

Where was my cup of honey made? PDO honey and sub-regional ethnocentric consumer segments

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Maria Teresa Trentinaglia and Daniele Cavicchioli

*Department of Environmental Science and Policy, Università degli Studi di Milano,
Milano, Italy*

Cristina Bianca Pocol

*Department of Animal Production and Food Safety, Faculty of Veterinary Medicine,
University of Agricultural Sciences and Veterinary Medicine,
Cluj-Napoca, Romania, and*

Lucia Baldi

*Department of Environmental Science and Policy, Università degli Studi di Milano,
Milano, Italy*

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Abstract

Purpose – The goal of this study is to understand if ethnocentrism exists at the sub-regional level among honey consumers living in the same production area as a protected designation of origin (PDO). Moreover, this analysis explores if ethnocentrism is influenced by individual economic conditions, among other socio-demographic characteristics.

Design/methodology/approach – A sample of 725 consumers was collected through the use of a questionnaire that was circulated in the province of Varese, one of the few honey PDO areas in Italy. The authors performed a principal component analysis and a two-step cluster analysis to identify different PDO honey consumer segments, focusing on their interest for PDO attributes.

Findings – The authors identified four consumer segments, depending on socio-demographic, consumption habits, frequencies, preferred attributes and preferences for the PDO product. One cluster exhibited strong preferences for the PDO honey, in the spirit of ethnocentrism, and was characterised by low-income levels; ethnocentric preferences were also observed in another cluster that had a different socio-economic profile.

Research limitations/implications – Honey is a niche product and not universally diffused among consumers: further analyses should investigate sub-national ethnocentrism for more universal food products. Yet, through the inspection of the different profiles found, it was possible to devise marketing strategies to boost PDO honey purchasing and to bring consumers closer to PDO products.

Originality/value – This analysis considers ethnocentrism as a segmentation criterion for PDO honey consumers that live in the very same PDO honey production area and enriches the existing literature on the relationship between ethnocentrism and individual economic status.

Keywords Honey, PDO, Ethnocentrism, Cluster analysis, Marketing segmentation, Italy

Paper type Research paper

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1. Introduction and theoretical background

When it comes to consumer analysis, the role that product origin can exert on consumer preferences and behaviour has been one of the most investigated topics ever (Samiee *et al.*, 2016). In its broadest definition, product origin coincides with national boundaries, and this country-of-origin effect can significantly influence consumers' perceived quality, even more than what it can affect attitude and purchase intentions (Verlegh and Steenkamp, 1999). When preferences for a domestic product over foreign ones are expressed by consumers living in the same country, such preferences may be defined ethnocentric and reveal the existence of a home-bias effect (Balabanis and Diamantopoulos, 2004). Still, ethnocentrism may arise also at the regional and sub-regional levels (e.g. Bianchi and Mortimer, 2015; Fernández-Ferrín *et al.*, 2018; Fernández-Ferrín *et al.*, 2020), where protected designation of origin (PDO) labels are particularly appreciated by local and rural consumers as higher PDO awareness has been observed in regions where protected products come from (Goudis and Skuras, 2020; Grunert and Achmann, 2016). These certifications of origin are in fact useful quality cues that allow consumers to correctly identify local products (Van der Lans *et al.*, 2001) and increase consumers' Willingness to Pay especially for minimally processed foods (Deselnicu *et al.*, 2013), just like honey.

Within the analysis of consumer behaviour, an equally relevant strand of literature has been dedicated to segmentation of consumers into different groups, depending on their socio-demographic characteristics, as well as on their subjective traits and consumption drivers. More importantly, customer segmentation can be a powerful instrument to detect different levels of awareness with regards to PDO products and to encourage farmers to adopt this quality certification scheme (Dimara *et al.*, 2004). Consumers of PDO products and PDO honey have been typically segmented with respect to their socio-demographic characteristics, their consumption habits and preferences, and Willingness to Pay (Botonaki *et al.*, 2006; Cosmina *et al.*, 2016; Pocol and Bolboacă, 2013; Schifani *et al.*, 2016; Toklu, 2016; Ványi *et al.*, 2011; Wu *et al.*, 2015). More recently, Fernández-Ferrín *et al.* (2020) introduced ethnocentrism as a segmentation criterion even at the sub-national level to correctly detect product-origin sensitive groups. This region-of-region effect has been observed in other PDO contexts as a Willingness to Pay enhancer (Chamorro *et al.*, 2015; Di Vita *et al.*, 2013) or rather as a Willingness to Pay barrier among local consumers (Garavaglia and Mariani, 2017). Yet, no study has considered ethnocentrism as a segmentation driver among certified honey consumers and the contrasting results from the available evidence might indicate that even within a spatially restricted area, ethnocentrism can exist but with varying intensities. The literature on consumer ethnocentrism has also explored the antecedents of such an attitude. The most relevant macro-factors proved to influence ethnocentrism are related to a country's cultural heritage and to its economic development. In particular, higher degrees of economic development are typically negatively associated with ethnocentrism: consumers living in advanced economies feel less threatened by foreign competition and thus less compelled to protect national production (Balabanis and Siamagka, 2022; Tsai *et al.*, 2013). At the individual level, a similar negative relation between income and ethnocentrism has been observed in several studies (Chrysochoidis *et al.*, 2007; Orth and Firbasova, 2003; Sharma *et al.*, 1994). Other studies (Hsu and Nian, 2008; Javalgi *et al.*, 2005) failed to observe a significant difference in income levels among ethnocentric and non-ethnocentric consumers.

