Appetite 106 (2016) 110–116

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Reprint of "Attitudes towards honey among Italian consumers: A choice experiment approach"☆

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ARTICLE INFO

Article history:
Received 12 June 2015
Received in revised form
17 December 2015
Accepted 18 December 2015
Available online 23 August 2016

Keywords:
Honey
Consumer preferences
Choice experiment
Marketing

ABSTRACT

Honey is becoming increasingly popular with consumers for its nutritional benefits as well as many other functions. The objective of this article is to determine which factors influence consumers' purchase intentions and to assess the importance of certain honey characteristics to enable identification of the constituents of an ideal honey profile. This information will lead to satisfaction of consumers' preferences and formulation of marketing strategies that support honey makers.

We applied a choice experiment to the Italian honey market to define the preferences and the willingness to pay for key characteristics of the product. A face-to-face questionnaire survey was conducted in 2014 (January–July) among Italian consumers; it was completed by 427 respondents. A latent class model was estimated and four classes were identified, with different preferences, illustrating that respondents seem to be heterogeneous honey consumers. Results suggest the "organic" attribute was more important than others factors, such as the place where the honey was produced (landscape), but less important than the country of origin; local Italian honey was preferred to foreign honey. Respondents showed a higher willingness to pay (WTP) for honey from their country of origin versus the production method used. Our results suggest that while organic beekeeping might be an important strategy for diversification, if suitable communication is not taken into consideration, the added value of the production method might not be perceived by consumers.

1. Introduction

In 2013, global production of honey was about 1.66 million metric tons, and in Europe, annual production reaches about 372 thousand tons (204 thousand tons in the European Union) (FAOSTAT, 2015). The average production of honey in Italy ranges from 9 to 12 thousand tons (FAOSTAT, 2015), depending on meteorological conditions during the year.

Honey is becoming increasingly popular with consumers for its nutritional benefits as well as many other functions (Aparna & Rajalakshmi, 1999; Al-Qassemi & Robinson, 2003; Bogdanov, Jurendic, Sieber, & Gallmann, 2008; Ismaiel, Al-Kahtani, Adgaba, Al-Ghamdi, & Zulail, 2014; Joshi, 2008). Moreover, as health consciousness has increased and concerns have focused on food processing technologies (Anton et al., 2010), consumption of honey has increased because it is not subjected to any technological processes (Ghorbani & Khajehroshanaee, 2009; Pocol & Teselios, 2012).

Despite this positive consumption situation, the beekeeping sector in Italy has not yet learned to understand the consumers' needs in order to increase their product satisfaction and earnings (Sillani & Grillenzoni, 2007).

According to the literature, there are various factors that influence consumers when purchasing honey. However, the decision is often habitual and dictated by knowledge of the honey's value. For example, Yeow, Chin, Yeow, and Tan (2013) have determined several factors that influence consumers' purchasing behaviours regarding honey-related products such as bee pollen, royal jelly and honey drinks. In detail, they stated that medical conditions, quality of the product, brand reputation and pricing have a positive and significant relationship with Asian consumers' purchasing

DOI of original article: http://dx.doi.org/10.1016/j.appet.2015.12.018.
☆ This article is a reprint of a previously published article. For citation purposes, please use the original publication details; Appetite, Volume 99, 1 April 2016, Pages 52–58.
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http://dx.doi.org/10.1016/j.appet.2016.08.005
0195-6663/

behaviour. Likewise, Ismaiel et al. (2014) and Zulail, Ismaiel, Al-Kahtani, Al-Ghamdi, and Adgaba (2014) analysed the major factors influencing consumption, expenditure patterns and demand for honey in Saudi Arabia, finding the major motivations for consuming honey are its medicinal and nutritional values. While investigating consumer behaviour in Romania, Arvanitoyannis and Krystallis (2006) identified four main dimensions in honey-purchasing motivation: medical benefits of its consumption, dietary quality, the ethical character of honey and suitability with food consumption lifestyle.

Unnevehr and Gouzou (1998) analysis of the US retail honey market indicated that consumers were willing to pay substantial premiums for honey based on form, container, brand and, in particular, unique monofloral sources. Similarly, Swanson and Lewis (1991) demonstrated that consumers were willing to pay for the unique characteristics of honey associated with particular floral sources, while Gambaro, Ares, Gimenez, and Pahor (2007) found that consumers showed significantly different degrees of approval of the colour of the evaluated honeys.

