How to communicate typical–local foods to improve food tourism attractiveness.

Abstract:	This research focuses on the communication of typical–local foods and their consumption as a main motivation for travel experiences and driver of food tourism attractiveness. Past studies have provided an inconsistent understanding of this phenomenon and its underlying psychological processes. Others have called for research on more integrated and effective marketing communications about typical–local foods to increase destination attractiveness, help consumer decision-making processes and reduce information asymmetry in the food tourism market. Through the application of an integrated framework under the umbrella of signalling theory, we focus on various signals (e.g. 'food security', 'trusting relationships', 'emotional value') associated with three key features of typical–local foods: sustainability, geographical indications and healthiness. We use a combination of neuroscience techniques, including the implicit priming test, eye-tracking and electroencephalography, to investigate which signals are best at communicating typical–local foods' distinctiveness. We find that consumers/tourists perceive healthiness as typical–local foods' most engaging and attractive product feature, followed by geographical indications then sustainability. Specific signals impact people's visual attention and cognitive engagement differently, with social and emotional attributes being most appealing. Therefore, food tourism managers should focus on these attributes in their communication campaigns to increase food tourism attractiveness and enhance travel experience.

Response to Editors' and Reviewers' comments for manuscript ID PM.202100627.R2
"How to communicate typical-local foods to improve food tourism attractiveness: results from a neuroscientific study"

Response to the Editor-in-Chief:

Thank you very much for giving us the opportunity to further improve our paper. Below, we indicate how we addressed the minor revisions suggested by you and the Associate Editor.

Comment 1:

Let me also ask you to revise your title removing the final part "results from a neuroscientific study".

Response to Comment 1:

Thank you for this suggestion. We have shortened the title by removing the final part. Now it reads as "How to communicate typical-local foods to improve food tourism attractiveness".

Comment 2:

Please also check your abstract and keywords carefully thinking of the key words/sentences that authors will likely type in Google Scholar (or similar engines) to find an article dealing with your topic. To make sure your work will appear at the top of search engines, use your keywords in your title and repeatedly in your abstract. If you need help with that, you can find more information here: https://authorservices.wiley.com/author-resources/Journal-Authors/Promotion/promotional-toolkit.html

Response to Comment 2:

Thank you very much for this useful recommendation aimed at improving the visibility of the paper on search engines. As you suggested, we carefully checked and modified the abstract and keywords. For example, we removed the keyword "signaling theory" and replaced with "implicit priming test" to provide clarifications on our neuroscience methodological approach, which also fits well with the current special issue. We also revised the abstract by repeating our keywords several times, as indicated by the Journal guidelines. Three keywords ('communication', 'typical-local foods', 'food tourism'), in particular, now appear in the first sentence of the abstract as well as in the article's title.

Response to the Associate Editor:

Comments from Associate Editor	Response to the comments from Associate Editor	Changes in the manuscript
Associate Editor		
Comment 1: *Be parsimonious with the use of some old references. Right now you have a laundry list. Ideally, you should not have more than 80-90 references.*	We thank the Associate Editor for giving us the opportunity to further improve our paper by revising the reference list.	The reference list has been revised and shortened by removing 25 references. We focused on deleting those references that were old or had a more recent equivalent already cited in our paper. Further down we list the reference removed. The current list, while still being longer than what the Associate Editor recommended, reflects our effort to enrich the literature as recommended in the previous steps of the revision process. In the previous rounds of revisions, the Editor-in-Chief and the reviewers recommended including literature from various streams such as marketing, communication studies, consumer psychology and tourism, as well as to include two sets of studies - those with a focus on self-reported data and those using neuroscience methods. However, if necessary, we are willing to do our best to try to shorten further the current reference list. List of references removed: 1. Alba, J.W., & Williams, E.F. (2013). Pleasure principles: A review of research on hedonic consumption. *Journal of Consumer Psychology*, 23(1), 2–18. 2. Bingen, J., Sage, J., & Sirieix, L. (2011). Consumer coping strategies: a study of consumers committed to eating local. *International Journal of Consumer Studies*, 35(4), 410–419. 3. Branzei, O., Ursacki-Bryant, T.J., Vertinsky, I., & Zhang, W. (2004). The formation of green strategies in Chinese firms: Matching corporate environmental responses and individual principles. *Strategic Management Journal*, 25(11), 1075−1095. 4. Camerer, C., & Yoon, C. (2015). Introduction to the journal of marketing research special issue on neuroscience and marketing. *Journal of Marketing Research*, 52(4), 423−426.

2

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Comment 2: *Remove your acronyms throughout (also TLS). They hamper the readability of your work.*	Thank you for this further suggestion aiming at improving the paper's readability.	All the acronyms, including TLF, have been removed from the paper, appendices, tables and figures.

4

How to communicate typical–local foods to improve food tourism attractiveness

Abstract

This research focuses on the communication of typical–local foods and their consumption as a main motivation for travel experiences and driver of food tourism attractiveness. Past studies have provided an inconsistent understanding of this phenomenon and its underlying psychological processes. Others have called for research on more integrated and effective marketing communications about typical–local foods to increase destination attractiveness, help consumer decision-making processes and reduce information asymmetry in the food tourism market. Through the application of an integrated framework under the umbrella of signalling theory, we focus on various signals (e.g. 'food security', 'trusting relationships', 'emotional value') associated with three key features of typical–local foods: sustainability, geographical indications and healthiness. We use a combination of neuroscience techniques, including the implicit priming test, eye-tracking and electroencephalography, to investigate which signals are best at communicating typical–local foods' distinctiveness. We find that consumers/tourists perceive healthiness as typical–local foods' most engaging and attractive product feature, followed by geographical indications then sustainability. Specific signals impact people's visual attention and cognitive engagement differently, with social and emotional attributes being most appealing. Therefore, food tourism managers should focus on these attributes in their communication campaigns to increase food tourism attractiveness and enhance travel experience.

Keywords: food tourism; typical–local food; marketing communications; neuromarketing; implicit priming test; eye-tracking; electroencephalography.

Introduction

Food is a vital component of the tourism experience, increasingly acting as a prime travel motivator (Andersson et al., 2017; Ellis et al., 2018), and food tourism has grown over recent decades (Okumus, 2021). In 2020, 53% of people in developed countries defined themselves as food and wine tourists. More than 70% were looking for

memorable food experiences when travelling, and about 60% considered such experiences when choosing between multiple destinations (Garibaldi, 2020). Consequently, tourism organisations have gradually included food in their offering, and several scholars have applied marketing and management theories to food tourism to improve overall business success and competitiveness (Okumus, 2021). Research in this area has investigated the relationship between food tourism and travel lifestyle, preferences,), and revisiting intentions (Getz & Robinson, 2014; Ribeiro et al., 2018). However, as recently noted (Ellis et al., 2018; Okumus, 2021), some limitations persist in terms of advancing knowledge in this field (with related practical implications) and methodological innovativeness. Regarding the former, Okumus (2021) recognises tourism authenticity, food safety challenges and sustainability issues among the key themes that should receive more attention in future research agenda. Regarding methodological issues, recent research has urgently called for the use of mixed-method approaches based on both qualitative and quantitative techniques and using multidisciplinary methods (Ellis et al., 2018; Okumus, 2021). In particular, we note calls for the use of modern research methods, such as neuroscience-based techniques, in the fields of both tourism and marketing/consumption. These techniques may overcome common biases in traditional research methods, as decision-making processes and current behaviours are not solely dependent on conscious control and may be beyond respondents' awareness (Lee et al., 2017; Scott et al., 2019).

Another gap in the literature concerns communication strategies, which are important for both organisations and consumers in their respective roles in the marketplace. Scholars have highlighted the need for more integrated and effective communications that signal the distinctiveness of food specialities to travellers (Fusté-Forné, 2020; Lum & Le Vayer, 2016). This is because consumers often overlook or

2

misinterpret such signals, which contributes to the creation of an information-asymmetric food tourism market (Crase & Jackson, 2000). Some studies (e.g. Alonso-Sobrado & Marcos, 2020; Fait et al., 2016) have stressed the potential role of social media communications in building an accurate image of brands, destinations and products, while others (e.g. Kim et al., 2018; Fusté-Forné, 2020) have suggested that narratives or storytelling should be used to involve tourists emotionally. However, prior research does not explain what communication contents and components these tourism organisations should use to increase the attractiveness of food destinations and enhance the tourist experience. This is necessary because food characteristics pertaining to a certain area often rely on intangible attributes, such as culture and traditional values, which consumers may struggle to recognise and perceive.

Hence, this paper highlights the role of food as a value-adding tool in the tourism industry and investigates how companies may communicate food quality and attributes for the benefit of consumers/tourists, organisations and destinations.

In this research, we focus particularly on typical–local foods from Italy, as they represent a salient expression of authenticity and local culture and have acquired an increasing appeal and popularity during the last decade (Memery et al., 2015; Savelli et al., 2019; Steenkamps & de Jong, 2010). Consumers show interest in typical–local foods because of their freshness, nutritional features and taste attributes (La Trobe, 2001; Zepeda & Deal, 2009), experiential value (Spielmann et al., 2018), sustainability (Rushing & Ruehle, 2013; Sirieix et al., 2011), healthiness (Delind, 2006; La Trobe, 2001) and strong linkage with their location. This is what makes typical–local foods cultural symbols and high-quality signals for particular destinations (Aprile et al., 2012; Casalegno et al., 2020; Chen, 2021; Likoudis et al., 2016).

3

We focus on Italy for several reasons. First, Italy is characterised by high biodiversity and strong connections between food and cultural heritage (e.g. living culture, handcraft traditions), resulting in the highest number of local foods labelled with geographical indications in Europe (Savelli et al., 2021). Nevertheless, tourism companies do not sufficiently communicate the cultural and traditional value of Italian typical–local foods when promoting their offering (Rachão et al., 2020). Thus, further research is needed in this area to advise tourism managers how better to attract a wide range of tourists/consumers who are interested in both culture and gastronomy and who perceive typical–local foods as a 'reason to go' on a particular holiday. Second, Italy is internationally renowned as a food tourism destination, with food being a cultural symbol and signal (Garibaldi, 2020), hence, the need to communicate the cultural value of local food properly is timely and essential for Italian tourism organisations, to reinforce the synergies between food and culture. In doing so, they can offer an engaging tourism experience that will attract tourists worldwide (Garibaldi & Pozzi, 2018). Finally, Italy has recently experienced a decrease in arrivals, due to both the Covid-19 pandemic and intensified competition from other Mediterranean countries (ISTAT, 2020). Thus, the development of new marketing communication strategies aimed at addressing these challenges is much needed.

Following the future research directions from Okumus's (2021) food tourism review, our study focuses on three typical–local food quality attributes – sustainability, geographical indications and healthiness – and investigates them through the lens of signalling theory (Spence, 2002). This theory suggests that when information asymmetry occurs – as in the food tourism market (Crase & Jackson, 2000) – companies should provide information (i.e. signals) that allow the consumers to better understand aspects of their products/brands that cannot be directly assessed. In the case

of typical–local foods, sustainability, geographical indications and healthiness can be

considered quality signals, which tourism managers can use in marketing

communications to attract food tourists. First, typical–local foods are often associated

with sustainability, as they are more respectful of the environment and local community

than non-local foods (Rushing & Ruehle, 2013; Sirieix et al., 2011). Second,

geographical indications are appreciated by consumers since they stand for the close

relationship between typical–local foods, territory and tradition, embracing the specific

culture of a local area or region (Aprile et al., 2012; Chen, 2021; Dekhili et al., 2021;

Likoudis et al., 2016). Finally, health benefits are often related to typical–local foods,

and health motivation is considered an important antecedent of local food purchases

(Delind, 2006; La Trobe, 2001).

Prior research has demonstrated that such features potentially affect tourists'

attitudes, preferences and behaviours towards foods and their places of origin.

Nevertheless, these studies have not provided enough clarity. Findings vary by product,

individual and country; they are sometimes inconclusive or contradictory, and some

studies rely only on traditional consumer research methods (see Appendix C for a

general overview of the research on typical–local foods' features and consumption).

This opens a space for further research, under the umbrella of communication

signals and consumer behaviour, which might more accurately address the complex

relationships between typical–local foods' sustainability, geographical indications and

healthiness and tourists' responses.

To fill this research gap, we adopt a neuroscientific approach to examine the

influence of typical–local foods' communication signals on tourists' visual attention and

engagement. These cognitive responses have been overlooked in studies based on

traditional self-report methods but are critical to understanding consumer decision-

5

making processes and choices and to informing related marketing communication decisions (Khachatryan et al., 2018).

Specifically, in our study, we use a combination of neuroscience techniques providing biometric and neurometric data (preceded by an implicit priming test used for visual stimuli selection) obtained through eye-tracking and electroencephalogram techniques. We collected this data to address two research questions:

RQ1: Do sustainability, geographical indications and healthiness (as three communication signals associated with typical–local foods) positively affect consumers' visual attention and cognitive engagement and, subsequently, the attractiveness of tourist destinations?

