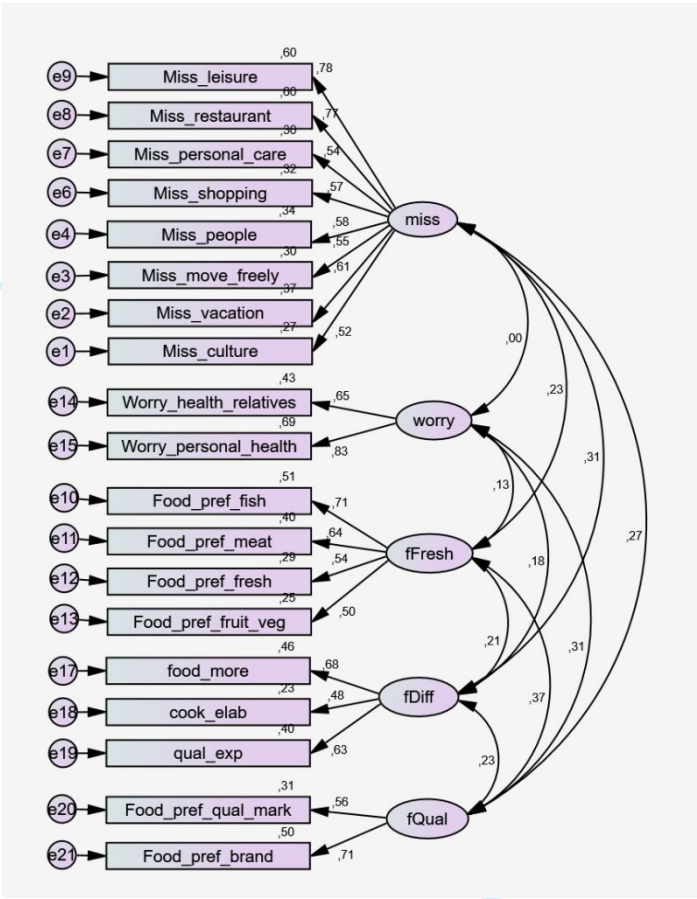

Figure 2. Confirmatory factor analysis

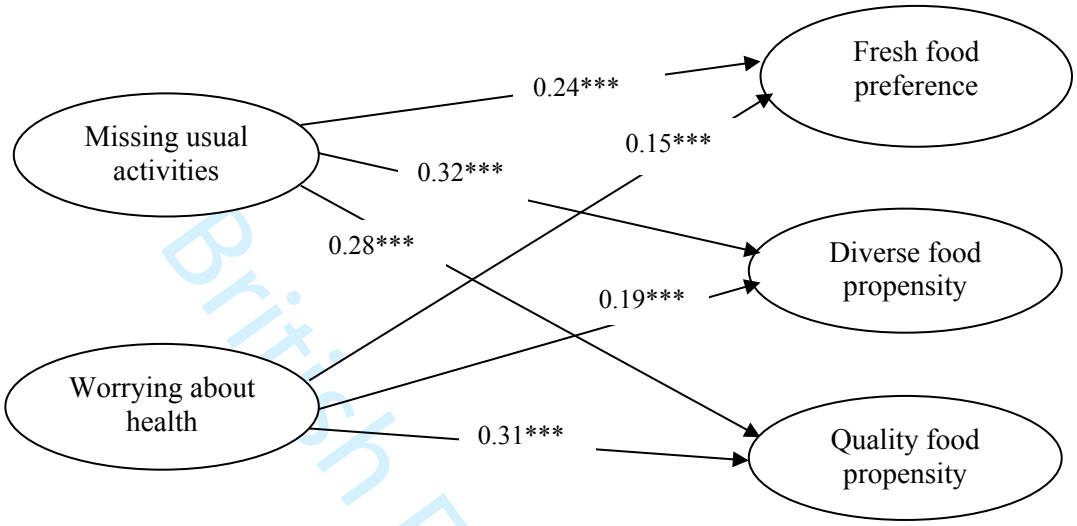

*Figure 3. Structural model - Best fit solution (***: p<0.001)*

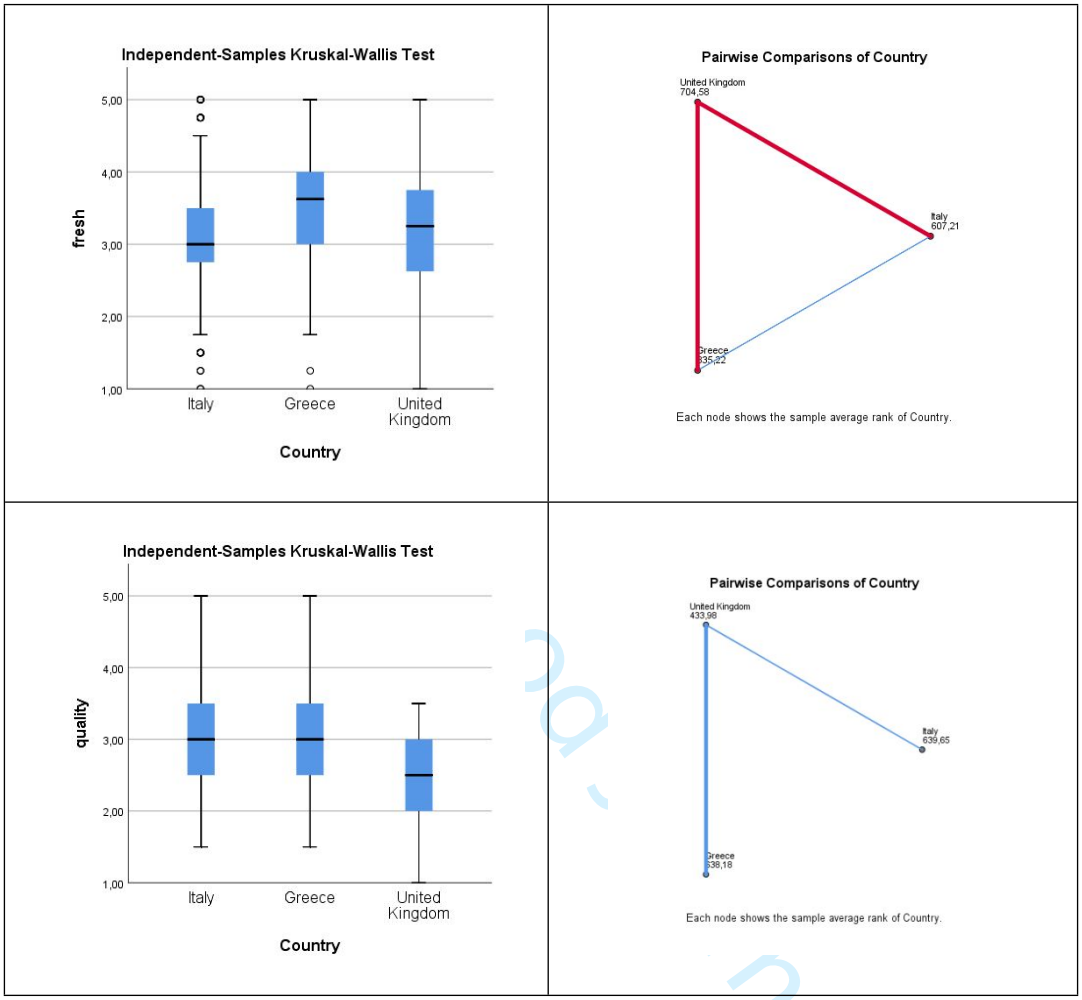

Figure 4.1 Comparisons of preferences across countries