Within a consumer analysis that segments consumers with regards to their socio-demographic characteristics, it is also important to investigate how individual wealth and economic conditions can influence the intensity of ethnocentrism observed. Giving the rising attention dedicated to regional ethnocentrism and its importance for food product evaluation, this work investigates ethnocentrism among PDO honey consumers and

explores how this is affected by individual economic conditions, providing an insight into the honey market that is currently missing in the literature. In particular, it focuses on the ethnocentric preferences of honey consumers that live in the province of Varese, located in the North of Italy and one of the few honey PDO areas of Italy. Such a perspective can capture ethnocentrism, though at varying intensities, among local consumers, and recalls the importance of segmenting consumers with regards to their preferences and behaviours in restricted areas and for certified products (Baldi *et al.*, 2019; Teis *et al.*, 2017). Our goal is to understand whether and to what extent living in the same production area of a PDO product (in our case honey) is an important factor in shaping preferences for this product and which consumer profiles have the highest level of ethnocentrism. Moreover, this analysis wants to explore how ethnocentrism among honey consumers living in a spatially restricted area can be influenced by different individual economic antecedents (Balanis and Siamagka, 2022), including income status (Balabanis and Siamagka, 2022; Good and Huddleston, 1995; Javalgi *et al.* 2005; Orth and Firbasova, 2003; Sharma *et al.*, 1994).

In light of the above, the hypotheses that we would like to test throughout this study are as follows:

- H1.* Ethnocentrism can be observed at the sub-regional level among honey consumers.
- H2.* Income and ethnocentrism are negatively related for honey consumers.

To this purpose, we conduct a survey interviewing 725 customers of certified honey living in the Varese administrative area and then segment them to identify different preferences for locally produced PDO honey. We initially performed a principal component analysis to extract a lower number of factors related to consumption habits. These factors were then used to segment consumers living in one of the few PDO honey production areas of Italy using cluster analysis.

By focusing on preferences of local consumers towards locally produced certified honey, this research fits into the strand of literature that explores ethnocentrism at the sub-national level and how individual economic conditions can influence the relative importance of supporting local production. It also adds to this literature by exploring the existence of ethnocentrism in the demand for honey, whose analysis has typically neglected such a perspective. In doing so, the findings of this analysis can help understand how this phenomenon shapes local consumers' preferences. Even though this consumer analysis has important and direct implications for Italy, a honey net importing country in both quantity and value (Pocol *et al.*, 2017), and where PDO honey production is limited to three different areas, we argue that this approach can be generalised to examine other region–PDO product pairs. On the one hand, understanding regional ethnocentrism may help designing more effective promotional activities that stimulate demand by touching the right chords among ethnocentric consumers. On the other hand, the existence of regional ethnocentric consumers could also encourage farmers to adopt the PDO quality certification scheme, thus stimulating supply.

The paper is structured as follows: [Section 2](#) presents the related literature; [Section 3](#) introduces the consumer survey and the methodological strategy; [Section 4](#) presents the results; [Section 5](#) discusses the results; [Section 6](#) presents the marketing implications and conclusions.

2. Literature review

The analysis of consumer behaviour typically explores the antecedents of consumer purchase intentions and evaluates how subjective or objective factors, such as

demographic characteristics of emotions, attitudes, and preferences, can affect purchase intentions and behaviour. Consumption patterns can be the promoters of sustainable pathways, a fact which is particularly relevant in the food domain. To this purpose, sustainable food consumption has been explored from different perspectives: to identify the drivers of organic food consumption (Aertsens *et al.*, 2009; Padel and Foster, 2005); to assess how sustainability labels influence consumption choices (Bertoni *et al.*, 2018; Grunert *et al.*, 2014); to appraise preferences for local food (Feldmann and Hamm, 2015); to investigate consumer behaviour towards short-food supply chains (Giampietri *et al.*, 2016, 2018) or towards alternative food networks (Baldi *et al.*, 2019), and to evaluate how healthy habits and practices, such as plant based diets, can lead to sustainable consumption behaviour (Pocol *et al.*, 2020).

2.1 Consumer ethnocentrism

Among the different factors influencing consumer behaviour, great relevance has been dedicated to the relation between consumer origin and product origin, and how these elements can influence product evaluation and consumption decisions. In particular, preferences for domestic or foreign goods and services can be characterised by cosmopolitan vs ethnocentric forces. Cosmopolitan consumers, who are “positively disposed towards consuming products from foreign countries” (Riefler *et al.*, 2012, p. 287), have been identified in international markets and are typically segmented with respects to their socio-demographic characteristics, to their psychographic variables, to their culture, and consumption trends (Makrides *et al.*, 2022). Ethnocentrism is a “moral obligation to support and protect the domestic economy by buying domestic products” (Balabanis and Siamagka, 2022, p. 746; Shimp and Sharma, 1987). Consumer ethnocentrism is described as a universal phenomenon, though its intensity varies from country to country; just like cosmopolitanism, ethnocentrism is influenced by different macro factors, such as cultural incidence, economic status, and ethnic diversity (Balabanis and Siamagka, 2022). Still, local and global identities can co-exist among international consumers (Makrides *et al.*, 2022) and the analysis of consumer preferences for domestic and foreign goods and services has been typically cast within the literature exploring consumer ethnocentrism and the country-of-origin effect, since both factors can significantly influence product evaluation and thus consumer behaviour. Consumer ethnocentrism has been detected in different consumption markets, such as tourism (Bremser and Abraham, 2022), apparel (Ortega-Egea and Garcia-de-Frutos, 2021), and in the food domain (Orth and Firbasova, 2003). An extreme case of consumer ethnocentrism is consumer animosity, according to which the consumption of goods and services produced or provided by companies of a specific country is highly disapproved of by consumers in a different country (Klein *et al.*, 1998; Riefler and Diamantopoulos, 2007). An extensive strand of research has explored the role of consumer ethnocentrism in the food domain, where food proximity can be a valuable attribute for consumers (Chryssocoidis *et al.*, 2007; Trentinaglia De Daverio *et al.*, 2020).