Jensen and Mørkbak (2013) used principal components analysis and multinomial logit analysis to explore the role of gastronomic, externality and feasibility dimensions in the formation of consumers' values and product perceptions. They also used these methods to determine the importance of the respective dimensions in consumers' choices of local and/or organic varieties of honey and apples. They found that perceived gastronomic quality is the most important determinant for food choice, but externality and feasibility aspects are also important correlates. Ghorbani and Khajehroshanaee (2009) surveyed the consumer demand for qualitative factors of honey using the hedonic pricing (HP) model and cross-sectional data from a consumer sample. Their results showed that the type of honey, as well as its packing conditions, colour, aroma and protraction, have positive effects on its price. Murphy, Cowan, Henchion, and O'Reilly (2000) used least squares regression to estimate part worths for the conjoint analysis and found that price and texture were felt to be the most important product attributes, followed by packaging, scale of production and, finally, the honey's colour. Mohamadi-Nejad (2013), using the qualitative pricing model, studied the demand for honey in urban areas of the Kermanshah province of Iran. This study showed that physical and chemical characteristics of honey affect its market price. Characteristics such as scent, production location and high traction significantly positively affect its price, while characteristics like proper packaging, bright colours and types of honey (with wax) can have significant negative effects on its market price. As one of the few studies to analyse willingness to pay (WTP) for honey, Wu, Fooks, Messer, and Delaney (2014) used auction experiments. They elicited consumer WTP for honey to compare auction and posted-price mechanisms and found that WTP estimates generated by an auction were approximately 50% lower than those from a posted-price mechanism.

Many studies have also stated that a honey's origin is the most important factor considered prior to purchase. Batt and Liu (2012) found that in purchasing honey from a retail store (exploratory factor analysis revealed), there were three principal constructs most influential in the purchase decision: brand reputation, origin and value for the money. A study conducted by Roman, Popiela-Pleban, Kozak, and Roman (2013) showed that most consumers said they only purchase honey with domestic origin, although almost half of them said they had not checked the provenance on the label. Likewise, Pocol and Bolboacă (2013) found that respondents preferred to buy honey from a local Romanian producer and had more knowledge in domestic rather than imported honey. Gyau, Akalakou, Degrande, and Biloso (2014) identified key consumer characteristics that influence preferences of honey consumers in the Democratic Republic of Congo; they showed that consumers who are married and have reached at least the level of secondary education have a strong preference for local forest and savannah honey. Moreover, Wu et al. (2014) evaluated consumer behaviour related to informational messages about honey that is produced locally, domestically and internationally and demonstrated that consumers prefer locally produced honey.

Nevertheless, sufficient clarification has not been established as to which is the best strategy for differentiating honey productions that emphasise increasing producers' earnings. A number of studies have investigated processing, storage and shelf life of organic honey. Parvanov and Dinkov (2012) recommended more specific conditions for processing, storage and production of honey to preserve its natural organoleptic, physical, chemical and antibacterial features. According to Belay, Solomon, Bultossa, Adgaba, and Melaku (2015), many consumers still think that if honey has crystallized it has gone bad or has been adulterated with sugar, but granulation is one of the characteristics for honey. In fact, the ongoing process of crystallization applies to all honeys (Roman et al., 2013).

Few studies have investigated consumer attitudes towards organic honey, yet this could be an alternative strategy to verify whether organic production would be preferred to other strategies such as geographic origin. For example, Ványi, Á, Csapo, and Karpati (2011) suggested that (in addition to price, food quality, healthy lifestyle and nutrition) food safety, organic options and animal welfare awareness influenced consumer decision-making.

Perception of landscape feature of production is quite a complex phenomenon as it involves a number of components of the human mind, and has an important emotional value (Tempesta et al., 2010). While the international literature (Tempesta et al., 2010; Veale & Quester, 2008) has demonstrated that associating wine to an image of greater visual impact can positively affect the wine quality perception, the analysis of the premium price for landscape features of beekeeping has not yet been investigated.

