



# Hybridizing consumer behavioural approaches on agrifood markets: Attitudes, judgements and choices

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## Abstract

The attitudinal approach, represented by the Theory of Reasoned Action and, subsequent, Theory of Planned Behaviour, and the judgements and choices – also called decision – approach, rendered by the Classical Utility Economic Theory, are the two mainstream frameworks to explain consumer behaviour. The former explains consumer behaviour based on beliefs and behavioural intentions, and the latter on products' attributes and prices. Both are criticized by having drawbacks, which may limit their explicative and predictive power, such as the attitude-behaviour or intention-behaviour gap in the former, and both the divergence between monetary assessment and predicted utility as well as the failures to maximize the utility of the choices in the latter. Our aim was to assess the potentiality of a hybrid approach which integrates instruments from both theories in order to unravel consumer behaviour in agri-food markets. The empirical research was performed using a daily agri-food product under volitional control, olive oil, and variance-based structural equation modelling by means of the Partial Least Squares (PLS) technique, collecting data from consumers in Southern Spain. The results show there are key factors from both approaches such as attitude, expected outcomes, and socioeconomic features, which makes us conclude that it is necessary to move forward on the convergence and integration of different theories. Indeed, testable knowledge must be produced which has meaningful implications for predicting behaviours in consumption.

**Additional keywords:** consumer behaviour; theory of planned behaviour; classical utility economic theory; olive oil markets; structural equation modelling; partial least squares.

**Abbreviations used:** AC (Actual Consumption); AT (Attitude); PLS (Partial Least Squares); PP (Perception of the Price); RAA (Reasoned-Action Approach); SE (Socioeconomic Factors); SN (Subjective Norms); ST (Stated Intention); TPB (Theory of Planned Behaviour); TRA (Theory of Reasoned Action); TT (Perception of the Taste).

**Authors' contributions:** Both authors conceived and designed the research and interpreted the data. Statistical analysis and drafting of the manuscript: MSO. Supervising the work, obtaining funding and coordinating the research project: MRE.

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## Introduction

There are two main paradigms to study consumer behaviour (Bagozzi, 1993): the attitudinal approach, and the judgements and choices – or decision – approach (henceforth, the judgement-choice approach). The former analyses consumer behaviour based on beliefs and behavioural intentions, being widely represented by the Theory of Reasoned Action – TRA (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) and, the subsequent, Theory of Planned Behaviour – TPB

(Ajzen, 1991). The judgement-choice approach is based on the explanation of how products' attributes and prices determine the consumption level which maximizes the utility of decisions. This approach is underpinned on the classical utility economic theory of consumer behaviour (henceforth, classical-utility theory), and mainly on the Lancaster Theory (Lancaster, 1966, 1971). The theories from both approaches have evolved and included additional predictors (*e.g.*, Povey *et al.*, 2000; Nicholson & Snyder, 2008; Fishbein & Ajzen, 2010; Del Giudice *et*

*al.*, 2015), but they continue being criticized by their drawbacks.

Criticism for the attitude-behaviour or intention-behaviour gap (Kraus, 1995; Hsiao *et al.*, 2002; Sheeran, 2002) describes an inconsistency between what consumers express and their purchase behaviour (Kraus, 1995; Sheeran, 2002). According to Foxall (1993) and later McEachan *et al.* (2011), a major weakness of models based on the abovementioned relationship is the only analysis of hypothetical pre-behavioural events. Related to the classical-utility theory, it is also well-known both the divergence between monetary assessment or what is called economic costs and predicted utility (Thaler, 1985; Kreps, 1990), as well as the failures to maximize the utility of the choices (Kahneman & Thaler, 2006). Amir *et al.* (2008) state this may be caused by the absence of experience cues in the modelling. Bagozzi (2000) remarks the Classical-utility Theory fails by not considering aspects such as, for example, attitude, subjective norms or emotions. The goal-based choice models (Fischer *et al.*, 1999; Van Osselaer & Janiszewski, 2012), based on the judgement-choice approach, also reflect part of this issue. Those assume that choices are driven by goals, which are cognitive dimensions, characterized by positive and negative forces linked to behavioural outcomes (Van Osselaer & Janiszewski, 2012).

Therefore, the explicative power of both approaches may present shortcomings. The aim of this study follows this thought, trying to assess the potential of a hybrid approach to unravel consumer behaviour in agri-food markets. Concretely, the hybridization of the attitudinal approach, by means of the TRA, and the judgement-choice approach, by means of the classical-utility theory, is explored, which represents a novelty in the literature where those attempts are truly scarce for foodstuffs such as Myrland *et al.* (2000) and Olsen (2003). We bring evidence on the differences between explaining behavioural intention and actions, and also research intention as driver of behaviour. The empirical application was performed using a daily product under volitional control such as olive oil, collecting data from Southern Spain consumers, and variance-based structural equation modelling by means of the Partial Least Squares (PLS) technique.