Typically, consumer ethnocentrism has been explored at the national level (Balabanis and Diamantopoulos, 2004; Miguel *et al.*, 2022; Orth and Firbasova, 2003; Van Loo *et al.*, 2019), but ethnocentrism can equally emerge at the sub-national or regional level (Fernández-Ferrín and Bande-Vilela, 2013; Fernández-Ferrín *et al.*, 2020). Such a sub-national perspective has been adopted to explore the preferences of consumers for food products, typically certified, produced in the same geographical area. It emerges that consumers living in the same region dedicated to the production of the same product are more sensitive to product origin (Van der Lans *et al.*, 2001) and this region-of-region effect has been observed in different PDO contexts (Chamorro *et al.*, 2015; Di Vita *et al.*, 2013).

2.2 Ethnocentrism and indicators of origin

Still, consumers living in the same region as a certified product might consider a PDO certification less important as they already know the product (Marcoz *et al.*, 2016). This is what emerged also in the analysis of Garavaglia and Mariani (2017), who observed that consumers living in the same area of PDO dry-cured ham have a lower Willingness to Pay than consumers living outside the area. These diverging patterns can be explained by the different awareness of PDO labels of consumers living in urban and rural areas described by Goudis and Skuras (2020), according to whom rural consumers are less exposed to PDO labels than urban consumers. A similar pattern emerges in less economically developed markets, where certified products are less available (Botonaki *et al.*, 2006). In this spirit, the literature has observed that awareness of European quality schemes varies extensively across product categories and regions (Goudis and Skuras, 2020; Skubic *et al.*, 2018) and is influenced by other socio-demographic characteristics like age or gender (Di Vita *et al.*, 2021; Grunert and Aachmann, 2016; Riivits-Arkonsuo *et al.*, 2016; Verbeke *et al.*, 2012). Consumers familiar with PDO labels are able to differentiate among different labels or quality indicators and may be more inclined to purchase them (Herrera and Blanco, 2011). Just like consumer ethnocentrism, the Country-of-Origin effect can shape consumer risk perception, product evaluation and purchase intentions in food and non-food domains (Diamantopoulos *et al.*, 2011; Ortega-Egea and Garcia-de-Frutos, 2021); it can be such a strong sign of food product quality and authenticity that it can be even more important than price attributes (Predanócyová *et al.*, 2022; Yang *et al.*, 2022). Being often considered as a quality sign, COO is equally considered as a brand, that is, an extrinsic clue that captures intangible product attributes (Diamantopoulos and Zeugner-Roth, 2011), and an antecedent for brand personality and credibility, which in turn can influence food product evaluation and purchase intentions (Saeed *et al.*, 2022; Sekhar *et al.*, 2022). The importance of brand reputation is also observed among Australian honey consumers (Batt and Liu, 2012).

2.3 Honey and consumer behaviour

PDO labels are similar quality cues that can be considered as a product brand. The importance of such quality cues (PDO labels and product certifications among others) has been intensively explored in the literature for a niche product just like honey (Brun *et al.*, 2020; Schifani *et al.*, 2016). Honey PDO certification is in fact perceived by consumers as a guarantee of a quality bee product that can be connected with a specific region (Brščić *et al.*, 2017) to empower consumer trust (Pocol *et al.*, 2022). A strong interest in PDO certified honey was also reported by Di Vita *et al.* (2021), their study confirming the hypothesis that there is a strong interest in this niche product from Italian consumers and an upward trend in demand. In addition to the PDO certification, honey labels typically highlight its organic or local properties (Pippinato *et al.*, 2020); more recently, increasing attention has been dedicated to the “mountain” label (Brun *et al.*, 2020). On top of bringing consumers closer to local or niche products, labels and certification schemes contribute to creating an image of a sustainable product (Pippinato *et al.*, 2020), mainly in terms of environmental protection (Di Vita *et al.*, 2021). The relation between local and sustainable also emerges in Götze and Brunner (2020). Last but not least, certified food products, just like PDO honey, are of great importance for the development of territories and of local economic systems (Brščić *et al.*, 2017) and for building resilience in rural areas (Sgroi and Modica, 2022).