RQ2: Which of the three communication signals and their respective components (i.e. sub-signals) are more successful at capturing consumers' visual attention and cognitive engagement?

By addressing these questions, we make two main contributions to the various literature streams. First, we contribute to the marketing and consumer behaviour literature and that of tourism management by advancing knowledge about: (i) which types of typical–local food communication content are most visually and cognitively attractive to individuals; and (ii) how tourism managers can use these to increase the appeal of their tourist destinations. Second, we adopt innovative techniques based on a neuroscientific approach, thus providing significant advances in understanding the implicit processes and mechanisms underlying tourist decision-making and behaviour (Scott et al., 2019).

The rest of the paper is structured as follows. First we review the literature, focusing on typical–local foods, their role in food tourism and their quality attributes. Next we describe the research method, followed by the results. We then discuss the

findings and provide theoretical and practical implications, while the final section

contains concluding remarks.

Theoretical background

The role of typical-local foods in food tourism development

Over the past couple of decades, food tourism has materialised rapidly as 'visitation to

primary and secondary food producers, food festivals, restaurants and specific locations

for which food tasting and/or experiencing the attributes of specialist food production

region are the primary motivating factor for travel' (Hall & Sharples, 2004: 10). This

conceptualisation of food tourism emphasises a motivation-based perspective (Smith &

Costello, 2009), where food-related experiences in a specific place are seen as an

important motive for destination choice. This perspective expects food tourists 'to travel

and visit a destination specifically for the unique food products offered' (Smith &

Costello, 2009: 49). Therefore, typical–local foods play a critical role in driving tourism

and consumer behaviour in this context, being an expression of an area's *genius loci*: a

set of tangible (e.g. natural landscape) and intangible (e.g. history and culture) meanings

attached to a certain place (Vecco, 2020).

Typical–local foods are produced by 'small-scale agricultural systems, with

special characteristics due to the combination of local raw materials with traditional,

inherited, production techniques' (Tregear, 2003: 91). Consistent with EEC Regulation

no. 2081/92, this definition highlights the twofold nature of typical–local foods –

relating to both the place of origin and the use of traditional production techniques –

from which the term 'typical–local food' is derived (Savelli et al., 2019). Parmesan

cheese and Parma ham are good examples of Italian typical–local foods, as they use

local ingredients (i.e. animal produce) sourced from a specific area and processing

7

techniques passed down through generations.

These foods, whose quality is usually guaranteed by the use of ingredients with certificate of origin labels and food quality awards (Hernandez-Rojas et al., 2021), may be considered signs of culture since they embody unique information about the culinary culture and heritage of the specific place they originate from (Alonso-Sobrado & Marcos, 2020). Hence, such products are particularly attractive to food tourists motivated by local identity and authenticity experiences (Hernandez-Rojas et al., 2021).

Given the historical, cultural and physical attributes deeply ingrained in their area of production, typical–local foods may have emotional attributes or signals that allow tourists to be involved in a personal experience when buying and consuming them (Rachão et al., 2020; Spielmann et al., 2018). Notably, thanks to their intrinsic and symbolic value, typical–local foods contribute to creating the local and cultural identity of tourist destinations and allow tourists to approach culture in a more emotional and participative way (Spielmann et al., 2018).

Because of the different types of psychological values and benefits that typical–local foods bring to consumers, research has uncovered their positive effect on food tourism in several contexts, for example wine, beer and coffee consumption (Reid, 2021; Rachão et al., 2020; Casalegno et al. 2020). Casalegno et al. (2020), for instance, suggested that tourists' experiences in a local café can improve their image perceptions of a specific brand destination. This is in line with other research suggesting that tasting local foods can bring excitement to the tourist experience, thus creating positive memories and long-term links to a destination (Di Clemente et al., 2020). Going deeper into the experiential dimension of tourism, Spielmann et al. (2018) and Leonidou et al. (2015) found that typical–local foods may contribute to turning passive tourists into active ones by engaging them in the local culture and heritage. Additional research

focusing on behavioural outcomes has found that local food can be decisive for customer loyalty (Hernandez-Rojas et al., 2021) and their intention to revisit a destination and recommend it in future (Ribeiro et al., 2018).

Overall, the literature suggests that tourists' intentions to visit a certain destination are positively influenced by their attitudes towards local foods. As Choe and Kim (2018) demonstrated, tourists' attitudes towards local food positively affect both their perception of the destination and their intention to visit it for food tourism. Such tourists can therefore become a key consumer segment for certain products and destinations.

On these bases, typical–local foods can be regarded as important factors in the marketing of certain destinations and as food tourism resources enabling industry development (Rachão et al., 2019). This is proved by recent data highlighting that food consumption represents a substantial part of tourist spending, even post Covid-19 (Garibaldi, 2020; World Travel & Tourism Council, 2020), while also benefiting destinations by leading to the active involvement of tourists in the value co-creation processes of authentic and memorable experiences (Leonidou et al., 2015; Rachão et al., 2020).

Signals of typical-local foods' quality and distinctiveness

While typical–local foods can act as cultural symbols of travel destinations (Casalegno et al., 2020) and may benefit consumption, pitfalls do exist. Specifically, potential tourists may suffer from asymmetric information, if they are not fully aware of the peculiarities of tangible (e.g. natural space) and intangible (e.g. heritage and traditions) resources characterising a destination (Crase & Jackson, 2000), and this could be disadvantageous to both consumers (i.e. tourists who might miss out on visiting,

experiencing and consuming) and service providers (i.e. tourism organisations and businesses that might be overlooked by consumers). A way of overcoming this is by drawing lessons from *signalling theory*, which proposes that people rely on signals as perceivable indicators of things they cannot observe directly (Spence, 2002). It recommends that companies provide information to signal a product's hidden traits or attributes, to assist consumer decision-making and reduce the risk of adverse selection due to information asymmetry (Spence, 2002). Signalling is critical for food, especially in the case of typical–local foods, where cultural, environmental, well-being and social values are often hard to observe or unobservable by outsiders. Signalling may help individuals to form judgements about typical–local food quality, by transforming the credence features into attributes that consumers search for prior to purchasing. In this respect, signalling theory provides suggestions to reduce information asymmetry and improve the ability of food tourism organisations to attract consumers. For example, food certification may enable consumers to identify typical–local food characteristics related to social, environmental and economic sustainability (e.g.: nutritional value: Hieke & Taylor, 2012; origin: Likoudis et al., 2016; environmental performance: Rothwell et al., 2016; and production method: Megicks et al., 2012).

In this study, signallers are tourism organisations, receivers are potential food tourists and signals represent the basic quality attributes of typical–local foods that organisations can use to attract tourists to places where certain products originate.

The underpinning principles of signalling theory are complemented by *consumer theories* (Miyazaki et al., 2005; Teas et al., 2000), which usually propose different subsets of product characteristics from which food quality derives. These include both *intrinsic* and *extrinsic attributes* that act as signals concerning product features, including the sensory (e.g. taste and appearance, quality, consistency), health and ethics

10

(e.g. nutritional value and safety, health, environmental friendliness, support of local economy), and purchase and convenience (e.g. availability, assortment, price, ease of preparation, preparation time). In this respect, many studies have mentioned *freshness, nutritional value* and *taste attributes* as key purchasing determinants of typical–local foods (La Trobe, 2001; Megicks et al., 2012; Zepeda & Deal, 2009). Such attributes are dependent on the geographical proximity of production and consumption and specifically characterise typical–local foods (unlike e.g. imported products).

Other signals of typical–local foods are the *tangible* and *intangible local resources* (e.g. specific plant varieties or animal species, knowledge of local agents); these influence food quality and consumer perceptions greatly.

Moreover, consumers appreciate typical–local foods for their *experiential nature*, which represents a further signal of distinctiveness. In a general consumption context, Megicks et al. (2012) emphasised the link between the act of shopping and the satisfaction from that experience as a strong motivation to buy local food. Other scholars, by focusing on the tourism sector, have highlighted the role of food as a vibrant means of experiencing a destination, allowing people to connect to the local culture and heritage (Spielmann et al., 2018). Similarly, Mirosa and Lawson (2012) demonstrated that local food buyers value family time and activities highly and put more effort into shopping, while other studies (e.g. Zepeda & Nie, 2012) have underlined that local food purchases lead to greater involvement with food preparation and enjoyment of cooking.

Having briefly reviewed above some of the typical–local foods' basic quality signals as noted in consumer behaviour, marketing and tourism literature, we will discuss next the three main TFL signals which represent the focus and contribution of the present research.

Sustainability is another signal of typical–local foods' quality and peculiarities (Sirieix et al., 2011). Sánchez-Bravo et al. (2020: 4) highlighted that 'the more local and the more seasonal a food product is, the more sustainable it usually is'. A study of grocery shoppers in the United States (US) noted that customers associate local foods with sustainability more so than other foods (Rushing & Ruehle, 2013). Compared with imported food, consumers regard local food as more environmentally friendly due to its shorter transport distance and high-performing environmental indicators, such as lower fuel, chemical and greenhouse gas emissions (Rothwell et al., 2016). Local food is, therefore, considered less dependent on industrialised farming and production techniques and more respectful of the environment and preservation of natural resources. In addition, previous research has underlined the socio-economic dimension of the sustainability of local foods (Rushing & Ruehle, 2013; Steenkamp & de Jong, 2010). As demonstrated by Memery et al. (2015), consumers who purchase local food more frequently are likely to support their local community, as they are driven to a greater extent by altruism than self-interest. In a local food system, producers market food directly to consumers, reducing transportation, packaging and associated costs for consumers (Tribaldos et al., 2018). As a result, consumers feel that purchasing local products allows their money to remain within a community, thus supporting local producers and enabling more farmers to stay in business. This arrangement seemingly has a positive impact on the local economy and employment (Steenkamp & de Jong, 2010).

In addition to sustainability, the literature stresses the frequent use of *geographical indications*, which can be seen as a further quality signal for typical–local foods, providing consumers with a better understanding of the entire food supply. Geographical indications – such as protected designation of origin, protected

12

geographical indication, and traditional speciality guaranteed – have gradually diffused

as indicators of the intrinsic attributes of typical–local foods (e.g. quality, safety and

authenticity) and may reassure consumers about their purchase decisions and provide

them with a positive utility (Aprile et al., 2012; Likoudis et al., 2016). Specifically,

geographical indications link a food product to territory and tradition, suggesting that

food is part of the culture and custom of a local area or region (Chen, 2021). They also

help to enhance local identity by transferring a cultural heritage to future generations

and sharing this heritage with the rest of the world (Silvestri et al., 2020). Thanks to

these labels, typical–local foods are perceived as safer and easier to trace in terms of

origins (Van Rijswijk & Frewer, 2012). Hence, geographical indications increase

preference for typical–local foods, as they stress the idea of inheritance between

generations (Meyerding et al., 2019) and provide reliable statements about ingredients,

composition and production and/or processing (Ilbery et al., 2005; Van Rijswijk &

Frewer, 2012).

A further typical–local food signal relates to *healthiness*. Consumers perceive

typical–local foods to be simple, basic, pure products, and the term 'local' is often

associated with attributes such as 'artisanal', 'biodiversity', 'natural', 'seasonal', and

'nutritious': all attributes considered to deliver health benefits (Dagevos & van Ophem,

2013; Delind, 2006; La Trobe, 2001). Liñán et al. (2019: 684) attributed healthiness to

local foods, since their consumption helps to 'maintain a healthy lifestyle and quality of

life for oneself and close relatives'. Moreover, thanks to the proximity of typical–local

foods, transport time is shortened, with positive benefits: for example, in the case of

fish, it allows optimal maturation and reduced use of preservatives (Birch et al., 2012).

Consequently, typical–local foods are usually considered as healthy foods, and health

motivation is increasingly cited as a main driver of local food purchase. Research in the

US showed that families reporting that their children ate more than five servings of fruit and vegetables a day bought local products more frequently (Racine et al., 2013). Similarly, attention towards local food was found to be higher among Minnesota students embracing alternative food systems, such as vegetarianism, where health concerns represented a motivation for abstention from meat (Pelletier et al., 2013).

Building on these arguments, we can see that consumer appreciation of and preference for typical–local foods are associated mainly with intangible attributes, especially *sustainability, geographical indications* and *healthiness*. Hence, we argue that providing information on such attributes could be useful for reducing the aforementioned information asymmetries in the food tourism market. This would signal to tourists that certain foods and related consumption experiences meet their requirements for environmental protection, quality assurance and health and safety.

Indeed, these three attributes are increasingly gaining attention in the broader tourism industry (Okumus, 2021) and we expect their importance to be higher for food tourists. For these people, the consumption of local food is a primary motivating factor as it provides them with an authentic, cultural experience at their travel destination (Hernandez-Rojas et al., 2021; Spielmann et al., 2018).

Based on the reviewed literature and theories, we propose an integrated conceptual framework of typical–local food communicating signals, as depicted in Figure 1. More information about the framework's components, conceptualisation/definitions and operationalisation can be found in the Methodology section.