Moreover, to our knowledge, there are only a few studies regarding honey and choice experiments (CE). CEs have been extensively used to understand the determinants of consumers' choice of food products. So far, CE has not been used to investigate the factors potentially shaping the choice of honey in Italy or other countries. The objective of this study is to determine the factors that influence consumers' purchase intentions and to assess the importance given by consumers regarding honey's five primary characteristics: country of origin, landscape features of production, crystallisation, production method—organic or conventional—and price. These are needed to identify an ideal honey profile to satisfy consumers' preferences and formulate marketing strategies that support honey makers. Specifically, we used a choice experiment approach to evaluate Italian consumers' WTP to select honey attributes, incorporating consumer preference heterogeneity in a latent class model (LC). In accordance with this objective, we carried out a survey in Friuli Venezia Giulia, a North-Eastern region in Italy.

This study contributes to the literature not only by providing estimates on Italian consumer WTP for premium honey, but also examines consumers' preferences towards local honey compared to domestic and international alternatives. Additionally, it provides insights on their specific perceptions about the organic and local origin of honey. To better assess WTP for local origin, it was decided to conduct interviews in a single region. Understanding these product-organic-origin interactions may illustrate the best marketing opportunities for domestic growers, especially for small farms in particular, who would otherwise compete with foreign producers on simple low-cost criteria. The paper is organized as follows: Section 2 provides a short overview of the theoretical

background; Section 3 describes the methods and materials used; Section 4 presents the results; and Section 5 includes the discussion of results and concluding remarks.

2. Material and methods

This study used, for exploratory purposes, the Multinomial Logit Model (MNL) and examined a random effect specification by implementing an LC model. Unlike the traditional MNL, where consumers are assumed to be homogeneous, here, heterogeneity in consumer preferences for honey attributes was measured using the LC model. In spite of the traditional logit, this model relaxed the limitations by offering particular flexibility to accommodate respondents' differences in decision strategies and choice consistency, which would otherwise lead to biased part worth utilities (Hensher, 2010; Hess, Shires, & Bonsall, 2013; McFadden & Train, 2000). The increasing use of LC and random parameter logit (RPL) models for the analysis of choice experiments in food contexts has been underpinned by a recognition of the heterogeneity in consumers' preferences and the desire to make this heterogeneity relevant for marketing segmentation purposes. In the context of segmented samples of respondents, LC analysis proves to be particularly suited. It groups respondents by looking at common choice patterns rather than clustering the sample on socio-economic characteristics.

By looking at the marginal rate of substitution between non-monetary and monetary attributes included in the indirect utility function (IUF) it was possible to estimate the premium price (or willingness to pay – WTP) for each attribute level by dividing β coefficients by βprice:

$$WTP = -\beta/\beta price$$

As the utility function is assumed to be linear in cost, the marginal WTP for the attribute is the ratio between the parameter of the attribute and the cost parameter in the utility function.

2.1. Experimental design

A face-to-face questionnaire survey, divided into three parts, was conducted in 2014 (January–July) among Italian consumers. Data were collected in shopping centers so that the survey could at least partly mirror the point-of-sale context. People were addressed according to a simple random rule. In accordance with the objectives of our study, the survey, including the CE, was administered in Friuli Venezia Giulia. It was completed by 427 respondents.

The first part of questionnaire collected respondents' socio-economic information, and they were also asked about their general opinions and experience regarding honey-related consumption habits. It was decided to insert a number of questions about organic produced food and -honey, asking the frequency and place for the purchase. These questions, along with those on the consumption of honey, constitute our reference framework for the potential consumer of organic honey in order to verify if organic beekeeping might be a strategy for diversification. Next, the CE was introduced, and the attributes with corresponding levels were repeated briefly before each respondent was faced with the choice sets.

A focus group was conducted in a single round with a number of consumers and producers of honey in order to identify the attributes and discuss questions in the questionnaire. Based on the focus group discussion, five attributes were identified (Table 1), which were considered to be important for consumers, but which did not make them differentiate between various types of honey.

The first attribute we considered was the geographic origin of honey, which seemed to be a preferred characteristic of consumers across all countries (Kehagia, Chrysochou, Chryssochoidis, Krystallis, & Linardakis, 2007). The country of origin attribute had three levels of study: Friuli Venezia Giulia Region, other Italian regions, and other countries.