Despite the importance of PDO labels, and even though sub-national ethnocentrism has been explored for different PDO products, the literature on honey consumer behaviour lacks an ethnocentric perspective. In fact, consumers of certified honey are typically segmented according to the frequency and mode of consumption (Šedík *et al.*, 2019), to socio-demographic characteristics (Brščić *et al.*, 2017; Pocol and Bolboacă, 2013; Ribeiro *et al.*, 2019;

Thoma *et al.*, 2019; Vapa-Tankosić *et al.*, 2020), to the relative importance assigned to intrinsic (Cosmina *et al.*, 2016) and extrinsic honey attributes. Among extrinsic characteristics, consumers are also partially interested in the health and therapeutic properties of honey (Brščić *et al.*, 2017; Zanchini *et al.*, 2022).

3. Research methodology

In order to segment honey consumers, we conducted a consumer survey on honey consumption habits and preferences, collecting 725 valid responses. A Principal Component Analysis was performed on the collected data to extract a lower number of factors, which were subsequently used as inputs in a two-step cluster analysis. In doing so, we were able to observe heterogeneous segments of consumers living in one of the few PDO honey production areas of Italy.

3.1 The consumer survey

The consumer analysis developed in the present work is based on an online survey, developed on Google Form, and on a snowball sampling technique. The link to the consumer survey was circulated in 2016 to honey consumers living in the province of Varese, Lombardy, Italy, using social networks and online local newspapers. Face-to-face interviews were conducted to collect responses of a small subsample of elder honey consumers that would have been otherwise excluded from the collection phase. Although not probabilistic, this type of sample has been found to be economical, efficient and effective in various studies and may have certain advantages (Atkinson and Flint, 2001). For instance, trust may be developed as referrals are made by acquaintances or peers rather than by other, more formal methods of identification. In fact, our sample is representative of the local population of consumers responsible for the household food purchase in terms of age and gender. Moreover, the sample stratification was designed in order to reflect population density within the different areas of the Varese province. In particular, agricultural regions have been used for this territorial stratification.

The questionnaire consisted of different sections and was built considering components relevant to honey consumption based on literature and on the interaction with stakeholders (Botonaki *et al.*, 2006; Cosmina *et al.*, 2016; Pocol and Bolboacă, 2013; Schifani *et al.*, 2016; Toklu, 2016; Ványi *et al.*, 2011; Wu *et al.*, 2015). In particular, a Focus Group with beekeepers' representatives of Varese was organised to elicit the most plausible drivers of consumption and other relevant aspects of honey consumer behaviour. Furthermore, through the Focus Group, Likert scale anchors were defined aimed at identifying the most ideal and comprehensible wording to make items as balanced as possible. The first section was dedicated to the socio-demographic profile (gender, age, education, income, family size, responsible for household errands, and quality of life-style). The survey continued with questions regarding honey consumption habits (frequency of consumption, kgs usually purchased per year, price usually paid for 1 kg of product, and packaging size typically purchased). Then, the survey listed a set of honey consumption drivers (energetic use, safety, convenient price, positive environmental effect, I am used to purchasing it). These questions were based on a 5-point Likert scale, where 1 represented a total disagreement and 5 a total agreement.

A 3-point Likert scale was introduced to collect information regarding the factors relevant for purchase (crystals, colour, knowing the farmer or beekeeper, organic, price, type of label and packaging) and the packaging characteristics (lid colour, size, practical use) that respondents value at the time of purchasing the product. Ethnocentric preferences are assessed by the relevance assigned to different product origins (Italian origin, local origin)

and to PDO labels. In these scales, 1 stood for “Not relevant at all”, and 3 was used for a “Highly relevant” characteristic. The survey eventually asked respondents their additional Willingness to Pay for organic or PDO honey relative to standard honey (up to 10% more; up to 30% more; up to 50% more; nothing more). All the scales used are balanced, except for the Willingness to Pay scales that have four different levels and thus miss a midpoint.

3.2 Methods

Our analysis was implemented in two different stages. First, we performed a Principal Component Analysis to simplify and reduce metric variables; in particular, the covariation existing among the observed variables is modelled as a function of one or more latent constructs, or factors, which are subsequently extracted by the Principal Component Analysis procedure. Generally speaking, the number of factors resulting from such a procedure is typically lower than the number of observed variables, and the extraction is such that the common information and the correlation of the original variables are preserved. The factors retrieved from the Principal Component Analysis were introduced as inputs in the two-step cluster analysis conducted in the second stage, which is essentially an exploratory tool able to reveal unobservable segments of individuals alike. This approach is similar to BIRCH (Zhang *et al.*, 1996) as it extends the model-based distance measure (e.g. Angelici, 2016; Banfield and Raftery, 1993) and permits the handling of categorical, ordinal and metric variables. Principal Component Analysis and cluster analysis are frequently implemented jointly in the literature on consumer behaviour (Espinoza-Ortega *et al.*, 2016). Both the Principal Component Analysis and the cluster analysis were conducted using the software SPSS v.28.

4. Results

In this Section we report the results of the principal component analysis and the results of the consumer segmentation.

