

Alma Mater Studiorum Università di Bologna  
Archivio istituzionale della ricerca

Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment:  
Does Personality Matter?

This is the final peer-reviewed author's accepted manuscript (postprint) of the following publication:

*Published Version:*

Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment: Does Personality Matter? / Bazzani, Claudia; Caputo, Vincenzina; Nayga, Rodolfo M.; Canavari, Maurizio. - In: FOOD QUALITY AND PREFERENCE. - ISSN 0950-3293. - STAMPA. - 62:(2017), pp. 144-154. [10.1016/j.foodqual.2017.06.019]

*Availability:*

This version is available at: <https://hdl.handle.net/11585/602923> since: 2018-02-03

*Published:*

DOI: <http://doi.org/10.1016/j.foodqual.2017.06.019>

*Terms of use:*

Some rights reserved. The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

This item was downloaded from IRIS Università di Bologna (<https://cris.unibo.it/>).  
When citing, please refer to the published version.

(Article begins on next page)

## Accepted Manuscript

Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment: Does Consumers' Personality Matter?

Claudia Bazzani, Vincenzina Caputo, Rodolfo Mercado Nayga Jr, Maurizio Canavari

PII: S0950-3293(17)30156-8  
DOI: <http://dx.doi.org/10.1016/j.foodqual.2017.06.019>  
Reference: FQAP 3353

To appear in: *Food Quality and Preference*

Received Date: 16 September 2016  
Revised Date: 11 June 2017  
Accepted Date: 29 June 2017

This is the final peer-reviewed accepted manuscript of: Bazzani, C., Caputo, V., Nayga, R.M. Jr, Canavari, M., Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment: Does Consumers' Personality Matter?, *Food Quality and Preference* (2017)

The final published version is available online at doi: <http://dx.doi.org/10.1016/j.foodqual.2017.06.019>

© 2017 Elsevier. This manuscript version is made available under the Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND) 4.0 International License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

**Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment: Does Consumers' Personality Matter?**

Claudia Bazzani <sup>a,\*</sup>, Vincenzina Caputo <sup>b</sup>, Rodolfo Mercado Nayga, Jr. <sup>c</sup>, Maurizio Canavari

<sup>d</sup>

<sup>a</sup> Department of Business Administration, University of Verona, Via Cantarane, 24 - 37129 Verona, Italy, [claudia.bazzani@univr.it](mailto:claudia.bazzani@univr.it)

<sup>b</sup> Department of Agricultural, Food, and Resource Economics – Michigan State University 446 West Circle Dr. - Justin S. Morrill Hall of Agriculture East Lansing, MI 48824, USA, [vcaputo@anr.msu.edu](mailto:vcaputo@anr.msu.edu)

<sup>c</sup> Department of Agricultural Economics and Agribusiness, University of Arkansas, 217 Agriculture Building, Fayetteville, AR 72701, USA; Korea University, Norwegian Institute of Bioeconomy Research, and NBER, [rnayga@uark.edu](mailto:rnayga@uark.edu)

<sup>d</sup> Department of Agricultural Sciences, Alma Mater Studiorum, University of Bologna, Viale Giuseppe Fanin, 50 – 40127, Bologna, Italy, [maurizio.canavari@unibo.it](mailto:maurizio.canavari@unibo.it)

## **Revisiting Consumers' Valuation for Local Versus Organic Food Using a Non-Hypothetical Choice Experiment: Does Personality Matter?**

### **ABSTRACT**

We investigate consumers' preferences and willingness to pay (WTP) for local and organic foods using a non-hypothetical choice experiment. Past studies have observed that beliefs and attitudes affect consumers' preferences for local and organic productions claims. However, in psychology, personality is an important factor in explaining individuals' attitudes and behavior, since personality traits are stable features which capture how individuals think, feel, and behave. To the best of our knowledge, this is the first study to investigate the interaction between personality traits and consumers' preferences for both local and organic food products. We used applesauce as the product in question, and we implemented the MIDI (Midlife Development Inventory) scale to capture respondents' personalities. We focused on the "Big Five" personality traits: openness to experience, conscientiousness, extraversion, agreeableness and neuroticism. We find that personality traits can be sources of heterogeneity in consumers' preferences for locally produced, but not for organic applesauce.

**KEYWORDS:** local; organic; personality traits; real choice experiment; consumers' preferences

### **1. Introduction**

Consumer demand for information about the origin and methods of the production of food products has significantly increased in recent years due to market globalization and issues related to food safety, food security, and environmental safeguards (Adams & Salois, 2010; Aprile et al., 2012; de-Magistris & Gracia, 2014; Govindasamy, Italia, & Adelaja, 2002; Grankvist et al., 2004; Grunert, Hieke, & Wills, 2014; Sirieix et al., 2013). This is also reflected by the growing number of locally based and alternative forms of food networks, such as farmers' markets and Community Supported Agriculture (CSA) in North America

and Europe. The popularity of the so-called "local food movement" is evidenced by an increased promotion from provincial and regional governments as well as mainstream food retailers indicating claims of the local origin of food products (Adams & Salois, 2010; Bazzani & Canavari, 2013; Campbell, Mhlanga, & Lesschaeve, 2013). This growing appeal for local foods has led to an increasing number of empirical studies focused on Alternative Agro-Food Networks (AAFNs) and the analysis of consumers' preferences and willingness to pay (WTP) for locally grown food products (Darby et al., 2008; de Magistris & Gracia, 2008; Goodman, 2003; Hu, Woods, & Bastin, 2009; Sacchi et al., 2015; Seyfang, 2006).

Despite the increasing appeal for local food products, the food system is still lacking an universally shared definition of "local food" (Adams & Salois, 2010; Aprile, Caputo, & Nayga 2016; Bazzani & Canavari, 2013; Bazzani & Canavari, in press; Campbell, Mhlanga, & Lesschaeve, 2013; Gracia, 2014). In previous studies, different criteria have been used for the interpretation of local food products, ranging from food miles (Caputo, Nayga, & Scarpa, 2013; Caputo et al. 2013; de-Magistris & Gracia, 2014) and political boundaries, such as regional or state borders (Hu et al., 2012; Scarpa, Philippidis, & Spalatro, 2005), to food traditions (Akaichi, Gil, & Nayga, 2012; Amilien, Fort, & Ferras, 2007). Furthermore, the concept of local food has often been associated with organic production (Campbell, Mhlanga, & Lesschaeve, 2013; Zepeda & Deal, 2009), in that organic agriculture incorporates food produced through a farming system aimed at the safeguard of natural resources and the reduction of agricultural inputs.<sup>1</sup> Although its principles do not necessarily require that food is locally produced, the organic concept was initially associated with promoting a close and, often, direct relationship between farmers and consumers, together with the balanced management of natural resources, e.g., soil, plants, animals, etc. In this regard, a number of studies have observed that consumers may perceive the "organic" and "local" concepts as partially overlapping (Campbell, Mhlanga, & Lesschaeve, 2013; Denver & Jensen, 2014; Haas et al., 2013; Padel & Foster, 2005). However, while local food is still a convoluted concept, the organic food system is more developed, e.g., certified labeling programs. Due to the growing global standardization and industrialization of organic food, several authors have

---

<sup>1</sup> According to the definition agreed upon by the International Federation of Organic Movements (IFOAM), "Organic Agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promotes fair relationships and a good quality of life for all involved."

argued that organic agriculture has lost some of its luster as an alternative to conventional agriculture and that this has caused a shift in consumers' preferences from organic to local food products (Adams & Salois, 2010; Campbell, Mhlanga, & Lesschaeve, 2013). Accordingly, local food has been defined in some quarters as the "new organic" (Adams & Salois, 2010; Campbell, Mhlanga, & Lesschaeve, 2013). Consequently, a growing number of studies are investigating consumers' preferences for local and organic foods, with results suggesting that consumers tend to value locally produced food products over organic food products (Aprile, Caputo, & Nayga, 2012; Campbell, Mhlanga, & Lesschaeve, 2013; de-Magistris & Gracia, 2014; Denver & Jenasen, 2014; Gracia, Barreiro-Hurlé, & Galán, 2014; Hu et al., 2012; Loureiro & Hine, 2002; Meas et al., 2014; Onozaka & Mcfadden, 2011). In the present study, we conducted a field experiment in Italy, using a real (non-hypothetical) choice experiment (RCE), in order to explore consumers' valuation for locally produced and organic applesauce.

In addition, past studies reported that consumers' profiles are a relevant aspect in the determination of consumers' valuation for local and organic foods (Campbell, Mhlanga, & Lesschaeve, 2013; Costanigro et al., 2014; Gracia, Barreiro-Hurlé, & Galán, 2014). In particular, evidence from the literature shows that factors such as individuals' attitudes and beliefs can be sources of heterogeneity in preferences for locally produced and organic food products (Bond, Thilmany, & Keeling Bond, 2008; Costanigro et al., 2011; Costanigro et al., 2014; Onozaka, Nurse, & Mcfadden, 2011; Onozaka & Mcfadden, 2011; Shi et al., 2015; Yangui, Costa-Font, & Gil, 2016; Zanolli & Naspetti, 2002). However, a recent study from Keller and Siegrist (2015) showed that individuals' personalities might play an important role in consumers' food choices. Their results showed that individuals' personality significantly affected respondents' preferences for different kinds of products such as meat, fruit, vegetable, sweet, and savory foods. In psychology, personality is described as traits which capture "patterns of thinking, feeling, and behaving" (APA, 2014). It is considered a contributing factor to understanding individuals' behavior given that personality traits represent stable features that can influence individuals' actions in different contexts (APA, 2014; Eysenck, 1970; McCrae et al., 2000; McCrae & Costa, 1995; Mischel, 2009; Rhodes, Courneya, & Jones, 2005). Hence, personality traits have been used extensively to explain different aspects of individuals' attitudes and behaviors, such as health issues, lifestyle, and

economical decisions (Almlund et al., 2011; Borghans et al., 2008; Ferguson, Heckman, & Cooper, 2011; Goodwin & Friedman, 2006).