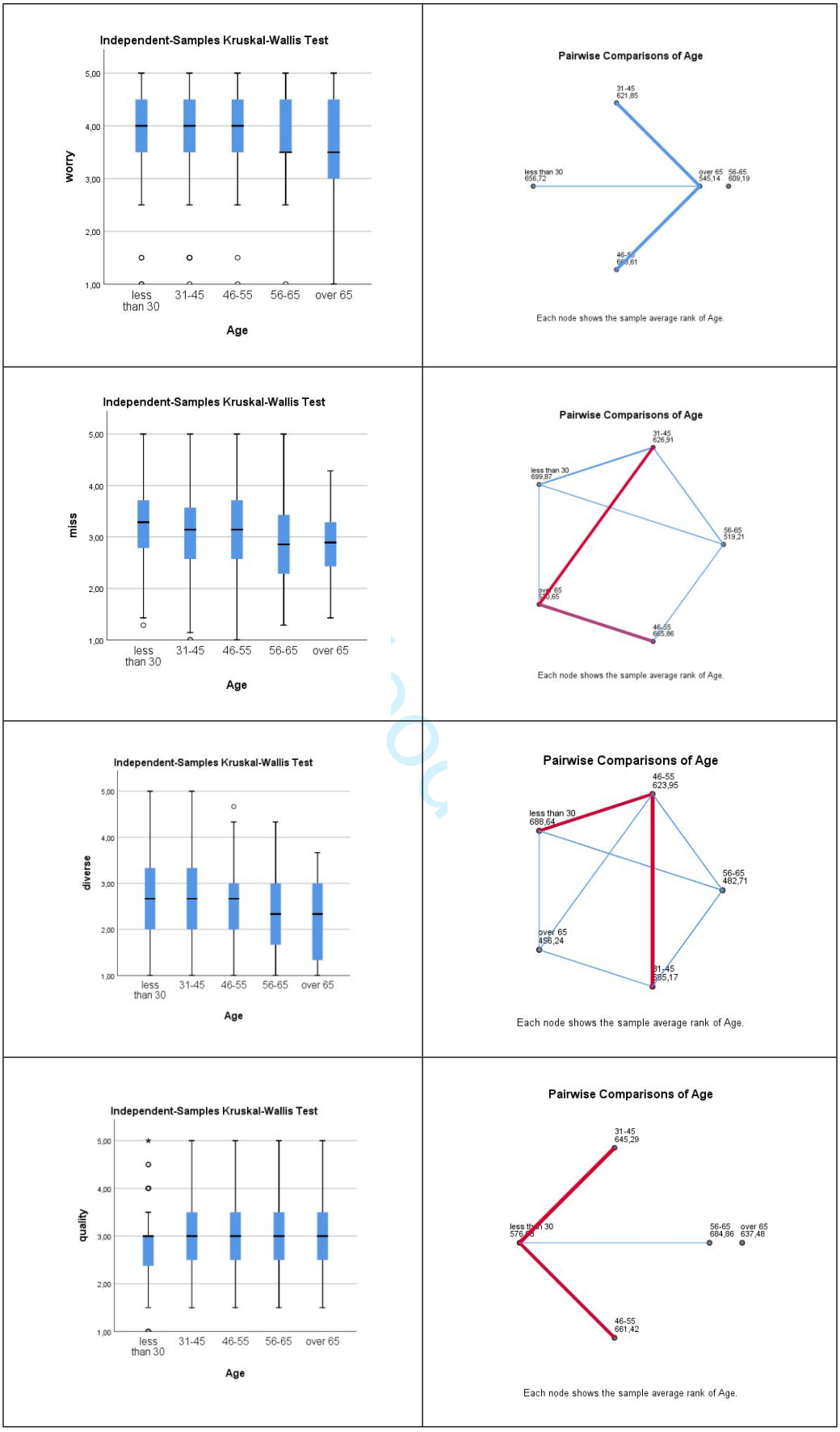

Figure 4.2 Comparisons of emotions and preferences across age groups

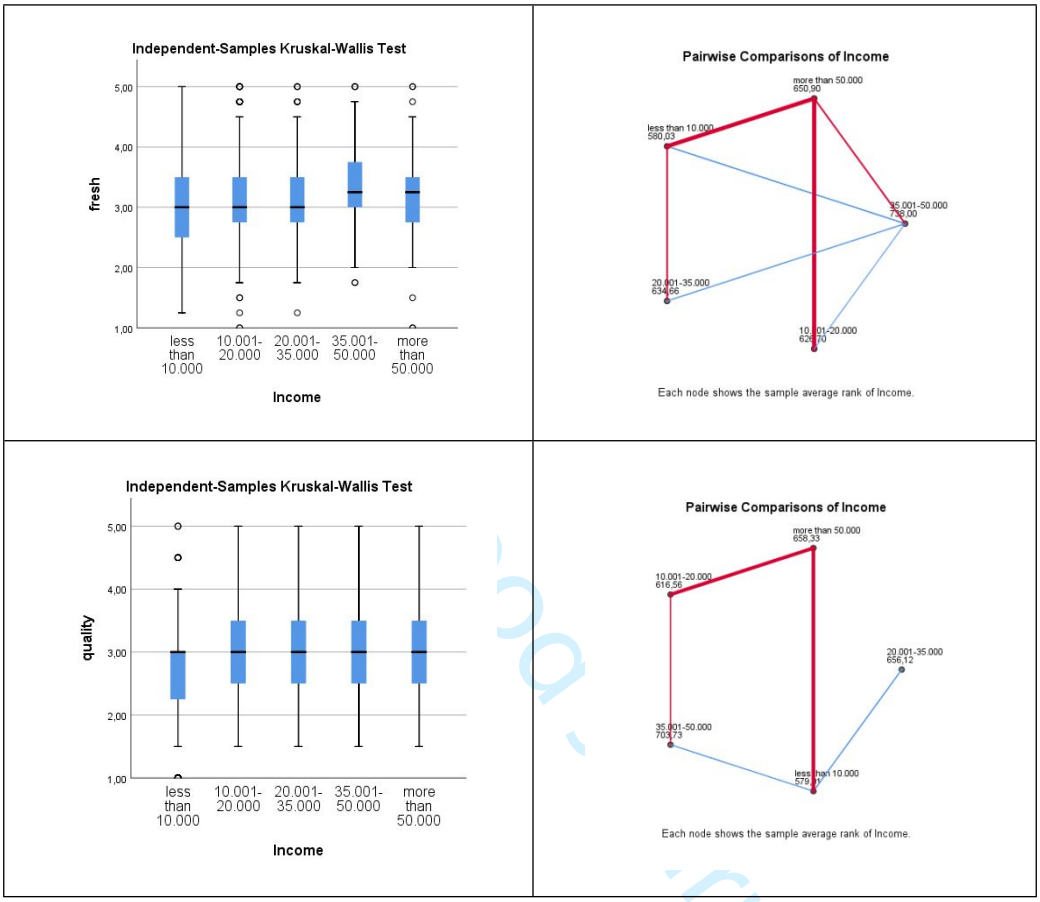

Figure 4.3 Comparisons of preferences across income groups

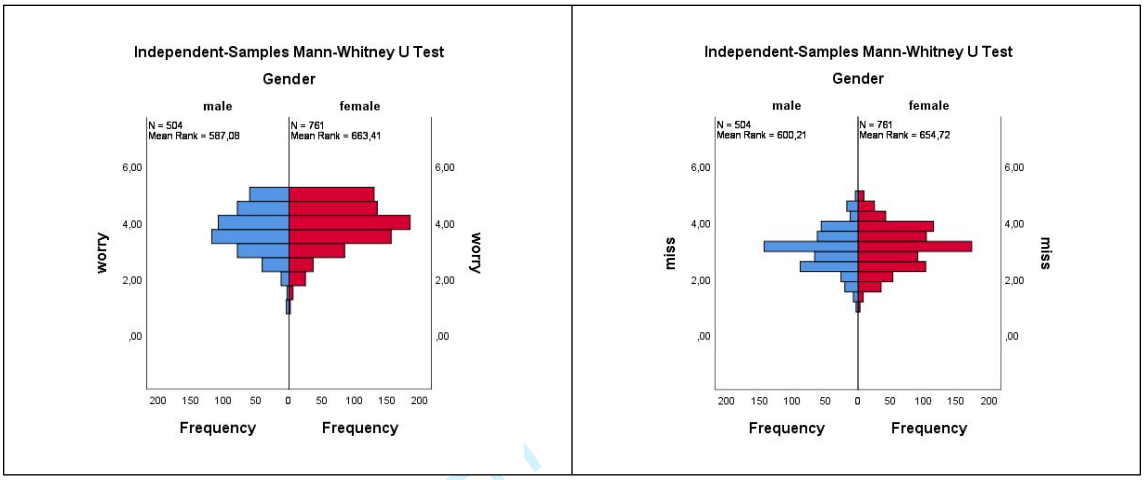

Figure 4.4 Comparison of emotions by gender