[FIGURE 1 HERE]

14

Consumer responses to different signals of typical-local foods' quality and

distinctiveness: recent developments and research questions

Here we focus on consumer responses to the three typical–local food signals

(sustainability, geographical indications and healthiness). For each, we briefly review

the literature to summarise knowledge from previous studies, building on traditional

data collection methods (i.e. self-report studies) and from modern methods (i.e.

neuroscience). We also draw attention to existing gaps and position our study and its

specific research questions.

The sustainability of typical–local foods

The effects of typical–local food sustainability properties on self-reported attitudes and

behaviours are still debated. Prior studies have found different consumer responses

according to the specific aspects of the foods considered, thus highlighting the critical

role of personal motivation (i.e. environmental *vs* socio-economic concerns) in

influencing individuals' attitudes, preferences and behaviour. Moreover, results are

often heterogeneous depending on the different consumer demographics, product

categories and/or countries investigated.

Most studies have focused on the environmental dimension of sustainable food

consumption. This has received a lot of attention in the marketing and consumption

arena, including the tourism context (Cachero-Martínez, 2020; Chang et al., 2021;

Dalmoro et al., 2020; Nam, 2020; Rothwell et al., 2016; Shashi & Singh, 2015; Shin et

al., 2017). Shashi and Singh (2015) showed that biodiversity preservation, conservation

of natural resources and lower energy consumption play key roles in influencing

consumer purchasing intentions towards organic foods. Chang et al.'s (2021) study on

plant-based diets found that the presence of restaurants offering plant-based dining in a

certain destination acts as an important motivation for travellers. Shin et al. (2017) demonstrated a similar relationship between tourists' intention to visit and willingness to pay for a certain restaurant providing a menu based on foods that are respectful of the environment.

Nevertheless, prior research has also found differences in consumer preferences and behaviour by country, consumer characteristics and motivations (García-González et al., 2020; Nam, 2020; Sánchez-Bravo et al., 2020). Nam (2020) demonstrated that consumer frequency of eco-friendly food purchase varies according to individual involvement in environmental issues. Similarly, Sánchez-Bravo et al. (2020) confirmed the results of prior research demonstrating that sustainable foods attract consumers living in rich countries, who show greater environmental concern. Other studies have stressed consumers' higher concern for the socio-economic rather than environmental dimensions of sustainability (de Magistris & Gracia, 2016; Stein & de Lima, 2021). They showed that protection of small farms and rural communities influences consumers towards organic choices more than environmental concerns do. By focusing on local foods, Stein and de Lima (2021: 6) found that 'only a small minority of consumers buy domestic products for environmental reasons. Consumers tend to see the meaning of "local" more in terms of identity, supporting their local economy or community traditions'.

Thus, research findings from self-reported data are complex and heterogeneous in terms of different ways of perceiving the concept of food sustainability, and they show diverse consumer responses in terms of both preferences and buying behaviour.

Food sustainability has also recently become the subject of neuromarketing research (e.g. Guyader et al., 2017; van Loo et al., 2015), an alternative or complementary approach to self-report methods. A recent study based on eye-tracking

16

investigated fish farming via aquaponics and showed people's preferences for natural production and environmentally friendly food processing (Schröter & Mergenthaler, 2019). Others have demonstrated that fair trade and other ethical dimensions of food are positively related to increasing willingness to pay and individual satisfaction (Bratanova et al., 2015; Enax et al., 2015), thus emphasising that social protection is an important driver of sustainable food consumption and environmental safety.

Other neuromarketing studies have revealed the positive impact of sustainable attributes on visual attention and emotional engagement, resulting in memory retention, higher acceptance of premium prices and favourable choice intentions towards sustainable food (Guyader et al., 2017; van Loo et al., 2015).

Despite some application of neuropsychology to tourism research (Scott et al., 2019), to the best of our knowledge, no studies using neuroscience look specifically at the relationship between sustainability of local foods and food tourists' behaviour.

In summary, the literature on self-reported consumer responses suggests that sustainable food consumption has been gaining importance over recent decades, and sustainability-related attributes of food are increasingly affecting consumers' attention, willingness to pay and buying behaviour (Lafontaine et al., 2021; Tanner, 2003; Vassallo et al., 2016). Combined with the assumption that spending more time for observing some attributes representing food sustainability relate to a higher preference for these attributes when making food choices (van Loo et al., 2015), this leads to the following research question:

RQ1.a: Does sustainability, as a communication signal associated with typical– local foods, positively affect consumers' visual attention and cognitive engagement and, subsequently, tourist destinations' attractiveness?

Geographical indications of typical–local foods

The mainstream consumer behaviour literature focusing on geographical indications suggests that consumer awareness and responses in terms of attitudes, preferences and behaviours remains a debated research topic (Bernard et al., 2020; Dekhili et al., 2021). Based on quantitative, self-reported data, several scholars have found consumers usually show positive attitudes, purchase intentions and willingness to pay towards foods with geographical indications, perceiving them as better in quality, taste and distinctiveness (Bryła, 2015; Kos Skubic et al., 2019). Other studies, however, have given different results (Chrysochou et al., 2012; Marcoz et al., 2016). Chrysochou et al. (2012), for instance, showed that the extent to which geographical indications influence consumer behaviour may vary by product; in particular, they demonstrated that such labels are less important drivers of loyalty to traditional foods than non-traditional ones. Marcoz et al. (2016), while focusing on tourism setting and proximity, found that the perceived value of geographical indications varies according to the distance between typical–local food region of origin and consumer residence. Notably, the importance of such labels for consumers rises with their increasing distance from the typical–local food areas of origin and production.

Contradictory findings have also recently emerged from neuroscientific studies, where the focus was mainly on quality claims (e.g. ecolabels and organic labels) rather than geographical indications. Based on eye-tracking techniques, van Loo et al. (2021) investigated how visual attention to sustainability claims affects product choice, finding that more visual attention is associated with a higher choice likelihood. Reitano et al.'s (2017) study highlighted the positive impact of geographical indications on visual attention, which resulted in higher willingness to pay for such brands. Other studies have seen similar findings and concluded that quality claims tend to increase food

valuation and choice, both behaviourally and neurally (Enax et al., 2015;

Georgakarakou et al., 2020; Linder et al., 2010). However, contradictory findings are

not uncommon in the neuromarketing literature (Drexler et al., 2018; Fiala et al., 2016).

For instance, Drexler et al. (2018), using a mixed-method approach based on eye-

tracking and in-depth interviews, found that many consumers do not care about organic

quality labels or pay attention to them. Similarly, Fiala et al. (2016) showed that interest

in a branded product is rather independent from the presence of eco, local or bio labels,

since consumers use mainly the product description and brand name in their decision-

making process.

In summary, previous research findings on geographical indications are

contradictory and sometimes overlook the role of such labels in influencing consumers'

visual attention in the food tourism industry. Thus, further research is needed to

understand the relationship between such labels and consumer responses, perhaps by

adopting innovative techniques that differ from traditional self-report methods (see

Grunert and Aachmann's (2016) recommendation). Hence, the second research question

of this study is:

RQ1.b: Do geographical indications, as communication signals associated with

typical–local foods, positively affect consumers' visual attention and cognitive

engagement and, subsequently, tourist destinations' attractiveness?

Healthiness of typical–local foods

Research on the relationship between food healthiness and consumer behaviour is

extensive and interdisciplinary, involving psychologists, dietitians, public authorities

and private organisations from different industries.

Within the traditional consumption literature, eating healthy food has been largely associated with emotional (self-esteem), physical (feel-good) and cosmetic (look-good) benefits for shoppers (Divine & Lepisto, 2005), often resulting in a positive attitude and intention to transition to daily healthy food consumption habits (Pawlak & Colby, 2009). In the tourism literature, studies on motivation and experience have argued that health is a motivation for tourists to choose typical–local foods, since they are perceived as containing fresh and nutritious ingredients and as beneficial to personal well-being (Kim & Eves, 2012; Mynttinen et al., 2015). However, Memery et al.'s (2015) study contradicts this, showing that highly health-conscious consumers may be directed towards alternative food products rather than those produced locally. In a general discussion about perception, Krishna (2016) proposed that the perceived healthiness of food affects its taste assessment; thus, sweet, fatty or salty foods tend to be more enjoyable for consumers than healthy foods. Similarly, Raghunathan et al. (2006) further demonstrated that the perceived healthiness of food products lowers both taste and enjoyment during actual consumption, potentially reducing the intention to consume them.

Findings from neuroscience-based research on healthiness appear inconclusive and heterogeneous. Many studies have investigated health labels using eye-tracking techniques in both artificial and natural settings. The common objective was to analyse to what extent health labels attract visual attention and affect consumer choices and behaviours (Ma & Zhuang, 2021). Empirical evidence reveals that the design of nutritional information on food labelling is an effective way to attract consumers' attention (Ballco et al., 2019; Graham & Jeffery, 2012). Moreover, by investigating the role of nutrition information on consumer decision-making, research has demonstrated that longer time spent viewing nutrition labels is related to a greater probability of

selecting healthier foods (Graham & Jeffery, 2012; Hodgkins et al., 2015). Despite this evidence, some scholars have suggested that people motivated by a healthy lifestyle look longer and more frequently at health labels compared with participants whose behaviour is driven mainly by product attributes, such as name, brand and flavour (Bialkova et al., 2014; Turner et al., 2014). Fenko et al.'s (2018) test, conducted in a natural setting, revealed that visual attention to food health labels depends on whether consumers are time-constrained or not. Likewise, people tend to look longer at health labels on food products such as pizza, soup and yogurt compared with vegetables, fruit, snacks and desserts, thus revealing that health labels may provide different consumer responses according to product category (Graham & Jeffery, 2012; Orquin & Scholderer, 2011). Notably, Orquin and Scholderer's (2011) study on yogurt varieties revealed that the nutrition label was the only feature that had an impact on healthiness perceptions.

In summary, previous studies tend to concur in assuming that the health properties of food positively influence consumer attitudes and preferences, as well as increasing visual attention to health labels. This subsequently results in a better understanding of the nutritional quality of food, which in turn can help consumers to make informed and healthy food choices (Hieke & Taylor, 2012). Nevertheless, research also shows great heterogeneity in results, which vary both by product and by individual characteristics and motivations. This leaves an open question as to whether typical–local foods' healthiness features can attract consumers' visual attention and generate individual engagement. This is particularly under-researched within the food tourism sector and studies of consumption behaviour. Therefore, a further research question of this study is:

RQ1.c: Does healthiness, as a communication signal associated with typical–local foods, positively affect consumers' visual attention and cognitive engagement and, subsequently, tourist destinations' attractiveness?

The above research questions are important as they may validate some of the previous findings, since the literature is rather inconclusive and context-, country- or sample-dependent. Nonetheless, it is important that we address a more significant gap about which of these signals and their components are more persuasive among consumers. We need this to understand consumer decision-making processes and provide more detailed suggestions to tourism companies about the management of communication strategies. Therefore, the final research question of this study is:

RQ2: Which of the three communication signals (sustainability, geographical indications and healthiness) and their respective components (sub-signals) are more successful at capturing consumers' visual attention and cognitive engagement?

Methodology

Steps and procedure

We analysed sustainability, geographical indications and healthiness in depth from the literature, to develop a conceptually-based typology of potential sub-signals representing each signal. We created the visual environment representing each signal on the basis of multiple attributes drawn from previous research. This was critical to meet the key characteristic for efficacious signals recommended by Spence (2002), namely signal fit (i.e. the extent to which the signal correlates with unobservable qualities) and consistency (i.e. the agreement between multiple signals from one source).

22

For sustainability, we chose Tribaldos et al.'s (2018) conceptualisation, given that it includes both the environmental and socio-economic dimensions of food sustainability, providing a more comprehensive approach. We drew specific qualities associated with geographical indications from Ilbery et al.'s (2005) triangular framework, which combines different attributes related to food quality, local distinctiveness/identity and traditional means of production associated with geographical indications. Finally, we defined the concept of healthiness according to Dagevos and van Ophem's (2013) classification of food consumption values – which are closely related to health benefits – namely product, process, location and emotional values. We added physical well-being to this conceptualisation, given its relationship with the overall concept of long-term health (Liñán et al., 2019). We present all these concepts and dimensions (which represent the sub-signals) visually in Figure 1, which includes our proposed conceptual framework and we describe them further in Appendix A.

After conceptualising the potential sub-signals, we produced multiple graphic illustrations representing them. This step benefited from a partnership with ISIA, the Graphic Design and Visual Communication School of Urbino University, which specialises in the creation of images and graphics supporting organisations' communication processes. We commissioned ISIA to draw three to five illustrations for each item (sub-signal) as previously defined, allowing more than one item to be represented within the same illustration. We provided detailed instructions to ensure a correct interpretation of each signal and relative sub-signals. Several meetings took place before starting the graphics work, to discuss how ISIA would translate different sub-signals into illustrations so that consumers would easily understand them. The research team recommended the use of simple graphic illustrations: for example, a

23

farmer working in the fields to represent socio-ecological resilience underlying the concept of sustainability; a stylised map of Italy to represent geographical origins associated with geographical indications; and the image of a man picking fruit directly from the tree to represent the process value linked to typical–local foods' healthiness. Moreover, ISIA suggested the use of a mixed photo and graphics technique to improve the overall observability of the visual stimuli; they proposed stylised white-drawing illustrations (each representing one or more sub-signals) which were overlaid on full-page coloured photos expressing natural landscapes. This would enable viewers (not involved in the design process) to notice the visual stimuli more easily.