In the literature on food consumption, studies have primarily investigated the effect of individuals' personality on eating and dietary habits (de Bruijn, Kremers, van Mechelen, & Brug, 2005; Dudek et al., 2015; Goldberg & Strycker, 2002; Lunn et al., 2014; MacNicol, Murray, & Austin, 2003; Magee & Heaven, 2011; Möttus et al., 2012, 2013; Tiainen et al., 2013). In addition, some studies have observed that personality influences individuals' preferences for organoleptic characteristics of food products such as sweet, bitter, or spicy flavors (Byrnes & Hayes, 2013; Robino et al., 2016; Saliba, Wragg, & Richardson, 2009). Despite the increased interest among consumers regarding food claims such as origin and method of production, only the study by Grebitus and Dumortier (2015) investigated the effect of personality on consumers' preferences for organic foods. Their results show that differences in personality affected consumers' WTP for organic and conventional tomatoes. Moreover, Grebitus, Lusk, and Nayga (2013) investigated the effect of personality on consumers' food choices using different ranges of food miles. However, their study focused on using personality traits to explain differences in respondents' valuations in EAs and CEs, not on the interaction between respondents' personality and product features. Hence, to the best of our knowledge, no known study has explored the role of personality traits on consumers' valuation of specific product attributes, especially those concerning origins and production methods.

To illustrate, consumers who are cooperative, helpful, and caring might give more value to a food product that is locally and organically produced since these personality traits could induce more-positive attitudes toward supporting the local economy or safeguarding the environment. In the literature, agreeableness has also been observed to be strongly linked to collective identity and environmental engagement (Milfont & Sibley, 2012; Westjohn, Singh, & Magnusson, 2012). Additionally, personality traits might explain heterogeneity in individuals' preferences for more unconventional, local production food claims as well as more regulated organic certifications. Notably, past studies show that individuals who are more extravert and open to experiences tend to seek new, uncommon aspects in food consumption trends (Byrnes & Hayes, 2012; Knaapila et al., 2011). As such, someone with an extraverted personality or someone who is more open to new experiences might be more willing to choose a food product characterized by a claim such as "locally grown" than a

more standardized label like the organic certification. On the other hand, an individual who tends to be apprehensive, worrisome, organized, or meticulous might be more comfortable buying foods that have been produced according to certified labeling programs, as in the case of organic production. Past studies, for example, report that conscientiousness and neuroticism are the traits mostly influencing consumers' perceptions towards food safety issues (Chang, Tseng, & Chu, 2013; Röhr et al., 2005). Finally, given the strong association between organic consumption and health attitudes (Chen, 2007; de Magistris & Gracia, 2008; Grebitus & Dumortier, 2016), personalities which have been generally linked to healthy dietary habits, such as agreeableness, conscientiousness, and extraversion, might positively influence consumers' preferences for the organic attribute, contrary to neuroticism that is generally related to dietary disorders (de Bruijn, Kremers, van Mechelen, & Brug, 2005; Dudek et al., 2015; Goldberg & Strycker, 2002; Lunn et al., 2014; MacNicol, Murray, & Austin, 2003; Magee & Heaven, 2011; Möttus et al., 2012, 2013; Tiainen et al., 2013).

In past studies, food beliefs, purchasing food habits, and food motivations have been investigated in relation to consumers' choices for origin and method of production attributes (Bond, Thilmany, & Keeling Bond, 2008; Costanigro et al., 2014; Onozaka, Nurse, & Mcfadden, 2011). However, these aspects might be influenced by external factors such as cultural environment and life events (Rhodes, Courneya, & Jones, 2005). On the other hand, personality traits can be considered as biological characteristics, which could influence individuals' choice behavior independently from the surrounding environment (Bouchard & Loehlin, 2001; Eysenck, 1970; Mischel, 2009; Rhodes, Courneya, & Jones, 2005). Thus, for the first time in the literature, we explored whether or not personality should be taken into account when estimating consumers' preferences and valuation for local and organic food products. We focused in particular on the "Big Five" personality traits, also known as the five factor model (Goldberg, 1992, 1994), which are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. These personality traits are often referred to with the acronym OCEAN. In our RCE (Real Choice Experiment), we assess whether or not the OCEAN personality traits, measured using the MIDI personality scale (Lachman & Weaver, 1997), can be source of heterogeneity in consumers' valuation for local and organic applesauce.



## 2. Background on Consumers' Willingness to Pay (WTP) for Local and Organic Food

Previous studies show that consumers are willing to pay a premium both for organic and locally produced foods. However, the local origin attribute has been identified in most of the cases as the more valued attribute (Aprile, Caputo, & Nayga, 2012; de-Magistris & Gracia, 2014; Hu et al., 2012; Hu, Woods, & Bastin 2009). Consumers tend to prefer local food products when origin is relayed in terms of state and regional borders (Hu, Woods, & Bastin, 2009; Hu et al., 2012; Loureiro, & Hine; 2002; Meas et al., 2014; Yue & Tong, 2009), in terms of designation of origin and geographical indication labels (Aprile et al., 2012; Gracia, Barreiro-Hurlé, & Galán, 2014; Yanguí, Costa-Font, & Gil, 2016) as well as "Food Miles" (Caputo et al., 2013; Caputo, Nayga, & Scarpa, 2013; de-Magistris & Gracia, 2014, Lim & Hu, 2016).

Only a few studies did not confirm this general consumers' preference for locally grown products over organic products. To illustrate, Hu et al. (2012) documented that consumers' preferences for organic and local claims for blueberry jam varied in the different levels of origin of production and on the levels of organic certification (100% organic seal, 95% organic seal, made with organic berries). Results from this study show that consumers from Kentucky and Ohio valued organic jam more than the other attributes when it was 100% organic, with the exception of when it was produced in the Appalachian Valley. On the other hand, Scarpa, Philippidis, and Spalatro (2005) found out that consumers' valuation for local and organic claims varied depending on the product under consideration. Using a discrete choice experiment, they investigated Italian consumers' preferences for organic and regionally grown labels on olive oil, table grapes, and oranges, finding that consumers' likelihood to purchase olive oil was higher when it was regionally produced and that organic production was the most valued claim in the case of oranges. Finally, Costanigro et al. (2014) used an experimental auction approach, observing that consumers' bids for locally grown and organic apples were similar and that participants tended to bid significantly higher only when the apples were both organic and local.

A number of other studies have examined consumers' purchasing drivers for local and organic foods. For instance, Costanigro et al. (2014) investigated whether or not food beliefs towards local and organic production affect consumers' preferences for organic and locally produced apples. Their results show that organic and local production were mostly associated

with environmental benefits, but this belief did not significantly influence respondents' valuation for the two claims. Onozaka, Nurse, and Mcfadden (2011) based their study on the Theory of Planned Behavior (TPB) in order to assess how consumers' behavioral motivations and attitudes influence their choices for different sustainable labels including organic and origin of production claims. Local origin was preferred mainly by consumers who tended to buy food products directly from farmers, while the organic attribute was valued higher by those consumers who perceived an impact from their purchases when buying organic. Comparatively, Bond, Thilmany, and Keeling Bond (2008) observed that support for the local economy, quality, and safety were the main drivers of consumers' WTP for a premium for locally produced food products, while environmental impact was the main factor affecting choice for organic food products. Shi et al. (2015) observed that consumers' valuation for organic and local foods depended on the type of store where the experimental auctions were conducted. Their results show that consumers at farmers markets and at quality-focused stores tended to have a higher willingness to pay for local blueberries, while consumers at the price-conscious outlets tended to bid higher for the organic products.

Finally, several studies have also explored the interaction between socio-demographic characteristics and consumers' choices for locally grown and organic food products, showing that age, gender, education, and income mostly affected individuals' perception and WTP for both attributes (Campbell, Mhlanga, & Lesschaeve, 2013; Hu et al., 2012; Hue, Woods, & Bastin, 2009; Loureiro & Hine, 2002; Yue & Tong, 2009; Zepeda, 2009).

In this paper we specified the local origin as regional borders (Emilia-Romagna, i.e., our survey area,) in an attempt to reflect the definition of local food in the Italian market (Coldiretti, 2014). Regarding the method of production, we defined the organic attribute as the generic claim "Organic" (Costanigro et al., 2014; Hu, Woods & Bastin, 2009, Moser & Raffaelli, 2012). We specified the organic attribute using the generic claim "Organic" and not the "Organic logo" in order to be consistent with the origin attribute, which was described with the generic claim "In Emilia Romagna"- "Outside Emilia Romagna". This is consistent with previous studies where the origin of production was also specified as a generic label (e.g., Costanigro et al., 2014; Moser and Raffaelli, 2012; Hu, Woods and Bastin, 2009).

We used applesauce as the product in question since the Emilia-Romagna region is the fourth-largest producer of apples in Italy. Notably, it is also the Italian region with the largest organic fresh fruit production (Il portale della Regione Emilia-Romagna, 2014). Moreover,

the choice to use applesauce has also been determined by another important factor. Although apples are highly cultivated in the Emilia-Romagna region, processed apple products, such as applesauce, are not commonly consumed in the area. Indeed, applesauce has only recently been introduced into the Italian market as a healthy snack product. Past studies have generally focused on traditional or commonly consumed food products in the survey area (Aprile, Caputo, & Nayga, 2012; de-Magistris & Gracia, 2014; Moser & Raffaelli, 2012). As such, this study contributes to the literature related to local and organic food preferences by using a food product that is still uncommon in the area of interest, i.e. Italy. In addition, our study is the first to evaluate how personality traits affects consumers' WTP for both local and organic food attributes.

### **3. Material and Methods**

#### *3.1 Real Choice Experiment*

Choice Experiments (CEs) are one of the most popular stated-preference methods used in food marketing to investigate individuals' WTP for a certain good or service because they evaluate different attributes and attribute levels. Moreover, the choice task in the CEs is staggeringly similar to real purchasing situations where consumers are asked to make trade-offs between products characterized by different attributes (Lusk & Schroeder, 2004). CEs provide several hypothetical purchasing scenarios. In each purchasing scenario, individuals are asked to make choices between alternatives that represent products with different attributes as well as attribute levels with a no-buy option. The familiarity of the decision mechanism in a CE is one of the main advantages of this approach.

A limitation of a hypothetical CE is that it may lead to hypothetical bias (Murphy et al., 2005). The absence of an economic commitment in hypothetical methods can be a source of inconsistency, generally over-estimation, in individual WTP estimations, as compared to non-hypothetical approaches such as Experimental Auctions (EAs) (Lusk & Shogren, 2007). To explain, hypothetical bias is the difference between individuals' WTP in hypothetical and non-hypothetical evaluation methods (Carlsson & Martinsson, 2001; Carpenter & Harrison, 2004; Murphy et al., 2005). Therefore, to mitigate hypothetical bias in CEs, several studies implement RCEs (Real Choice Experiments), wherein the tasks are incentivized by randomly

choosing one of the choice tasks as binding after the respondent has completed all of the choice tasks (Lusk & Schroeder, 2004; Alfnes et al., 2006; Chang et al., 2009; Yue et al., 2009; de-Magistris & Gracia, 2014). Further, real products are used, and participants have to buy the product they choose in the randomly selected binding choice task unless they select the no-buy option. Previous studies showed that the incentive compatibility of RCEs can help mitigate hypothetical bias, providing a better approximation of consumers' actual WTP (Lusk & Schroeder, 2004; Johansson-Stenman & Sveds, 2008; Chang et al., 2009; Loomis et al., 2009; Volinskiy et al., 2009; Yue et al., 2009; Grebitus, Lusk, & Nayga, 2013). Additionally, RCEs more closely represent individuals' choice behavior when compared to EAs because they are more similar to real purchasing processes, e.g., the types of decisions made at supermarkets, and they evade the peer pressure that can characterize EA mechanisms (Akaichi et al., 2013; Gracia, Louriero, & Nayga, 2011; Grebitus et al., 2013).