4.1 Sample description

As Table 1 below indicates, most of the respondents were women ($n = 528$, 72.8% of the sample), declared to be responsible for the household expenditure ($n = 653$, 90.1% of the sample) and had a high school diploma ($n = 393$, 54.2% of the sample). In terms of age, respondents of different age groups were included in the sample. Half of them were aged from 30- to 50-years old ($n = 382$, 52.6% of the sample). Younger and older generations, respectively up to 29-years old and 60 and older, were almost equally represented ($n = 107$ and 91, 14.7 and 12.6% of the sample respectively). Most respondents ($n = 477$, 65.8% of the sample) lived in large families, with three or more family members. People living alone or in couples also represented a significant share of respondents ($n = 248$, 34.2% of the sample). In terms of occupational status, most respondents ($n = 479$, 66.1% of the sample) were reported to be currently working. The most represented working categories were employees and entrepreneurs, respectively 39.7% ($n = 288$) and 17.2% ($n = 125$) of the total sample. The non-working category was represented by housewives, retired, and students, which accounted for 9.1, 8.4 and 6.9% of the total sample ($n = 66$, 61, 50 respectively). The average family income fell within the 2,000–4,000€ range per month ($n = 328$, 45.2% of the sample), followed by the lower 1,001–2,000€ range ($n = 251$, 34.6% of the sample). Last but not least, 76.7% ($n = 556$) of respondents lead a rather healthy life.

4.2 Principal component analysis

We conducted a Principal Component Analysis on those responses of the consumer survey obtained from the 23 scaled Likert questions and we obtained 7 factors.

Category		%	N	PDO honey and ethnocentric consumers
Gender	Female	72.8	528	
	Male	27.2	197	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Age	Up to 19-year-old	0.8	6	
	From 20- to 29-year-old	13.9	101	
	From 30- to 39-year-old	26.3	191	
	From 40- to 49-year-old	26.3	191	
	From 50- to 59-year-old	20.0	145	
	From 60- to 69-year-old	9.4	68	
	Equal or above 70-year-old	3.2	23	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Educational level	Primary or secondary school	10.5	76	
	High school diploma	54.2	393	
	Degree	35.3	256	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Family monthly income	≤1,000€	6.2	45	
	1,001–2,000€	34.6	251	
	2,001–4,000€	45.2	328	
	4,001–6,000€	8.4	61	
	>6,000€	5.5	40	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Family size	1 or 2 members	34.2	240	
	From 3 to 4 members	58.6	425	
	More than 5	7.2	52	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Responsible for household expenditure	No	9.9	72	
	Yes	90.1	653	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Healthy lifestyle	Unhealthy/very unhealthy	8.7	63	
	Rather healthy	76.7	556	
	Very healthy	14.6	106	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	
Employment	Entrepreneur	17.2	125	
	Employee/teacher	39.7	288	
	Trader	3.0	22	
	Worker	6.1	44	
	Retired	8.4	61	
	Housewife	9.1	66	
	Student	6.9	50	
	Not working unspecified	9.5	69	
	<i>Total</i>	<i>100.00</i>	<i>725</i>	

Table 1.
Sample description

The data matrix adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, which was equal to 0.73, confirming that a Principal Component Analysis was suitable to search for latent constructs within our sample. This validity was further supported by the statistical significance of Bartlett's test of sphericity (Chi-squared = 3958.3, p -value = 0.000). The rotated component matrix using a Varimax method indicated that the seven factors extracted from the Principal Component Analysis explained 60% of the total variance. The results of the Principal Component Analysis are reported in [Table 2](#), which displays the component matrix values for the factor identification obtained after rotation, the eigenvalues, the percent variance, the cumulative variance and the Cronbach alpha to explore the internal consistency of the constructs collected in this survey.

Table 2.
Principal Component
Analysis – Rotated
Component Matrix of
extracted factors

Sections of questionnaire	Questions	Ethnocentric/ certified	Quantity	Drivers	WTP	Packaging	Sensorial	Marketing characteristics
Consumption habits	Frequency		0.818					
	Price for 1 kg Amount consumed (kg/year)		0.871					0.671
	Packaging size Energetic Safe		0.635	0.534 0.811 0.767				
Consumption drivers	Convenient price Environmental impact			0.696				
	I am used to it Appearance (crystallised or not)		0.622				0.843	
Relevant factors during purchase	Colour						0.807	
	Knowledge of farmer Italian origin	0.630 0.704						
	Organic Local production	0.631 0.756			0.357			
	PDO label Price	0.588						
	Type of packaging and label							0.671 0.629
	Lid colour Size and type Practical						0.649 0.800 0.732	
WTP	For 1 kg of organic honey For 1 kg of PDO honey				0.883 0.871			
	Eigen value	2.42	2.42	2.22	1.87	1.824	1.58	1.48
	Percent variance	10.53	10.50	9.66	8.12	7.93	6.87	6.42
	Cumulative variance	10.53	21.03	30.69	38.82	46.75	53.62	60.04
	Cronbach alpha	0.71	0.67	0.71	0.7	0.61	0.65	0.5

Note(s): Extraction method: principal component analysis; Rotation method: Varimax with Kaiser normalisation. The table does not report factor loadings that are <0.35

Overall, the reliability analysis provided satisfactory results: three factors show an alpha value greater than or equal to 0.70 (strong internal consistency) and three factors show a value between 0.60 and 0.67 (moderate internal consistency). Only the last factor shows an alpha value at the borderline, although the share of variance explained is comparable to the other constructs. Finally, PCA results manifest weak cross-loading (Hair *et al.*, 1998). In fact, there is only one variable - organic - which manifests cross-loading >0.3.

By the rotated component matrix, we are able to define the meaning of the 7 extracted factors.