After producing the visual environments, we recruited a focus group to select the most representative illustrations. This included two experts from ISIA, all members of our research team and three academic experts concerned with sustainability-related topics and healthy food consumption issues. During the focus group, ISIA displayed the visual stimuli on a computer and asked participants to associate them with the list of items used to describe the concepts of sustainability, geographical indications and healthiness. After some debate, the group selected a few illustrations, giving preference to those that were associated with more than just one item, to reduce the total number of graphic illustrations (or visual stimuli) for inclusion in the final representation of signals. ISIA combined the chosen illustrations into two images, representing the three subjects of communication in pairs. Each image contained no more than three visual stimuli, following Drover et al.'s (2018) recommendations to avoid a large number of stimuli as that could generate tasks that are too cognitively difficult, potentially producing confusion. This whole process of developing the visual stimuli and materials lasted about four months, from May to September 2020.

We then used the implicit priming test for the final selection of images. Implicit measures have generally been used in consumer research to investigate and discuss unconscious attitudes (e.g. Genschow et al., 2017). In our study, the implicit priming test aimed to detect the implicit semantic association between different images ('targets') representing the concepts of sustainability, geographical indication and healthiness, and the specific sub-signals ('primes') describing them (e.g. 'food security' and 'right to food' for sustainability; 'trusting relationships between customers and producers' for geographical indications; 'emotional value' and 'physical well-being' for healthiness) in consumers' minds. The stronger the association, the faster the response (in a reaction time test). Before running the implicit priming test, participants completed a training session informing them about the research task and test execution. The implicit priming test was critical in identifying the best-performing images to convey the selected signals. We then used these in the later stage of eye-tracking and electroencephalography, to observe their impact on tourists' visual attention, cognitive loading and engagement.

Eye-tracking is the process of measuring eye motions. When individuals process a visual stimulus, 'eyes move simultaneously in a non-smooth way, driven by the attention to different elements of the stimulus' (Esteban-Bravo & Vidal-Sanz, 2021: 135). This movement alternates between gaze fixations over a single point and very quick movements from one point to another (i.e. saccades). Eye-tracking measures fixations, saccades and their durations empirically, thus providing information to help identify the most attractive product packages and for studying the experience of viewing advertising and communication elements at the point of sale (Esteban-Bravo & Vidal-Sanz, 2021; Rojas et al., 2015). We used eye-tracking to identify the focal point of

different images reproducing sustainability, geographical indications and healthiness as basic signals of typical–local food communication.

Finally, we used electroencephalography to monitor cortex electrical activity, to analyse the influence of communication signals on consumers' cognitive load and engagement. A greater cognitive load (or mental effort) is associated with a lesser ability of the individual to decode information, while greater engagement indicates a higher level of involvement and attention in analysing the stimulus (Esteban-Bravo & Vidal-Sanz, 2021). We carried out electroencephalography in combination with eye-tracking to overcome the latter's intrinsic limitations. As gaze fixations do not always imply high-level cognitive processes, the electroencephalogram provides a better comprehension of biometric data.

We performed all tests between January and February 2021. Tests lasted no more than 15 minutes per participant, to reduce fatigue and time spent in the experiment (Sharafi et al., 2015). The Italian Sensory Analysis Center (CIAS), a specialist in consumer science research belonging to the Intertek Group, conducted the tests.

Respondents

We selected study participants from Italian foodies, who love to travel for food-related experiences, both domestically and internationally. Although food tourists are usually expected to travel several times a year, we screened our participants to ensure that they had travelled for food at least once within the past 12 months (limiting their expected travel frequency in the light of the current Covid-19 pandemic).

In addition, we assessed the participants according to their frequency of typical–local food consumption through a preliminary screening question – *When given the chance, how frequently would you consume typical–local foods while travelling?* – based on a seven-point Likert scale. We recruited only people consuming typical–local foods

26

frequently (5 = about 70% of the time), usually (6 = about 90% of the time) or 'every

time' (7 = about 100% of the time). This was to ensure they were familiar with typical–

local food qualities and that their preference towards these foods was habitual and not

sporadically related to travel motivations. The final panel of participants included

people aged 18–65 (60% female, 40% male) from central Italy, including the regions of

Tuscany, Umbria, Marche and Lazio, which represent a major production zone for

many Italian typical–local foods (Aleffi & Cavicchi, 2020).

Previous research provides no evidence about the optimal number of participants

for neuroscientific studies. However, a recent review by Plassmann et al. (2015)

revealed that most neuroscientific studies use no more than 20–30 participants, due

largely to the high costs and complexity of conducting the experiments. Solnais et al.

(2013) recommends the same number. Therefore, in collaboration with CIAS, we

recruited two groups of 20 participants each. One group was used for the implicit

priming test, while the other was engaged in the eye-tracking and

electroencephalography study. At the selection stage, we chose both panels to be of very

similar composition in terms of age, gender, geographical location and attitudes towards

consumption of typical–local foods and food travel. We invited the panellists personally

and they took part in the research voluntarily. After the tests, they received a gift pack

containing a few local foods and wines as a reward for their participation.

Test execution and data processing

We processed the psychographic data from the implicit priming test through CoolTool

software. This works by comparing the speed of response provision (in the reaction time

test) measured in milliseconds (ms) with the combination of images (targets) and items

(primes) to conclude which items are more associated with one image or the other. We

considered the image preferred for at least three to five items the best-performing one in

the group of each signal we investigated. We used an internal algorithm, directly included in the automatic processing of results, to improve data quality. If a respondent's answers for one combination of item and image were either too quick (within 250 ms) or too slow (over 500 ms), we did not analyse the test results. We tested the chosen images and relative items for each communication signal, with each prime flashed on the screen for approximately 500 ms, just before the target.

For the eye-tracking, we used a common eye-tracker (Eye Tribe) as supporting technology and Tobii Studio software (version 3.0.5) to analyse gazing behaviour. Participants sat approximately 60–70 cm away from the eye-tracker system (17″ flat high-definition screen with 1920 × 1080 pixel resolution and sensor bar) where stimuli were displayed. We divided the test into two steps: first, we projected each image representing the investigated communication signals for 10 seconds, followed by an interval of five seconds projecting a neutral background. The sequence of exposure was randomised between participants. Then, we displayed images simultaneously for 30 seconds, allowing the participants to compare them. Again, the position of images within the final stimulus was randomised between subjects. We recalibrated the eye-tracker for each subject to improve measurement accuracy. We used two metrics to measure the eye movements (Sharafi et al., 2015), namely average fixation duration and time to first fixation, both measured in seconds (sec.). The average fixation duration is the sum of durations of all the fixations divided by the number of fixations in a given area of interest:

$$AFD = \frac{\sum_{i=1}^{n}[ET(F_i) - ST(F_i)] \; in \; AOI}{n}$$

Where:
AFD = Average fixation duration
$ET(F_i)$ = end time for a fixation F_i
$ST(F_i)$ = start time for a fixation F_i

n = total number of fixations in a given area of interest
AOI = Area of Interest

Longer fixations indicate a substantial increase in the area of interest's ability to capture attention.

Additionally, time to first fixation can be used to indicate the amount of time it takes a respondent (or all respondents on average) to look at a specific area of interest from the onset of the stimulus. This provides information about the duration of the first fixation on a single area of interest, regardless of the number of fixations made on it. We calculated it as a mean value, by dividing the sum of seconds that each consumer takes to arrive at that specific area of interest since the beginning of stimulation by the number of observations:

$$\text{TFF} = \frac{\sum_{i=1}^{N}[SF(t) - SO(t)] \; in \; AOI}{N}$$

Where:
TFF = Time to first fixation
SF(t) = starting time for stimulus fixation
SO(t) = starting time for stimulus onset
N = total number of observations (i.e. number of participants)
AOI = Area of Interest

This measures the attractiveness power/saliency of a particular area of interest, providing information about how certain aspects of a visual scene are prioritised. A lower time to first fixation implies the area of interest commands higher levels of attention.

We applied a filter method internal to Tobii Studio software, which fixed the velocity threshold at 30°/sec. and discarded short fixations. Additionally, since fixation durations range from a minimum of 100–125 ms to a maximum of 1–2 sec. (depending on the type of exploratory activity of various studies; Wang et al., 2017), we considered time fixations of less than 80 ms invalid and consequently omitted them from the

analysis. We used heat maps to represent the eye-tracking data (Esteban-Bravo & Vidal-Sanz, 2021).

In parallel with the eye-tracking, we performed an electroencephalogram through a one-channel wireless headset using three dry electrodes (MindWave Mobile 2 from NeuroSky). The device digitises and amplifies raw brain signals and transfers delta, theta, low alpha, high alpha, low beta, high beta and gamma waves to a computer for translation into meaningful data. The speed of brain waves was measured in Hertz (Hz) (cycles per sec.) and automatically converted to a 0–100 scale by the internal algorithm in the CoolTool software. To improve the overall quality of the test, the software automatically filtered data to include only the relevant frequencies in the analysis, removing the effect of 50 Hz of noise. The dominance of higher frequencies means that the brain is on the alert, which implies greater cognitive load, attention and involvement. The output of the electroencephalogram was presented in tables showing the engagement and the cognitive load values ranging from 0 to 100. The engagement algorithm indicates the intensity of mental focus or attention. Higher values for the engagement algorithm indicate higher intensity of mental focus or attention to a specific stimulus. The cognitive load algorithm measures the mental workload while performing a task. The higher the value of the cognitive load algorithm, the harder a user's brain works on a task.

Appendix B describes the trials and stimuli randomisation occurring during eye-tracking and electroencephalogram tests.

Results

Implicit priming test

For the implicit priming test we used two images (A *vs* B) resulting from the focus

group and five items describing each communication subject/signal (see Appendix A).

By observing the difference in the average association time (expressed in ms) of each

item to the relative image, we could see which items or primes were most associated

with it. In Figure 2, the greater the length of the bar, the greater the association of the

item with image A (the white bar on the left) or B (the black bar on the right) used for

representing sustainability, geographical indications and healthiness.

[FIGURE 2 HERE]

The findings reveal that sustainability is better represented by image B, with

three to five items associated with it, while geographical indications and healthiness are

better represented by the corresponding image A, both with four to five items associated

with it.

Figure 3 depicts the selected images along with the interpretation of visual

stimuli that emerged from the focus group. We considered each visual stimulus as an

area of interest, represented by geometric shapes, from which we later extracted visual

attention, engagement and cognitive loading metrics via eye-tracking and

electroencephalogram tests.

[FIGURE 3 HERE]

Eye-tracking and electroencephalography

The implicit priming test provided evidence only about the best-performing image representing the investigated signals. Hence, it was a preparatory stage for the eye-tracking and electroencephalogram tests. Table 1 summarises the results from these tests, while Figure 4 shows the heat maps obtained from eye-tracking.

[TABLE 1 HERE]

[FIGURE 4 HERE]

Regarding sustainability, visual stimulus 3, which represents a working farmer, achieved the highest fixation duration (3.47 sec.) and the shortest time to first fixation (4.36 sec.) on average, denoting participants' high levels of visual attention. At the same time, this area saw the highest value of average engagement (44.50), thus producing a significant level of individual involvement. The visual stimulus contained in this area represents the economic and social dimensions of sustainability; it is related to the possibility of increasing agricultural workers' income and the ability of a food system to reduce stress and shock and to enhance local producers' social well-being. Environmental safety, represented within the second area of interest, achieved less visual attention, with an average fixation duration of 1.81 sec. and average time to first fixation of 8.40 sec. The engagement value (40.90) was also, lower than that related to other areas.

With regards to geographical indications, visual stimulus 2, illustrating a conversation and handshake between two people, achieved the greatest fixation duration (2.72 sec.) and the lowest time to first fixation (5.85 sec.) on average, thus being the most visually attractive sub-signal. However, it generated less engagement (40.60)

32

among participants and took the lowest value among related sub-signals. In contrast, the

visual stimulus representing a generic quality label included in area of interest 3

achieved the highest engagement value (48.90) while capturing the lowest visual

attention, as denoted by the average fixation duration (1.01 sec.). This sub-signal was

also associated with the lowest cognitive loading (44.00), meaning that it demanded a

lower level of mental effort by the individual. Hence, the quality label emerged as an

important visual stimulus for geographical indications, acting as a means of quality,

product differentiation and protection from counterfeiting.