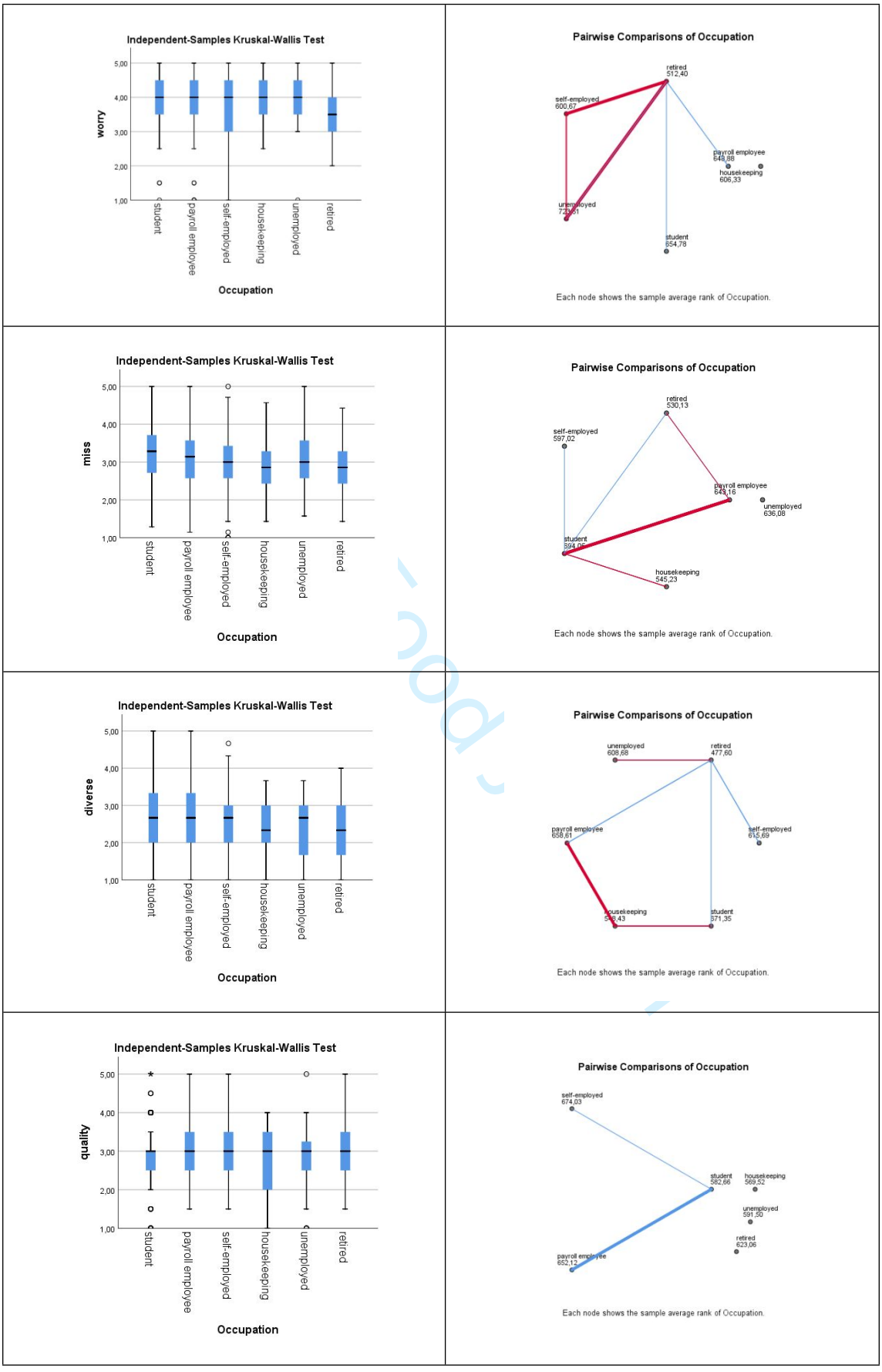

Figure 4.5 Comparisons of emotions and preferences by occupation

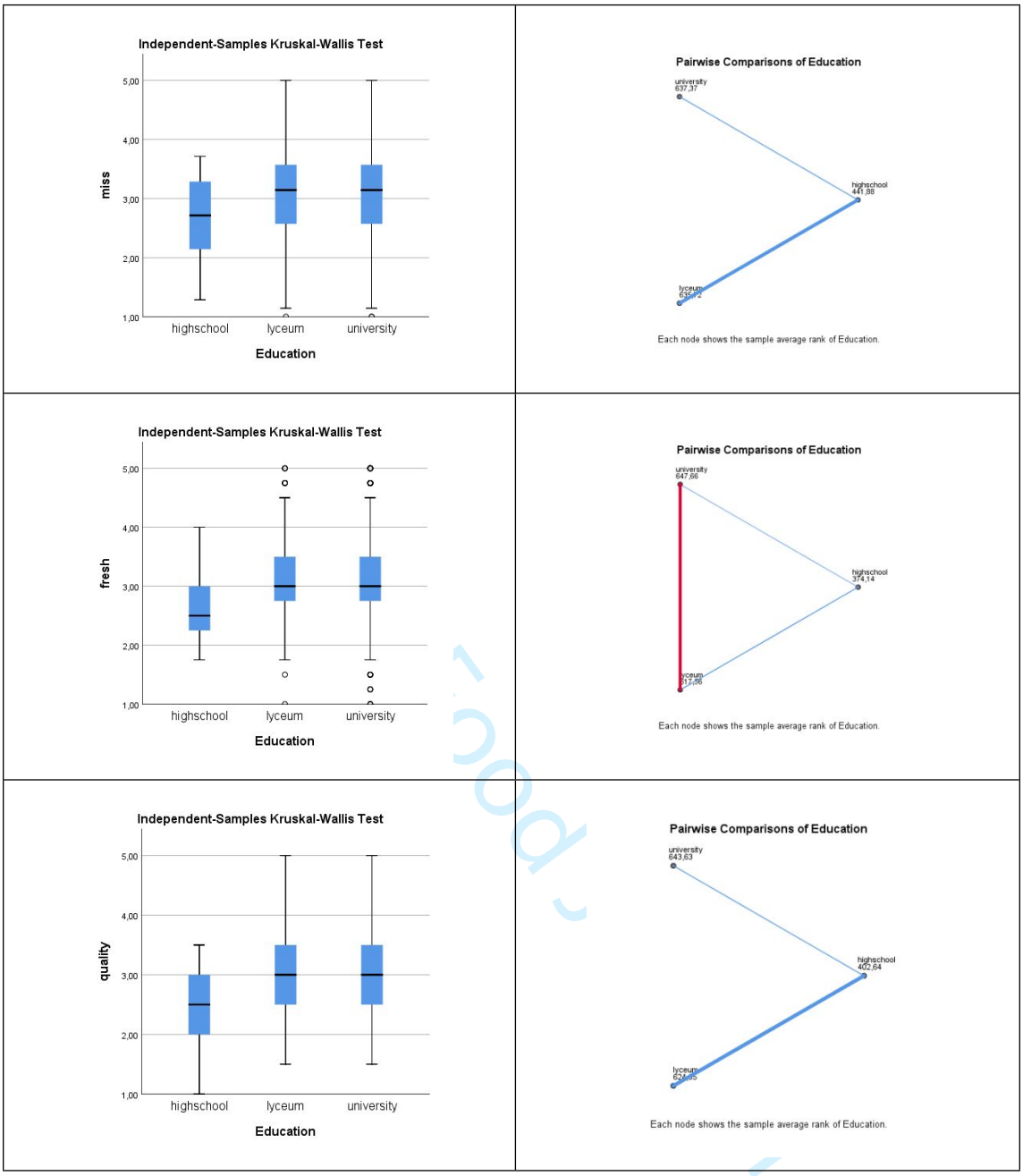

Figure 4.6 Comparisons of emotions and preferences by education level

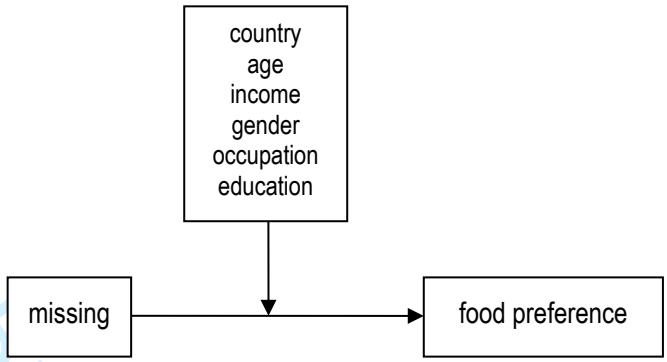

Figure 5.1 Moderation effects of demographic variables on the hypothesised relationships between missing emotions and food preferences

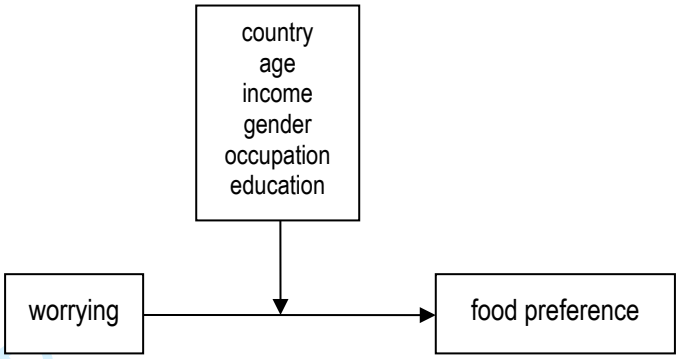

Figure 5.2 Moderation effects of demographic variables on the hypothesised relationships between worrying emotions and food preferences