The *Ethnocentric/certified* factor identifies, as the name suggests, ethnocentric preferences, such as the interest in knowing the farmer, the relevance assigned to the product origin (Italian, local) and to PDO labels; this factor also captures the interest for organic certifications. Factor *Quantity* captures heavy honey consumption levels (high frequency of consumption, honey purchased in large amounts and in big packages). As for *Drivers*, this factor summarises the different reasons of purchase: above the different drivers of consumption, energy intake, safety, price and environmental impact are the relevant ones for the construct considered. The *WTP* factor captures a high Willingness to Pay for certified products. The *Packaging* construct stresses the importance of the packaging characteristics (lid colour, size and type, easy to use). The *Sensorial* factor describes the product appearance and its colour. Last, the *Marketing characteristics* factor identifies the marketing of the product (competitive price, packaging, colour).

4.3 Cluster analysis

In the second phase we performed a Two Steps Cluster Analysis to segment the respondents into homogeneous groups. The algorithm employed by this procedure has several desirable features that differentiate it from traditional clustering techniques and in particular it handles both categorical, ordinal and continuous variables. We thus used the 7 factors obtained from the Principal Component Analysis and add the 8 socio-demographic variables reported in Table 1 to improve the profile of the segments. Our two-step cluster analysis retrieved four different consumer segments (Table 3) depending on respondents' socio-demographic characteristics and their consumption behaviour toward honey synthesised in the factors.

To ensure clusters obtained were well-distinguished from each other and homogeneous within them, we performed a one-way analysis of variance (ANOVA) using the 7 factors as target variables. The post-hoc Tukeys HSD test subsequently revealed how each of the 7 factors were statistically different across the four clusters identified (Table 4).

Moreover, for the 8 socio-demographic variables, we used Pearson's chi-square test and obtained a $p < 0.001$ for all of them (Table 5). We can thus conclude that the definitions of the clusters are well supported by statistical criteria.

Cluster 1 ($n = 75$, 10.3% of sample) was composed of *Ethnocentric and impoverished Consumers*. This is the smallest yet most ethnocentric cluster: consumers belonging to this cluster paid the highest attention to the PDO certification. They buy honey in large amounts, and their purchase is mainly driven by the energetic and safety properties of honey, as well as

Cluster		N	%
1	Ethnocentric though impoverished consumers	75	10.3%
2	Eager consumers	165	22.8%
3	Gourmet and local consumers	276	38.1%
4	Confused consumers	209	28.8%
Total		725	100%

Table 3.
Cluster distribution

by its environmental impact. These consumers also value the product packaging, especially in terms of type, label, and price. Other packaging characteristics, such as the lid colour and the ease of use, are equally relevant. These consumers are not particularly concerned with the sensorial features of honey: once local origin has been proved, these sensorial aspects have only a secondary relevance. Nonetheless, the price of honey can influence their consumption decisions. These consumers are price sensitive, and even though they were the most interested in local origin, they report the lowest Willingness to Pay for a PDO certification. This apparently contrasting result can be explained by the economic status that characterises the members of this cluster: they are in fact elder consumers, typically retired or housewives, with a low education and very limited economic capacity (less than €2,000 per month). Despite their true interest for PDO honey, they simply cannot afford the local certified honey and have to make constrained consumption decisions. Last but not least, they tend to live either alone or in couples, they do the food shopping, and lead a healthy life.

Cluster 2 ($n = 165$, 22.8% of sample) was characterised by *Eager Consumers*, and is the least ethnocentric cluster identified in our analysis. Only very few cluster members are interested in a certified, local production. The main characteristic of this cluster is instead the love for quantity reported by its members. These consumers are not interested in the sensorial or packaging factors that typically drive consumption choices, and report an average Willingness to Pay for certified honey; they instead consume honey in large amounts, on a regular basis, and thus appreciate preferably large packaging to satisfy their consumption needs. This cluster has the highest representation of the male gender; also, its members are mainly young (less than 30 years old), with a medium-high education level and living in large families, with more than 4 members. On average, cluster members report a rather unhealthy lifestyle. As for employment, one-third of this cluster was made of students,

Table 4.
Average of factor score for each cluster and ANOVA results

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Anova <i>F</i> -test	
Ethnocentric/certified	0.135 ^a	-0.236 ^b	0.099 ^a	0.007 ^{ab}	4.492	**
Quantity	0.056 ^{abc}	0.159 ^{ab}	-0.089 ^{ac}	-0.028 ^{abc}	2.259	*
Drivers	0.435 ^a	-0.066 ^b	-0.165 ^b	0.114 ^{ab}	8.628	***
WTP	-0.295 ^a	0.021 ^{ab}	0.211 ^b	-0.189 ^{ab}	9.063	***
Packaging	0.467 ^a	-0.018 ^{ab}	-0.084 ^{ab}	-0.042 ^{ab}	6.375	***
Sensorial	-0.160 ^a	-0.114 ^a	0.093 ^a	0.025 ^a	2.199	*
Marketing characteristics	0.298 ^a	0.187 ^{ab}	-0.142 ^c	-0.067 ^{bc}	6.451	***

Note(s): *, **, and *** denote respectively 10%, 5%, and 1% level of significance. WTP stands for Willingness to Pay. Based on posthoc Tukeys HSD test, the values with different superscript letters in a row are significantly different ($p < 0.05$)

Table 5.
Pearson Chi-squared for socioeconomic variable used in cluster analysis

Socioeconomic variables	Chi-squared	Sig. Level	<i>Df</i>
Gender	188.755	***	3
Education level	324.944	***	6
Employment	744.072	***	21
Family monthly income	75.037	***	12
Age group	943.857	***	18
Family size	11.84	***	15
Responsible for household expenditure	216.367	***	3
Healthy lifestyle	70.618	***	9

Note(s): *, **, and *** denote respectively 10%, 5%, and 1% level of significance

and the remaining two-thirds by entrepreneurs and employees. This almost bimodal distribution is reflected in different sensitivities to the product price: students, who still live with their parents and are not concerned with food expenditure, are relatively price indifferent; entrepreneurs and employees, though affluent, pay more attention to the honey price.