Finally, concerning the healthiness signal, we noted a greater balance between

the areas of interest in terms of average fixation duration. This was despite visual

stimulus 1, which represented product and emotional values associated with healthiness,

observed for longer (2.24 sec.) than other stimuli. There was, however, a shorter

average time to first fixation (4.48 sec.) related to area of interest 2, representing a

person meditating, which suggests that its association with physical well-being is almost

immediate. Even the engagement and cognitive loading data did not show very different

results, despite stimulus 3 being associated with a higher engagement value (48.90) than

the other sub-signals considered. Thus, overall, product and emotional values related to

healthiness seem to capture consumers' highest levels of visual attention, while physical

well-being associated with healthy food benefits is easily understandable as a signal by

individuals but commands a higher cognitive load on their part and is thus less

attractive.

After participants compared the three images on a screen projection lasting 30

sec. (second step, Table 1), we observed that the healthiness signal achieved the greatest

engagement value (48.60) and average fixation duration (9.41 sec.). This suggests the

ability of this signal to capture cognitive and visual attention. In contrast, the image

representing geographical indications achieved less visual attention, with 8.51 sec. of average fixation duration, but received a level of engagement and cognitive loading that was comparable to healthiness. In this case, the lowest engagement value (45.60) related to sustainability.

General discussion

This study investigated whether communication signalling strategies using sustainability, geographical indications and healthiness can be used to influence consumers, thus reducing their information asymmetry in the food tourism market and enhancing the attractiveness of tourist destinations.

The findings reveal that all three signals are important to consumers to some extent, since they positively affect consumers' visual attention and cognitive engagement. Therefore, tourism organisations should use these signals in communications to improve the overall attractiveness of places of origin of various foods. These findings help us to answer the first research question (RQ1 and the related RQ1.a, RQ1.b and RQ1.c) and show alignment with some prior research findings based on both self-report and neuroscientific methods.

Moreover, we were also able to answer the second research question (RQ2) and the related research gap. In our analyses we focused on: (i) ranking the visual and cognitive attractiveness of each communication signal; and (ii) uncovering the specific sub-signals on which signalling strategies should be focused.

Regarding the first point (i), we found that healthiness is the most persuasive communication signal, achieving the highest engagement and the lowest cognitive loading, while geographical indications and sustainability (in that order) were much less attractive and engaging signals for consumers. This partially confirms past consumer research findings (e.g. Ballco et al., 2019; Pawlak & Colby, 2009), including those from

34

the tourism literature (Kim & Eves, 2012; Mynttinen et al., 2015), which claim that consumers appreciate typical–local foods mainly for their benefits to personal health. However, our results are fairly surprising when it comes to the sustainability signal, because it has often been recognised as a critical antecedent of consumers' individual attention, willingness to pay, buying behaviour and visual attention (Lafontaine et al., 2021; Tanner, 2003; Vassallo et al., 2016; van Loo et al., 2015; Verfuerth et al., 2021).

With respect to the second point (ii), on sub-signals, the overall results emphasise the social and emotional dimensions as common sub-signals for all three attributes/signals. Specifically, social sustainability is more relevant than economic sustainability, consistent with previous research (de Magistris & Gracia, 2016; Stein & de Lima, 2021), and social protection is confirmed as an important driver of sustainable food consumption (Guyader et al., 2017; Hu et al., 2019; van Loo et al., 2015). Our study confirms this by the high level of visual and cognitive attention devoted to those areas of interest representing such dimensions of sustainability. For geographical indications, previous studies have focused mainly on legal aspects or economic issues related to this attribute (Chrysochou et al., 2012; Marcoz et al., 2016; van Loo et al., 2021). Our findings, instead, highlight the cultural dimension of specific geographical areas, linking this attribute to social rather than economic characteristics, as indicated by the highest engagement value associated with the area representing the potential relationship between consumers and farmers and their traditional know-how. Finally, our study confirms and reinforces the feel-good dimension of healthiness, as proposed by different authors (Kim & Eves, 2012; Mynttinen et al., 2015). Specifically, we found product and emotional values to be critical sub-signals of typical–local foods' healthiness, achieving high levels of visual attention and, on average, good levels of cognitive engagement.

Implications for theory and practice

Our research makes some empirical contributions that add important knowledge to the literature on communication strategies, with a focus on the food tourism market and typical–local foods. More precisely, under the umbrella of signalling theory, this study contributes by proposing and evaluating an integrated theoretical framework of communication signals (i.e. sustainability, geographical indications and healthiness, as highlighted by Okumus (2021) as key decisional factors) and multiple sub-signals drawn from the literature (e.g. 'food security', 'location value', 'trusting relationships'). This more comprehensive approach aligns with the fact that multiple signals are used and considered by both marketers/producers and consumers/tourists. In doing so, this study advances understanding of consumers' perception and decision-making processes, since previous research has mainly investigated these signals separately and focused on the communication channels themselves (e.g. Alonso-Sobrado & Marcos, 2020; Fait et al., 2016; Kim et al., 2018).

Our findings highlight how the three communication signals associated with typical–local foods affect consumers' visual attention and cognitive engagement and, subsequently, tourist destinations' attractiveness. As already discussed, the results show that the most attractive signal is healthiness and suggest that the social and emotional dimensions are the most important sub-signals for all three communication signals. These attract the highest level of attention among consumers, and marketers would therefore benefit from using them to increase consumer interest in a specific tourism destination. Our study also shows that despite all three signals having a significant impact on consumer responses, they vary in how they impact people's visual attention and cognitive engagement. This sheds light on the complexity of comparing the effects of such types of communications and on the intricacy of unconscious brain processes.

36

A further contribution relates to our methodological approach, applying neuroscience techniques. Most previous research investigating similar topics has used traditional methods, such as questionnaires, content analysis and interviews (Okumus, 2021), which are unable to capture unconscious brain processes that relate to consumer decision-making and are affected by a series of limitations, such as self-report and recall biases (Scott et al., 2019).

In this research, we also combined eye-tracking with electroencephalography to overcome the individual limitations of each technique; this represents a superior methodological approach to some previous studies that used them separately (Scott et al., 2019). The neuroscientific approach adopted here has provided new insights on the emotions, attitudes and associations experienced by individuals when exposed to typical–local food communication signals.

Overall, food tourism organisations can use these findings to inform their marketing communication strategies. Notably, the managerial implications and insights of our study are twofold. At a general level, because the findings show that consumers consider healthiness as the most attractive signal of typical–local food quality and distinctiveness, organisations should focus their communication strategy primarily on this attribute of local foods. They should use messages highlighting the health benefits to promote unique products and tourism destinations and to reduce the overall information asymmetry that characterises the food tourism market (Crase & Jackson, 2000). In contrast, since geographical indications, and especially sustainability, were less attractive among consumers in terms of visual and cognitive attention, their appeal as communication signals may be limited, suggesting that managers should not invest too much in them to promote typical–local foods and relative destinations.

37

On a more specific level, the analysis provided an understanding of the components (sub-signals) of healthiness, geographical indications and sustainability that achieved the highest visual and cognitive attention among consumers; marketers and tourism managers can use this information to manage each communication signal properly. Notably, with respect to typical–local foods' healthiness, participants were visually attracted to product and emotional values, followed by the visual stimulus representing mental and physical well-being sub-signals. However, the highest engagement was achieved by the visual stimulus representing location and processing values, indicating less processed foods (with no preservatives or synthetic additives) that come from traditional local markets and/or natural places of purchase. This suggests that tourism managers should stress the intangible and experiential benefits of typical–local foods, such as physical and emotional well-being (as a potential signal of healthiness), by including images, sounds and words evoking these sub-signals. Additionally, standard communication campaigns promoting the health benefits of local foods could be combined with activities promoting physical or mental well-being, such as sports competitions, festivals or other social, educational and cultural activities, to enhance the tourist experience and increase destination attractiveness. Food festivals, such as the Italian Couscous Festival in Sicily, are good examples of tourism events that contribute a clearer understanding of 'place identity' and enhance community cohesion, regional identity and people's experiences of art and natural food.

In consumers' minds, geographical indication has mainly been associated with attributes such as food quality, food originality and protection against counterfeiting (represented by the quality label); hence, these components should be emphasised by tourism managers who want to stress the certification value of typical–local foods. Our study participants were also attracted by visual stimuli representing the potential

relationship with farmers and their traditional know-how. This suggests that managers

should use clearly visible certification labels, highlighting these aspects on product

packaging, as well as in their communication campaigns. Moreover, the product labels

and communications should convey the processes related to such certifications: for

example, the historic–cultural value connected with their production, the proximity

between production and consumption, and the overall uniqueness of the product. To this

end, organisations could promote specific on-site events: for example, for tourists to

familiarise themselves with farm life through site visits, experience hands-on the

production techniques for certain foods, and gain human know-how through typical–

local food tasting and consumption activities.

Finally, as the social and economic (but less so the environmental) dimensions of

sustainability captured consumers' attention in this study, tourism organisations should

use these sub-signals in communication campaigns for typical–local foods. For

example, aspects concerning the economic conditions of workers/farmers and the

overall social well-being of local producers could be used as communication

components to attract consumers' visual and cognitive attention. The focus of

communications should change from merely the environmental performance of food

production to the social and economic benefits of typical–local foods; this aligns with

more recent debates in research and industry (e.g. de Magistris & Gracia, 2016; Stein &

de Lima, 2021). Organisations would benefit from connecting with various actors in the

local economic system (e.g. catering, trade, crafts) and working together towards

strengthening the local destination's image (focusing more on geographical indications

and related health and well-being experiences/benefits) to enhance branding and

attractiveness to consumers. Creating such collaborations and synergies at the marketing

communications and product/service offering level would help to promote local foods and regions further, as well as better managing consumer demand and preferences.

We see tourism operators as key players in the local system (as they often act as the first port of call for information) and as promoters of tourism destinations and typical–local food territories. Thus, we suggest that tourism operators deepen their knowledge about typical–local foods and develop their consumer-facing communication skills to assist consumers/tourists asking for specific information on typical–local foods.

Based on our findings we also recommend that organisations improve signalling of the genuine nature and high quality of typical–local foods, by indicating or guaranteeing this quality from the early stages of production. They can achieve this, for example, through cooperation with agricultural producers or supply chain partners who can use the same geographical indication logos or participate in co-branding campaigns. It is also imperative that typical–local food marketing communication campaigns are closely linked to the promotion of other types of tourism (in particular those associated with culture, wellness and environmental quality) that might attract tourists to a certain region.

Limitations and future research

Despite its contributions and implications, our study has several limitations that we detail below.

First, to facilitate the use of eye-tracking and electroencephalogram technology, we conducted the study in a laboratory setting and with a relatively small sample drawn from central Italy, which might limit its representativeness beyond Italy or Europe. Future studies could examine if our findings are generalisable beyond this region and group of potential consumers/tourists. This is particularly critical in the tourism setting, as communication endeavours target people from various countries and with different

socio-cultural backgrounds. Moreover, the use of a laboratory environment for our

neuroscientific tests has some limitations, despite this being a standard research

approach for consumers' attention processes (Meißner et al., 2019) because it allows

high levels of control. Hence, future studies should evaluate the potential of field

experiments for observing the more 'natural' cognitive responses to real communication

campaigns. This would improve the overall validity of the data, because in a real-world

setting researchers might be able to account for and measure the environmental

distortion that occurs due to communication noise, which reduces the observability of

the signal itself. Additionally, receiver feedback may affect the effectiveness of signals,

and external referents (e.g. other receivers) may change the relationships between

signallers and receivers, enhancing the adoption of imitation behaviours (Connelly et

al., 2011). All this suggests a need to enrich the analysis of communication processes in

future research, moving the focus to real environments where the potential effects of

environmental distortions due to signaller reputation, receiver feedback, noise and/or

media use could be considered better. Moreover, we recommend that future research

combines the neuromarketing technique we used here (electroencephalography and eye-

tracking) with other methods (e.g. galvanic skin response and functional magnetic

resonance imaging) to overcome the limitations of each individual method and to

provide a more comprehensive view of the various psychological processes involved in

consumers' perceptions and decisions. Alternatively, neuromarketing techniques could

be accompanied by consumer diaries (that tourists keep while at destination and

consuming typical–local foods) and run as part of a longitudinal study.

  Second, the focus of our research is limited to typical–local foods as a product

category (without distinguishing product types) and to only three main characteristics

(sustainability, geographical indications and healthiness) as potential signals of

communication. While this approach is advantageous in terms of generalisability of results, product type is likely to influence consumers' visual attention when making food choices (van Loo et al., 2015). Thus, future studies should also test the robustness of our findings using specific typical–local foods, such as ham, cheese or olive oil, as such foods could be characterised by different levels of involvement, which may affect potential tourists' cognitive and affective responses. Future research on specific typical–local foods could also examine the optimal number of stimuli that can be used or combined to achieve the best communication method for increasing attention and engagement while avoiding consumer information overload.