### 3.2 Experimental Design

The different applesauce products differed in terms of origin and method of production. Product origin was assigned two levels: (1) in the Emilia-Romagna region and (2) outside of the Emilia-Romagna region, but still in Italy. As Italy lacks a shared definition of local food, the regional borders were defined as the boundary between the local and nonlocal because these are most often used when defining food products as local (Coldiretti, 2014). In addition, prior to conduct the choice experiment, in depth interviews on twenty-three individuals chosen among consumers, farmers and experts of the Italian food system were performed in order to explore the meaning of "local food" in the Italian market. Respondents from this qualitative analysis agreed on defining "local" in terms of belonging to a geographical area, i.e. region, rather than in terms of food miles (Bazzani & Canavari, in press). Two levels were set for the production method: organic and nonorganic (Hu, Woods, & Bastin, 2009). The price attribute has four levels (€0.95, €1.45, €1.95, and €2.45), approximately reflecting the market price for two cups (100 g each) of applesauce.<sup>2</sup> Table 1 reports the attributes and attributes levels used in this study.

---

<sup>2</sup> The actual market price for two cups of applesauce (100 g each) in 2014 generally varied between €1.10 and €2, depending on the brand, production method (organic or conventional), and the store from which the product was bought. However, in the pre-test phase, respondents were asked to indicate their reference price for two

**Table 1: Attributes and attribute levels**

<i>Attributes</i>	<i>Attribute Levels</i>
Price	2.45 € 1.95 € 1.45 € 0.95 €
Origin	Local (produced in Emilia-Romagna) Non-local (produced in Italy, but outside Emilia-Romagna)
Method of Production	Organic Non-organic

Attributes and attribute levels were allocated using a sequential Bayesian approach (Ferrini & Scarpa 2007; Scarpa, Campbell, & Hutchinson, 2007; Sandor & Wedel, 2001). It was obtained after conducting three phases. In the first phase, we followed Street and Burgess (2007) to generate a D-Optimal design with all parameter priors simultaneously assumed equal to zero. Accordingly, the chosen attributes and attribute levels were used to generate an orthogonal main effects fractional factorial design for the first alternative of the design, reducing the full factorial 16 ( $4 \times 2^2$ ) combinations of the attributes (profiles) to eight. We then applied suitable design generators (1,1,1) for the three attributes with four, two, and two levels to obtain eight pairs, leading to a D-efficiency of 96.6%. This design was then used for the pilot survey on 27 consumers (second phase). In the third phase, we used the data from the pilot to estimate a Multinomial Logit Model (MNL) whose coefficient estimates of the attributes and no-buy constant were used as Bayesian priors necessary to generate the final  $D_b$ -optimal choice experimental design. Bliemer and Rose (2010) demonstrated that designs based on multinomial logit probabilities perform well also for Random Parameter Logit models despite the difference in the asymptotic variance-covariance estimator. This is also confirmed by a growing number of food choice studies which implemented MNL based designs (Caputo, Scarpa, & Nayga, 2017; Scarpa et al., 2013).

cups of applesauce (100 g each). The range of the suggested prices was much wider than the actual market prices. Therefore, we used a slightly wider price range than the one defined by the market in order to prevent respondents from considering the differences in the prices as irrelevant.

### 3.3 Personality Traits Measurement

Individuals' personality can be interpreted as a dynamic and organized set of characteristics that capture differences in how subjects think, feel, and behave (APA, 2014; Hofstee, 1994). In defining different personality traits, the literature is divided into two main currents: the "lumpers" who believe that individuals' personality is characterized by a few broad traits and the "splitters" who believe that personality is characterized by more narrowly specified traits (Bouchard & Loehlin, 2001). Even so, there is an increasing consensus among personality theorists that personality is structured as a set of global traits, which in turn are composed by narrower traits (Bouchard & Loehlin, 2001; Christensen, Drewsen, & Maaløe, 2014; Gnambs, 2014; Gill & Hodgkinson, 2007; Eysenck, 1991). Indeed, one of the most popular structures in defining personality traits is the so-called "Big Five" or "Five Factors" Model (Perugini & Gallucci, 1997; Bouchard & Loehlin, 2001; Goodwin & Friedman, 2006; Weiss, Bates, & Luciano, 2008). The OCEAN model consists of five broadly defined dimensions: Openness to experiences (O), Conscientiousness (C), Extraversion (E), Agreeableness (A), and Neuroticism (N). Each of the "OCEAN" dimensions is defined by more specific personality traits. The "Openness to experiences" factor describes personality traits related to intellectual activity, openness or skepticism to novelty, inclination to be practical or imaginative, and flexibility in emotions and ideas. The dimension "Conscientiousness" refers to traits such as aptitude for being organized, active, and hardworking. The factor "Extraversion" describes the inclination to be sociable, lively, and extraverted. "Agreeableness" is the sum of those traits that define whether or not an individual is cooperative, helpful, sympathetic, caring, and trustworthy. Finally, the factor "Neuroticism" includes all those traits related to emotional instability such as anxiety, inability to react to stressful situations, and self-consciousness (Bouchard & Loehlin, 2001; Goldberg, 1992, 1993; Grebitus, Lusk, & Nayga, 2013; Perugini & Gallucci, 1997; Weiss, Bates, & Luciano, 2008).

In order to measure the personality traits, the Midlife Development Inventory (MIDI) scale was implemented where the five OCEAN traits are associated with a list of 25 items<sup>3</sup>

---

<sup>3</sup> The MIDI scale by Lachman and Weaver (1997) is composed of 30 items and six dimensions, but the literature usually focuses only on the "Big Five" model. As such, different studies (Weiss, 2008; Keyes, Shmotkin, & Ryff, 2002) left the sixth factor (Agency) out for the elicitation of the five OCEAN factors.

(Keyes, Shmotkin, & Ryff, 2002; Lachman & Weaver, 1997; Weiss, Bates, & Luciano, 2008)  
(Table 2).

**Table 2: Description of the OCEAN personality traits in the MIDI scale (Lachman & Weaver, 1997)**

OCEAN global factors (Cronbach's Alpha values)	Specified traits
Openness to experience (0.77)	Creative Imaginative Intelligent Curious Broadminded Sophisticated Adventurous
Conscientiousness (0.58)	Organized Responsible Hardworking (non) Careless
Extraversion (0.78)	Outgoing Friendly Lively Active Talkative
Agreeableness (0.80)	Helpful Warm Caring Soft-hearted Sympathetic
Neuroticism (0.74)	Moody Worrying Nervous (non) Calm

Each item was elicited using a scale from 1 (not at all) to 4 (a lot) to indicate the degree to which each item on the scale describes the participants.<sup>4</sup> The MIDI scale was constructed based on the MacArthur Foundation Survey of Midlife Development in the United States (MIDUS survey), where, using a pilot of 1,000 men and women (of ages between 30-70 years), a broad number of personality items from pre-existing inventories

<sup>4</sup> Following Lachman and Weaver (1997), the question used to measure each item was "Please indicate how well each of the following items describes you"



were tested (Lachman & Waeber, 1997). Items with the highest correlations and factor loadings were selected for its construction. The main advantages of the MIDI scale are its simplicity and conciseness, which work well when interviewing participants within a limited time-frame. For the analysis of the data, the mean value of the adjectives for each trait was calculated.

The survey was conducted using face-to-face interviews. However, in the case of the MIDI scale, respondents were asked to privately read and answer the questions in order to avoid a potential social pressure from the interviewer.

### *3.4 Data and Empirical Model*

#### *3.4.1 Data*

A field RCE was conducted during the fall of 2014 in a grocery store located in Bologna, a city in the Emilia-Romagna region of Italy. Food shoppers were randomly intercepted and recruited at the entrance of the store. They were asked to participate in a survey of consumers' valuation for different kinds of applesauce. Each participant was incentivized with a €5 check coupon. A total of 80 consumers participated in our RCE involving applesauce products. As aforementioned, applesauce is not a popular food product in the area of interest, i.e. Italy, since it has only been recently introduced in the Italian food market as a healthy snack product. Indeed, in our pre-test, 46% of the respondents indicated that they were not familiar at all with applesauce and 68% indicated that they had never purchased this product before. As such, in an attempt to equally familiarize the respondents with the product in question, we asked participants to taste the four types of applesauce (local/organic, local/nonorganic, nonlocal/organic, and nonlocal/nonorganic) before answering the RCE questions. We chose to adopt a blind tasting approach so that the sensory characteristics of the different types of applesauce would not affect respondents' preferences for the production origin and production method attributes. After completing the blind tasting, participants also had the opportunity to visually examine the applesauce products (two cups of 100 g of each applesauce). Detailed information about the RCE mechanism was also provided to all the participants, emphasizing that an actual payment had to occur if they chose one of the two product options in the binding choice task. Once participants completed the RCE, they were asked to fill out a questionnaire that included questions related to personality traits and socio-demographic information.



### 3.4.2 Empirical Models

Respondents' preferences and WTP were analyzed using a discrete choice framework. Discrete choice models are consistent with the Lancaster Consumer Theory (Lancaster, 1966) and the Random Utility Theory (McFadden, 1974). According to the Lancaster Consumer Theory (Lancaster, 1966), the total utility of a good can be segregated into partial utilities given by the different attributes of the good. Additionally, according to the Random Utility Theory, the utility of an individual  $n$  choosing alternative  $j$  in the  $t^{th}$  choice situation can be represented as:

$$U_{njt} = \beta'_n x_{njt} + \varepsilon_{njt} \quad (1),$$

where  $x_{njt}$  is a M-dimensional column vector of the variables, related to alternative  $j$  and individual  $n$ ;  $\beta_n$  is a M-dimensional vector of structural taste parameters, characterizing choices by the overall  $t$  situations; and  $\varepsilon_{njt}$  is the error term, which is assumed to be independent of the vectors  $\beta$  and  $x$ .  $\beta'_n x_{njt}$  is the deterministic portion of the individual utility function, while  $\varepsilon_{njt}$  is the stochastic portion that is unobserved by the researcher.