## Material and methods

### Consumer behaviour approaches

According to Bagozzi (1993), approaches based on attitudes and those on judgement-choices are two mainstream that have developed into different theories of

consumer action. The most frequently cited theories on attitude and behavioural intentions, and widely applied to study agri-food markets, are the TPB (Ajzen, 1991) and its predecessor, the TRA (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980). Both theories postulate that intention is the direct precursor of the action, given that it involves the efforts and tries; however, TPB also considers what it is called the perceived behavioural control which involves the self-perception that the behaviour is under volitional control (Ajzen, 1991; Ajzen & Fishbein, 2008). Consequently, depending on the potential to perform volitional acts, either TRA or TPB can be more appropriate. In addition, Fishbein & Ajzen (2010) also introduce, by means of the Reasoned-Action Approach (RAA), the actual control as a variable influencing both volitional control and the relationship between intention and behaviour.

Intention is a function of the attitude towards the behaviour and the subjective norms (Ajzen, 1985; Ajzen & Fishbein, 2008; Fishbein & Ajzen, 2010), *i.e.*, positive or negative predisposition and social pressures to perform it. In addition, salient beliefs determine all of the abovementioned concepts. Steenkamp (1997) highlights that one of the key issues in the attitudes' formation about food are the beliefs built from direct observation of the product attributes. Therefore, the former author links attitudes about food with Ajzen's (2005) definition of attitude towards an object. Similarly, Bagozzi (2000) identifies attitude towards a behaviour with attitude towards a product in consumer behaviour models. In addition, according to Woodside & Bearden (1977) and Ajzen (2015), those product attributes' beliefs become usual predicting variables of consumer attitudes. Consequently, perception of the product attributes is associated with the salient beliefs in TRA and TPB, which in turn determine attitudes.

In contrast, according to the judgement-choice approach based on the classical-utility theory, consumer preferences are based on the utility derived directly from defining attributes – intrinsic or extrinsic – of a product considering prices and budget restrictions (Lancaster, 1966, 1971). Therefore, consumers will choose whichever option offers them maximum utility or welfare. Consequently, since Samuelson (1948, 1965) seminal works, this approach assumes the observed behaviour is the conclusion of a utility maximization process and tries to explain choices. Meanwhile, some models based on goal-based choice state that choices are the selection of what they call means, which are behaviours, products or services, and then the intention of consuming those means (Van Osselaer & Janiszewski, 2012), so that they are closer to TRA, but others (Fischer *et al.*, 1999) explain

actual choices, being closer to Classical-utility Theory. Additionally, prices explain a large part of those choices. In fact, price is one of the three factors that explains actual behaviour and consumers' willingness to pay becomes key as the representative value of the product depends on reference prices (Thaler, 1985). From Monroe (1973), authors such as Nicholson & Snyder (2008) mention that the classical-utility theory posits price as the major influence on choices because it is an indicator of purchase cost, but consumers' price perceptions are what determine its influence on buyers' decision making. Authors such as the former and Jacoby & Olson (1977) distinguish between objective and subjective price (see *e.g.*, Homburg *et al.*, 2014), to know the development of conceptual frameworks about objective price formation). In this regard, the first type of price refers to the cost of the product in terms of monetary units; the second is linked to the perception of the symbolic value of the products which leads to an internal interpretation. Then, the second type may conform a salient belief itself in the way attitudinal approach defines it. In addition, this type of price can also be seen as a motivational force which encouraged behaviours in the sense of the goal-based choice models (Van Osselaer & Janiszewski, 2012). Regarding product attributes, Shepherd (2011) asserts that food taste is the major influence of food choices as a sensory-affective response, and it is comprised of the flavour, smell and perception of food texture. Indeed, consumers' beliefs on taste cause differences in their willingness to pay (Spiller & Belogolova, 2017).

Nonetheless, some authors (Thaler, 1985; Bagozzi, 2000; Kahneman & Thaler, 2006) point out that actual consumption explained solely by product attributes is a main limitation of the classical-utility theory. Consequently, this theory should be extended which is reflected in new models coming from seminal works from Kahneman & Tversky (1979) and Thaler (1980, 1985) using both cognitive psychology and microeconomics, and other new models such as the abovementioned goal-based choice framework (Van Osselaer & Janiszewski, 2012). Bagozzi (2000), conversely, proposes an alternative model based on his theory of trying (Bagozzi, 1993) where the behaviour is considered as a process or striving; so it analyses behaviours more closely when there is not higher volitional control and introduces the necessity to add conative, emotional and social procedures. Nevertheless, Ajzen (1985) and Fishbein & Ajzen (2010) assumes that behavioural intentions involve a person's motivations to act.