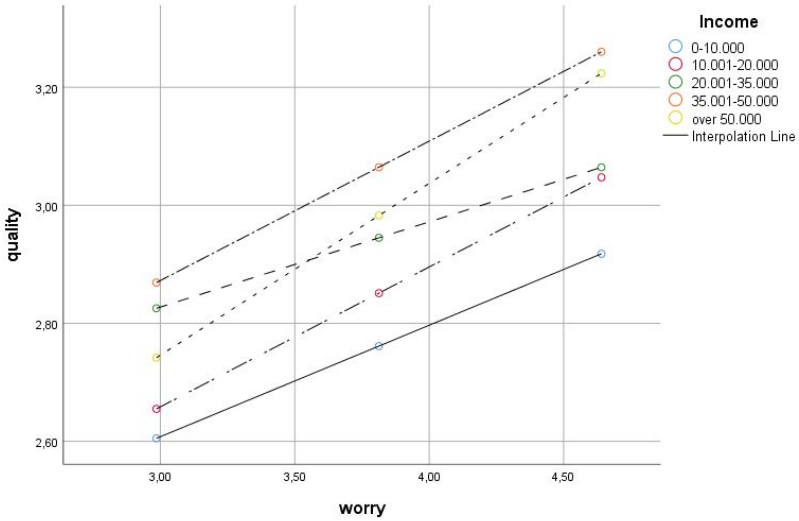

Figure 6.1 Moderation effect of income on the hypothesised relationship between worrying emotions and quality food preferences

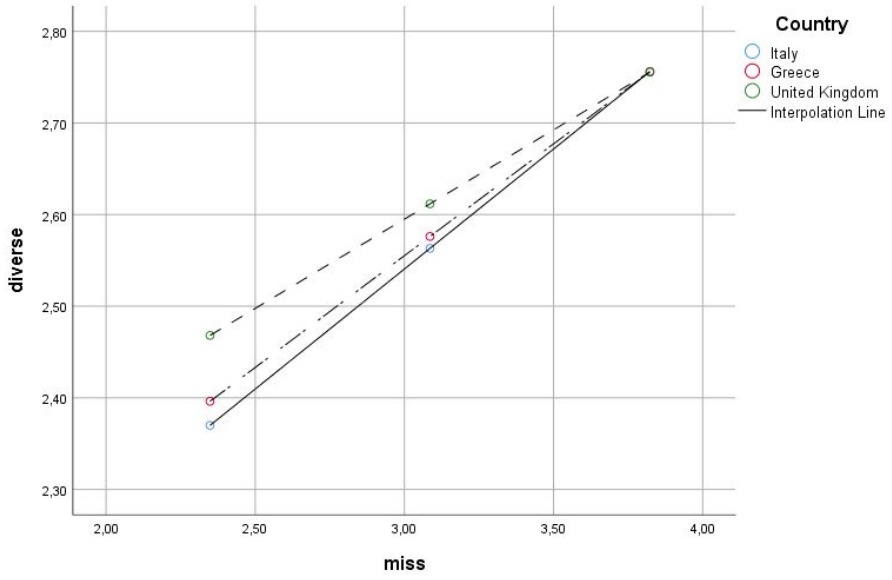

Figure 6.2 Moderation effect of country on the hypothesised relationship between missing emotions and diverse food preferences

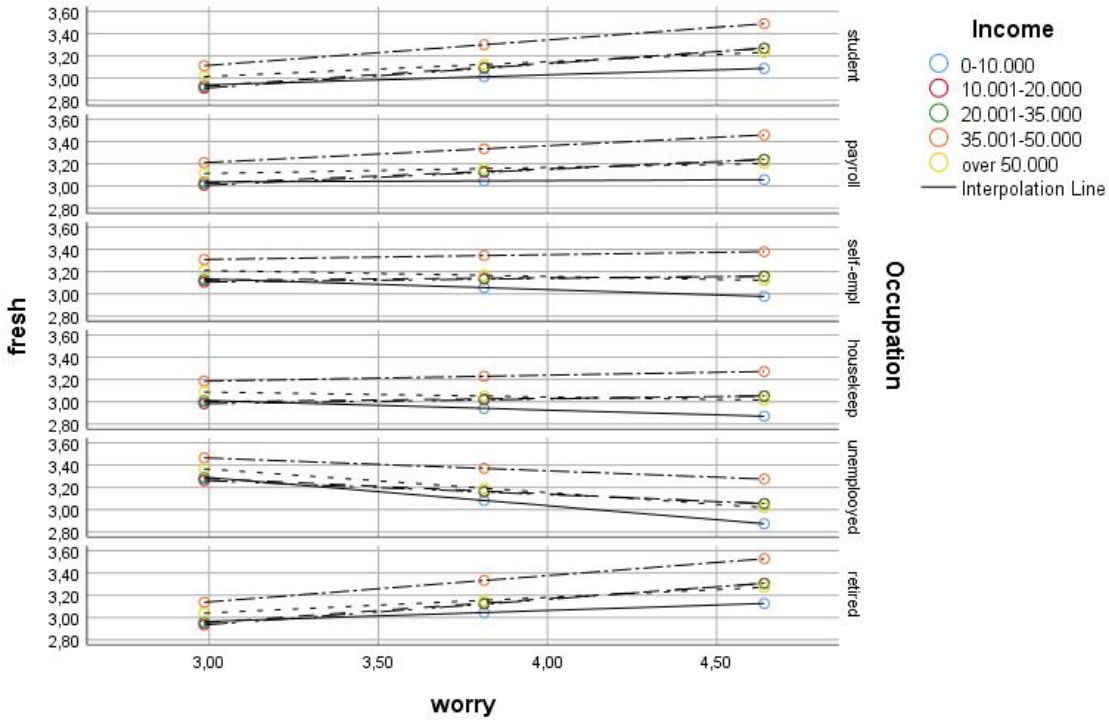

Figure 6.3 Combined moderation effect of income and occupation on the hypothesised relationship between worrying emotions and fresh food preferences (R= 0.2025, p<0.001)

Manuscript ID: BFJ-10-2021-1145

Title: Food Literacy as a Resilience Factor in response to health-related uncertainty

Response to the editor's and to the reviewers' comments

We are grateful to the reviewers for their insightful suggestions to improve the manuscript. We hope that the revised manuscript is significantly improved. All additions are highlighted in blue.