Cluster 3 ($n = 276$, 38.1% of sample) was the cluster of *Gourmet and local Consumers*. They were quite ethnocentric, though not as consumers belonging to Cluster 1, and report the highest Willingness to Pay for honey with a certified local origin. Differently from other clusters, Cluster 3 was the most interested in the sensorial aspects of honey. Yet, they report the lowest consumption levels and do not value other drivers such as its price or the product packaging. They do not buy honey for its energetic use, nor for the product's safety or convenience: they simply buy it because they like it, from time to time. Most of the cluster was represented by women, and had a higher education (71% of them have a university degree); most of them (80% of the cluster) were aged between 30 and 50, and were mainly employees or teachers. People lived as couples or in families with one or two children, where the average cluster income was medium-high. They conduct a very healthy lifestyle and are mainly responsible for the household food expenditure.

Cluster 4 ($n = 209$, 28.8% of sample) was made of *Confused Consumers* and was the least "characterised". Consumers were indifferent to local origin, they had medium-low consumption levels, and low Willingness to Pay for certified honey. Even though they seem to consume honey for no apparent reason, they do pay some attention to the physical state of the product and its colour. Price or other packaging characteristics do not matter. This was the group with the highest share of females, and an average level of education (85% of the cluster has a high school diploma). There was a high concentration of housewives, office workers and teachers. Their income was low to medium (50% of them declare between 1,000 and 2,000 euros per month). The majority were in the 40–60 age group. They lived in fairly large households, the respondents were all responsible for spending, and their lifestyle overall was quite healthy. Being not ethnocentric, they rarely spend more to buy honey with a local origin certification.

5. Discussion

Throughout this analysis, we tested two different hypotheses. The first one states that ethnocentrism exists among honey consumers living in a small, sub-regional geographical area (Fernández-Ferrín *et al.*, 2020). Provided that even within a spatially restricted area, ethnocentrism can exhibit different intensities among local consumers, the second assumption explores if ethnocentrism is influenced by consumers' economic affluence (Balabanis and Siamagka, 2022; Good and Huddleston, 1995; Javalgi *et al.*, 2005; Orth and Firtasova, 2003; Sharma *et al.*, 1994).

To this purpose, we conducted a survey interviewing 725 customers of certified honey living in the Varese administrative area, one of the few PDO honey areas in Italy. We performed a Principal Component Analysis to extract relevant consumption drivers and then segmented consumers with regards to their socio-demographic characteristics and attitude toward certified honey.

The findings of this analysis allow us to confirm entirely the first hypotheses: The Principal Component Analysis extracts one factor, defined as *Ethnocentric/Certified*, that exhibits the highest share of variance, proving that ethnocentrism is well identified and is statistically significant. The Two-Step Cluster Analysis returned four different clusters: of these, Clusters 1 and 3 (Ethnocentric though impoverished consumers, and Gourmet and local consumers), that represent almost half of the entire sample, are characterised by ethnocentric preferences. Consumers belonging to Clusters 2 and 4 (Eager consumers, Confused

consumers respectively) are instead far from being ethnocentric: they are not sensitive to local origins and seem not to catch the quality cue represented by the PDO label. These findings thus prove the existence of ethnocentrism at the sub-regional level, and thus confirm the validity of our first testable hypothesis. We thus recommend adopting an ethnocentric perspective when interpreting consumer clusters of a PDO product also at sub-national levels (Fernández-Ferrín *et al.*, 2020).

As far as the second hypothesis is concerned, we observe that the two ethnocentric clusters have totally different socio-demographic and economic profiles. Cluster 1, which was also the smallest in terms of size, was the most ethnocentric yet the least affluent of all the clusters identified. Moreover, it was also characterised by low education levels. This finding is in line with the literature that observes a negative relation between income and ethnocentrism (e.g. Balabanis and Siamagka, 2022). Cluster 3, which was still quite ethnocentric, was instead represented by education and affluent consumers, who were also professionally successful. Hence, these findings suggest that the second hypothesis is only partially verified. The low-income status of Cluster 1 confirms the role that economic uncertainty can have on the desire to protect local economies that has been typically observed in the literature (e.g. Balabanis and Siamagka, 2022). Broadly speaking, low-income consumers feel more economically insecure and feel more compelled to protect domestic, or regional, production. Yet, these consumers have a low Willingness to Pay for locally certified honey. Despite their desire to support local production, we argue that these consumers, mainly retired or aged housewives with low educational levels, simply cannot afford to pay a price premium for a honey with a PDO certification. This result is partially in line with the implications of Yildiz *et al.* (2018), according to whom ethnocentric consumers might not actually exhibit the highest propensity to purchase local products.