The second attribute offered respondents the opportunity to choose between liquid (runny) state honey or semi-solid state honey. Honey is susceptible to crystallisation, which occurs naturally. Crystallisation is affected by three major factors: floral origin of the nectar; high contents of fructose (generally, honeys with very high contents of fructose remain liquid for a longer time (Yao, Bhandari, Datta, Singanusong, & D'Arcy, 2003); and the organic honey production method.

An increasing interest and concern among consumers in the ways in which food is produced has led to a need for differentiation in production methods. Consequently, we considered two different levels for this attribute: organic or non-organic. Organic production means the production process has followed the rules established by EU Regulations (CE) N. 834/2007 and 889/2008.

With regard to landscape features of beekeeping, the fourth attribute, we used three levels: i) intensive beekeeping carried out with a large numbers of colonies concentrated in small areas, which enables large yields but damages landscape beauties; ii) an industrial site where an apiary is located; and iii) traditional bee hives in a beautiful mountain landscape. The proposed landscapes were all created with Gymp software tools (http://www.gimp.org). They were selected among a larger group of images, which were shown to focus group participants according to the hypothesis that the landscape in which the honey is produced could affect quality product perception (Kaplan, 1985). According to Daniel (2001), the selected images were then shown to a sample of 50 citizens to obtain their appreciation. A 5 point Likert scale was used to score each image (ranging from 1, "not pleasant", to 5, "very pleasant"). The mountain landscape reached the highest average score, while the environment with intensive beekeeping obtained the lowest result. By using appropriate statistical tests the global significance difference among the three levels of the landscape attribute was confirmed. In addition the differences among the average scores were shown to be statistically significant. Consequently we decided to use the selected images for the CE.

The price attribute had the levels € 3, € 5 and € 9. This corresponded to a 500 g. glass jar.

To elicit consumer preferences for the attributes efficiently, a fractional factorial design was used to vary all attributes among the scenarios. A final set of 18 treatment combinations has been derived. Respondents had to face 6 choice sets with 3 treatment combinations each plus the opt-out alternative ("None of these"). The choice sets were shown in colour pictures to the respondents. In detail, the respondents were asked to choose among three jars of honey. An example of a choice set is illustrated in Fig. 1.

About 50 pre-tests of the questionnaire were made before it was administered to the final respondents. The pre-tests resulted in a number of minor changes in the formulation of questions.

Table 1
Attributes and their corresponding levels.

Attribute	Levels
Geographic origin	Friuli Venezia Giulia Region; other Italian regions; other countries
Honey crystallisation	Liquid (runny) state; semi-solid state
Organic	Yes; no
Landscape	Evocative landscape; bee hives near industrial buildings; skyscraper hives
Price (€/500 g.)	3; 5; 9

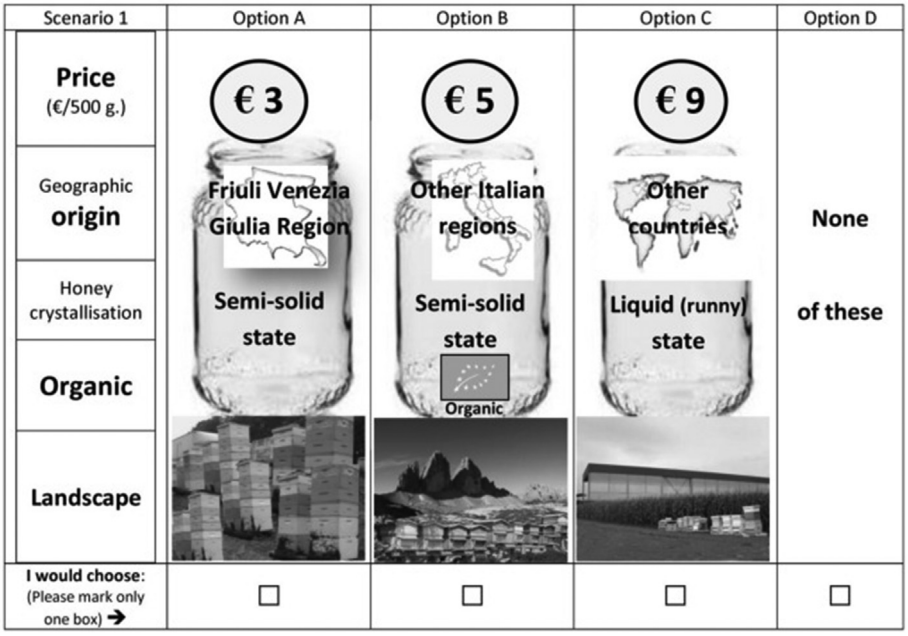

Fig. 1. Graphical example of a choice set.