Third, our research targeted only bottom-up factors influencing consumers' visual attention and cognitive engagement, without considering top-down factors (van der Laan et al., 2017). Bottom-up factors relate to the characteristics of the stimulus itself (graphic, size, location, etc.) and occur without potential consumers specifically searching for them. Top-down factors relate to consumers' proactive information search driven by pre-existing demographics, preferences, personal goals and involvement (van der Laan et al., 2017). Previous studies (Scott et al., 2019) have shown that top-down factors affect consumers' attention to and interaction with their environment. That is, attention towards typical–local foods may be affected by a covert component that we have neglected in this study. For instance, we did not control for (top-down) memory effects on attention, such as brand familiarity and product involvement. Thus, additional studies focusing on socio-demographic and cultural differences in attention would advance research in this area and would help our understanding of how food tourists respond to different communication signals. Moreover, future studies could usefully examine the follow-up stages of consumers' decision processes, such as word-of-mouth and product recommendations. In this context, researchers might want to examine what

42

attributes consumers focus on when recommending typical–local foods to others and whether these align with our findings in terms of the most noticeable and influential stimuli and signals.

We also recommend that future research investigates how much consumers/tourists know about a region due to its locally produced foods and how promotional activities can strengthen the link between the images of typical–local foods and their region or correct any inconsistencies. Notably, future work could explore how both tourism destinations and typical–local foods can align and synchronise their promotion and offering to satisfy multiple consumer needs/preferences (e.g. health, sustainability, high quality, originality, safety, convenience).

Conclusions

Consumers appreciate typical–local foods for several reasons, including taste, freshness, healthiness, authenticity and environmental protection, as well as respect for animal welfare and human rights (Alonso-Sobrado & Marcos, 2020; Hernandez-Rojas et al., 2021). Due to their relationship with the culinary culture and heritage of their place of origin, these products are critical in the food tourism context, where specialist food tastings and/or experiences are the primary motivating factor for travel (Hall & Sharples, 2004).

This research focused on three basic attributes of typical–local foods, namely sustainability, geographical indications and healthiness (Sirieix et al., 2011), and investigated through the lens of signalling theory (Spence, 2002) whether such attributes can act as signals of typical–local food quality, positively influencing consumers' visual attention and cognitive engagement and, subsequently, the attractiveness of destinations that typical–local foods originate from.

43

Our findings show that all three signals are relevant, as they significantly impact consumers' visual attention, cognitive load and engagement; this answers our RQ1 and the findings are in line with most previous literature on this topic. More importantly, while addressing RQ2, which investigated which of these communication signals and their components are most persuasive among consumers, we uncovered some novel insights. Namely, not all signals and sub-signals should be paid equal attention: healthiness emerged as the most influential communication signal, achieving the highest visual and cognitive attention; while the most appealing sub-signals were those associated with social and emotional dimensions of different signals.

Therefore, we conclude that consumers display different preferences for these signals and sub-signals and that this may influence their subsequent decision-making processes. We recommend that tourism organisations focus their communication strategies on the health-related benefits of typical–local foods to attract potential tourists' attention. In addition, signalling the intrinsic and emotional attributes of these types of foods, as well as the physical and cognitive well-being benefits associated with their consumption, may enable food tourist operators and local managers to improve their destinations' unique selling propositions and attractiveness.

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[APPENDIX A HERE]

[APPENDIX B HERE]

[APPENDIX C HERE]

Figure 1. Integrated conceptual framework of typical–local foods communication signals with underpinning theories.
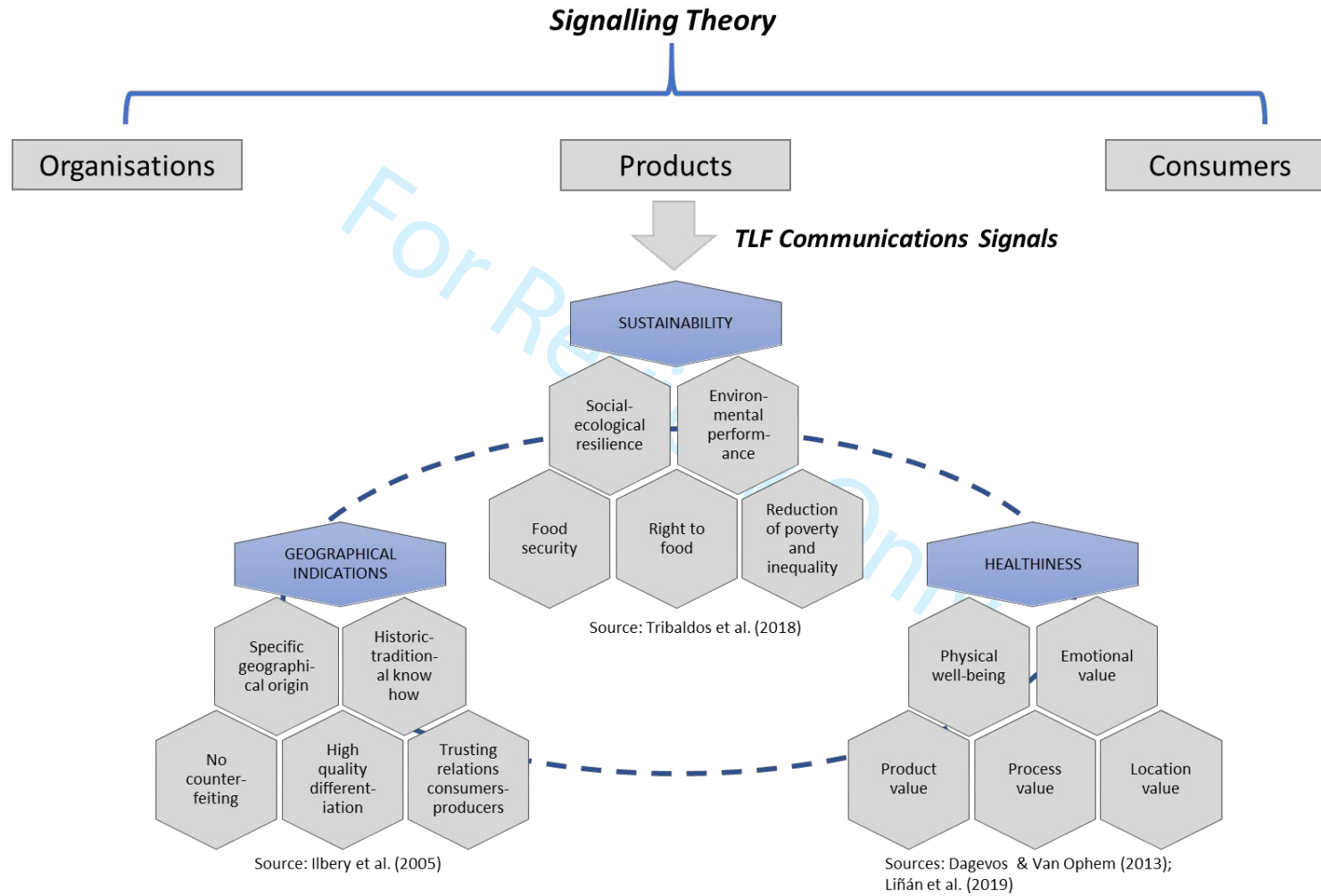
Figure 2. Results from implicit priming test.
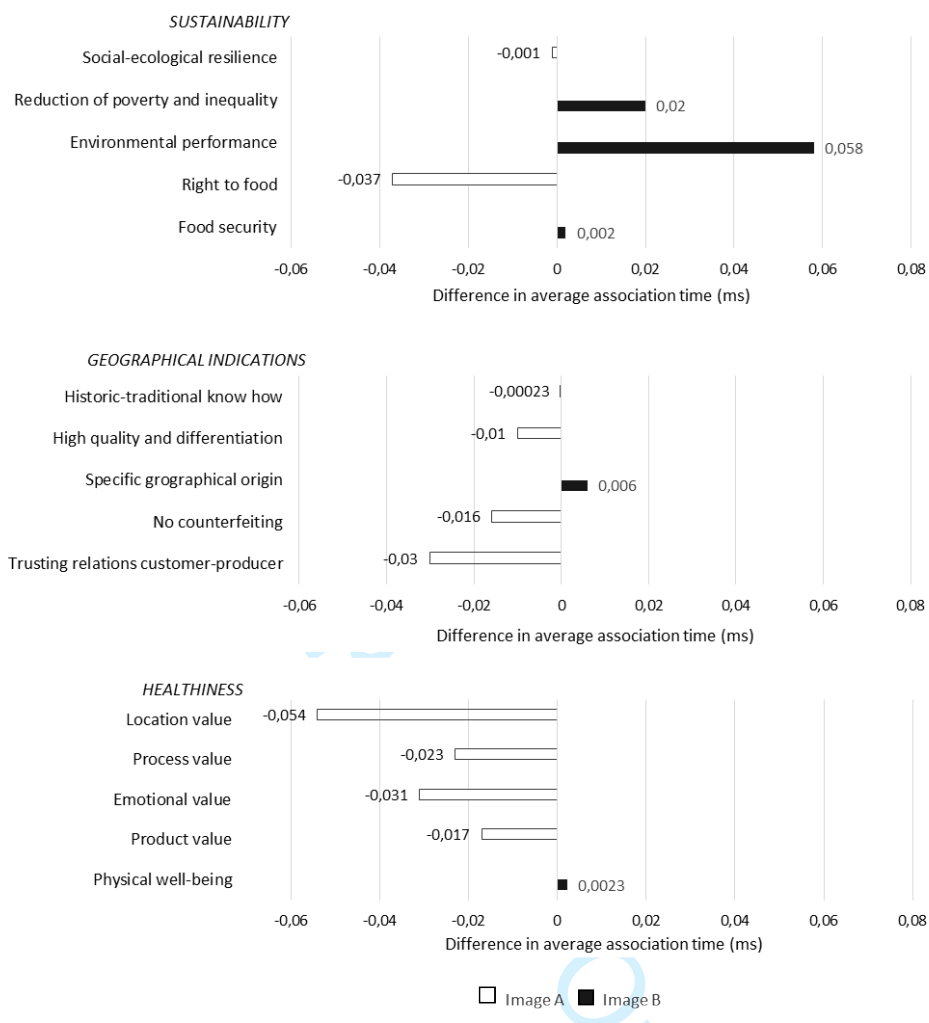
Figure 3. Selected images representing the communication signals' and stimuli's meaning, corresponding to Areas of Interest (AOI).
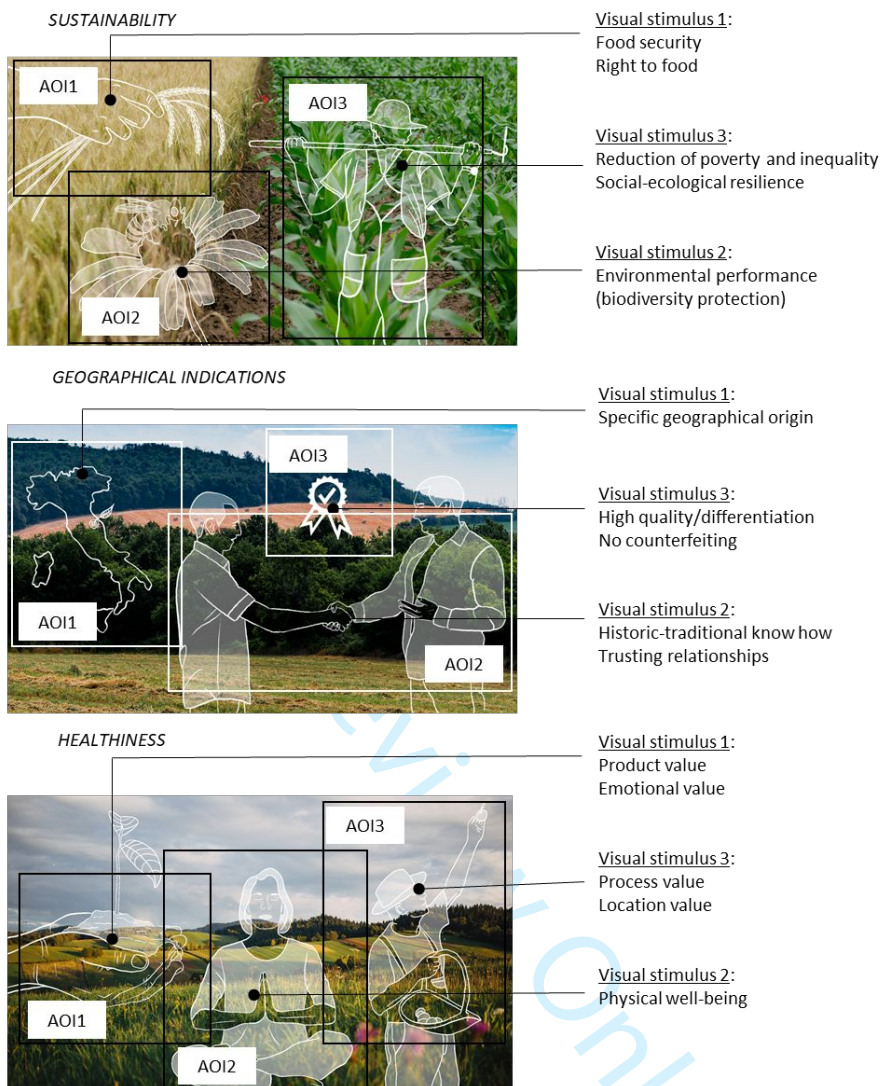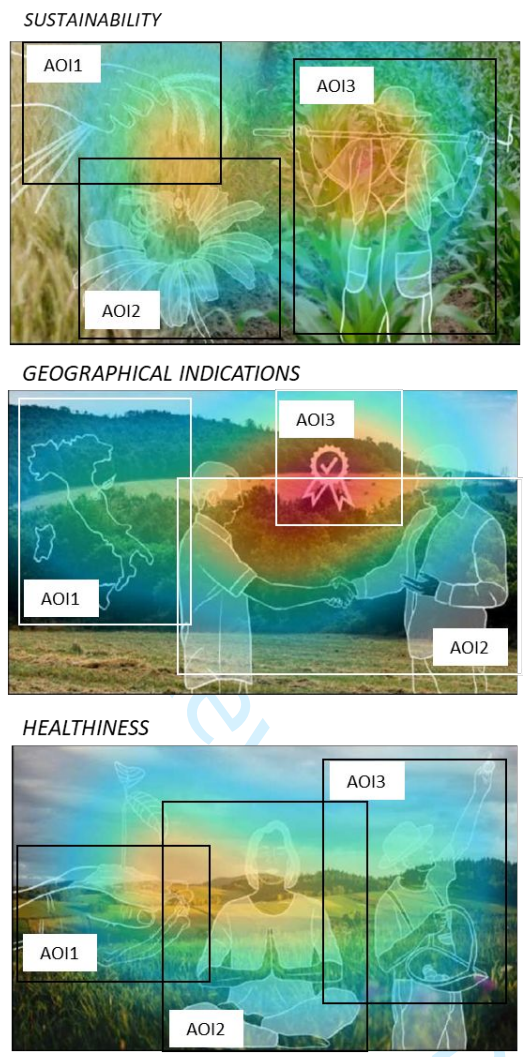
Figure 4. Heat maps.

