Motives towards traceable food choice: A comparison between French and Italian consumers

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Davide Menozzi * [a], Rafia Halawany-Darson [b], Cristina Mora [a], Georges Giraud [c]

[a] University of Parma, Department of Food Science, Via Kennedy 6, 43125 Parma (Italy).

[b] VetAgro Sup, Campus Agronomique de Clermont, 89 Avenue de l'Europe - BP35, F-63370 Lempdes (France).

[c] Agro-Sup, 26 Boulevard Dr Petitjean – BP 87999, 21079 Dijon Cedex (France).

* corresponding author: Davide Menozzi, University of Parma, Department of Food Science, Via Kennedy 6, 43125 – Parma (Italy), email: davide.menozzi@unipr.it; tel. +39 0521 902519; fax: +39 0521 902498.

Abstract

Food traceability standards aim to reduce the risk of food-borne disease by facilitating the withdrawal of food and feed products and to provide consumers with targeted information. This paper analyses consumers' attitude and behaviour towards traceable food in two different European countries: Italy and France. A survey has been conducted on two samples of Italian (n=503) and French (n=501) consumers, aiming to explain the intention toward purchasing traceable food using the theory of planned behaviour (TPB). The predictive power of the TPB model significantly increases in both countries when new variables are added: habits, trust, past behaviour and socio-demographics. The results show that attitudes drive the intention to purchase traceable chicken and honey in France. Trust affects the intention to purchase traceable chicken and honey in Italy. These findings may serve to target public interventions and private strategies towards food traceability.

Keywords: food traceability; theory of planned behaviour; chicken; honey; trust; habits.

Highlights

- A positive attitude towards traceable food was detected in France and Italy.

- Intention to buy traceable chicken is higher compared to traceable honey.
- Trust and attitude are the main drivers of behavioural intentions.
- Habits, trust, past behaviour and socio-demographics increase prediction of TPB.
- Differences were found between countries and products.

1. Introduction

Food scares such as the Bovine Spongiform Encephalopathy (BSE), avian flu and tainted milk powder have affected consumers' confidence and have increased the demand for verified and guaranteed food quality and safety information. The European Union's General Food Law[1] introduced an integrated approach aiming to guarantee food safety "from farm to table", specifying mandatory traceability requirements in the European food industry since January 2005 (Charlier & Valceschini, 2008). Similarly, to address concerns related to food terrorism, the US Food and Drug Administration (FDA) issued the 2004 Food Bioterrorism Regulation for the establishment and maintenance of records to track commodity flows one step forward and one step backward (Nganje, Dahl, Wilson, Mounir & Lewis, 2007). Although these mandatory requirements aim to facilitate the withdrawal of unsafe or risky food to prevent frauds and to improve consumer confidence, they do not deliver any information to consumers about the products they are buying. An improved traceability system that is able to organise the information transmission throughout the entire supply chain would be more efficient in ensuring both sanitary security and consumers' information; however, it would be more costly, requiring some level of supply chain management and product labelling (Charlier & Valceschini, 2008). Additional compulsory traceability schemes have been introduced in the EU in specific food sectors that were linked to past scandals, such as beef (Menozzi, 2006) and fish (Asioli, Boecker & Canavari, 2011). Other schemes for voluntary traceability and labelling have been introduced by national standard organisation and legislations (Banterle, Stranieri & Baldi, 2006). Given this fragmented policy framework, consumers' attitudes towards and intention to purchase traceable food is a key element for both industries and policy makers.

Food traceability has received growing attention in the evaluation of consumers' perception and incentives towards traceable food. By increasing food chain transparency (van Rijswijk, Frewer,

[1] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

Menozzi & Faioli, 2008; Chrysochou, Chryssochoidis & Kehagia, 2009; Chen & Huang, 2013), traceability is expected to improve consumer confidence in the food system, especially if associated with other quality assurance schemes (Hobbs, Bailey, Dickinson & Haghiri, 2005; Verbeke & Ward, 2006). Both quality and safety were shown to be related to traceability in consumers' minds (Giraud & Halawany, 2006; van Rijswijk et al., 2008; van Rijswijk & Frewer, 2008; Mora & Menozzi, 2008). Origin, increased prices, production methods, quality guarantee and best before date are the main attributes associated to traceability, whilst its main benefits are food safety, health, naturalness, quality, trust, control guarantee and environmental protection (Dickinson & Bailey, 2002; Giraud & Amblard, 2003; Miles, Ueland & Frewer, 2005; Verbeke & Ward, 2006; Giraud & Halawany, 2006; van Rijswijk et al., 2008; Lichtenberg, Heidecke & Becker, 2008; Mora, Menozzi, Faioli, Frewer & van Rijswijk, 2009; Mai, Bogason, Arason, Árnason & Matthíasson, 2010). Traceability perception is a product-specific issue, mostly because of different perceived risks across different products, where traceability is expected to carry more weight for fresh produce (Dickinson & Bailey, 2002; Hobbs et al., 2005; van Rijswijk et al., 2008; Menozzi, Mora, Faioli, Chryssochoidis & Kehagia, 2010; Wu, Xu & Gao, 2011). Cross-national differences in traceability perception were also observed (Giraud & Halawany, 2006; van Rijswijk et al., 2008; Cicia & Colantuoni, 2010). Although consumers' perception of food traceability has been studied in the past, little is known about consumers' intention to purchase traceable food or the main psychosocial determinants of these intentions.

This research aims to examine the attitude towards and intention to buy traceable food, as well as to identify the determinants of traceable food purchasing in France and Italy using the theory of planned behaviour (TPB) as a conceptual framework. These two countries were selected because several studies related to food traceability have shown that Italian consumers are strongly concerned with safety issues related to food chain controls and recall possibilities, whilst French consumers are more interested in quality aspects linked to quality labels and indication of origin (Bernués, Olaizola & Corcoran, 2003; van Rijswijk et al., 2008). Thus, the determinants of intention to

84 purchase traceable food in these two countries may reflect these differences in traceability
85 perception. Two different products were considered—chicken and honey—that have both
86 differences (e.g., production, consumption) and similarities (e.g., importance of traceability) to
87 evaluate how the determinants of intention to purchase traceable food differ between them. As a
88 fresh meat product, chicken raises sensitive issues with respect to traceability, such as concerns
89 about safety, freshness, and origin, especially after the dioxin crisis in Belgium in 1999 and the
90 major avian flu outbreak in 2005 (Mancini, 2005; Mazzocchi, Lobb, Traill & Cavicchi, 2008;
91 Vukasovič, 2009). Although considered by consumers as safe and healthy, honey is also a sensitive
92 case with respect to traceability: it is a processed and tradable food that might be blended after
93 collection. Thus, concerns about safety and origin are also present in the case of honey. The
94 frequency of consumption is high for chicken, where in Italy the yearly per capita consumption is
95 12 kg (U.N.A., 2011) whilst in France it is 15 kg (Agreste, 2012). On the contrary, Italy and France
96 report the lowest per capita consumption of honey in Europe: approximately 600 g per year in each
97 country, against 1.5 kg in Germany and 800 g in England (France-Agrimer, 2011; Unaapi, 2012).
98 Finally, these two cases have also been chosen because voluntary traceability and labelling schemes
99 have been developed in Italy for poultry meat[2] and honey[3], whereas in France, voluntary traceability
100 schemes for poultry meat were established under the quality logo "Label Rouge[4]", and under the
101 labelling system for honey[5]. Given these features, we can expect significant differences in
102 purchasing determinants between products and countries.
103
104 **2. The theoretical framework**

[2] Ministerial Decree of 29/07/2004. Rules for the application of a voluntary system of labeling of poultry meat, issued by the Minister of Agriculture and Forestry, Official Journal of the Italian Republic n° 241, October 13, 2004.
[3] Legislative Decree 21 May 2004, n. 179. Implementation of Directive 2001/110/EC concerning the production and marketing of honey, Official Journal of the Italian Republic n° 168, July 20, 2004.
[4] French Rural Code, art. R641-1, Decree No. 2007-30 of 05/01/2007, Official Journal of the French Republic of January 7, 2007.
[5] Decree no. 2003-587 of 30 June 2003. Practical guidelines for beekeeping. application of the article L. 214-1 of the consumption code concerned with honey. Official Journal of the French Republic of July 2, 2003.