As such, in our study, the utility of each respondent  $n$  of choosing alternative  $j$  in each choice task  $t$  can be specified as follows:

$$U_{njt} = ASC + \beta_1 Price_{njt} + \beta_2 Local_{njt} + \beta_3 Organic_{njt} + \varepsilon_{njt} \quad (2),$$

where  $ASC$  is an alternative-specific constant representing the no-buy choice alternative;  $Price_{jt}$  is a continuous variable represented by the four experimentally designed price levels; further,  $Local_{jt}$  and  $Organic_{jt}$  are dummy variables equal to one if the product is labeled "local" and "organic," respectively, and zero otherwise.

Different choice models can be derived depending on assumptions regarding the distribution of the unobserved error term and the functional form of the utility. The Multinomial Logit Model (MNL) is built on the assumption that the error terms are independently and identically distributed (IID) with a Gumbel (Extreme Value Type I) distribution. This model also implies independence within the alternatives and taste homogeneity across respondents. However, several studies have shown that consumers'

preferences for local food and organic products are generally heterogeneous (Gracia, 2014; Onozaka & Mcfadden, 2011; Scarpa, Philippidis, & Spalatro, 2005). When heterogeneity on consumers' preferences is expected, then more flexible discrete choice models such as the Random Parameter Logit (RPL) model could be specified. The RPL model allows for random taste variation and consideration of the panel structure of choice data (Train, 2003). Accordingly, in our study, a specification of the RPL model with panel data structure was considered, as each respondent answered eight different choice tasks. The implementation of the RPL model would, then, allow us to test whether personality traits can explain heterogeneity in consumers' preferences for organic and locally produced food products.

Moreover, additional modeling issues should be taken in account in order to assure for robustness and consistency with individuals' choice behavior of the model's estimates. First, it was assumed that correlation across utilities for the different parameters exists. In the standard RPL model, independency across taste parameters is usually assumed. However, some attributes of the good in question might be interdependent. When estimates for the elements of the Cholesky matrix are statistically significant, dependence across tastes can be taken into consideration. Second, our design consisted of choice tasks with two experimental product options and a no-buy option. While the experimental product options are hypothetical and vary in every choice task, the no-buy option is actually experienced by respondents and repeats itself in all the eight choice tasks. As such, the unobservable utilities of the two purchase options might have a higher variance in comparison with the unobservable utility of the no-buy alternative, and in particular, they might be more correlated amongst themselves than with the utility of the no-buy option (Bazzani et al., 2017; Gracia, Barriero- Hurlé, & Galán, 2014; Gracia, Barriero- Hurlé, & Pérez y Pérez, 2012). According to Scarpa, Ferrini, and Willis (2005) and Scarpa, Thiene, and Marangon (2007), one way to capture the correlation of the purchase alternatives utilities in the estimation is to make these two alternatives share an extra zero-mean error component. Thus, in this study, the RPL model with error component (RPL-EC) was estimated.

In this study, different models were then specified. *Model 1* is the standard RPL model; *Model 2* is the RPL model with error component; and *Model 3* adds to *Model 2* by incorporating personality traits as a possible source of additional heterogeneity in individuals' preferences as follows:

$$\begin{aligned}
 U_{njt} = & ASC + \beta_1 Price_{jt} + \beta_2 Local_{jt} + \beta_3 Organic_{jt} + \beta_4 Local_{jt} \times Openness_n + \\
 & \beta_5 Local_{jt} \times Conscientiousness_n + \beta_6 Local_{jt} \times Extraversion_n + \beta_7 Local_{jt} \times Agreeableness_n + \\
 & \beta_8 Local_{jt} \times Neuroticism_n + \beta_9 Organic_{jt} \times Openness_n + \beta_{10} Organic_{jt} \times Conscientiousness_n + \\
 & \beta_{11} Organic_{jt} \times Extraversion_n + \beta_{12} Organic_{jt} \times Agreeableness_n + \\
 & \beta_{13} Organic_{jt} \times Neuroticism_n + \eta_{njt} + \varepsilon_{njt} \quad (3),
 \end{aligned}$$

where  $\beta_4, \beta_5, \beta_6, \beta_7, \beta_8$  are the coefficients of the interaction terms between the attribute *Local* and personality traits.  $\beta_9, \beta_{10}, \beta_{11}, \beta_{12}$ , and  $\beta_{13}$  are the coefficients of the interaction terms between the attribute *Organic* and personality traits;  $\eta_{njt}$  is the error component (EC) associated only with alternatives that portray a purchase decision, and is absent in the utility of the no purchase alternative (Scarpa & Ferrini, 2005). The rest of the variables are specified as in equation (2). This implementation of the RPL-EC model with interaction terms would, then, allow us to test whether personality traits can explain some of the heterogeneity in consumers' preferences for organic and locally produced food products.

Before including the personality traits in the econometric model, each trait was mean-centered by subtracting the overall mean from the personality scores of each individual so that the “average” personalities had a mean of zero (Greibitus, Lusk, & Nayga, 2013; Van Loo et al., 2015). In this way, we were able to calculate the marginal utility in choosing the locally produced and organic applesauce, respectively, for the mean personality types, and, specifically, we were able to observe for each personality trait how variations from the mean values affected individuals' preferences for the organic and local attributes.

## 4. Results

### 4.1 Descriptive Statistics

The summary statistics of the demographic characteristics of the sample are reported in Table 3. A slight majority of respondents were female (55%). In terms of age, about 40% of the sample are individuals older than 65 years of age. The household size for nearly half of the sample (47.5%) was composed of two people. The majority of the sample held a college degree. Finally, the majority (65%) of the respondents had an annual income lower than €30,000.

**Table 3: Socio-demographic characteristics of the sample (% , n=80)**

<b>Gender</b>	<b>Sample</b>
Female	55.00
Male	45.00
<b>Age</b>	
18-39	26.25
40-64	33.75
Older than 65	40.00
<b>Household size</b>	
1	12.50
2	47.50
3	22.50
4	13.75
> 5	3.75
<b>Education</b>	
Primary School	28.75
Secondary School	31.25
College degree	32.50
College degree + Professional Degree (Masters, PhD)	7.50
<b>Average household income</b>	
< 15.000€	22.75
15.000€ - 29.999	42.25
30.000-44.999€	23.75
45.000-59.999€	5.00
>= 60.000 €	6.25

Table 4 shows the descriptive statistics of the personality traits. The majority of the means of the personality traits (except neuroticism) has a value around three, indicating that respondents identified themselves "some" with most of the traits. Neuroticism clearly has the lowest figures, suggesting that participants, on average, did not define themselves as worrying, anxious people<sup>5</sup>.

<sup>5</sup> Cronbach's alpha values were acceptable (>0.5) for all the personality factors. However, we observe low Cronbach's alpha value in case of the Conscientiousness factor (0.53). Despite this, in order to be consistent with the validated MIDI scale and with studies where this scale has been used (e.g. Grebitus et al., 2013; Keyes et al., 2002), we implemented in our analysis all the four items used by Lachman and Weaver (1997) to describe the consciousness big trait instead of eliminating the items with lower internal consistency.

**Table 4: Descriptive statistics of personality traits (n=80)**

<b>Trait (Cronbach's Alpha values)</b>	<b>Mean</b>	<b>Variable</b>	<b>Mean</b>	<b>SD</b>
Openness (0.61)	2.98	Creative	2.80	0.81
		Imaginative	3.00	0.68
		Intelligent	3.22	0.63
		Curious	3.46	0.72
		Broadminded	3.30	0.67
		Sophisticated	2.48	0.80
		Adventurous	2.61	0.90
Conscientiousness (0.53)	3.12	Organized	3.16	0.76
		Responsible	3.45	0.67
		Hardworking	3.33	0.68
		(non) Careless	2.53	0.92
Extraversion (0.76)	3.17	Outgoing	2.85	0.90
		Friendly	3.54	0.58
		Lively	3.15	0.76
		Active	3.35	0.67
		Talkative	2.96	0.82
Agreeableness (0.62)	3.18	Helpful	3.51	0.61
		Warm	3.12	0.73
		Caring	3.26	0.67
		Softhearted	2.53	1.03
		Sympathetic	3.47	0.61
Neuroticism (0.71)	2.35	Moody	2.05	0.87
		Worrying	2.70	1.00
		Nervous	2.42	0.94
		(non) Calm	2.23	0.84

#### 4.2 Estimates from Empirical Models

Table 5 reports the estimates of *Model 1* (RPL), *Model 2* (RPL-EC), and *Model 3* (RPL-EC + interaction).<sup>6</sup> As previously mentioned, *Model 1* is the basic specification accounting for heterogeneity in consumers' preferences and correlation across taste parameters; *Model 2*

<sup>6</sup> We tested whether pro-environmental attitudes could influence consumers' choices for local and organic applesauce, including in the questionnaire questions concerning food values which are related to environmental issues, i.e. naturalness, environmental impact, and origin of food products (Lusk & Briggeman, 2009). Specifically, we asked respondents to indicate how important they considered these factors in a scale from 1 (not important at all) to 7 (extremely important) when making choices concerning food products. In an exploratory phase, we then included importance of (1) naturalness, (2) environmental impact, and (3) origin as dummy variables in the RPL-EC model (values in the continuous form equal or lower than 3 took value of zero in the dummy form, while values higher than 3 took value of 1 in the dummy form). Results indicate that respondents' attitudes towards environmental issues do not significantly affect their preferences for local and organic attributes.

adds to *Model 1* by incorporating an error component. Hence, it also accounts for correlation across the utilities of the different alternatives. *Model 3* adds to *Model 2* by incorporating personality traits as interactions with the local and organic attributes to assess whether personality traits can be a source of heterogeneity in the estimates.<sup>7</sup>

**Table 5: Estimates from the RPL and the RPL-EC models (n=80)**

Variables	Coefficients	Model 1 (RPL)	Model 2 (RPL-EC)	Model 3 (RPL-EC with interactions)
Price	$\mu$	-1.75*** (-10.06) <sup>1</sup>	-2.01*** (-10.17)	-2.02*** (-10.20)
ASC no-buy	$\mu$	-1.44*** (-5.84)	-1.45*** (-3.83)	-1.42*** (-3.76)
Error Component ( $\eta$ )	$\sigma$		2.05*** (5.71)	2.11*** (6.65)
Local	$\mu$	0.95*** (4.13)	1.11*** (4.38)	1.13*** (4.77)
	$\sigma$	1.47*** (6.83)	1.50*** (5.71)	1.30*** (5.27)
Organic	$\mu$	1.33*** (5.98)	1.92*** (6.33)	1.96*** (6.48)
	$\sigma$	1.45*** (6.32)	1.87*** (5.06)	1.85*** (5.18)
Interaction terms with Personality traits				
Local $\times$ Openness				0.38 (0.68)
Local $\times$ Conscientiousness				-0.31 (-0.70)
Local $\times$ Extraversion				-0.79* (-1.73)
Local $\times$ Agreeableness				1.87** (3.49)
Local $\times$ Neuroticism				0.14 (0.45)
Organic $\times$ Openness				0.42 (0.77)
Organic $\times$ Conscientiousness				0.00 (0.01)
Organic $\times$ Extraversion				-0.68 (-1.46)
Organic $\times$ Agreeableness				-0.43 (-0.81)

<sup>7</sup> We have tested for the existence of a significant interaction between the local and organic attributes. Estimates from all model specification show that the interaction between local and organic attributes is not statistically significant.