Notes: The red colour on the maps corresponds to the points of highest visual attention (i.e. maximum number or duration of fixations), while the green colour represents the area of minimum attention paid by participants.

Table 1. Results from eye-tracking and electroencephalogram tests.

First step: evaluation of single images representing the signals

		Visual stimulus 1 (AOI1)	Visual stimulus 2 (AOI2)	Visual stimulus 3 (AOI3)
SUSTAINABILITY				
Eye-tracking	Average fixation duration	1.73***	1.81**	3.47***
	Time to first fixation	9.19***	8.40***	4.36**
Electroencephalogram	Engagement	41.90**	40.90*	44.50**
	Cognitive loading	41.90***	48.70***	45.50***
GEOGRAPHICAL INDICATIONS				
Eye-tracking	Average fixation duration	1.74***	2.72***	1.01***
	Time to first fixation	11.38*	5.85**	6.39*
Electroencephalogram	Engagement	43.40***	40.60***	48.90***
	Cognitive loading	45.50**	47.40***	44.00**
HEALTHINESS				
Eye-tracking	Average fixation duration	2.24**	1.88***	1.83**
	Time to first fixation	8.47***	4.48***	9.25***
Electroencephalogram	Engagement	46.80***	45.60***	48.90**
	Cognitive loading	44.20**	45.10*	46.00*

Second step: comparison between different images

		Sustainability	Geographical indications	Healthiness
Eye-tracking	Average fixation duration	8.61***	8.51***	9.41***
	Time to first fixation	2.71**	2.77***	2.44***
Electroencephalogram	Engagement	45.60*	48.00**	48.60**
	Cognitive loading	45.60***	44.90**	45.40***

Notes: Eye-tracking metrics are measured in seconds (sec.). Electroencephalogram metrics are measured on a score ranging from 0 to 100. All measures in the table are expressed as mean values.
***, **, * indicate statistical significance at p = 0.001, p = 0.01 and p = 0.05 respectively.

Appendix A. Typical–local foods' signals and items specification.

Communication subjects (Signals)	Items (Sub-signals)	References
SUSTAINABILITY	1. *Food security* (availability of food supplies, access to these supplies, appropriate use of food in nutritional terms)	Tribaldos et al. (2018)
	2. *Right to food* (food accessibility and distribution. Every person living in a region has the right to adequate food at any time and its availability must be ensured now and for future generations)	
	3. *Reduction of poverty and inequality* (sustainable food increases the financial means of agricultural workers)	
	4. *Environmental performance* (total amount of land, energy, and water required for food production; use of seeds, fertilisers and pesticides; human influence on landscapes and biodiversity)	
	5. *Social-ecological resilience* (the ability of a food system to reduce stress and shocks; self-organisation of food system actors; capacity to learn from past events and to develop existing contexts further)	
GEOGRAPHICAL INDICATIONS	1. *Specific geographical origin* (the product is originally produced in a specific land)	Ilbery et al. (2005)
	2. *Historic-traditional know how* (the product preserves local knowledge and culture)	
	3. *Trusting relationships between customers and producers* (the label decreases the information asymmetry)	
	4. *High quality and differentiating characteristics* (the product is obtained through good methods of production, transport time length and conditions, etc.)	
	5. *Protection from counterfeiting* (the label acts as a source of protection for regional productions)	
HEALTHINESS	1. *Product value* (beneficial ingredients, nutritional content, good taste)	Dagevos & van Ophem (2013)
	2. *Process value* (less processed, with no preservatives and synthetic additives)	Liñán et al. (2019)
	3. *Location value* (traditional local markets, natural place of purchase)	
	4. *Emotional value* (positive emotions and experience)	
	5. *Physical well-being* (long-term health safety)	

Appendix B. Trials and stimuli randomization during eye-tracking and electroencephalogram tests[a].

First step: evaluation of single images representing each signal

Trials	Randomization of images (stimuli) presentation	Duration of the trial[b]	Trials	Randomization of images (stimuli) presentation	Duration of exposure (sec.)
1	S1 – S2 – S3	40 sec.	11	S1 – S2 – S3	40 sec.
2	S3 – S2 – S1	40 sec.	12	S2 – S1 – S3	40 sec.
3	S2 – S3 – S1	40 sec.	13	S3 – S1 – S2	40 sec.
4	S2 – S1 – S3	40 sec.	14	S2 – S3 – S1	40 sec.
5	S3 – S1 – S2	40 sec.	15	S2 – S1 – S3	40 sec.
6	S3 – S1 – S2	40 sec.	16	S3 – S2 – S1	40 sec.
7	S1 – S3 – S2	40 sec.	17	S2 – S3 – S1	40 sec.
8	S3 – S1 – S2	40 sec.	18	S1 – S3 – S2	40 sec.
9	S1 – S2 – S3	40 sec.	19	S1 – S3 – S2	40 sec.
10	S1 – S2 – S3	40 sec.	20	S3 – S1 – S2	40 sec.

Second step: comparison between different images

Trials	Randomization of images' position for final comparison	Duration of the trial[c]	Trials	Randomization of images' position for final comparison	Duration of exposure (sec.)
1	S2 – S3 – S1	30 sec.	11	S1 – S3 – S2	30 sec.
2	S2 – S3 – S1	30 sec.	12	S1 – S3 – S2	30 sec.
3	S1 – S2 – S3	30 sec.	13	S1 – S2 – S3	30 sec.
4	S1 – S2 – S3	30 sec.	14	S3 – S1 – S2	30 sec.
5	S2 – S3 – S1	30 sec.	15	S3 – S2 – S1	30 sec.
6	S1 – S3 – S2	30 sec.	16	S3 – S1 – S2	30 sec.
7	S2 – S1 – S3	30 sec.	17	S2 – S3 – S1	30 sec.
8	S3 – S2 – S1	30 sec.	18	S3 – S2 – S1	30 sec.
9	S3 – S1 – S2	30 sec.	19	S1 – S2 – S3	30 sec.
10	S3 – S1 – S2	30 sec.	20	S2 – S1 – S3	30 sec.

Notes:

[a] S1 = Image (stimulus) representing Sustainability; S2 = Image (stimulus) representing geographical indications; S3 = Image (stimulus) representing healthiness.

[b] The total duration of each trial was 40 sec.: each image has been projected for 10 sec., followed by an interval of 5 sec. with neutral screen.

[c] The total duration of each trial was 30 sec.: images were simultaneously projected, while their position within the screen was randomized between participants.

Appendix C. Overview of the research on typical–local foods.

Topic area	Sub-topic/theme	Representative references	Methodology	Key findings	Main gaps/limitations in theme
The relationship between typical–local foods and food tourism	Typical–local foods' conceptualisation and their linkage with territory/culinary culture and heritage	Alonso-Sobrado & Marcos (2020)	Desk analysis on companies' websites	The promotion of food tourism benefits from the linkage between gastronomic offering and the territory's identity.	- Conceptual papers are lacking empirical validation. - The joint effects of global and local cultures are rather undervalued.
		EEC Regulation no. 2081/92	Institutional document	Typical-local foods have a twofold nature related to: (i) place of origin; and (ii) use of traditional production techniques.	
		Hall & Sharples (2004)	Conceptual paper	Specialist food provides tasting and experiences that act as primary food travel motivators.	
		Tregear (2003)	Conceptual paper	Local foods are critical for food tourism development as they are signs of culture and place authenticity.	
	Antecedents and outcomes of typical–local food consumption in food tourism	Casalegno et al. (2020)	Questionnaire survey	Consumers' perceptions formed during coffee farm visits are positively influenced by coffee consumption and travel in coffee-producing countries.	- The prevailing focus on a single food product, a specific geographic area and/or a limited sample can reduce the generalisability of results. - Studies focused on different countries do not consider cultural differences. - Authors highlight the need for further investigation of consumers' emotional and perceptual processes. - The use of mixed-methods approaches is recommended to overcome limitations of self-reported methods.
		Choe & Kim (2018)	Questionnaire survey	Tourists' attitudes towards local food positively affect their perception of the food destination image and intention to visit it.	
		Di Clemente et al. (2020)	Questionnaire survey	Involvement and memorable food-based experiences can promote long-lasting loyalty for both local products and the destination among food tourists.	
		Hernandez-Rojas et al. (2021)	Questionnaire survey	Traditional cuisine using local foods contributes to tourists' destination loyalty.	
		Ribeiro et al. (2018)	Questionnaire survey	Emotional solidarity with local residents and producers improves tourist satisfaction and destination loyalty.	
		Smith & Costello (2009)	Questionnaire survey	Satisfaction at a culinary event is influenced by food and beverage prices, ease of coming/going to the event, convenient parking, and food tasting.	
Attributes and signals of typical–local	Intrinsic/extrinsic attributes	Megicks et al. (2012)	Mixed method	Local food consumption is affected by four drivers (intrinsic quality, local support and provenance, product distracters, buying	- The psychological mechanisms and social dimension of consumer

foods		(focus group + questionnaire survey)	inconvenience) and two inhibitors (shopping benefits, ethical sustainability).	behaviour is generally overlooked.
		Zepeda & Deal (2009)	Qualitative study (in-depth interviews)	Knowledge, information-seeking and habits are important in understanding why consumers choose organic and local foods.	- The research focus on local food as a product category is recognized as a potential limitation.
					- Geographic and demographic cross-validations are suggested to increase generalisability of results.
					- Reliance on self-reported measures
	Emotional and experiential attributes	Leonidou et al. (2015)	Questionnaire survey	Tourism experience affects tourists' attitudes and involvement in environmental issues (including eco-friendly, organic foods).	- These studies do not include cross-national and longitudinal designs
		Mirosa & Lawson (2012)	Questionnaire survey	Local buying behaviour is influenced by the types of food (e.g. unprocessed), the store (e.g. at speciality stores), and the cooking method (e.g. following recipes). Moreover, local food buyers value the convivial shopping experience that farmers' markets provide.	- Exploratory studies based on qualitative methods are recognised as limited in terms of generalisability of results.
		Rachão et al. (2020)	Qualitative study (focus group + in-depth interviews)	Respondents are more willing to participate in food than wine experiences. However, memorable experiences are critical for value co-creation in tourism.	- Negative experiences are generally overlooked.
		Reid (2021)	Conceptual paper	Consuming beer at the point of production ensures that beer is enjoyed in its freshest possible state and provides tourists with exciting on-site experience.	
		Savelli et al. (2019)	Questionnaire survey	Local foods are highly appreciated for their emotional connection, which allows consumers to be involved in a personal experience when buying and consuming them.	
		Spielmann et al. (2018)	Mixed method (qualitative + quantitative)	Place authenticity provides an important characteristic that unlocks a valuable consumer experience.	
		Zepeda & Nie (2012)	Questionnaire survey	Local food consumption leads to greater involvement with food preparation and enjoyment of cooking.	