105 The theory of planned behaviour (TPB) suggests that the likelihood of a particular behaviour can be
106 predicted by the individual's intention to perform that behaviour (Ajzen, 1991). Intention captures
107 the motivational factors that influence behaviour, e.g., to purchase traceable food. According to the
108 TPB, behaviour is guided by favourable or unfavourable evaluation of the behaviour (attitudes
109 towards the behaviour), perceived social pressure (subjective norms) and perceived ability to
110 perform the behaviour (perceived behavioural control, PBC). In general, the more favourable the
111 attitude and subjective norm, and the greater the perceived control, the stronger the intention to
112 perform a given behaviour should be (Ajzen, 1991). TPB has proved to be a successful analysis tool
113 for eating behaviours associated with risky or health-related actions (Lobb, Mazzocchi & Traill,
114 2007; Mullan, Wong & Kothe, 2013). Because traceability is related to both food quality and safety
115 perceptions and to consumers' health (van Rijswijk et al., 2008), the TPB was used in this paper to
116 predict intention to purchase traceable food.
117 Although the TPB has been satisfactorily applied in predicting intentions and behaviour in many
118 fields (Armitage & Conner, 2001; Conner & Sparks, 2005), it may not necessarily capture all of the
119 predictors of more complex behaviour such as food choices. Other concepts have extended the TPB,
120 improving its descriptive and predictive power in the literature. For food purchases, behaviour may
121 not only be the result of planned intentions, but it may also become habitual. Several studies have
122 suggested that past behavioural frequency and habit strength may be important predictors of future
123 behaviour. If past behaviour can be considered a frequency measure (Honkanen, Olsen &
124 Verplanken, 2005), habit is a psychological construct involving both repetition and automaticity
125 (Ouellette & Wood, 1998; Verplanken & Orbell, 2003). It was found to have significant effects on
126 food intentions and consumption in many health-related circumstances, such as fruit (De Bruijn et
127 al., 2007; De Bruijn, 2010; Menozzi & Mora, 2012), fish and seafood consumption (Honkanen et
128 al., 2005; Verbeke & Vackier, 2005) and binge drinking (Norman & Conner, 2006; Norman, 2011).
129 The information asymmetry and barriers preventing consumers from making their own risks
130 assessments of food hazards, raise the importance of trust in evaluating the labelled information and

safety certifications provided by producers, retailers, public authority or other sources (Lobb et al., 2007; Stefani, Cavicchi, Romano & Lobb, 2008; Mazzocchi et al., 2008). The implementation of food traceability systems and the existence of control throughout the food chain may result in an improvement of consumers' trust and confidence (van Rijswijk et al., 2008; Bosona & Gebresenbet, 2013; Chen & Huang, 2013).

The influence of socio-demographic variables on food traceability perception is not clear in the literature. Verbeke & Ward (2006) found that older and female consumers gave more importance to the quality guarantee scheme associated with traceability, whereas young consumers were the least interested in the country of origin of beef. Lobb et al. (2007) found that age, income and education have a significant impact on trust in information as provided by alternative sources, whilst Mazzocchi et al. (2008) found no relationship between socio-demographic variables and consumer trust in food safety information.

The present study attempts to first test the TPB model by measuring the beliefs that underlie attitude, subjective norms, and PBC and how they influence intentions to purchase traceable food. Second, it tests the efficacy of an extended TPB model in predicting intentions, incorporating variables such as trust, past behaviour (frequency of purchase), habits and socio-demographics, which may capture a significant proportion of variance in the intention to purchase traceable food. This approach adds knowledge to the current literature, providing further evidence of the role of psychosocial determinants (attitude, subjective norms, PBC, trust and habits) and socio-demographic variables in the explanation of food-related behaviours, i.e., intention to purchase traceable food.

3. Methods

3.1 Data collection

A survey was conducted in November 2006 in Italy and France on 520 respondents in each country, via face-to-face interviews. In all cases, the sampling unit was the household and the respondent

was the person above 18 years old responsible for food purchases. Respondents that consumed chicken or honey less than once a year or never were excluded. Half of the questionnaires administered were related to traceable chicken and half were related to traceable honey. The interviews took approximately 30 minutes to complete. At the beginning of the questionnaire, it was emphasised clearly that the research was not for commercial purposes and was financed by the European Union. To address response biases due to the response process itself, the question ordering was changed in each interview to avoid any influence that ordering could exert over respondents' answers. To reduce the social desirability bias, the questionnaire was also tested and questions were defined, avoiding the implication that the respondent should know the answer to a particular question. Moreover, interviewers verbally emphasised that they were only interested in respondents' opinions about the consumption and purchase of food products, that there were no correct or incorrect answers and that the data would be treated confidentially and analysed together with those of other participants.

In Italy, consumers were recruited through a stratified cluster sampling, with systematic random selection of the sampling units inside each cluster; in-home interviews were conducted by trained personnel of the University of Parma in 11 cities and 15 villages, providing a country representativeness subdividing population into locations (four geographical areas: North-West, North-East, Center and South/Islands). Consumers were recruited to meet the quota of age and education in the four areas of the Italian population as described by ISTAT (Italian National Institute of Statistics). In France, participants were recruited using published announcements in two local journals and flyers distributed in mailboxes. They were selected to respect the national quotas of age, education, and gender based on INSEE data (National Institute of Statistics and Economic Studies). A small gift was offered to all respondents at the end of the interviews in both countries. After removing the incomplete and invalid questionnaires, the final sample consisted of 1,004 consumers, with 503 in Italy (258 for chicken and 245 for honey) and 501 in France (251 for chicken and 250 for honey). The socio-demographics of the two samples are shown in Table 1.

- Table 1 about here -

As major food purchasers, a total of 62% of respondents in France and 74% of respondents in Italy were female. The respondents under 31 years old (28%) and between 41-50 years old (25%) were more represented in the sample from Italy compared to national statistics, while consumers over age 60 were less represented (15%). In Italy, respondents with primary education were less represented (9%), while those with tertiary education were more represented (25%). Household size (2.5 members), number of children per household (0.4 members under age 18) and income (median value between euro 1,500 and euro 2,000) were instead in line with national statistics in Italy. Household size was significantly higher in the Italian sample than in the French sample ($p<0.001$). In France, the age distribution of the sample was slightly overrepresented compared to the national data. Concerning the educational level of the respondents, primary and secondary education were less represented while tertiary education was more represented compared to national statistics. As in the Italian case, this correlates to the selection criteria for the respondents of this study; given the difficulty of the questionnaire, it was decided to select more respondents with higher level of education. The rest of the demographic characteristics of French respondents corresponded to national statistics.