Editor's comment	**Response**
Dear authors, I am happy to say that your manuscript has been appreciated by me and the reviewers. However, some changes are needed. Please, follow the suggestion of the reviewers as well as the following:	We would like to thank the editor and the reviewers for their time and effort in reviewing our manuscript. The manuscript has been revised accordingly. We hope that this revised version of the manuscript meets the reviewer's expectations.
- Motivation of the Paper. In the introduction I do not understand and see clearly the theoretical contribution of the paper. I think the paper, at the present form, partially fails to formulate a research problem, which is of interest. We have partial answers on what we know now about the topic and what we do not know. The author should more in detail and in a more systematic way present answer on these questions, but also what we need to know. Why is this important, for research, for practice? Also, the introduction is critical and I suggest the following key points within this section (Positioning, Gap, Purpose, Central argument, Organizing, Contribution, So what?)	The manuscript has been thoroughly revised to address all reviewers' concerns. Theoretical grounding (conceptual model) is now presented in detail in a separate section. All sections have been reorganised and enriched.
- Literature. The paper should be grounded more on recent literature. Also, do you think food waste may be in some way related to part of your paper? See: Rasool, S., Cerchione, R., Salo, J., Ferraris, A., & Abbate, S. (2021). Measurement of consumer awareness of food waste: construct development with a confirmatory factor analysis. British Food Journal.	We thank the Editor for the literature suggestions. The Introduction, Literature review, Conceptual Model, Materials and methods, Results, Discussion, and Conclusion sections have been revised and enriched and grounded by pertinent research. The following references - and several more – have been added in the revised manuscript. • Bazzani, A., Bruno, S., Frumento, P., Cruz-Sanabria, F., Turchetti, G. and Faraguna, U. (2021), "Sleep quality mediates the effect of chronotype on resilience in the time of COVID-19", *Chronobiology International*, Vol. *38* No. 6, pp. 883-892. https://doi.org/10.1080/07420528.2021.1895199 • Rasool, S., Cerchione, R., Salo, J., Ferraris, A. and Abbate, S. (2021), "Measurement of consumer awareness of food waste: construct development with a confirmatory factor analysis", *British Food Journal*, Vol. 123 No. 13, pp. 337-361. https://doi.org/10.1108/BFJ-02-2021-0160 • Trieste, L., Bazzani, A., Amato, A., Faraguna, U. and Turchetti, G. (2021), "Food literacy and food choice – a survey-based psychometric profiling of consumer behavior", *British Food Journal*, Vol. 123 No. 13, pp. 124-141. https://doi.org/10.1108/BFJ-09-2020-0845
- Building your discussion: I would suggest that a discussion section be more comprehensively developed that links back to your initial research questions and a clear statement of proposed contributions, once you have reframed your arguments and developed some propositions. What should we, as readers, take away regarding your study? What are the key theoretical contributions that are gained? How can these findings contribute to the literature stream associated with food businesses? What do we know about this literature stream now that we	Discussion section is now revised and justified by more pertinent research. Theoretical and practical aspects are now more clearly discussed.

have read your study? What future research should be conducted within this literature stream that can be extended based upon your study?	
This is what I often call "closing the loop". Specifically, you a) state in the introduction that there is a gap (your research questions), and you plan to address the gap theoretically; b) present a formally developed and very focused literature review that gives the rational for the study and develop propositions/hypos that reflect this gap; and c) "Close the loop", by developing your discussion section that ties back to the research question(s). In the end, you hope that the reader has been able to read the article and see the article, in its entirety, as encapsulating the resolution of a theoretical or empirical gap.	The revised manuscript includes enhanced theoretical grounding of this research. Literature review explains the development of the conceptual model. Findings support the posited research hypotheses and, furthermore, they offer comparisons across different countries, age groups, genders, income groups, occupations, and education levels. Discussion and conclusion address the results in light of the developed hypotheses.

Reviewer: 1	
Reviewer's comment	**Response**
Interesting paper with some improvements however needed.	We would like to thank the reviewer for the encouraging comments. The manuscript has been revised accordingly. We hope that this revised version of the manuscript meets the reviewer's expectations.
1. Originality: This is an interesting paper, and timely given that research regarding the effects of the pandemic is very much needed. But the aim is not clear. There are three instances the 'aim' is presented, and quite differently stated in each of this instances: page 1, line 9 page 1, line 13 page 2, line 1 So what is the aim??	The aim is now stated once in the introduction.
2. Relationship to Literature: Although important and relevant literature is presented, it does seem to need more improvement in content and richness. As it stands the hypotheses presented do not seem to have adequate justification - perhaps more on food preferences, more on habits, more on emotion, more on factors affecting decision, are some examples this section could improve.	Literature review has been enriched. A section (section 3) is dedicated to the description of the conceptual framework that led to the development of the research hypotheses.
3. Methodology: overall acceptable - but no information as to sampling method used (probability or non? how were units selected? and so on)	Methodology section has been revised. Sampling method is now clearly described and referenced. Data collection subsection is also added. Sample breakdown by country, gender, age, income, occupation, and education level is now shown in Tables 1.1 to 1.6.
4. Results: acceptable presentation of results. but there is a weakness in the discussion and conclusion. these two sections could be further enriched as the findings are somewhat 'undersold'.	Results are now enriched in the revised manuscript by comparisons and moderation analysis. Discussion and Conclusion sections have been revised accordingly.
5. Implications for research, practice and/or society: further research suggests comparison among countries. but this research was done in different countries (Italy, Greece, UK) why could the comparison not be done in this case?	Following the reviewer's kind recommendations moderating analysis has been performed using demographic variables as moderators. The respective findings are presented in the results section.
6. Quality of Communication: good	