Organic × Neuroticism	- 0.03 (-0.11)
-----------------------	-------------------

#### Summary Statistics

N. of observations	640	640	640
N. of parameters	7	10	20
Log likelihood	-582.60	-554.09	-543.82
AIC	1179.20	1128.18	1127.65
AIC/N	1.84	1.76	1.76

\*\*\*, \*\*, \* indicate significance at 1%, 5% and 10% level; 1= Number in parenthesis are t-stats

Each model contains 640 observations based on the responses of 80 individuals performing 8 choice tasks each characterized by three alternatives, for a total of 1,920 choices. In all models, most of the estimates in the Cholesky matrix were statistically significant, indicating that correlation across the parameters exists across all models (results are available upon request). Also, the distribution of the EC associated with experimentally designed alternatives has a significant estimate for the standard deviation, suggesting that utility variance is much larger for utility of the buy-alternatives as compared with the no-buy alternative.

In looking at the summary statistics, there are increases in the log-likelihood function and a reduction in the AIC statistics when moving from *Model 1* to *Model 3*. This suggests that *Model 3* fits the data better than *Model 1* and *Model 2*. Despite the fact that the results are robust across all the models, when assessing consumers' preferences for local and organic foods, model performance can be further improved when accounting for heterogeneity in consumers' preferences and heterogeneity due to personality traits.

In *Model 3*, the constant for the No-buy alternative (*ASC*) and the price coefficients are, as expected, negative and statistically significant at the 0.01 level; hence, the utility that consumers derive from choosing none of the proposed alternative products is lower than the utility from buying one of them. Also, increments on the price variable decrease the associated utility provided by the choice. As for the local and organic attributes, their coefficients are both positive and statistically different from zero at the 0.01 level. This indicates that perceived utility and, therefore, the probability for consumers choosing to buy the product increases when the applesauce is locally produced or organic. Particularly, respondents' utility increases more when choosing the organic applesauce, followed by applesauce produced in Emilia-Romagna. Additionally, the hypothesis of preference

heterogeneity for both organic and local cannot be rejected due to the fact that the derived standard deviation parameters for both claims are statistically different from zero. Hence, consistent with previous studies, heterogeneity in consumers' preferences is an issue that needs to be considered when assessing consumers' preferences for both organic and local attribute information. In looking at the interaction terms, we observe that two out of the five interaction terms are statistically significant when the local production claim is interacted with the "Extraversion" and "Agreeableness" traits. The negative sign of the interaction between the local claim and the "Extraversion" trait suggests that the utility of an extraverted individual decreases when the applesauce is locally produced. On the other hand, the positive value of the coefficient describing the interaction between the local attribute and the "Agreeableness" trait indicates that more caring and helpful individuals tend to prefer locally produced applesauce more than the non-local counterpart. In the case of the organic attribute, none of the personality traits significantly affect respondents' preferences for the organic claim.

Finally, we used the estimates from *Model 3* to calculate the marginal WTP for local and organic applesauce at the mean values of the personality traits. Marginal WTPs were calculated as a negative ratio, where the numerator is the estimated mean value of the coefficient associated with the local and organic attributes and the denominator is the price coefficient ( $-\beta_2/\beta_1$  and  $-\beta_3/\beta_1$  for the local and organic attributes respectively). Respondents with personality traits corresponding to the sample averages were willing to pay a premium of € 0.56 (sd=0.43) for the locally produced applesauce and € 0.97 (sd=0.54) for the organic one.<sup>8</sup> Moreover, results from a t-test show that marginal WTP for the local and organic attributes are statistically different from each other (p-value = 0.003).

Based on the interaction terms in *Model 3*, we also calculated the change in WTP for the locally produced applesauce for a one-point increase in terms of extraversion ( $\beta_6/\beta_2$ ) and agreeableness ( $\beta_7/\beta_2$ ) scores, respectively (Van Loo et al., 2015). For every one unit increase in extraversion, marginal WTP for local applesauce decreases by 69.9%, while it increases by 165.5% for every unit increase in agreeableness.

---

<sup>8</sup>Results from the Wald Test show that marginal WTP values for local and organic attributes are statistically different from zero at the 0.01 level.



Finally, we also show how the marginal WTP for local attribute varies depending on the scores of extraversion and agreeableness personality traits. Results are reported in Figure 1<sup>9</sup>.

**Figure 1: Effect of extraversion and agreeableness on marginal WTP for local applesauce**

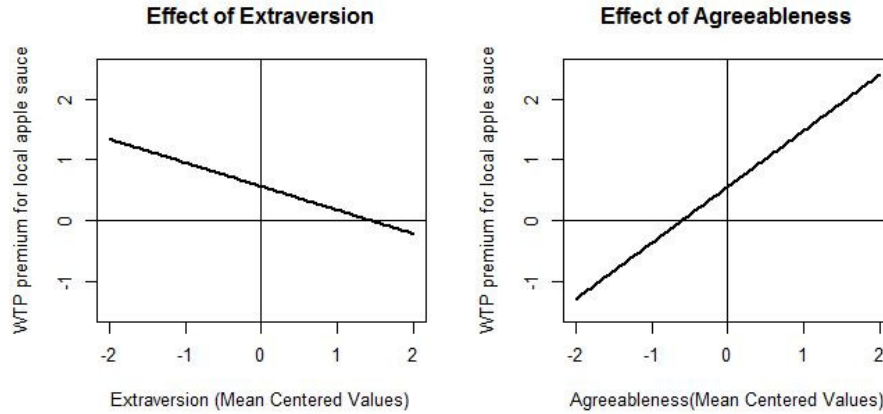


Figure 1 shows that an increase in extraversion leads to a decrease in WTP premium for the local applesauce, while agreeableness has a strong positive effect on WTP formation for the local production claim.

## 5. Discussion

Given the growing popularity of locally produced and organic food products, a significant number of studies have investigated consumers' valuation for local and organic food claims. Findings from the majority of these studies show that consumers tend to value the local origin of the product more than the organic production claim (Aprile, Caputo, & Nayga, 2012; Campbell, Mhlanga, & Lesschaeve, 2013; Costanigro et al., 2014; de-Magistris & Gracia, 2014; Gracia, 2014). Our results suggest that consumers are willing to pay a price premium both for the local and organic attributes; however, estimates also indicate that consumers are willing to pay the highest price for the organic applesauce. To our knowledge,

<sup>9</sup> The formula for calculating the WTP premium for the local claim as a function of the extraversion trait was the following:  $WTP = [-(\beta_2 + \beta_6 * Extraversion) / \beta_1]$  (Greibitus, Lusk, & Nayga, 2013). The WTP premium for the local claim as a function of the agreeableness trait can be calculated in a similar way.

this is a finding that is relatively new to the literature (only the studies of Scarpa, Philippidis, & Spalatro (2005) and Hu et al. (2012) are partially consistent with our results). One reason for this outcome may be the selection of the origin levels in our study; i.e., Emilia-Romagna as local and the rest of Italy as non-local. Italy is a country with an exceptionally strong food tradition, and national origin can still be perceived as being “local” (Bazzani & Canavari, 2013; Lombardi et al., 2013). However, we verified that the study by Scarpa, Philippidis, & Spalatro (2005), who also used regional and national borders to investigate Italian consumers’ valuation for origin and organic claims, showed that respondents were more willing to buy olive oil when this product was characterized by the regional origin (Scarpa, Philippidis, & Spalatro, 2005). This suggests that the choice of the origin attribute levels might not be the determining factor in explaining the peculiarity of our findings.

In addition, results from Hu et al. (2012) suggest that the use of different descriptions of the organic attribute (e.g., generic organic, 100% organic, 95% organic) can influence consumers’ preferences for local and organic food. In their study, they observed a higher preference for the organic over the local blueberry jam when the organic attribute was specified as 100% organic rather than as 95% organic or “with organic blueberry.” In addition, past studies have shown that consumers evaluate differently the organic claim when this is specified as a general claim or as a domestic or governmental logo (Janssen & Hamm; 2012; Van Loo et al., 2011). Specifically, these studies showed that a certification logo is preferred over the generic organic label, in particular, when it is interpreted as a more trustful and reliable source of information (Janssen & Hamm; 2012; Van Loo et al., 2011). In our experiment, consumers tended to choose with a higher probability the organic attribute even though it was simply specified as a “general” organic claim. Moreover, to the best of our knowledge, higher WTP for the local attribute was generally observed when the organic production was specified as either with the European Logo (Aprile, Caputo, & Nayga, 2012; de-Magistris & Gracia, 2014), as USDA certified (Costanigro et al., 2011; Onozaka & Mcfadden, 2011) or as a generic claim (Moser & Raffaelli, 2012; Hu et al. 2009; Scarpa, Philippidis, & Spalatro, 2005) across consumers from different countries, with potentially different perceptions towards the specifications of the organic labels (Janssen & Hamm; 2012). For these reasons, we believe that our results are not just a mere artifact of our use of a generic organic claim in our experimental design.

Moreover, since "local" is often perceived as an element of freshness (Darby et al., 2008; Lim & Hu, 2016), the use of a processed food product might have induced a decrease in consumers' interest for the local attribute in comparison to the organic one. However, this suggestion is not consistent with findings from different studies that verified that consumers value the local attribute more than the organic claim, even in the case of processed products such as blackberry jam and pastries (Hu et al., 2012; Hu, Woods, & Bastin, 2009). Therefore, following Scarpa, Philippidis, and Spalatro (2005), the most likely explanation as to why our results are quite different from those of previous research might be that the use of an uncommon food product, instead of a traditional one, could have induced a weaker connection with territory and local community components and, therefore, a decrease of "home bias."