Chicken was purchased several times a month for 43% of the French sample, and at least once a week for 25%. In the Italian sample, the frequency of purchase was significantly higher, where 34% purchased chicken several times a month, and 49% purchased chicken at least one a week. As expected, the frequency of purchase of honey was lower in both countries; however, French respondents mostly buy honey once every three or four months (32%), while 49% of respondents in Italy bought honey only once or twice per year.

3.2 Model measures

209 Traceability alone does little to reduce consumers' information asymmetry with respect to quality
210 attributes (Hobbs et al., 2005). Therefore, at the beginning of the questionnaire, we provided
211 consumers with two definitions of traceable chicken and traceable honey to develop a common
212 background among respondents about the concept analysed. Traceable chicken was defined as "a
213 chicken for which unique details are available by which it can be identified. For example,
214 information is available about its producer, the production process of the chicken (e.g., feed, rearing
215 conditions, treatments), country and region of origin, and a certification that this information can be
216 trusted. This chicken can be traced back to the specific farm on which it was raised". Traceable
217 honey was defined as "a honey for which unique details are available by which it can be identified.
218 For example, information is available about its producer, the production process of the honey (e.g.,
219 water content, if it includes pollen, addition of various sugars, heating temperature, mixing with
220 other honey), country and region of origin, and a certification that this information can be trusted.
221 This honey can be traced back to its producer (beekeeper)".
222 The questionnaire items were defined, taking into account Ajzen's conceptual and methodological
223 considerations for constructing a TPB questionnaire (Ajzen, 1991; 2006) and the previous findings
224 on similar topics (e.g., Honkanen et al., 2005; Verbeke & Vackier, 2005; Giraud & Halawany,
225 2006; van Rijswijk et al., 2008; van Rijswijk & Frewer, 2008). It was designed using a back-
226 translation method to avoid semantic variance between countries. Then, a pilot study (n=60) was
227 implemented in each country to verify the internal consistency of the constructs and to shape the
228 final version of the questionnaire. All items were scored on a 7-point Likert scale (1="totally
229 disagree", 7="totally agree").
230 Attitude towards purchasing traceable chicken/honey was assessed with seven items (e.g., traceable
231 chicken/honey, in comparison to other chicken/honey now available in stores, will likely be:
232 healthier, tastier, more expensive, of known origin, safer, of more satisfying quality, guaranteed for
233 being controlled). We formulated five different questions to obtain a measure of perceived
234 subjective norms towards purchasing traceable chicken/honey among family and friends, doctors

235 and nutritionists, media, the food industry, and other important people. Perceived behavioural
236 control was assessed with six items (e.g., regarding the identification of additional information
237 about the production process and origin of this chicken/honey: "looking for/understanding that it
238 will be easy to do", "I will feel confident when doing it", "I will be able to do it without help from
239 others"). Behavioural intention was measured by three items: "I intend to buy this chicken/honey",
240 "I will search for this chicken/honey when I next go shopping for food" and "It is important to me
241 to buy this chicken/honey when I make my next food purchase".
242 To measure habits, respondents indicated to what extent they agreed with ten statements, such as:
243 "When I buy chicken/honey I look for information about the farmer/the production process/the
244 country and region of origin/the existence of a certificate; I do so frequently, I do so automatically, I
245 do so as is typical of my behaviour". Trust in traceable food was measured with three items: "I
246 believe this chicken/honey can be traced back to its producer (farmer/beekeeper)", "I trust the
247 information provided about production process and origin" and "If the information for this
248 chicken/honey is certified I trust it to be genuine".
249 We first tested the TPB model, as defined by Ajzen (1991), where intention to purchase traceable
250 food is determined by attitudes, subjective norms and PBC. Then, we tested an extended version of
251 the TPB model introducing habits, trust, past behaviour (frequency of consumption) and socio-
252 demographic variables (i.e., income, age, gender, household size, number of children in household
253 and education) as predictors of the intention to purchase traceable food. The model structure is
254 shown in Figure 1, where the grey variables refer to the TPB and the white ones add to the former
255 in the extended TPB model.
256
257 - Figure 1 about here -
258
259 A structural equation model (SEM) technique was employed on the data collected to test the
260 relative importance of intention determinants. A multi-group analysis was also conducted for each

product to test for differences between countries. SEM allows for the specification of model structure with both latent and observed variables; latent variables, i.e., abstract phenomena that cannot be directly measured by the researcher, have been analysed using confirmatory factor analysis (Byrne, 2010). Confirmatory factor analysis (CFA), often referred to as the measurement model, is used when the researcher has some knowledge of the underlying latent variable structure or wishes to evaluate a priori hypotheses driven by theory. The links between the TPB constructs (circles) and questionnaire items (rectangles) represent the measurement model in Figure 1. The internal consistency of the latent variables has been assessed by the Cronbach's α coefficient. Relations between the latent variables identify the structural model. The use of different goodness-of-fit indices is generally recommended to test how well the observed data fit the model. Model fit was assessed with chi-square, normalised by degrees of freedom (χ^2/df), comparative fix index (CFI) and root mean square error of approximation (RMSEA). The coefficient of determination R-square was used to measure the explained variance of the endogenous variable (intention). The models were estimated using maximum likelihood procedures.

4. Results

The results showed a general positive attitude towards traceable food in both countries (Table 2). French and Italian respondents thought that traceable chicken and honey would likely be of a known origin, more controlled, safer and of more satisfying quality than their standard non-traceable counterparts. Consumers from both countries also thought that these products would be more expensive but have almost the same taste as the standard products. At the same time, we found differences in single attitude items between countries: in Italy, respondents thought that traceable chicken would likely be safer and healthier than other chicken more than respondents did in France ($p<0.001$) and that traceable honey would likely be safer, healthier and more expensive than other honeys ($p<0.001$). In France, respondents thought that traceable honey would likely be of known origin more so than other honeys ($p<0.01$).

287

288 - Table 2 about here -

289

290 Italian respondents perceived more subjective norms and behavioural control towards purchasing
291 traceable chicken and honey compared to French respondents. People in both countries generally
292 agreed that they would intend to buy traceable chicken and honey in their next food purchases
293 (Table 2). However, the intention to buy traceable chicken and honey was significantly higher in
294 Italy for all items compared to France. At the same time, the intention to search for, and the
295 importance of buying traceable chicken was significantly higher than was observed for these
296 aspects of traceable honey in both countries ($p<0.05$). In general, consumers in both countries
297 trusted the traceability information and procedures associated with chicken and honey. French
298 consumers, in particular, believed more than Italian consumers that traceable honey and chicken
299 could be traced back to its producer. French consumers showed a stronger habit to look for
300 information about the producer and origin of honey ($p<0.001$) and about the production process and
301 certificate of chicken ($p<0.001$) than did Italian consumers.
302 Table 3 provides the standardised loadings and Cronbach's alpha coefficients. The standardised
303 factor loadings are all significant with $p<0.001$ and show a high degree of intensity (0.50 or higher).
304 The reliabilities of the scales in the measurement model are confirmed by the alpha coefficient
305 values higher than the recommended level of 0.70; in other words, the type and the number of items
306 included in the analysis provided an accurate measure of the constructs.

307

308 - Table 3 about here -

309

310 Table 4 shows the results of multi-group analysis for traceable chicken and honey. The results show
311 that both models provide a good fit to the data.