Reviewer: 2	
Reviewer's comment	**Response**
There are some serious concerns raised and it has to be fixed by the authors before publication.	We revised the manuscript to address the concerns raised by the reviewer. Hopefully, the revision meets the reviewer's recommendations.
1. Originality: *Does the paper contain new and significant information adequate to justify publication?* Yes, it is new and much-needed research	We would like to thank the reviewer for the encouraging comments.
2. Relationship to Literature: *Does the paper demonstrate an adequate understanding of the relevant literature in the field and cite an appropriate range of literature sources? Is any significant work ignored?* No, I feel still the hypotheses links were not explained adequately. No theoretical stance applied here? Authors can explain each hypothesis with a detailed literature review. Also, if possible authors can add the conceptual model in graphical format.	The manuscript has been revised accordingly. A distinct section (Section 3) is dedicated to the explanation of the conceptual grounding of the study that led to the posited research hypotheses. A figure has been added to depict the conceptual framework.
3. Methodology: *Is the paper's argument built on an appropriate base of theory, concepts, or other ideas? Has the research or equivalent intellectual work on which the paper is based been well designed? Are the methods employed appropriate?* Somewhat Yes. The authors stated that this study is exploratory in nature. Most of the exploratory researches are qualitative in nature. It follows, constructivism paradigm and the authors followed quantitative methods. This discussion is contradicting.	This phrase is removed from the revised manuscript to avoid contradictions.
It seems you have used the same samples for EFA and CFA, many researchers disagree with this technique. So cite some research work to justify the same sample usage in EFA and CFA.	A paragraph has been added in the beginning of the discussion section to justify the use of both EFA and CFA to the same sample. Relevant research is referenced in the revised manuscript.
As per the literature, AVE values should be more than 0.5, and in your study, some of the constructs were less than 0.5. It is recommended to remove some of the items to increase the convergent validity. Authors have given explanation for this, however, many researchers follow both reliability and validity as important measure.	Indeed, AVE values of certain constructs are lower than anticipated. However, any removal of items of these constructs fails to raise the respective AVE values. Therefore, we used heterotrait-monotrait (HTMT) analysis. HTMT is a rather novel type of analysis that is used as an alternative in such cases. This analysis in now included in the Results section.
4. Results: Are results presented clearly and analysed appropriately? Do the conclusions adequately tie together the other elements of the paper?: Somewhat Yes. Since validity is a big concern in this research, I am not sure how much the structural model results are reliable.	More detailed justification regarding the validity concerns is included in the results section. Additional validity (HTMT) testing supports the findings.
Moreover, in studies like this, the authors can use some more analysis, such as moderating analysis. It is recommended to use demographic variables as moderators to check the model difference based on important demographics.	Following the reviewer's kind recommendations moderating analysis has been performed using demographic variables as moderators. The respective findings are presented in the results section.
5. Implications for research, practice and/or society: No academic implications. It is recommended to include academic implications for future researchers and theories.	Academic implications are included in the revised manuscript.
Practical implications are fine.	We would like to thank the reviewer for the encouraging comments.

Reviewer: 2	
Reviewer's comment	**Response**
6. Quality of Communication: Yes. Perfect	We are grateful to the reviewer for the encouraging comments.

Reviewer: 3	
Reviewer's comment	**Response**
It is not clear to me to what audience this paper is designed for: marketers, practitioners, or the broadest audience possible? Authors should explicitly state their positioning. Due to a lack of clarity in most of its sections (i.e., mainly aims, methods and results), although focused on a very interesting topic, this paper would benefit from additional work before being published.	We are grateful to the reviewer for the insightful recommendations. Text is revised accordingly. Aim is clarified, methods and results are enriched.
With respect to the introduction and literature review, I suggest the authors to make sure that all passages are backed with appropriate references. For instance, are the following sentences reported at pag.1 supported by empirical evidence? - lines 28-30: "given that those who are more physically fit usually […]" - lines 49-54: "Then, in an effort to adapt […]" - etc.	The text is revised and all passages are now backed with respective references.
The authors should provide additional explanation about the reason why they chose the conceptual framework proposed. As an example, why is the concept of "solastalgia" so relevant? Why is it not further commented across the manuscript?	Thanks to the reviewer's kind recommendation the conceptual framework of this research is now presented in detail in the revised manuscript. The concept of 'solastagia' is now better justified and commented.
Finally, in section 2.2 (pag.3) authors might consider citing also recent works on the association between physiological functions and resilience (e.g., Bazzani, A., Bruno, S., Frumento, P., Cruz-Sanabria, F., Turchetti, G., & Faraguna, U. (2021). Sleep quality mediates the effect of chronotype on resilience in the time of COVID-19. Chronobiology International, 1-10.), as well as on the importance of food literacy in food choice (e.g., Trieste, L., Bazzani, A., Amato, A., Faraguna, U. and Turchetti, G. (2021), "Food literacy and food choice – a survey-based psychometric profiling of consumer behaviour", British Food Journal, Vol. 123 No. 13, pp. 124-141. https://doi.org/10.1108/BFJ-09-2020-0845).	Recent works on the association between physiological functions and resilience and on the importance of food literacy in food choice – including those suggested by the reviewers - are now cited in the manuscript.
Objectives are not clearly stated: e.g., the aim reported at pag. 1 (lines 26-32) sounds different from the one declared at p.2 (lines 3-5).	Research aim is now stated only once in the manuscript.
Methodology is too poorly described. This part should be significantly expanded. There is no sufficient description of the sample characteristics (e.g., mean age, gender information, etc.). Also, are the questions used in the survey obtained from validated questionnaires? Which are the "certain precautions" taken?	Methodology section has been revised. Data collection is now described in a distinct subsection. Sample breakdown by country, gender, age, income and occupation is now shown in Tables 1.1 to 1.5.The sources were the questions were drawn from are presented in a table (in the Annex) in the revised manuscript. The precautions taken to tackle common method bias are now better justified and supported by relevant references.
Results mainly describe statistical analysis for the internal validity of the questionnaire without precisely addressing the research hypotheses listed at pag.4. Please modify the display of the results section so to clearly distinguish between findings related to the analysis of the reliability of the questionnaire (ideally as a first part), and a second part dedicated to findings related to the research questions.	Following the reviewer's insightful suggestion, a paragraph is now added in the Results section dedicated to findings related to research hypotheses. Also, group comparisons are now included in the results section.
The conclusion section (together with "research implications", as well as "limitations and	Conclusion section has been revised, as advised.