Consumers belonging to Cluster 3 are wealthier than Cluster 1 consumers: despite being quite sensitive to PDO honey, they also value the product's sensorial characteristics and do not consider PDO certification as an essential driver of purchase. Overall, the different effects of income on ethnocentrism confirm only partially the validity of our second research question since ethnocentrism, though at lower intensities, can be still detected even among more affluent consumers. Individual economic conditions can thus be equally relevant antecedents of ethnocentric preferences that are worth supporting with dedicated marketing strategies.

In light of these results, we identify two different dimensions of ethnocentrism: one, that is more traditional and anchored to the at least potential desire to protect local territories. The second one is instead a modern view of the product that also attracts younger and more affluent consumer groups for whom PDO honey represents a preference good.

6. Marketing implications and conclusions

Our analysis has revealed that ethnocentrism at the sub-regional level exists also among honey consumers that live in the PDO area where honey is produced. Moreover, this analysis shows that ethnocentrism is indeed influenced by one's economic conditions: in particular, lower levels of disposable incomes are associated with a higher intensity of ethnocentric preferences. Yet, even affluent consumers can express preferences for local products.

In light of these heterogeneous consumption patterns and frequencies, dedicated marketing strategies can be tailored to reach the different clusters identified by our analysis.

Given the research questions of this analysis, it is appropriate to focus firstly on ethnocentric clusters (1 and 3). Cluster 3 is the most numerous (38% of the sample) with the highest latent consumption potential, having low consumption associated with a high Willingness to Pay and medium to high family income. Such features make this cluster the ideal target for the PDO honey, given its higher selling price. A possible strategy may be to

increase the frequency and habit of consuming honey, focusing on consumers' attention for its sensory properties. For this purpose, tasting itineraries could be useful. At the same time, a targeted campaign should nudge such consumers to increase consumption frequency, by showing, for instance, how honey can replace sugar in its various daily uses, without taste rebound. Consumers belonging to Cluster 1, despite being the most ethnocentric, are the least numerous group (10% of the sample). They are already heavy consumers, but they cannot afford to buy PDO honey. To further increase their honey consumption, it is necessary to direct them to lower priced non-PDO honey, but still of local origin. To accompany them in this transition, it is advisable to leverage their sensitivity to the nutritional, health and environmental characteristics of honey. The marketing strategy for Cluster 2 (*eager consumers*) should start from a demographic consideration: it brings together the youngest consumers in the sample. These consumers (be they students or employees/entrepreneurs) are the ones with the greatest consumption potential, in terms of time. For this reason, every promotional investment in this group will result in a return in the medium to long term. This cluster should be targeted with a campaign aimed at raising its willingness to pay from medium to high in the medium term. Even if its members show a rather unhealthy lifestyle, such a feature may be the target of a campaign promoting healthier habits, associated with high-quality honey consumption. The strategy for cluster 4 is based on some characteristics common to its members: their low to medium consumption level and Willingness to Pay, both constrained by medium to low income, the presence of many housewives, in large families. This suggests directing these consumers towards non-certified honey of medium-low price, making them aware of the use of honey for cooking and as an ingredient in baked goods.

Our analysis represents an attempt to empirically detect heterogeneities among local consumers of a PDO product, through the lens of ethnocentrism. In line with the literature on consumer ethnocentrism (Chamorro *et al.*, 2015; Di Vita *et al.*, 2013; Garavaglia and Mariani, 2017; Fernández-Ferrín *et al.*, 2020), we identified those consumer segments that, though within the same area of production, do not particularly value the local product and still embrace a rather traditional-oriented vision of PDO certifications. The detection of the different degree of attachment/valuation of consumer groups towards their local PDO (ethnocentrism) allows us to sketch more tailored marketing strategies. This is consistent and confirmed by our empirical results. In light of this finding, we developed possible marketing suggestions to further enhance the PDO attractiveness and its image, as well as to incentivise the purchase of PDO honey among less convinced consumers. While the present analysis contributes to the literature of ethnocentric perspective applied to consumer perception of PDO products at sub-national level, our findings refer only to honey, which is a niche product. A further test on the validity of the ethnocentric approach to the analysis of local consumption should be carried out on the most widespread and consumed PDO products within the population.

This consumer analysis suffers from some limitations. Given the spatially restricted area, we adopted a snowballing sampling technique to reach as many respondents as possible (Alaimo *et al.*, 2020; Sadler *et al.*, 2010) in an economical, efficient and effective way (Atkinson and Flint, 2001; Galati *et al.*, 2022). Though not probabilistic (Migliore *et al.*, 2020), the underlying sample stratification was designed to reflect the different population density over the different areas of the Varese province. Also, this analysis adopts a sub-regional lens to explore ethnocentric preferences, within a limited geographical area and with regards to a specific product. In order to prove the validity of our approach and findings, future research efforts should explore ethnocentrism on representative samples and perform cross-country or sub-regional comparisons on different area-PDO pairs (Fernández-Ferrín *et al.*, 2020; Sharma *et al.*, 2022). These analyses would also improve consumers' and farmers' awareness of the value of products with a local certification.

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Corresponding author

Daniele Cavicchioli can be contacted at: daniele.cavicchioli@unimi.it