312

313 - Table 4 about here -

314

315 The TPB model shows R-square values for the intention to purchase traceable chicken of 0.60 in
316 France and 0.28 in Italy; this means that, respectively, 60% and 28% of the variance of intention
317 can be explained by the TPB variables in French and Italian sub-samples. Attitude is the main
318 determinant of the intention to purchase traceable chicken in both countries (France: β = 0.44; Italy:
319 β = 0.36), followed by PBC (France: β = 0.27; Italy: β = 0.20), and subjective norm in France (β =
320 0.24).
321 The TPB model is able to explain 37% and 30% of the intention to purchase traceable honey in the
322 French and Italian sub-samples, respectively. Attitude is the main determinant of intention in both
323 countries (France: β = 0.43; Italy: β = 0.32), while PBC is the second main predictor of intention in
324 Italy (β = 0.27). Subjective norms are also significant determinants in both countries (France: β =
325 0.18; Italy: β = 0.17).
326 The explained variance of intention to purchase traceable chicken increases to 65% in France and to
327 43% in Italy when the TPB model is extended with habits, trust, past behaviour (frequency of
328 purchase) and socio-demographic variables. Attitudes (β = 0.46), subjective norms (β = 0.20) and
329 PBC (β = 0.19) are still significant drivers of intention in France. Habits of searching for additional
330 information about the products' country of origin, production process, certificates, etc., are also
331 significant determinants of the intention to buy traceable chicken in France (β = 0.16). Trust is the
332 main determinant of the intention to purchase traceable chicken in Italy (β = 0.41), whilst attitude is
333 not a significant predictor of intention in this case. PBC (β = 0.14) and habits (β = 0.15) affect the
334 intention to purchase traceable chicken in the Italian sub-sample with a lower strength than trust,
335 however. Household size, which is significantly higher in the Italian sample, negatively affects the
336 intention to purchase traceable chicken in Italy (β = -0.13).
337 The picture is quite different regarding traceable honey. R-square values for the intention to
338 purchase traceable honey are 0.44 in France to 0.48 in Italy, showing a significant improvement of

339 the predictive power of the model in both countries when other variables are included. Trust is the
340 main driver of intention in both countries (France: β = 0.29; Italy: β = 0.45), followed by attitude in
341 France (β = 0.27), which is not significant in Italy. Subjective norms are relatively more important
342 in Italy (β = 0.16), although they are significant in France, too (β = 0.13). Habits of searching for
343 additional information play a minor but significant role in explaining the intention to buy traceable
344 honey in Italy (β = 0.16). PBC is not a significant predictor in both sub-samples, while past
345 behaviour (i.e., frequency of purchase) positively affects the intention to purchase traceable honey
346 in Italy (β = 0.13), and the number of children in household has a significant effect in France (β =
347 0.14).
348
349 **5. Discussion**
350 Consumers could benefit from improved traceability through a reduction in the risk of unsafe food
351 and a reduction in information asymmetry as they are supplied with more information. The
352 objectives of this study were to investigate the attitude towards and intention to purchase traceable
353 chicken and honey in France and Italy, to identify the main determinants of intention using the
354 theory of planned behaviour (TPB) framework (Ajzen, 1991) and to extend the TPB model by
355 incorporating new variables.
356 Our study has shown that knowing the origin of meat is the item with the highest connection to
357 traceable chicken in both countries; other studies have demonstrated that country of origin is an
358 important factor that influences the consumer decision process. As suggested by Vukasovič (2009),
359 the increasing importance of meat origin may be related to the outbreak of the avian influenza in the
360 poultry meat market, which has caused consumers to mistrust the quality of meat from foreign (or
361 unknown) origins and has promoted consumers' trust in the quality and safety of domestic poultry
362 meat. The results show differences between countries on single attitude item scores, in line with van
363 Rijswijk et al. (2008); the strongest concern for safety was indicated by Italian consumers, while

364 French consumers were more concerned with quality attributes such as quality labels and indication
365 of origin.
366 The observation that the intention to buy traceable chicken is greater than the intention to buy
367 traceable honey may be due to the influence played by the recent avian influenza scare (Mancini,
368 2005). Additionally, the respondents may be more confident about their purchases of honey, a sweet
369 unprocessed food, often perceived as safer than fresh meat. Thus, in this case, concerns about safety
370 and origin were more significant in shaping the intention to purchase traceable chicken than the
371 intention to purchase traceable honey. Similarly, Wu et al. (2011) found that Chinese consumers
372 expressed heterogeneous preferences for different types of traceable products. The results have also
373 shown that the intention to purchase traceable foods is higher in Italy. This is may be because
374 Italian consumers assume that traceable chicken and honey are safer than standard products, which
375 encourages them to purchase traceable food with safety as their main concern (van Rijswijk et al.,
376 2008), and that French consumers think that traceable chicken is more expensive than the other
377 products, which discourages them from buying traceable chicken.
378 When new variables (i.e., habits, trust, past behaviour and socio-demographics) are added to the
379 TPB variables, the predictive power of the model increases in both countries. In Italy, the explained
380 variance sharply increases by 15% for chicken (from 28% to 43%) and 18% for honey (from 30%
381 to 48%). In France, adding new variables to the TPB model raised the R-squared values, producing
382 a 5% boost in explained variance for chicken (from 60% to 65%) and 7% for honey (from 37% to
383 44%). These results are satisfactory because research from 185 independent studies found that the
384 TPB variables, on average, accounted for 39% of the variance in intention (Armitage & Conner,
385 2001). However, this study suggests that when food purchasing behaviour is related to food quality,
386 safety perceptions and consumers' health, adding trust and habits, as well as socio-demographic
387 variables, may significantly increase the model's prediction of intention.
388 The identification of the main determinants of intention to purchase traceable food, considered an
389 antecedent of behaviour, has many implications for the choice of appropriate intervention to

promote traceable food in Italy and France. Generally speaking, the greater the relative weight of a given factor, the more likely it is that changing that factor will influence intentions and behaviour (Ajzen, 1991). Consumers' attitude towards traceable chicken is the main determinant of intention to buy in the French sub-sample, whereas subjective norms and perceptions of behavioural control contribute relatively little. It would seem reasonable to direct the intervention to attempt making attitudes towards the behaviour more favourable, such as with informative campaigns, thus having effects on intentions and, consequently, behaviour. Positive attitudes towards traceable foods make up a good starting point; however, a positive attitude does not always result in the desired behavioural intention because many other factors determine the decision-making process.

Italian consumers are more driven by trust in the effectiveness of the traceability system, i.e., beliefs and trust that traceable food can be traced back to its producer, trust in the information provided about production process and origin, and confidence that information about traceable food is genuine if the information is certified. Interestingly, when trust is added to the model, attitude becomes insignificant both in the case of poultry and in the case of honey. This means that, for Italian consumers, trust in the traceability of the food system nulls the effect of other attitudinal traceability benefits, such as knowing the origin of food, buying tastier and higher quality food, etc. Trust is an important predictor of the intention to buy traceable honey in France as well, but attitude is still a significant factor. The Italian case relates to the need for security and food safety required by Italian consumers, which have already been shown in other studies (van Rijswijk et al., 2008; Mora et al., 2009), especially in the presence of food scares (Mazzocchi et al., 2008). Thus, improving attitudes with more information on traceable chicken could be insufficient to increase the intention to purchase it, and interventions should be targeted at improving consumers' trust in food safety policies. For instance, Mazzocchi et al. (2008) found that a successful food safety campaign depends on the information source; food chain actors are especially trusted in France, and experts, such as doctors and EFSA scientists, are more trusted in Italy. Stefani et al. (2008) also found that trust in food chain actors is important in reducing the level of perceived risk and therefore