3. Results

The majority of the respondents were female (55%). Most respondents (45%) were aged between 41 and 55 years. 51% of respondents lived in a household with three to four members. Respondents were mainly employed (68%). Table 2 presents the descriptive statistics used in the estimations.

More than 90% of the respondents stated that they consumed honey, however, the majority (49.35%) consumed it only occasionally. Buying honey directly from the beekeeper was widespread among respondents, but for 36.20%, the supermarket was the primary place of purchase. Of the 65.71% who declared their preference for liquid (runny) honey, 72.95% of them regularly or rarely bought organic honey.

By means of the program NLogit4®, MNL and LC models were estimated. Both models shared the same following linear utility function.

In Table 5, the relative marginal utility of the attributes of the entire sample can be analysed. The coefficients were all significant at a 90 or 95% confidence level (P value). The marginal utility of local honey production was higher than that of organic production. Estimates indicate that respondents are also concerned about landscape features of production and liquid state of honey. The coefficient of the price attribute is negative as expected and postulated by theory as consumer prefers the less expensive alternative *ceteris paribus*.

According to Lancsar, Louviere, and Flynn (2007) the relative impact of each honey attribute was analysed using partial log-likelihood values (Table 3). The results indicate that the geographic origin was ranked at the top, and accounted for 72.9% of the log-likelihood. This attribute was followed by price, organic, landscape of production, and honey crystallization.

A LC model was estimated on the respondents for testing for latent heterogeneity in honey choices and preferences in order to

Table 2
Interviewee and population characteristics.

		Sample		Friuli V.G. region	Italy
		No	%	%	%
Gender	Male	192	44.96	48.2	48.8
	Female	235	55.04	51.8	51.1
Age	Less than 25 years	40	9.37	20.9	24.0
	Between 25 and 40 years	136	31.85	20.0	21.2
	Between 41 and 55 years	192	44.96	23.2	22.8
	Between 56 and 70 years	52	12.18	19.3	17.5
	More than 70 years	7	1.64	16.5	14.5
Family members	1–2		40.52	65.1	51.9
	3–4		50.82	31.1	40.6
	5 and more		8.67	3.8	7.5
Educational level	Primary and lower secondary	50	11.71	49.4	55.0
	Secondary	188	44.03	37.9	33.9
	Graduate	164	38.41	12.7	11.1
	Other	25	5.85	/	/
Employment status	Employed	355	83.14	63.2	56.8
	Non-employed	72	16.86	36.8	43.2

Table 3
Ranking of attribute importance.

Honey attributes	Partial effect	Attribute importance (%)
Origin	−272.26	72.9
Price	−69.75	18.7
Organic	−27.00	7.2
Landscape	−2.88	0.8
Crystallization	−1.57	0.4

Table 4
Latent class model statistics.

	LCM-2	LCM-3	LCM-4	LCM-5
LL	−2780.398	−2665.518	−2576.875	−2562.647
AIC	2.184	2.103	2.041	2.038
BIC	2.223	2.167	2.128	2.148
HQIC	2.199	2.126	2.072	2.078
McFadden pseudo R^2	0.217	0.249	0.274	0.278

consider the possibility of segmentation of preferences into different consumer groups. In fact, LC model is quite informative and interesting when studying preferences heterogeneity of respondents In detail, LC model determines empirically the typologies of consumers/respondents according to their homogeneity of preferences derived from the choices made, independently of their socio-economic characteristics.

Results from the LC model are reported in Table 5. The number of segments was defined exogenously. The class four model was then selected by comparing LL function, AIC and BIC for different numbers of classes (Table 4).