Finally, in the literature concerning consumers' preference for sustainable food labels, different factors such as socio-demographic characteristics and food values have been analyzed to explain heterogeneity in consumers' preferences for local and organic foods.<sup>10</sup> In contrast, in this study, we considered the interaction effect between personality traits and consumers' valuation for local and organic applesauce. Notably, in psychology, personality has been identified as a relevant aspect in understanding individuals' choice behavior, given that personality traits are stable features that can explain individuals' behavior in different contexts (Mischel, 2009). Personality traits have been generally described using the OCEAN factors: Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. In our experiment, we elicited respondents' personality traits using the MIDI personality scale (Keyes, Shmotkin, & Ryff, 2002; Lachman & Weaver, 1997; Weiss, Bates, & Luciano, 2008), which produced results indicating that some personality traits affected respondents' valuation for the local production attribute.

Our results show that respondents' utility in choosing the local applesauce increases when respondents are characterized by a higher degree of agreeableness. This might reflect the association of local food with the support to the local economy (Westjohn, Singh, &

---

<sup>10</sup> Since previous empirical evidence shows that socio-demographic characteristics can impact consumers' preferences for local and organic foods, during the exploratory phase of the data analysis, we incorporated the socio-demographic variables collected during the experiment (age, gender, education, income) as interactions with the local and organic attributes, respectively, in all model specifications. However, our results indicate that the socio-demographic variables are not statistically significant when interacting with both the "Local" and "Organic" attributes. This evidence is consistent with previous food choice studies, e.g., Caputo et al., 2013; Gracia et al., 2009; Lee et al., 2015; Nilsson et al., 2006; Tonsor et al., 2009.

Magnusson, 2012). This supports our hypothesis that the utility of a helpful individual might, then, increase when their purchase can be of benefit to the geographical area he/she belongs to. On the other hand, in contrast to prior expectations, the interaction between the local claim and the "Extraversion" trait has a negative effect. This might be explained by the fact that the local production is perceived as a protection or closure to the external environment, and these aspects might be more associated with an introverted personality. On the other hand, an extraverted personality might be more willing to have experiences from the "outside world" (Westjohn, Singh, & Magnusson, 2012). In addition, an extraverted individual might be more inclined to try new aspects related to food products (Byrnes & Hayes, 2012; Knaapila et al., 2011). Local production might then be perceived by the extraverted consumer as a feature of the product that they already know. Therefore, the probability of the product to be chosen by an extraverted personality decreases when the product is characterized by the local claim.

## 6. Conclusions

The respondents in our study were willing to pay a price premium for both the local and the organic applesauce compared to conventional applesauce. This result has implications for practitioners who craft marketing strategies for food products with either or both of these attributes, mainly because it suggests that locally produced and especially organic food claims might be positively valued by consumers. In addition, this study is the first to explore how individuals' personalities affect consumers' valuation for local and organic claims. We found that consumers' preferences for local and organic food can be heterogeneous; i.e., personality traits appear to partially explain this heterogeneity. In particular, we observed that more caring personalities tend to choose with a higher probability the applesauce when it is locally produced, while the locally produced claim is less preferred by more extraverted personalities. We could assume that the unconventionality and the lack of a shared definition for the local food claim might be a source of higher heterogeneity in consumers' perceptions and preferences in comparison to the standardized organic certification. However, in contrast to prior expectations, we did not observe any significant positive interaction between the local origin attribute and personality traits such as extraversion and openness to experience or a negative interaction with either conscientiousness or neuroticism trait. On the other hand, our results show that extraverted personalities, who might be inclined to search for more

sophisticated, unconventional characteristics of food products (Byrnes & Hayes, 2012; Knaapila et al., 2011), are willing to pay a lower price for local applesauce. In addition, we did not observe any significant interaction between the five personality traits and the organic attribute.

While these results are interesting and novel, we believe that an exploration of the association in food choices between personality traits and food values, such as environmental safeguard and fairness in food production or nutritional content (Lusk & Briggeman, 2009), would be a pertinent area of future research since it could potentially provide helpful insights that could explain some of our findings.

### Acknowledgements

This work was partly supported by the Tyson Chair Endowment at the University of Arkansas and by the National Research Foundation of Korea (NRF-2014S1A3A2044459).

The authors want to thank the company "Natura Nuova" for donating part of the material used in the experiment and "Coop Adriatica" for granting permission to perform the survey in their retail outlet.

The authors also want to thank Carola Grebitus and Jayson Lusk for their insights on the data analysis. Any remaining errors are the responsibility of the authors.

### References

- Adams, D. C., & Salois, M. J. (2010). Local versus organic: a turn in consumer preferences and willingness-to-pay. *Renewable Agriculture and Food Systems*, 25(4), 331–341. doi:10.1017/S1742170510000219
- Akaichi, F., Nayga, R. M., & Gil, J. M. (2013). Are results from non-hypothetical choice-based conjoint analyses and non-hypothetical recoded-ranking conjoint analyses similar? *American Journal of Agricultural Economics*, 95(4), 949–963. doi:10.1093/ajae/aat013
- Akaichi, F., Gil, J. M., & Nayga, R. M. (2012). Assessing the market potential for a local food product: evidence from a non-hypothetical economic experiment. *British Food Journal*, 114(1), 19–39. doi:10.1108/00070701211197347.

- Alfnes, F., Guttormsen, A. G., Steine, G., & Kolstad, K. (2006). Consumers' willingness to pay for the color of salmon: a choice experiment with real economic incentives. *American Journal of Agricultural Economics*, 88(4), 1050–1061.
- Almlund, M., Lee, A., James, J., & Duckworth, A. L. (2011). Personality Psychology and Economics. IZA discussion paper no. 5500, February 2011.
- Amilien, V., Fort, F., & Ferras, N. (2007). Hyper-real territories and urban markets changing conventions for local food – case studies from France and Norway –. *Anthropology of food*, 4, 1–17. Retrieved from <http://aof.revues.org/446>.
- American Psychological Association (APA). (2014). Personality. Available at: <http://www.apa.org/topics/personality/>.
- Aprile, M. C., Caputo, V., & Nayga Jr, R. M. (2016). Consumers' preferences and attitudes toward local food products. *Journal of Food Products Marketing*, 22(1), 19-42.
- Aprile, M. C., Caputo, V., & Nayga Jr, R. M. (2012). Consumers' valuation of food quality labels: the case of the European geographic indication and organic farming labels. *International Journal of Consumer Studies*, 36(2), 158–165. doi:10.1111/j.1470-6431.2011.01092.x.
- Bazzani, C., & Canavari, M. (2013). Alternative agri-food networks and short food supply chains: a review of the literature. *Economia Agro-Alimentare*, 15(2), 11–34. doi:10.3280/ECAG2013-002002.
- Bazzani, C., & Canavari, M. (in press). Is local a matter of food miles or food traditions? *Italian Journal of Food Science*, 29(3).
- Bazzani, C., Caputo, V., Nayga, R. M., & Canavari, M. (2017). Testing commitment cost theory in choice experiments. *Economic Inquiry*, 55(1), 383-396. doi:10.1111/ecin.12377

- Bliemer, M. C., & Rose, J. M. (2010). Construction of experimental designs for mixed logit models allowing for correlation across choice observations. *Transportation Research Part B: Methodological*, 44(6), 720-734.
- Bond, C. A., Thilmany, D., & Keeling Bond, J. (2008). Understanding consumer interest in product and process-based attributes for fresh produce. *Agribusiness*, 24(2), 231-252.
- Borghans, L., Duckworth, A. L., Heckman, J. J., & Weel, B. (2008). The economics and psychology of personality traits. *Journal of human Resources*, 43(4), 972-1059.
- Bouchard, T. J., & Loehlin, J. C. (2001). Genes, evolution and personality. *Behavior Genetics*, 31(3), 243-273.
- Byrnes, N. K., & Hayes, J. E. (2013). Personality factors predict spicy food liking and intake. *Food Quality and Preference*, 28(1), 213-221. doi:10.1016/j.foodqual.2012.09.008.
- Campbell, B. L., Mhlanga, S., & Lesschaeve, I. (2013). Perception versus reality: canadian consumer views of local and organic. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, 61(4), 531-558. doi:10.1111/j.1744-7976.2012.01267.x.
- Caputo, V., Nayga, R. M., & Scarpa, R. (2013). Food miles or carbon emissions? Exploring labelling preference for food transport footprint with a stated choice study. *Australian Journal of Agricultural and Resource Economics*, 57(4), 465-482. doi:10.1111/1467-8489.12014.
- Caputo, V., Scarpa, R., & Nayga, R. M. (2017). Cue versus independent food attributes: the effect of adding attributes in choice experiments. *European Review of Agricultural Economics*, 44(2), 211-230. doi:10.1093/erae/jbw022
- Caputo, V., Vassilopoulos, A., Nayga, R. M., & Canavari, M. (2013). Welfare effects of food miles labels. *Journal of Consumer Affairs*, 47(2), 311-327. doi:10.1111/joca.12009.

- Carlsson, F., & Martinsson, P. (2001). Do hypothetical and actual marginal willingness to pay differ in choice experiments? *Journal of Environmental Economics and Management*, 179–192.
- Carpenter, J. P., & Harrison, G. W. (2004). *Field Experiments in Economics* (Vol. 10). Bingley: Emerald (MCB UP).
- Chang, J. B., Lusk, J. L., & Norwood, F. B. (2009). How closely do hypothetical surveys and laboratory experiments predict field behavior? *American Journal of Agricultural Economics*, 91(2), 518–534. doi:10.1111/j.1467-8276.2008.01242.x.
- Chang, A., Tseng, C. H., & Chu, M. Y. (2013). Value creation from a food traceability system based on a hierarchical model of consumer personality traits. *British Food Journal*, 115(9), 1361–1380.
- Chen, M. F. (2007). Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: moderating effects of food-related personality traits. *Food Quality and preference*, 18(7), 1008–1021.
- Christensen, B. T., Drewsen, L. K., & Maaløe, J. (2014). Implicit theories of the personality of the ideal creative employee. *Psychology of Aesthetics, Creativity, and the Arts*, 8(2), 189.
- Coldiretti. (2014). Coldiretti. Retrieved from <http://www.coldiretti.it/News/Pagine/default.aspx>.
- Costanigro, M., McFadden, D. T., Kroll, S., & Nurse, G. (2011). An in-store valuation of local and organic apples: the role of social desirability. *Agribusiness*, 27(4), 465–477.
- Costanigro, M., Kroll, S., Thilmany, D., & Bunning, M. (2014). Is it love for local/organic or hate for conventional? Asymmetric effects of information and taste on label preferences in an experimental auction. *Food Quality and Preference*, 31, 94–105. doi:10.1016/j.foodqual.2013.08.008.