416 increasing the intention to buy chicken in Italy. For these reasons, we can argue that increasing the
417 level of control throughout the supply chain, such as with integrated supply chains, may improve
418 the level of trust of consumers and consequently their intention to purchase traceable food.
419 Several food-related studies have argued that the subjective norm component is rarely able to
420 predict intention, and so have removed it from analysis (Armitage & Conner, 2001; Honkanen et
421 al., 2005). However, the present study has demonstrated that what family, doctors, nutritionists and
422 other people important to the respondents believe may have a significant effect on respondents'
423 intentions to buy traceable chicken in France and traceable honey in both countries. In this case, the
424 opinions of family, practitioners and nutritionists may have a significant role in communicating the
425 properties of traceable food to consumers and in shaping consumers' intentions to buy it.
426 This study has also demonstrated that past behaviour (i.e., frequency of purchase) and habits
427 influence intention. In particular, past behaviour positively affects the intention to buy traceable
428 honey in Italy, where the purchase frequency is slightly lower compared to the France sample. This
429 means that in Italy traceable honey is more appreciated by those who frequently purchase honey.
430 Other studies found habit to be a strong predictor of health-related food and drink consumption
431 (Ouellette & Wood, 1998; Verbeke & Vackier, 2005; De Bruijn et al., 2007; De Bruijn, 2010;
432 Norman, 2011; Menozzi & Mora, 2012), and also demonstrated that past behaviour might in fact
433 function as a priming effect on future intention (Norman & Conner, 2006; Honkanen et al., 2005).
434 In future studies on food consumption, independent measures of habit strengths are strongly
435 recommended.
436 The present study has shown that few socio-demographic variables are statistically significant
437 predictors of intention to purchase traceable food. Household size in Italy and the number of
438 children in household in France affect consumers' intention to purchase traceable chicken and
439 honey. Although these results are not consistent across countries, they would suggest that supply
440 chain actors target these socio-demographic groups, e.g., families with children in France and

small-size families in Italy, for tailored communication and marketing strategies related to traceable honey and chicken, respectively.

This study also confirms that traceability perception is a product-specific and a country-specific issue. It also shows that preferences in purchasing traceable food may depend on food scares or safety hazards affecting specific food chains. Moreover, improving consumers' attitudes towards traceable food may not be sufficient to increase their intention to buy traceable products: trust in traceability systems has also been found to be an important variable in this context. Therefore, public policies and marketing strategies should be targeted differently between products and between countries, taking into account cultural and socio-demographic differences. In other words, this research shows the need for food safety and traceability issues to be addressed by specific (vertical) regulations.

The main limitation of this study is that actual behaviour, i.e., traceable food purchase, is not reported. Although intentions may account for considerable variance in actual behaviour, as suggested by Ajzen (1991; 2006), further research may investigate traceable food purchase behaviour, by means of experimental auctions or in-store observations, for example.

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469 **References**

470 Agreste (2012). *Statistique agricole*. Paris: Ministère de l'Agriculture et de l'Alimentation.
471 Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision*
472 *Processes, 50*, 179-211.
473 Ajzen, I. (2006). *Constructing a TpB questionnaire: Conceptual and methodological*
474 *considerations*. Retrieved from: http://people.umass.edu/aizen/tpb.html.
475 Armitage, J.C., & Conner, M. (2001). Efficacy of the Theory of Planned Behaviour: A meta-
476 analytic review. *British Journal of Social Psychology, 40*, 471–499.
477 Asioli, D., Boecker A., & Canavari M. (2011). Perceived Traceability Costs and Benefits in the
478 Italian Fisheries Supply Chain, *International Journal on Food System Dynamics*, *2*(4), 357-375.
479 Banterle, A., Stranieri, S., & Baldi, L. (2006). Voluntary traceability and transaction costs: An
480 empirical analysis in the Italian meat processing supply chain. In M. Fritz, U. Rickert, & G.
481 Schiefer (Eds), *Trust and Risk in Business Networks* (pp. 565-573). Bonn (Germany): Universitat
482 Bonn - Ilb Press.
483 Bernués, A., Olaizola, A., & Corcoran K. (2003). Labelling information demanded by European
484 consumers and relationships with purchasing motives, quality and safety of meat. *Meat Science, 65*,
485 1095-1106.
486 Bosona, T., & Gebresenbet, G. (2013). Food traceability as an integral part of logistics management
487 in food and agricultural supply chain. *Food Control, 33*, 32-48.
488 Byrne, B.M. (2010). *Structural equation modeling with AMOS. Basic concepts, applications and*
489 *programming*. New York: Routledge - Taylor & Francis Group.
490 Charlier, C., & Valceschini, E. (2008). Coordination for traceability in the food chain. A critical
491 appraisal of European regulation. *European Journal of Law and Economics, 25*(1), 1-15.

492 Chen, M.-F., & Huang, C.-H. (2013). The impacts of the food traceability system and consumer
493 involvement on consumers' purchase intentions toward fast foods. *Food Control, 33*, 313-319.
494 Chrysochou, P., Chryssochoidis, G., & Kehagia, O. (2009). Traceability information carriers. The
495 technology backgrounds and consumers' perceptions of the technological solutions. *Appetite, 53*,
496 322–331.
497 Cicia, G., & Colantuoni, F. (2010). Willingness to Pay for Traceable Meat Attributes: A Meta-
498 analysis. *International Journal of Food System Dynamics, 3*, 252-263.
499 Conner, M., & Sparks, P. (2005). Theory of Planned Behaviour and Health Behaviour. In M.
500 Conner, & P. Norman (Eds). *Predicting Health Behaviour* (pp. 170-222). Maidenhead (UK): Open
501 University Press.
502 De Bruijn, G-J. (2010). Understanding college students' fruit consumption. Integrating habit
503 strength in the theory of planned behaviour. *Appetite, 54*, 16–22.
504 De Bruijn, G-J., Kremers, S.P.J., De Vet, E., De Nooijer, J., Van Mechelen, W., & Brug, J. (2007).
505 Does habit strength moderate the intention–behaviour relationship in the Theory of Planned
506 Behaviour? The case of fruit consumption. *Psychology and Health, 22*(8), 899–916.
507 Dickinson, D.L., & Bailey D. (2002). Meat Traceability: Are U.S. Consumers Willing to Pay for It?
508 *Journal of Agricultural and Resource Economics, 27*(2), 348-364.
509 France-Agrimer (2011). *Programme apicole 2011-2013*. Paris: Ministère de l'Agriculture et de
510 l'Alimentation.
511 Giraud, G., & Amblard, C. (2003). What does traceability mean for beef meat consumer? *Sciences*
512 *des Aliments, 23*(1), 40-46.
513 Giraud, G., & Halawany, R. (2006). Consumers' Perception of Food Traceability in Europe. In
514 *International Food & Agribusiness Management Association Symposium*. June 10-11, 2006.
515 Buenos Aires (Argentina). Retrieved from:
516 https://www.ifama.org/events/conferences/2006/cmsdocs/1066_Paper.pdf.