While LC model results confirm the MNL results trend, they highlight a differentiated set of preferences among respondents. The class four LCM model (LCM-4) showed that the sample had heterogeneous preferences and respondents could be divided into four classes, representing 19%, 35%, 20% and 26%, respectively. It is interesting to observe how the coefficients for class one are not significant ($P > 0.05$) apart from the local origin. The members of this class who chose the most preferred alternatives considered only the local origin of honey and seemed indifferent to the other attributes considered in our experiment ("localists").

Each of the other three classes were characterised by a different structure of preferences: members of class two were more concerned about organic beekeeping and negative landscape externalities of intensive production, while members of class three preferred more liquid (runny) honey and intensive beekeeping. We will refer to members of class two as "environmentally friendly consumers" and members of class three as "pro-intensive production consumers", although they had a positive WTP for organic production. Furthermore, members of class three had, on average, a higher WTP for all attributes except local origin. Looking at class four, we noticed that people belonging to that class gave more importance to the physical property of "liquid" honey and organic beekeeping. They could be defined as "organic consumers". Regarding product origin, all the groups preferred honey produced in Friuli Venezia Giulia. Considering the landscape externalities of production attribute, classes three and four preferred intensive beekeeping (WTP € 7.02 and € 4.51, respectively), while members of class two had a negative WTP. Consumers belonging to class two preferred crystallised honey, while members of classes three and four showed a positive WTP for a liquid consistency (WTP € 8.02 and € 6.20, respectively).

Although in a preliminary step we included socio-demographic and behavioural variables in the LC model to better explain class probability, we found that they were not generally significant in explaining the probability of class membership. We retained the most significant socio-demographic variable, the 25–40 age group. This variable had a positive coefficient relative to the first class.

The ASC was significant ($P < 0.05$) for classes two, three and four, but negative for classes two and three, meaning there were preferences towards the 'none' option, which could not be explained by the variables contained in the model. For class four, the ASC was positive.

4. Discussion and conclusions

The Italian beekeeping sector has not yet learned to understand the consumers' needs in order to increase their product satisfaction and earnings. In this context, new strategies like organic beekeeping could be an opportunity to diversify the product and acquire a margin to improve earning capacity.

Our study provides initial empirical evidence for this opportunity.

Four classes were identified, with different preferences, illustrating that respondents seem to be heterogeneous honey consumers.

The results revealed strong positive preferences for locally produced honey. In fact, the country of origin had a substantial effect on the interviewees' utility along all classes. This result also emerged in other research, where respondents tended to prefer products from their home region (Al-Ghamdi, 2007; Troiano, Tempesta, & Marangon, 2014; Wu et al., 2014; Zulail et al., 2014). The WTP estimates for honey produced in Friuli Venezia Giulia

Table 5
Base model and latent class model results.

Variable	MNL	Latent class model							
	Coeff. (S.E.)	Class 1		Class 2		Class 3		Class 4	
		Coeff. (S.E.)	WTP (€/jar)	Coeff. (S.E.)	WTP (€/jar)	Coeff. (S.E.)	WTP (€/jar)	Coeff. (S.E.)	WTP (€/jar)
ASC	−0.25 (0.12)***	0.46 (0.97)	/	−2.86 (0.22)***	/	−0.56 (0.23)***	/	2.51 (0.24)***	/
Price	−0.15 (0.01)***	−0.08 (0.14)	/	−0.27 (0.02)***	/	−0.10 (0.02)***	/	−0.26 (0.03)***	/
Friuli V.G.	1.04 (0.07)***	5.73 (2.07)***	/	1.04 (0.11)***	3.91	0.51 (0.11)***	4.97	1.28 (0.15)***	4.86
Foreign	−0.58 (0.12)***	0.11 (1.46)	/	−1.69 (0.21)***	−6.31	0.25 (0.16)	/	−0.83 (0.27)***	−3.14
Liquid	0.16 (0.09)**	1.13 (0.99)	/	1.15 (0.21)***	4.29	0.68 (0.18)***	6.65	1.57 (0.23)***	5.95
Organic	0.81 (0.11)***	−2.42 (1.64)	/	−1.28 (0.19)***	−4.81	0.82 (0.13)***	8.02	1.64 (0.16)***	6.20
Evocative	0.14 (0.08)**	−0.32 (0.71)	/	0.23 (0.17)	/	0.34 (0.11)***	3.30	0.63 (0.16)***	2.40
Intensive	0.16 (0.10)**	−1.01 (1.77)	/	−0.40 (0.14)***	−1.51	0.72 (0.15)***	7.02	1.19 (0.19)***	4.51
Average probability		0.19		0.35		0.20		0.26	
Theta in class probability model: 25–40 age group									
		0.61 (0.33)**		−0.01 (0.30)		0.10 (0.36)		0.00 (fixed parameter)	