- Darby, K., Batte, M. T., Ernst, S., & Roe, B., 2008. Decomposing local: a conjoint analysis of locally produced foods. *American Journal of Agricultural Economics*, 90(2), 476–486. doi:10.1111/j.1467-8276.2007.01111.x.
- de Bruijn, G.-J., Kremers, S. P. J., van Mechelen, W., & Brug, J. (2005). Is personality related to fruit and vegetable intake and physical activity in adolescents? *Health Educ Res*, 20(6), 635–644. doi:10.1093/her/cyh025.
- de Magistris, T., & Gracia, A. (2008). The decision to buy organic food products in Southern Italy. *British Food Journal*, 110(9), 929–947.
- de-Magistris, T., & Gracia, A. (2014). Do consumers care about organic and distance labels? An empirical analysis in Spain. *International Journal of Consumer Studies*, 38(6), 660–669. doi:10.1111/ijcs.12138.
- Denver, S., & Jensen, J. D. (2014). Consumer preferences for organically and locally produced apples. *Food Quality and Preference*, 31(1), 129–134. doi:10.1016/j.foodqual.2013.08.014.
- Dudek, D., Siwek, M., Jaeschke, R., Dembińska-Kieć, A., Arciszewska, A., Hebal, F., Małłok, M., Major, P., Malczewska-Malec, M., Wnęk, D., Pilecki, M., & Rybakowski, J. (2015). Relationships between obesity, bipolar spectrum features, and personality traits: a case-control study. *European Review for Medical and Pharmacological Sciences*, 19(22), 4235–4240.
- Eysenck, H. J. (1970). *The biological basis of personality*. Thomas: Springfield, IL.
- Ferguson, E., Heckman, J. J., & Corr, P. (2011). Personality and economics: Overview and proposed framework. *Personality and Individual Differences*, 51(3), 201–209. doi:10.1016/j.paid.2011.03.030.
- Ferrini, S., & Scarpa, R. (2007). Designs with a priori information for nonmarket valuation with choice experiments: A Monte Carlo study. *Journal of environmental economics and management*, 53(3), 342–363.

- Gill, C. M., & Hodgkinson, G. P. (2007). Development and validation of the five-factor model questionnaire (FFQM): An adjectival-based personality inventory for use in occupational settings. *Personnel Psychology*, 60, 731–766.
- Gnambs, T. (2014). A meta-analysis of dependability coefficients (test–retest reliabilities) for measures of the Big Five. *Journal of Research in Personality*, 52, 20–28.
- Goldberg, L. R., & Strycker, L. A. (2002). Personality traits and eating habits: the assessment of food preferences in a large community sample. *Personality and individual differences*, 32(1), 49–65.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American psychologist*, 48(1), 26–34.
- Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological assessment*, 4(1), 26.
- Goodman, D., 2003. The quality “turn” and alternative food practices: reflections and agenda. *Journal of Rural Studies*, 19(1), 1–7. doi:10.1016/S0743-0167(02)00043-8.
- Goodwin, R. D., & Friedman, H. S. (2006). Health status and the five-factor personality traits in a nationally representative sample. *Journal of health psychology*, 11(5), 643–54. doi:10.1177/1359105306066610.
- Govindasamy, R., Italia, J., & Adelaja, A. (2002). Farmers’ markets: consumer trends, preferences, and characteristics. *Journal of Extension*, 40(1), 1-7.
- Gracia, A. (2014). Consumers’ preferences for a local food product: a real choice experiment. *Empirical Economics*, 47(1), 111-128.
- Gracia, A., Barreiro-Hurlé, J., & Galán, B. L. (2014). Are local and organic claims complements or substitutes? a consumer preferences study for eggs. *Journal of Agricultural Economics*, 65(1), 49–67. doi:10.1111/1477-9552.12036.

- Gracia, A., Barreiro-Hurlé, J., & Pérez y Pérez, L. (2012). Can renewable energy be financed with higher electricity prices? Evidence from a Spanish region. *Energy Policy*, 50, 784–794.
- Gracia, A., Loureiro, M. L., & Nayga, R. M. (2009). Consumers' valuation of nutritional information: A choice experiment study. *Food Quality and Preference*, 20(7), 463–471.
- Gracia, A., Loureiro, M. L., & Nayga, R. M. (2011). Are valuations from nonhypothetical choice experiments different from those of experimental auctions? *American Journal of Agricultural Economics*, 93(5), 1358–1373. doi:10.1093/ajae/aar054.
- Grankvist, G., Dahlstrand, U., & Biel, A. (2004). The impact of environmental labelling on consumer preference: negative vs. positive labels. *Journal of Consumer Policy*, 27(2), 213–230.
- Grebitus, C., & Dumortier, J. (2016). Effects of Values and Personality on Demand for Organic Produce. *Agribusiness*, 32 (2), 189–202.
- Grebitus, C., Lusk, J. L., & Nayga, R. M. (2013). Explaining differences in real and hypothetical experimental auctions and choice experiments with personality. *Journal of Economic Psychology*, 36, 11–26.
- Grunert, K. G., Hieke, S., & Wills, J. (2014). Sustainability labels on food products: consumer motivation, understanding and use. *Food Policy*, 44, 177–189. doi:10.1016/j.foodpol.2013.12.001.
- Haas, R., Sterns, J., Meixner, O., Nyob, D.-I., & Traar, V. (2013). Do US consumers perceive local and organic food differently? an analysis based on means-end chain analysis and word association. *International Journal of Food System Dynamics*, 4, 214–226.  
Retrieved from <http://centmapress.ilb.uni-bonn.de/ojs/index.php/fsd/article/viewFile/358/346>.
- Hofstee, W. K. B. (1994). Who should own the definition of personality? *European Journal of Personality*, 8, 149–162.

- Hu, W., Batte, M. T., Woods, T., & Ernst, S. (2012). Consumer preferences for local production and other value-added label claims for a processed food product. *European Review of Agricultural Economics*, 39(3), 489–510. doi:10.1093/erae/jbr039.
- Hu, W., Woods, T., & Bastin, S. (2009). Consumer acceptance and willingness to pay for blueberry products with nonconventional attributes, *Journal of Agricultural and Applied Economics*, 41(1), 47–60.
- Il Portale dell'Emilia-Romagna (2014). Agricoltura e Pesca. Available at: <http://www.regione.emilia-romagna.it/>. Retrieved on September 2014.
- Janssen, M., & Hamm, U. (2012). Product labelling in the market for organic food: consumer preferences and willingness-to-pay for different organic certification logos. *Food Quality and Preference*, 25(1), 9-22.
- Johansson-Stenman, O., & Svedsäter, H. (2008). Measuring hypothetical bias in choice experiments: the importance of cognitive consistency. *The B.E. Journal of Economic Analysis and Policy*, 8(1), article 41.
- Keller, C., & Siegrist, M. (2015). Does personality influence eating styles and food choices? Direct and indirect effects. *Appetite*, 84, 128–138.
- Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: the empirical encounter of two traditions. *Journal of Personality and Social Psychology*, 82(6), 1007–1022. doi:10.1037//0022-3514.82.6.1007.
- Knaapila, A., Silventoinen, K., Broms, U., Rose, R. J., Perola, M., Kaprio, J., & Tuorila, H. M. (2011). Food neophobia in young adults: genetic architecture and relation to personality, pleasantness and use frequency of foods, and body mass index—a twin study. *Behavior genetics*, 41(4), 512–521.
- Lachman, M. E., & Weaver, S. L. (1997). *The midlife development inventory (MIDI) personality scales : scale Construction and scoring*. Brandeis University: Waltham, MA.

- Lancaster, K. J. (1966). A new approach to consumer theory. *The Journal of Political Economy*, 74(2), 132–157.
- Lee, Sang Hyeon, et al. Consumers' valuation for a reduced salt product: a nonhypothetical choice experiment, *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie* 63.4 (2015): 563–582.
- Lim, K. H., & Hu, W. (2016). How local is local? A reflection on Canadian local food labeling policy from consumer preference. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie*, 64(1), 71–88. doi:10.1111/cjag.12062.
- Lombardi, P., Caracciolo, F., Cembalo, L., Colantuoni, F., D'Amico, M., Del Giudice, T., Maraglino, T., Menna, C., Panico, T., Sannino, G., Tosco, D., & Cicia, G. (2013). Country of origin labelling for the Italian early potato supply chain. *New Medit*, 12(1), 37–48.
- Loomis, J., Bell, P., Cooney, H., & Asmus, C. (2009). A comparison of actual and hypothetical willingness to pay of parents and non-parents for protecting infant health : the case of nitrates in drinking water. *Journal of Agricultural and Applied Economics*, 41(3), 697–712.
- Loureiro, M. L., & Hine, S. (2002). Discovering niche markets: a comparison of consumer willingness to pay for local (Colorado grown), organic, and GMO-free products. *Journal of Agricultural and Applied Economics*, 34, 477–487.
- Lusk, J. L., & Briggeman, B. C. (2009). Food values. *American Journal of Agricultural Economics*, 91(1), 184–196.
- Lunn, T. E., Nowson, C. A., Worsley, A., & Torres, S. J. (2014). Does personality affect dietary intake? *Nutrition*, 30(4), 403–409. doi:10.1016/j.nut.2013.08.012.
- Lusk, J. L., & Schroeder, T. E. D. C. (2004). Are choice experiments incentive compatible? A test with quality differentiated beef steaks. *American Journal of Agricultural Economics* 86(2), 467–482.