517 Hobbs, J.E., Bailey, D., Dickinson, D.L., & Haghiri, M. (2005). Traceability in the Canadian red
518 meat sector: Do consumers care? *Canadian Journal of Agricultural Economics, 53(1),* 47-65.
519 Honkanen, P., Olsen, S. O., & Verplanken, B. (2005). Intention to consume seafood – the
520 importance of habit. *Appetite, 45*, 161-168.
521 Lichtenberg, L., Heidecke, S.-J., & Becker, T. (2008). Traceability of meat: Consumers´
522 associations and their willingness-to-pay. Proceedings from 12th Congress of the European
523 Association of Agricultural Economists. August 26-29, 2008. Ghent (Belgium). Retrieved from
524 http://purl.umn.edu/43951.
525 Lobb, A.E., Mazzocchi, M., & Traill, W. B. (2007). Modelling risk perception and trust in food
526 safety information within the theory of planned behaviour. *Food Quality and Preference, 18*, 384-
527 395.
528 Mai, N., Bogason, S.G., Arason, S., Árnason, S.V., & Matthíasson, T.G. (2010). Benefits of
529 traceability in fish supply chains - case studies. *British Food Journal, 112*(9), 976-1002.
530 Mancini, M.C. (2005). Avian influenza: Food emergency? *GIMT – Giornale Italiano delle Malattie*
531 *del Torace, 59*(5), 351-352.
532 Mazzocchi, M., Lobb, A., Traill, W.B., & Cavicchi, A. (2008). Food scares and trust: A European
533 study. *Journal of Agricultural Economics, 59*(1), 2–24.
534 Menozzi, D. (2006). Economic aspects of labelling regulations for consumer protection, *Progress in*
535 *Nutrition, 8*(3), 157-166.
536 Menozzi, D., & Mora, C. (2012). Fruit consumption determinants among young adults in Italy: a
537 case study. *LWT – Food Science and Technology, 49*(2), 298-304.
538 Menozzi, D., Mora, C., Faioli, G., Chryssochoidis, G., & Kehagia, O. (2010). Consumers'
539 perception of food traceability, quality and safety. *Economia Agro-Alimentare, 1*, 137-158.
540 Miles, S., Ueland, Ø., & Frewer, L.J. (2005). Public attitudes towards genetically-modified food.
541 *British Food Journal, 107*(4), 246-262.

542 Mora, C., & Menozzi, D. (2008). Benefits of traceability in food markets: consumers' perception
543 and action. *Food Economics*, *5*(2), 92-105.
544 Mora, C., Menozzi, D., Faioli, G., Frewer, L.J., & van Rijswijk, W. (2009). Percezione dei
545 consumatori della rintracciabilità dei prodotti alimentari: analisi delle catene mezzi-fini. In M.
546 D'Amico, & M. Lanfranchi (Eds). *Produzioni alimentari tra rintracciabilità e sicurezza: Analisi*
547 *economiche e politiche di intervento* (pp. 243.252). Milan (Italy): FrancoAngeli.
548 Mullan, B.A., Wong, C., & Kothe, E.J. (2013). Predicting adolescents' safe food handling using an
549 extended theory of planned behavior. *Food Control*, *31*(2), 454-460.
550 Nganje, W., Dahl, B., Wilson, W., Mounir, S., & Lewis, A. (2007). Valuing private sector
551 incentives to invest in food security measures: Quantifying the risk premium for alternative tracking
552 system. *Journal of International Agricultural Trade and Development*, *3*(2), 199-216.
553 Norman, P. (2011). The theory of planned behavior and binge drinking among undergraduate
554 students: Assessing the impact of habit strength. *Addictive Behaviors*, *36*, 502–507.
555 Norman, P., & Conner, M. (2006). The theory of planned behaviour and binge drinking: Assessing
556 the moderating role of past behaviour in the theory of planned behaviour. *British Journal of Health*
557 *Psychology*, *11*, 55–70.
558 Ouellette, J., & Wood, W. (1998). Habit and intention in everyday life: The multiple process by
559 which past behaviour predicts future behavior. *Psychological Bulletin*, *117*, 67-86.
560 Stefani, G., Cavicchi, A., Romano, D., & Lobb, A. E. (2008). Determinants of intention to purchase
561 chicken in Italy: The role of consumer risk perception and trust in different information sources.
562 *Agribusiness*, *24*, 523-537.
563 U.N.A. (2011). *Il Settore avicolo in cifre*. Rome (Italy): Unione Nazionale dell'Avicoltura.
564 Retrieved from: http://www.unionenazionaleavicoltura.it/.
565 Unaapi (2012). *Note e osservazioni sull'andamento del mercato del miele in Europa*. Castel San
566 Pietro Terme (BO, Italy): Unione Nazionale Associazioni Apicoltori Italiani. Retrieved from:
567 http://www.mieliditalia.it.

568 Van Rijswijk, W., & Frewer, L.J. (2008). Consumer perceptions of food quality and safety and their
569 relation to traceability. *British Food Journal, 110*(10), 1034-1046.
570 Van Rijswijk, W., Frewer, L.J., Menozzi, D., & Faioli, G. (2008). Consumer perceptions of
571 traceability: A cross national comparison of associated benefits. *Food Quality and Preference, 19*,
572 452-464.
573 Verbeke, W., & Vackier, I. (2005). Individual determinants of fish consumption: Application of the
574 theory of planned behaviour. *Appetite, 44*, 67-82.
575 Verbeke, W., & Ward, R.W. (2006). Consumer interest in information cues denoting quality,
576 traceability and origin: an application of ordered probit models to beef labels. *Food Quality and*
577 *Preference, 17*, 453-467.
578 Verplanken, B., & Orbell, S. (2003). Reflections on Past Behavior: A Self-Report Index of Habit
579 Strength. *Journal of Applied Social Psychology, 33*(6), 1313-1330.
580 Vukasovič, T. (2009). Consumer perception of poultry meat and the importance of country of origin
581 in a purchase making process. *World's Poultry Science Journal, 65*(1), 65-74.
582 Wu, L., Xu, L., & Gao, J. (2011). The acceptability of certified traceable food among Chinese
583 consumers. *British Food Journal, 113*(4), 519-534.
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586 Table 1 - Demographic characteristics of the sample, French and Italian population.

	France				Italy			
	Chicken	**Honey**	**Total**	**Population[a]**	**Chicken**	**Honey**	**Total**	**Population[b]**
n	**251**	**250**	**501**		**258**	**245**	**503**	
Gender	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*
Females	59.4	65.2%	62.3	51.7	72.5%	75.1%	73.8	51.5
Males	40.6	34.8%	37.7	48.3	27.5%	24.9%	26.2	48.5
Age	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*
18-30	35.1	34.0	34.5	18.8	29.8	26.5	28.2	19.0
31-40	12.4	12.8	12.6	12.7	15.9	14.3	15.1	19.7
41-50	13.9	16.8	15.4	13.6	28.3	21.6	25.0	17.2
51-60	16.3	16.4	16.4	14.7	13.2	20.0	16.5	15.2
> 60	22.3	20.0	21.2	19.7	12.8	17.6	15.1	28.9
Educational level	*%*	*%*	*%*	*%*	*%*	*%*	*%*	*%*
Primary education	15.1	17.2	16.2	31.6	8.5	9.4	8.9	23.3
Secondary education	39.8	38.3	39.1	47.6	67.1	65.7	66.4	65.6
Tertiary education or higher	45.0	46.0	45.5	20.8	24.4	24.9	24.7	11.1
	mean (sd)	*mean (sd)*	*mean (sd)*	*mean*	*mean (sd)*	*mean (sd)*	*mean (sd)*	*mean*
Household size	2.4 (1.2)	2.4 (1.4)	2.4 (1.3)	2.3	3.0 (1.3)	2.9 (1.3)	2.9 (1.3)	2.5
Children in family	0.4 (0.7)	0.4 (0.8)	0.4 (0.8)	0.3	0.4 (0.7)	0.4 (0.7)	0.4 (0.7)	0.4
	median	*median*	*median*	*mean*	*median*	*median*	*median*	*mean*
Income [c] (euro)	1,500-2,000	1,500-2,000	1,500-2,000	2,068	1,500-2,000	1,500-2,000	1,500-2,000	1,660
Frequency of purchase	*%*	*%*	*%*		*%*	*%*	*%*	
Every day or almost every day	0.0	0.0	0.0		3.5	0.0	1.8	
Several times a week	5.6	0.0	2.8		16.7	0.0	8.5	
Once a week	19.5	0.0	9.8		29.1	0.0	14.9	
Several times a month	43.0	4.4	23.8		33.7	4.9	19.7	
Once a month	20.7	13.2	17.0		12.8	14.3	13.5	
Every two months	8.8	14.0	11.4		4.3	11.8	8.0	
Every three / four months	0.4	32.0	16.2		0.0	20.0	9.7	
Twice per year	0.8	20.4	10.6		0.0	21.2	10.3	
Once per year	1.2	16.0	8.6		0.0	27.8	13.5	