*** Significant at a 95% conf. level; ** Significant at a 90% conf. level.

were positive and quite consistent in comparison to production abroad. The propensity to purchase food of local origin may have a plurality of explanations (Troiano et al., 2014). It could be assumed that local food products are preferred especially by environmentally-conscious consumers because they are more environmentally benign. In addition, they are generally produced by local producers respecting local traditions. Moreover, it could be also assumed the presence of an altruistic component regarding the opportunity to empower local socio-economic system through the purchase of local products.

Nevertheless, the results show that WTP for organic honey was higher, except in class one, meaning that only a small fraction of the interviewees was not willing to pay a premium price for organic production. These results are in line with Kehagia et al. (2007), who stated that Italian respondents insisted on organic honey and considered the origin of honey to be important as well. If organic honey buyers are considered more responsible for their own health and more likely to undertake preventive health action than the general population (Makatouni, 2002), our results identify organic production of honey as a driving opportunity for beekeeping. In fact, Ismaiel et al. (2014) evidenced that the trend of consuming honey as a health food has been steadily increasing. This could be a key factor of the expected growth in the Italian demand for honey.

The implications of this findings for marketing are clear. The emphasis on local origin of honey besides organic production logo may result in increasing demand.

Moreover, our results suggest the "organic" attribute was more important than the landscape features where production takes place. Although we used a well-known Dolomitian landscape taken from the North-Eastern region in Italy to create one of the proposed (photomontaged) images, we notice it has not developed a particular emotional tie. While Tempesta et al. (2010) stated that associated wine to an evocative landscape induces a significantly higher preference for the tested wine, our findings reveal that a consistent group of respondents (class 3 and 4–45%) are more WTP for a landscape characterized by intensive honey production. This may be due to the fact the landscape produced by intensive wine production compared to the one obtained by intensive producing honey are really very different. In detail, the landscape impacts of the intensive production of honey are not permanent. Moreover Italian consumers pay attention on and appreciate winescape resulting from sustainable (not intensive) production methods because of its positive impacts on aesthetic and recreational values. In addition, wine production culture in Italy has a long-standing tradition. However, a considerable group of respondents (class 2–35%) had a negative WTP for degraded landscape, in which environmental resources had been obscured by intensive beekeeping.

While Murphy et al. (2000) stated the ideal honey profile for Irish consumers of honey was one with a thick texture, in our study findings reveal the presence of significant market segments interested in the liquid consistency of honey, not taking into consideration that crystallisation or granulation are natural phenomena. In fact, most pure raw or unheated honey has a natural tendency to crystallise over time. There is no difference in taste or nutritional value of these two states. Crystallised honey is not spoiled and preserves the characteristics of liquid honey. It can also be restored to a liquid state. Nevertheless a consistent group of respondents (class 3 and 4–45%) has a positive WTP for liquid honey. Our results are in line with the study of Kabani et al. (2011), who stated that crystallization of honey makes it less appealing to the consumer, who prefers it liquid and/or transparent. May be this is due to aa lack of sufficient information regarding the quality properties and physical aspects of honey in general.

Some limitations of our research merit emphasis. It is important to extend the research to real consumer behaviour to better understand their preferences. Moreover, it may be useful to extend this research to other states or regions. Despite the limitations of our study, we believe our results add useful data to currently available literature on consumers' preferences towards honey. In fact, as many of the characteristics of the examined study region may be similar to the characteristics of other Italian and European Regions, the issues of this study may be of interest to researchers and policy makers in such regions. In addition, our findings should be useful for producers in areas where the development of organic honey as niche market product can be an important element for the improvement of the competitiveness of the beekeeping sector and therefore for the increase of its revenues.

In conclusion, our results suggest that organic beekeeping might be an important strategy for diversification. Moreover, the findings help producers to understand the opportunity posed by the local marketing trend to organic honey producers and sellers by integrating local resources into their brand value.

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