- Lusk, J. L., & Shogren, J. F. (2007). *Experimental auctions: methods and applications in economic and research*. (P. H. Franses, Ed.) (pp. 1–304). Cambridge, UK: Cambridge University Press.
- MacCallum, R. C., Widaman, K. F., Zhang, S., & Hong, S. (1999). Sample size in factor analysis. *Psychological methods*, 4(1), 84–99
- MacNicol, S. A. M., Murray, S. M., & Austin, E. J. (2003). Relationships between personality, attitudes and dietary behaviour in a group of Scottish adolescents. *Personality and Individual Differences*, 35(8), 1753–1764. doi:10.1016/S0191-8869(02)00404-X.
- Magee, C. A., & Heaven, P. C. L. (2011). Big-five personality factors, obesity and 2-year weight gain in Australian adults. *Journal of Research in Personality*, 45(3), 332–335. doi:10.1016/j.jrp.2011.02.009.
- McCrae, R. R., & Costa, P. T. J. (1995). Trait explanations in personality psychology. *European Journal of Personality*, 9(4), 231–252. doi:10.1002/per.2410090402.
- McCrae, R. R., Costa, P. T., Ostendorf, F., Angleitner, A., Hrebícková, M., Avia, M. D., Sanchez-Bernardos, M. L., Kusdil, E.M, Woodfiles, R., Suanders, P.R., & Smith, P.B. (2000). Nature over nurture: temperament, personality, and life span development. *Journal of Personality and Social Psychology*, 78(1), 173–86. doi:10.1037/0022-3514.78.1.173.
- McFadden, D. (1974). "Conditional Logit Analysis of Qualitative Choice Behavior". In P. Zarembka (Ed.), *Frontiers in econometrics* (pp. 105–142). New York: Academic Press.
- Meas, T., Hu, W., Batte, M. T., Woods, T. A., & Ernst, S. (2014). Substitutes or complements? Consumer preference for local and organic food attributes. *American Journal of Agricultural Economics*, 97(4), 1044–1071. doi:10.1093/ajae/aau108.

- Milfont, T. L., & Sibley, C. G. (2012). The big five personality traits and environmental engagement: Associations at the individual and societal level. *Journal of Environmental Psychology*, 32(2), 187–195.
- Mischel, W. (2009). From personality and assessment (1968) to personality science, 2009. *Journal of Research in Personality*, 43(2), 282–290.
- Moser, R., & Raffaelli, R. (2012). Consumer preferences for sustainable production methods in apple purchasing behaviour: a non-hypothetical choice experiment. *International Journal of Consumer Studies*, 36(2), 141–148. doi:10.1111/j.1470-6431.2011.01083.x.
- Möttus, R., Realo, A., Allik, J., Deary, I.J., Esko, T., & Metspalu, A. (2012). Personality traits and eating habits in a large sample of estonians. *Health Psychology*, 31(6), 806–814.
- Möttus, R., McNeill, G., Jia, X., Craig, L., Starr, J., & Deary, I. J. (2013). The associations between personality, diet and body mass index in older people. *Health Psychology*, 32(4), 353–360.
- Murphy, J. J., Allen, P. G., Stevens, T. H., & Weatherhead, D. (2005). A meta-analysis of hypothetical bias in stated preference valuation. *Environmental and Resource Economics*, 30, 313–325. doi: 10.1007/s10640-004-3332-z.
- Nilsson, T., Foster, K., & Lusk, J. L. (2006). Marketing opportunities for certified pork chops. *Canadian Journal of Agricultural Economics/Revue Canadienne d'Agroeconomie*, 54(4), 567–583.
- Onozaka, Y., & Mcfadden, D. T. (2011). Does local labeling complement or compete with other sustainable labels? A conjoint analysis of direct and joint values for fresh produce claim. *American Journal of Agricultural Economics*, 93(3), 693–706. doi:10.1093/ajae/aar005.

- Onozaka, Y., Nurse, G., & Mcfadden, D. T. (2011). Defining sustainable food market segments: Do motivations and values vary by shopping locale? *American Journal of Agricultural Economics*, 93(2), 583–589. <http://doi.org/10.1093/ajae/aaq152>.
- Padel, S., & Foster, C. (2005). Exploring the gap between attitudes and behaviour: Understanding why consumers buy or do not buy organic food. *British Food Journal*, 107(8), 606–625. <http://doi.org/10.1108/00070700510611002>.
- Perugini, M., & Gallucci, M. (1997). A hierarchical faceted model of the Big Five. *European Journal of Personality*, 11(4), 279–301.
- Rhodes, R. E., Courneya, K. S., & Jones, L. W. (2005). The theory of planned behavior and lower-order personality traits: Interaction effects in the exercise domain. *Personality and Individual Differences*, 38(2), 251–265. doi:10.1016/j.paid.2004.04.005.
- Röhr, A., Lüddecke, K., Drusch, S., Müller, M. J., & Alvensleben, R. V. (2005). Food quality and safety—consumer perception and public health concern. *Food control*, 16(8), 649–655.
- Robino, A., Mezzavilla, M., Pirastu, N., La Bianca, M., Gasparini, P., Carlino, D., & Tepper, B. J. (2016). Understanding the role of personality and alexithymia in food preferences and PROP taste perception. *Physiology and Behavior*, 157, 72–78. Doi:10.1016/j.physbeh.2016.01.022.
- Sacchi, G., Caputo, V., & Nayga, R. M. (2015). Alternative Labeling Programs and Purchasing Behavior toward Organic Foods: The Case of the Participatory Guarantee Systems in Brazil. *Sustainability*, 7(6), 7397–7416.
- Saliba, A. J., Wragg, K., & Richardson, P. (2009). Sweet taste preference and personality traits using a white wine. *Food Quality and Preference*, 20(8), 572–575. doi:10.1016/j.foodqual.2009.05.009.
- Sandor, Z., & Wedel, M. (2001). Designing conjoint choice experiments using managers' prior beliefs. *Journal of Marketing Research*, 38(4), 430–444.



- Scarpa, R., Campbell, D., & Hutchinson, W. G. (2007). Benefit Estimates for Landscape Improvements : Sequential Bayesian Design and Respondents' Rationality in a Choice Experiment. *Land Economics*, 83(4), 617–634.
- Scarpa, R., Ferrini, S. & Willis, K.G. (2005). Performance of error component models for status quo effects in choice experiment. In: R. Scarpa,& A. Alberini (Eds), *Applications of simulation method in environmental and resource economics* (pp. 247–274). Dordrecht, Netherlands: Springer.
- Scarpa, R., Philippidis, G., & Spalatro, F. (2005). Product-country images and preference heterogeneity for Mediterranean food products: a discrete choice framework. *Agribusiness*, 21(3), 329–349. doi:10.1002/agr.20051.
- Scarpa, R., Thiene, M., & Marangon, F. (2007). The value of collective reputation for environmentally-friendly production methods: the case of Val di Gresta. *Journal of Agricultural & Food Industrial Organization*, 5(1). doi:10.2202/1542-0485.1149.
- Scarpa, R., Zanolì, R., Bruschi, V., & Naspetti, S. (2012). Inferred and stated attribute non-attendance in food choice experiments. *American Journal of Agricultural Economics*, aas073.
- Seyfang, G. (2006). Ecological citizenship and sustainable consumption: Examining local organic food networks. *Journal of Rural Studies*, 22(4), 383–395. doi:10.1016/j.jrurstud.2006.01.003.
- Shi, L., Gao, S., House, L. A., & Heng, Y. (2015). A Multi-Store Auction to Measure Willingness-to-Pay for Organic and Local Blueberries. *Journal of Food Distribution Research*, 46(3), 153–162.
- Sirieix, L., Delanchy, M., Remaud, H., Zepeda, L., & Gurviez, P. (2013). Consumers' perceptions of individual and combined sustainable food labels: a UK pilot investigation. *International Journal of Consumer Studies*, 37(2), 143–151. doi:10.1111/j.1470-6431.2012.01109.x.

- Street, D., & Burgess, L.. (2007). *The construction of optimal stated choice experiments*. Hoboken, NJ : John Wiley and Sons.
- Tonsor, G. T., Wolf, C., & Olynk, N. (2009). Consumer voting and demand behavior regarding swine gestation crates. *Food Policy*, 34(6), 492-498.
- Tiainen, A. M. K., Männistö, S., Lahti, M., Blomstedt, P. A., Lahti, J., Perälä, M. M., & Eriksson, J. G. (2013). Personality and dietary intake - findings in the Helsinki birth cohort study. *PLoS ONE*, 8(7). doi:10.1371/journal.pone.0068284.
- Train, K. E. (2003). *Discrete choice methods with simulation* (Vol. 8). Cambridge: Cambridge University Press.
- Van Loo, E. J., Caputo, V., Nayga, R. M., Meullenet, J. F., & Ricke, S. C. (2011). Consumers' willingness to pay for organic chicken breast: Evidence from choice experiment. *Food Quality and Preference*, 22(7), 603–613.
- Van Loo, E. J., Caputo, V., Nayga, R. M., Seo, H. S., Zhang, B., & Verbeke, W. (2015). Sustainability labels on coffee: Consumer preferences, willingness-to-pay and visual attention to attributes. *Ecological Economics*, 118, 215–225.
- Volinskiy, D., Adamowicz, W. L., Veeman, M., & Srivastava, L. (2009). Does choice context affect the results from incentive-compatible experiments ? The case of non-GM and country-of-origin premia in canola oil. *Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie* 57(2), 205–221. doi:10.1111/j.1744-7976.2009.01148.x.
- Weiss, A., Bates, T. C., & Luciano, M. (2008). Happiness Is a Personal ( ity ) Thing. *Psychological Science*, 19(3), 205–210.
- Westjohn, S. A., Singh, N., & Magnusson, P. (2012). Responsiveness to global and local consumer culture positioning: A personality and collective identity perspective. *Journal of International Marketing*, 20(1), 58–73.

- Yangui, A., Costa-Font, M., & Gil, J. M. (2016). The effect of personality traits on consumers' preferences for extra virgin olive oil. *Food Quality and Preference*, 51, 27–38. doi:10.1016/j.foodqual.2016.02.012.
- Yue, C., & Tong C. (2009). Organic or local ? Investigating consumer preference for fresh produce using a choice experiment with real economic incentives. *HortScience*, 44(2), 366–371.
- Zanoli, R., & Naspetti, S. (2002). Consumer motivations in the purchase of organic food. *British Food Journal*, 104(8), 643–653. doi:10.1108/00070700210425930.
- Zepeda, L. (2009). Which little piggy goes to market? Characteristics of US farmers' market shoppers. *International Journal of Consumer Studies*, 33(3), 250–257. doi:10.1111/j.1470-6431.2009.00771.x.
- Zepeda, L., & Deal, D. (2009). Organic and local food consumer behaviour: alphabet theory. *International Journal of Consumer Studies*, 33(6), 697–705. doi:10.1111/j.1470-6431.2009.00814.x.

**Edited Highlights for “Revisiting Consumers’ Valuation for Local Versus Organic Food using a Non-Hypothetical Choice Experiment: Does Personality Matter?”**  
**(FQAP-D-16-00447)**  
**Second Revision**

- We investigated whether personality affects consumers’ WTP for local and organic applesauce
- WTPs were higher for the organic than the local production claim
- Personality traits mostly affected consumers’ WTP for the local claim