587 [a] Source NSEE data (National Institute of Statistics and Economic Studies).
588 [b] Source ISTAT data (Italian National Institute of Statistics).
589 [c] Ten different income brackets (net monthly household income) were given in each country, the fifth bracket
590 representing the country's average (i.e., France = 2,001-2,500 euro; Italy = 1,500-2,000 euro).
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Table 2 – Questionnaire items, mean (std dev).

		Chicken			Honey		
	Code	**France** (n=251)	**Italy** (n=258)	**sig.**	**France** (n=250)	**Italy** (n=245)	**sig.**
This chicken/honey will likely be:							
- healthier	att1	5.14 (1.64)	5.64 (1.32)	***	4.78 (1.83)	5.62 (1.30)	***
- tastier	att2	4.94 (1.57)	4.71 (1.60)	†	4.78 (1.71)	4.94 (1.58)	n.s.
- more expensive	att3	5.71 (1.49)	5.92 (1.32)	†	5.22 (1.77)	5.96 (1.27)	***
- of known origin	att4	6.24 (1.15)	6.05 (1.06)	†	6.21 (1.29)	5.93 (1.20)	*
- safer	att5	5.37 (1.51)	5.91 (1.21)	***	5.29 (1.56)	5.82 (1.24)	***
- of more satisfying quality	att6	5.47 (1.32)	5.45 (1.33)	n.s.	5.68 (1.29)	5.71 (1.17)	n.s.
- guaranteed for being controlled	att7	6.00 (1.13)	6.03 (1.14)	n.s.	5.88 (1.48)	6.09 (0.97)	†
I would buy this chicken/honey because:							
- my family, my partner and my friends approve	sn1	3.94 (2.07)	4.66 (2.04)	***	3.81 (2.04)	4.61 (2.12)	***
- doctors / nutritionists are in favour	sn2	3.39 (1.96)	4.56 (1.93)	***	3.42 (1.95)	4.38 (1.95)	***
- media are in favour	sn3	2.63 (1.66)	3.21 (1.85)	***	2.23 (1.57)	3.05 (1.83)	***
- food industry / food supermarkets promote it	sn4	2.80 (1.68)	3.60 (1.82)	***	2.48 (1.68)	3.41 (1.83)	***
- people important to me buy this type of chicken/honey	sn5	3.11 (1.81)	3.92 (2.05)	***	3.48 (1.96)	4.11 (2.02)	***
Regarding the additional information about the production process and origin of this chicken/honey:							
It will be easy to look for this information	pbc1	4.54 (1.59)	4.98 (1.62)	**	4.47 (1.65)	4.81 (1.63)	*
I will feel confident when I look for it	pbc2	4.78 (1.50)	5.23 (1.50)	***	4.66 (1.63)	5.08 (1.54)	**
I will look for it without help from others	pbc3	5.28 (1.66)	5.42 (1.62)	n.s.	5.26 (1.74)	5.27 (1.62)	n.s.
It will be easy to understand the additional information	pbc4	5.11 (1.44)	5.25 (1.46)	n.s.	4.98 (1.50)	5.18 (1.59)	n.s.
I will be confident that I'll understand it	pbc5	4.90 (1.45)	5.40 (1.44)	***	4.80 (1.56)	5.33 (1.49)	***
I will understand it without help from others	pbc6	5.24 (1.64)	5.39 (1.59)	n.s.	5.15 (1.69)	5.34 (1.59)	n.s.
I intend to buy this chicken/honey	int1	5.44 (1.23)	5.80 (1.33)	**	5.29 (1.46)	5.72 (1.19)	***
I will search for this chicken/honey when I next go shopping for food	int2	4.98 (1.53)	5.53 (1.48)	***	4.66 (1.77)	5.25 (1.55)	***
It is important to me to buy this chicken/honey when I make my next food purchase	int3	4.15 (1.73)	5.02 (1.73)	***	3.79 (1.90)	4.71 (1.72)	***
I believe this chicken/honey can be traced back to its producer (farm/beekeeper)	tru1	5.80 (1.15)	5.55 (1.39)	*	5.79 (1.27)	5.13 (1.42)	***
I trust the information provided about production process and origin	tru2	5.54 (1.14)	5.40 (1.24)	n.s.	5.58 (1.29)	5.43 (1.12)	n.s.
If the information for this chicken/honey is certified, I trust it to be genuine	tru3	5.90 (1.13)	5.71 (1.26)	†	5.90 (1.31)	5.78 (1.08)	n.s.

596 Table 2 – Continued.

		Chicken			Honey		
	Code	**France** (n=251)	**Italy** (n=258)	**sig.**	**France** (n=250)	**Italy** (n=245)	**sig.**
When I buy chicken/honey I look for information about the producer	hab1	4.68 (1.89)	4.63 (2.03)	n.s.	5.38 (1.76)	4.71 (2.01)	***
- I do so frequently	hab2	4.64 (1.90)	4.92 (1.87)	†	4.79 (2.00)	5.08 (1.71)	†
- I do so automatically	hab3	4.24 (2.15)	4.91 (1.91)	***	4.63 (2.08)	4.98 (1.70)	*
- I do so as is typical of my behaviour	hab4	4.06 (2.09)	4.84 (1.92)	***	4.38 (2.11)	4.99 (1.78)	***
When I buy chicken/honey I look for information about the production process	hab5	4.65 (2.00)	3.93 (2.17)	***	3.88 (2.08)	3.79 (1.98)	n.s.
When I buy chicken/honey I look for information about the country and region of origin	hab6	5.53 (1.53)	5.32 (1.90)	n.s.	6.08 (1.22)	5.26 (1.82)	***
When I buy chicken/honey I look for information about the existence of a certificate	hab7	5.75 (1.48)	4.77 (1.97)	***	4.86 (1.91)	4.53 (2.05)	†
- I do so frequently	hab8	5.40 (1.71)	5.31 (1.57)	n.s.	4.98 (1.83)	5.28 (1.59)	†
- I do so automatically	hab9	4.92 (1.96)	5.13 (1.70)	n.s.	4.86 (1.94)	5.16 (1.63)	†
- I do so as is typical of my behaviour	hab10	4.65 (2.01)	5.11 (1.76)	**	4.54 (2.05)	5.19 (1.74)	***

597 Note: Signif. codes: *** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$, † = $p < 0.1$.

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600 Table 3 – Standardized factor loadings and Cronbach's alpha.