Reviewer: 3	
Reviewer's comment	**Response**
future research directions") should be revised accordingly.	
Also, please provide clear captions for figures and tables (not shown).	Captions for all figures and tables are provided.
Descriptive statistics should be provided as well: did authors consider the possible differences among the three countries taken into account?	Demographics group comparisons are now included in the revised manuscript.
Finally, pay attention p.5, lines 19-20: authors state that "Cronbach's alpha reliability coefficients are higher than 0.6, which is an acceptable threshold value in exploratory research", while in table 2 is reported a Cronbach's alpha value of 0.567 for "quality food propensity". Please fix this mistake.	This mistake has been corrected in the revised manuscript, supported by relevant justification.
Some additional and punctual suggestions to improve the readability of the manuscript are listed below:	All suggestions have been addressed. Please see the detailed justification that follows.
P. 2, lines 5-12: you can remove the sentences from "To serve […]" to "[…] conclusion section".	The indicated sentences are omitted.
P. 2, lines 36-39, please rephrase the sentence "In other words, […]"	The indicated sentence is rephrased in the revised manuscript.
P.2, line 42: "excessive emotional reactions". Excessive compared to?	The adjective "excessive" has been replaced by "instinctive and intuitive"
P. 2, line 49: "on collective awareness". How does this finding apply to COVID-19 pandemic? Please specify.	First and Brozina (2009) in their study on cultural influences on motivation for organic food consumption found that "Croatian consumers display homogeneous collective awareness, i.e. they almost exclusively consider health as prime consumption motive." This explanation has been added in the revised manuscript.
P. 2, line 58: "spending and hoarding food later". "[…] spending […] later"?	This sentence is now rephrased to increase comprehension: "young *people started mass buying and stockpiling food at a later point in time* than older people"
P. 3, line 50: remove "etc."	"Etc." has been replaced by "and": "... social, emotional, and work relationships ..."
P.4, lines 4-5: remove the sentence "Dining at home has become something more than a necessity".	The indicated phrase is removed from the manuscript.
P.4, lines 10-22: make some relevant examples of "regular/usual activities"	The following explanatory text is added in the revised manuscript: *e.g. to reach their physical workplace and socialise, to meet with family and friends, to practice sports and recreational activities, to visit restaurants, cafes, cinemas and theatres, to attend parties, anniversaries and celebrations, to travel, and go shopping*
Additional Questions:	
1. Originality: This paper focuses on a very interesting topic, which is the role of food literacy as a resilience factor during the COVID-19 pandemic. The possible implications of a paper of this kind are immediate both for researchers and professionals. However, some major issues should be addressed before definitely sharing this work with the scientific community.	We would like to thank the reviewer for the encouraging comments. We made sincere efforts to address the reviewer's kind recommendations.
2. Relationship to Literature: Authors should clearly state whether all passages, especially in the introduction section, are backed with appropriate references. For instance, are the following sentences reported at pag.1 supported by empirical evidence? - lines 28-30: "given that those who are more physically fit usually […]" - lines 49-54: "Then, in an effort to adapt […]" - etc.	The text has been revised and all passages are now backed with respective references.

Reviewer: 3	
Reviewer's comment	**Response**
Also, authors should provide additional explanation about the reason why they chose the conceptual framework proposed. As an example, why is the concept of "solastalgia" so relevant? Why is it not further commented across the manuscript?	Solastalgia is a concept related to the human-ecosystem health nexus. This research draws on a risk-resilience perspective to link external risk factors (like Covid-19) with changes in the mood (caused by missing and worry feelings) and ways to cope (like food choices). This elaboration is now added in the manuscript in the conceptual framework development subsection.
Finally, in section 2.2 (pag.3), authors might consider citing other recent works on the association between physiological functions and resilience (e.g., Bazzani, A., Bruno, S., Frumento, P., Cruz-Sanabria, F., Turchetti, G., & Faraguna, U. (2021). Sleep quality mediates the effect of chronotype on resilience in the time of COVID-19. Chronobiology International, 1-10.), as well as on the importance of food literacy in food choice (e.g., Trieste, L., Bazzani, A., Amato, A., Faraguna, U. and Turchetti, G. (2021), "Food literacy and food choice – a survey-based psychometric profiling of consumer behaviour", British Food Journal, Vol. 123 No. 13, pp. 124-141. https://doi.org/10.1108/BFJ-09-2020-0845)	Suggested and other recent works have been added in section 2.2. Also, a distinct section (Section 3) is now dedicated to the explanation of the conceptual grounding of the study that led to the posited research hypotheses. A figure has been added to depict the conceptual framework.
3. Methodology: Methodology is too poorly described. This part should be significantly expanded. There is no sufficient description of the sample characteristics (e.g., mean age, gender information, etc.).	Data collection is now described in a distinct subsection. Sample breakdown by country, gender, age, income and occupation is now shown in Tables 1.1 to 1.5.
Also, are the questions used in the survey obtained from validated questionnaires?	The sources were the questions were drawn from are presented in a table (in the Annex) in the revised manuscript.
Which are the "certain precautions" taken?	The precautions taken to tackle common method bias are now better justified and supported by relevant references.
4. Results: Results mainly describe statistical analysis for the internal validity of the questionnaire without precisely addressing the research hypotheses listed at pag.4. Please modify the structure of the results section so to clearly distinguish between findings related to the analysis of the reliability of the questionnaire (ideally as a first part), and a second part dedicated to findings related to the research questions.	Following the reviewer's insightful suggestion, a paragraph is now added in the Results section dedicated to findings related to research hypotheses.
Also, pay attention p.5, lines 19-20: authors state that "Cronbach's alpha reliability coefficients are higher than 0.6, which is an acceptable threshold value in exploratory research", while in table 2 is reported a Cronbach's alpha value of 0.567 for "quality food propensity". Please fix this mistake.	A primary reason for the moderate reliability value is that the scale has only two items. Scale reliability is sensitive to the number of items (Hair et al., 2013). Future research should add more items to increase the scale reliability of the construct that represents the preference of consumers toward branded, certified food products. *This justification is now included in the results section of the revised manuscript.*
Finally, please provide **clear captions for figures and tables (not shown)**.	Captions for all figures and tables are provided.
Descriptive statistics should be provided as well: did authors consider the possible differences among the three countries from which data were collected?	Descriptive statistics are now provided in the data analysis and the results sections. Differences across country, age, income, gender, occupation, and education level groups are now presented in the results section.
5. Implications for research, practice and/or society: The conclusion section, including research implications, should be entirely revised. See "Quality of Communication".	Conclusion has been revised according to the reviewer's insightful suggestions.

Reviewer: 3	
Reviewer's comment	**Response**
6. Quality of Communication: It is not clear to me to what audience this paper is designed for: marketers, practitioners, or the broadest audience possible? Authors should explicitly state their positioning. Otherwise, the lack of clarity throughout the whole structure of the manuscript will negatively affect the main message about the findings reported and, as a consequence, the relevance of this work for the readers. Objectives are not clearly stated: e.g., the aim reported at pag. 1 (lines 26-32) sounds different from the one declared at p.2 (lines 3-5). Methodology is poorly described. I suggest modifying the display of results so to clearly answer to the research hypotheses (from 1 to 6) listed at page 4 (lines 13-22). The conclusion section (together with "research implications", as well as "limitations and future research directions") should be revised accordingly.	The manuscript has been revised in terms of both structure and content. The materials and methods are now described in detail. Research aim is stated only once. The conceptual model of the research is discussed and presented in figure form. Results are now enriched and better justified. Discussion and conclusion sections have been revised accordingly.