Sustainability	Memery et al. (2015)	Questionnaire survey	Local food ensures local support more than intrinsic product quality.	- Most of these studies are focused on drivers associated with sustainable food consumption than potential barriers.
	Rushing & Ruehle (2013)	Questionnaire survey	Customers associate sustainability-related attributes with locally sourced food more than organic food.	- Research on a single local food and/or a limited sample produces limited and non-generalisable results.
	Rothwell et al. (2016)	Qualitative study (case study)	Local food is associated with better environmental performance across a range of indicators at local peri-urban commercial farms compared with a larger interstate farm.	- The relationship between global and local food needs more investigation when considering the subject of sustainability.
	Sánchez-Bravo et al. (2020)	Questionnaire survey	To achieve a sustainable future, raising awareness about food (and local food) consumption among the population is increasingly necessary.	
	Sirieix et al. (2011)	Qualitative study (in-depth interviews + projective techniques)	Organic food is beneficial to health and makes agriculture more environmentally friendly.	
	Steenkamp & de Jong (2010)	Questionnaire survey	Consumers who favour the localisation response (i.e. preferring local products and rejecting global products) are older, ethnocentric people who value tradition and conformity.	
	Tribaldos et al. (2018)	Conceptual paper	The relationship between sustainable diets and sustainable food systems is influenced by five principles of food sustainability: food security, the right to food, reduction of poverty and inequality, environmental performance, and resilience.	
Geographical indications	Chen (2021)	Questionnaire survey	The prevention-focused benefit and the promotion-focused benefit of local food (i.e. local tea) have higher influence compared with perceived concerns (price) about attitude towards products with geographical indication.	- Studies on geographical indication related to local foods often focus on narrow samples that are not representative.
	Hieke & Taylor (2012)	Literature review	Literature on nutritional labelling in the consumption context should be explored and interpreted by adopting a holistic approach, since changes in the marketplace, as well as in consumption trends, can influence both the regulatory activity and the consumer responses to nutritional labelling.	- The sole attention on geographical indication offers limited understanding of consumer motivations towards local food. Authors often suggest

	Ilbery et al. (2005)	Conceptual paper	It is possible to identify 'critical' and 'territorial development' rationales that influence the ways in which product, process and place are combined in food labelling schemes.	combining geographical indications with other local food features in future analyses.
	Likoudis et al. (2016)	Questionnaire survey	Factors that are significantly associated with respondents' willingness to buy food with Protected Designation of Origin/Protected Geographical Indication labels include origin, health claims, product labelling, and sustainable consumer behaviour.	
	Meyerding et al. (2019)	Choice experiment	Consumers prefer local food labels; these stress the idea of inheritance between generations.	
	Silvestri et al. (2020)	Questionnaire survey	Geographical indication labels contribute to transferring cultural heritage to future generations, and sharing this heritage with the rest of the world.	
	Van Rijswijk & Frewer (2012)	Questionnaire survey	Geographical indication labels provide information about ingredient traceability and food processes.	
Healthiness	Birch et al. (2012)	Mixed method (focus group + questionnaire survey)	Health is one of the main drivers for seafood consumption in Australia, together with taste, convenience, and a desire for diet variety.	- When studying the healthy dimension of local food, authors highlight that more attention to the product offering side is needed.
	Dagevos & van Ophem (2013)	Conceptual paper	Food consumption value consists of four elements: product, process, location and emotional value.	- Sample representativeness is a critical limitation which is widely recognised in both qualitative and quantitative studies.
	Delind (2006)	Conceptual paper	Eating locally is an essential prerequisite for maintaining both human and environmental health and security globally.	- The use of mixed-method approaches based on experiments and quantitative surveys is recommended.
	La Trobe (2001)	Questionnaire survey	Most customers visit a farm market to buy healthy fresh foods. In particular, they prefer food which is organically grown and free from genetic modification.	
	Liñán et al. (2019)	Qualitative study	Healthy food preferences are influenced by utilitarian values linked to product and process, as well as by the physical setting and more intangible values, such as the feeling of taking care of oneself.	
	Pelletier et al. (2013)	Questionnaire survey	Preferences for alternative production practices (including local production) are associated with healthy eating behaviours.	

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		Racine et al. (2013)	Questionnaire survey	Buying local products is more likely among white and lower-income families, families living in rural areas, families with children who eat five or more servings of fruits and vegetables per day, and families with children in poor health.	
Consumers' cognitive and behavioural response to typical–local food features	Sustainability	Cachero-Martínez (2020)	Questionnaire survey	The positive relationship between attitude and behavioural intentions towards organic food is stronger for consumers with greater environmental awareness.	- Main limitations associated with these studies concern: (i) the use of a narrow sample focused on a geographic area, which does not account for preference heterogeneity; (ii) scant attention paid to cultural and/or demographic variables; and (iii) the focus on a specific local food, which reduces the generalisability of findings.
		Chang et al. (2021)	Questionnaire survey	There is a positive relationship between motivations (comprising physical, cultural, interpersonal and prestige domains) and satisfaction with and loyalty towards plant-based dining.	
		Dalmoro et al. (2020)	Qualitative study (in-depth interviews)	Organic farmers can build social and material arguments against conventional food production and consumption.	
		de Magistris & Gracia (2016)	Choice experiment	Consumers are willing to pay a premium price for almonds that are organically and locally produced, and, therefore, generate fewer greenhouse gas emissions.	- Research based on self-report methods calls for the use of neuromarketing techniques.
		Enax et al. (2015)	Neuroscience (functional magnetic resonance imaging)	Fair trade labels (as a sign of sustainability) positively affect willingness to pay. Moreover, several brain regions are activated in response to fair trade products, compared with conventional ones.	- Insights from eye-tracking need to be integrated with other neuromarketing techniques.
		García-González et al. (2020)	Questionnaire survey	Participants show a positive attitude towards sustainable diets. However, important misconceptions remain and these require education, information, and motivation interventions.	- Some research does not deal with local food but with other products, such as organic and natural foods.
		Guyader et al. (2017)	Neuroscience (eye-tracking)	Retailers can attract consumers' visual attention and increase the green premium through various practices, such as providing relevant information, orienting consumers inside the store, and offering an eco-friendly product assortment.	
		Lafontaine et al. (2021)	Questionnaire survey	Customer ethics is among the main factors facilitating organic food buying behaviour.	

	Nam (2020)	Questionnaire survey	Involvement in eco-friendly food and purchase empowerment positively affect the frequency of buying eco-friendly food. Moreover, the relationship between involvement in eco-friendly food and engagement empowerment is statistically significant.	
	Rihn et al. (2016)	Neuroscience (eye-tracking)	Respondents' visual attention to organic production methods has a strong positive effect on their purchase likelihood.	
	Schröter & Mergenthaler (2019)	Neuroscience (eye-tracking)	Allocation of visual attention is linked to the specific information content and the assessment of the natural aspect of aquaponics production.	
	Shashi & Singh (2015)	Conceptual paper	Environment protection, pesticide-free food and animal protection are major sustainability issues influencing organic purchase intentions.	
	Shin et al. (2017)	Questionnaire survey	Altruistic values affect biosphere values, which in turn influence willingness to pay for an organic menu.	
	Tanner (2003)	Questionnaire survey	Green food purchases are facilitated by consumers' positive attitudes towards: (i) environmental protection; (ii) fair trade; (iii) local products; and (iv) availability of action-related knowledge.	
	van Loo et al. (2015)	Neuroscience (eye-tracking)	Consumers who spend more time attending to and fixating on sustainability attributes (in the case of coffee) value them more during the decision-making process.	
	Vassallo et al. (2016)	Questionnaire survey	The complexity of social pressure in predicting the intention to buy highlights a clear and significant role of the Italian family in making sustainable food choices.	
Geographical indication	Aprile et al. (2012)	Questionnaire survey	Consumers are willing to pay the highest premium price for a product with a Protected Designation of Origin label, followed by organic farming labels and then Protected Geographical Indication labels.	- Many studies are characterised by a narrow research setting. The focus on a single case study, in particular, weakens the consistency and generalisability of the results.
	Bryla (2015)	Questionnaire survey	The perceived authenticity of origin products depends to the largest extent on factors such as natural taste, product quality, sale in the region of origin, and labelling.	- Few scholars recognise

	Chrysochou et al. (2012)	Scanner data	In comparison with other extrinsic product attributes, Designation of Origin Labels are less important drivers of loyalty. However, traditional foods carrying a Designation of Origin Labels exhibit higher levels of loyalty compared with others with any Designation of Origin Labels label.	the need for longitudinal research, despite the mutual and interactive effects of attributes other than geographical indications alone.
	Drexler et al. (2018)	Mixed method (eye-tracking + in-depth interviews)	Organic product labelling can play a role in decision-making, despite 27% of participants in this study not caring about the organic quality labels or not paying attention to them.	- Neuroscience studies call for more observations in real environments.
	Fiala et al. (2016)	Neuroscience (eye-tracking)	Heat maps show that participants notice labels of origin, but they have no effect or a small effect on their behaviour as consumers. Origin labels are more attractive in the case of yoghurt.	- Some of these studies do not deal with local food, but with other products such as organic and natural foods.
	Georgakarakou et al. (2020)	Neuroscience (eye-tracking)	Quality claims tend to improve consumers' evaluation of organic foods and increase their likelihood of choosing them.	
	Kos Skubic et al. (2019)	Questionnaire survey	The presence of a Protected Designation of Origin label on a traditional food package is not too important. Slovenian consumers tend to pay greater attention to taste, healthiness and ingredients of traditional food. Moreover, there is a direct relationship between the belief that the Protected Designation of Origin signals a better quality and the selection of such a label.	
	Linder et al. (2010)	Neuroscience (functional magnetic resonance imaging)	Foods labelled as "organic" provide increased activity in the ventral striatum (i.e. part of the brain that is involved in some emotional responses, especially those related to pleasure and behavioural motivation) compared with conventionally labelled food.	
	Marcoz et al. (2016)	Mixed method (in-depth interviews + questionnaire survey)	The importance of Protected Designation of Origin certification for consumers grows with increasing distance from the region of origin of the typical product (i.e. Fontina cheese). Protected Designation of Origin is thus valued more by tourists than by locals.	

	Reitano et al. (2017)	Neuroscience (eye-tracking)	Whatever their age, consumers associate traced products (such as olive oil) with a higher level of quality. Thus, traceability is a competitiveness factor.	
	Stein & de Lima (2021)	Conceptual paper	Multiple types of sustainability labels in the food market can inform consumers about the economic, social and environmental sustainability implications of their food purchasing choices.	
	van Loo et al. (2021)	Neuroscience (eye-tracking)	Visual attention to nutrition and sustainability claims influences food product choice. Moreover, visual attention is associated with a higher choice likelihood.	
Healthiness	Ballco et al. (2019)	Mixed method (discrete choice experiment + eye-tracking)	The presence of nutritional claims on food increases visual attention in terms of fixation count, which may be linked to increasing likelihood of purchasing behaviour.	- The prevailing use of eye-tracking techniques implies limitations that should be overcome by using different techniques.
	Bialkova et al. (2014)	Neuroscience (eye-tracking)	A health goal results in longer and more frequent fixations, compared with a preference goal. Moreover, higher fixation relates to higher likelihood of choice. Hence, attention mediates the effect of nutrition labels on choice.	- The focus on specific geographic areas, small samples or food categories limits the consistency and representativeness of the results.
	Fenko et al. (2018)	Neuroscience (eye-tracking)	Time constraints negatively affect visual attention to food health labels. General health interest moderates the effect of time constraints. However, visual attention to health labels is a poor predictor of healthy food choice.	- Some studies do not deal with local food, but with other products, such as organic and natural foods.
	Graham & Jeffery (2012)	Neuroscience (eye-tracking)	Nutrition label viewing is related to food purchasing, and labels are viewed more when a food's healthiness is ambiguous.	
	Kim & Eves (2012)	Multiple questionnaire survey	Five underlying motivational dimensions of local food consumption are: cultural experience; interpersonal relationships; excitement; sensory appeal; and health concern.	
	Ma & Zhuang (2021)	Literature review	Updated nutrition label designs can improve consumer attention and nutrition label comprehension but do not necessarily lead to healthier food choices.	

Mynttinen et al. (2015)	Mixed method (qualitative study + questionnaire survey)	Russian tourists value the freshness and healthiness associated with local food. Nevertheless, local food products are poorly recognised, and tourists are not familiar with local South Savo food.
Orquin & Scholderer (2011)	Neuroscience (eye-tracking)	The only information element that consumers consistently use as a health cue is the nutrition label. However, only a limited amount of attention is devoted to reading nutrition labels during purchase likelihood evaluations.
Raghunathan et al. (2006)	Mixed approach (implicit association test + experiments)	The association between the concepts of "unhealthy" and "tasty" operates at an implicit level.
Turner et al. (2014)	Neuroscience (eye-tracking)	People with motivation to shop for healthy foods spend significantly more time looking at all available nutritional information compared with people with motivation to shop for products on the basis of taste.