	Chicken			Honey		
Code	**alpha**	**France**	**Italy**	**alpha**	**France**	**Italy**
Attitude	0.81			0.79		
att1		0.79	0.56		0.72	0.62
att2		0.77	0.52		0.55	0.59
att3		0.54	0.51		0.50	0.53
att4		0.51	0.62		0.54	0.60
att5		0.71	0.88		0.72	0.85
att6		0.76	0.70		0.64	0.76
att7		0.52	0.84		0.55	0.71
Subjective Norm	0.84			0.82		
sn1		0.70	0.75		0.48	0.69
sn2		0.83	0.74		0.87	0.61
sn3		0.71	0.63		0.75	0.73
sn4		0.66	0.58		0.67	0.53
sn5		0.53	0.74		0.53	0.60
PBC	0.87			0.83		
pbc1		0.53	0.60		0.59	0.57
pbc2		0.89	0.90		0.82	0.80
pbc3		0.67	0.63		0.61	0.64
pbc4		0.54	0.76		0.52	0.67
pbc5		0.84	0.86		0.80	0.91
pbc6		0.55	0.75		0.52	0.77
Intention	0.86			0.85		
int1		0.83	0.81		0.84	0.79
int2		0.64	0.92		0.80	0.84
int3		0.69	0.82		0.79	0.91
Trust	0.80			0.79		
tru1		0.73	0.82		0.82	0.69
tru2		0.74	0.85		0.83	0.75
tru3		0.84	0.72		0.77	0.76
Habits	0.90			0.88		
hab1		0.69	0.66		0.65	0.66
hab2		0.82	0.88		0.54	0.65
hab3		0.86	0.85		0.56	0.83
hab4		0.77	0.82		0.57	0.77
hab5		0.56	0.52		0.66	0.58
hab6		0.62	0.61		0.59	0.62
hab7		0.73	0.73		0.72	0.59
hab8		0.76	0.66		0.60	0.73
hab9		0.64	0.61		0.67	0.84
hab10		0.54	0.63		0.65	0.82

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602 Table 4 – Structural equation models coefficients results.

	TPB				TPB-extended			
	Chicken		**Honey**		**Chicken**		**Honey**	
	France	**Italy**	**France**	**Italy**	**France**	**Italy**	**France**	**Italy**
R-squared								
Intention	0.60	0.28	0.37	0.30	0.65	0.43	0.44	0.48
Standardized regression coefficients (β)								
Attitude	0.44***	0.36***	0.43***	0.32***	0.46***	0.09	0.27**	0.09
Subjective Norm	0.24**	0.10	0.18*	0.17*	0.20**	0.08	0.13 †	0.16*
PBC	0.27***	0.20**	0.13	0.27***	0.19*	0.14*	0.05	0.11
Habits					0.16**	0.15*	0.04	0.16*
Trust					0.03	0.41***	0.29***	0.45***
Income					0.08	0.01	-0.02	-0.01
Number of children					0.08	0.00	0.14 †	0.06
Household					0.00	-0.13*	0.06	0.01
Age					0.04	-0.03	0.05	0.01
Gender					0.01	0.06	0.06	0.04
Education					-0.01	-0.03	-0.06	-0.01
Frequency of purchase					0.01	0.04	0.05	0.13*
Model fit measures								
$\chi 2$/df	1.619		1.675		1.568		1.644	
CFI	0.962		0.950		0.923		0.906	
RMSEA	0.035		0.037		0.033		0.036	

603 Note: Signif. codes: *** = p < 0.001, ** = p < 0.01, * = p < 0.05, † = p < 0.1.

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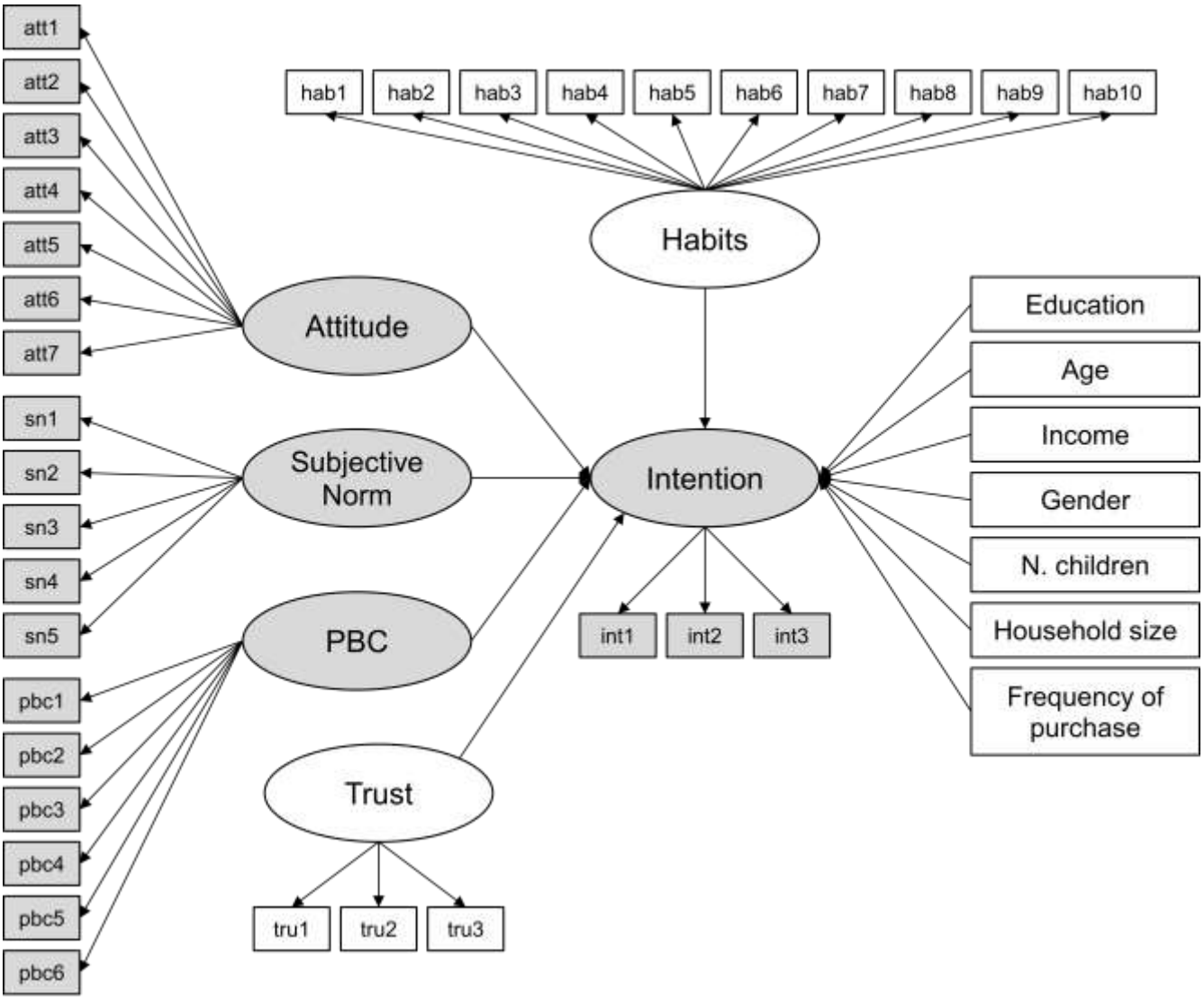
608 Figure 1 – The model structure.



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610 Note: circles represent latent variables and rectangles represent observed variables (Byrne, 2010). In
611 grey, we show the original structure of the TPB model by Ajzen (1991); in white, we show the
612 added variables in the extended TPB model. To make it visually understandable, the diagram does
613 not display the correlations between variables.

614

615