Furthermore, Shepherd (2011) considers factors such as income, education and household structure,

which can encompass socioeconomic features, as underlying causes of food choices. For the classical-utility theory, those are core in explaining consumers' choices (Boxall & Adamowicz, 2002), and are called as tastes by Michael & Becker (1973), when excluding income. In contrast, attitudinal approaches ignore those socioeconomic aspects in their models for mainly theoretical reasons (Ajzen & Fishbein, 1980). Ajzen & Fishbein (1980) comment in a general sense that those external factors may be related to behaviour but by means of variables such as attitude, subjective norms, perceived behavioural control or intention. Indeed, Fishbein & Ajzen (2010) place different individual and socioeconomic factors as background factors which may influence on belief. TRA and TPB similarly drop the fact that consumers face choices between product alternatives, choosing according to their attitude about the attractiveness of each product (Steenkamp, 1997).

### Linking conceptual and modelling approaches

Four models were designed. Model 1 (M1) represents the attitudinal framework based on TRA (Ajzen & Fishbein, 1980) for agri-food markets under volitional control. We assume that intentions are directly and independently determined by subjective norms and attitudes, so that the stronger the subjective norms or the attitude the more likely to form the intention. The planning hypotheses are:

- H1<sub>M1</sub>: Stated intention increases according to positive subjective norms.
- H2<sub>M1</sub>: Stated intention increases according to positive attitude.

In addition, we assumed that salient beliefs influence attitudes (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980, 2008), and those salient beliefs become the perception about product attributes, as Ajzen (2015) states. The subsequent hypotheses are:

- H3<sub>M1</sub>: Attitude increases according to positive perception of the price.
- H4<sub>M1</sub>: Attitude increases according to positive perception of the taste.

Assuming linear relationships and considering all of the concepts non-observable variables because of their theoretical complexity, if ST means the intention to purchase for consumer *i*, SN denotes subjective norms of consumer *i*, AT refers to attitude of consumer *i* towards the product, then

$$ST_i = \beta_{1i}SN_i + \beta_{2i}AT_i + \zeta_i \quad [1]$$

and if PP means price perception of consumer *i*, and TT means taste perception of consumer *i*, then

$$AT_i = \beta_{4i} PP_i + \beta_{5i} TT_i + \zeta_{2i} \quad [2]$$

where  $\zeta$  denotes the random errors.

The conceptual model is developed in Figure 1.

In the Model 2 (M2), the factors included in the judgement-choice approach, based on classical-utility theory for agri-food markets, are considered as has been seen in the theoretical framework. We assume the relevance of socioeconomic factors as direct determinants of behaviour as well as prices and product attributes, translating the latter into the perception of taste as a core factor in agri-food markets. The following hypotheses are posited:

- H1<sub>M2</sub>: Actual consumption is influenced by socioeconomic factors.
- H2<sub>M2</sub>: Actual consumption increases according to positive perception of the price.
- H3<sub>M2</sub>: Actual consumption increases according to positive perception of the taste.

On the basis of the assumptions for M1, and defining AC as the actual consumption of consumer  $i$ , SE as the socioeconomic features of consumer  $i$ , and TT as the taste perception of consumer  $i$ , then M2 is defined as

$$AC_i = \beta_{6i} SE_i + \beta_{7i} PP_i + \beta_{8i} TT_i + \zeta_{3i} \quad [3]$$

Figure 1 displays the above-mentioned conceptual model.

Finally, Model 3 (M3) and Model 4 (M4) perform the hybrid approach where we consider both models which are defined similarly. As a result, the hypotheses based on both approaches are:

- H1<sub>M3</sub>: Stated intention increases according to positive subjective norms.
- H2<sub>M3</sub>: Stated intention increases according to positive attitude.
- H3<sub>M3</sub>: Stated intention is influenced by socioeconomic factors.
- H4<sub>M3</sub>: Attitude increases according to positive perception of the price.

- H5<sub>M3</sub>: Attitude increases according to positive perception of the taste.
- H6<sub>M3</sub>: Stated intention increases according to positive perception of the price.
- H7<sub>M3</sub>: Stated intention increases according to positive perception of the taste.
- H1<sub>M4</sub>: Actual consumption increases according to positive subjective norms.
- H2<sub>M4</sub>: Actual consumption increases according to positive attitude.
- H3<sub>M4</sub>: Actual consumption is influenced by socioeconomic factors.
- H4<sub>M4</sub>: Attitude increases according to positive perception of the price.
- H5<sub>M4</sub>: Attitude increases according to positive perception of the taste.
- H6<sub>M4</sub>: Actual consumption increases according to positive perception of the price.
- H7<sub>M4</sub>: Actual consumption increases according to positive perception of the taste.

Supposing again the assumptions for M1, M3 is defined as

$$ST_i = \beta_{9i} SN_i + \beta_{10i} AT_i + \beta_{11i} SE_i + \beta_{12i} PP_i + \beta_{13i} TT_i + \zeta_{4i} \quad [4]$$

and

$$AT_i = \beta_{14i} PP_i + \beta_{15i} TT_i + \zeta_{5i} \quad [5]$$

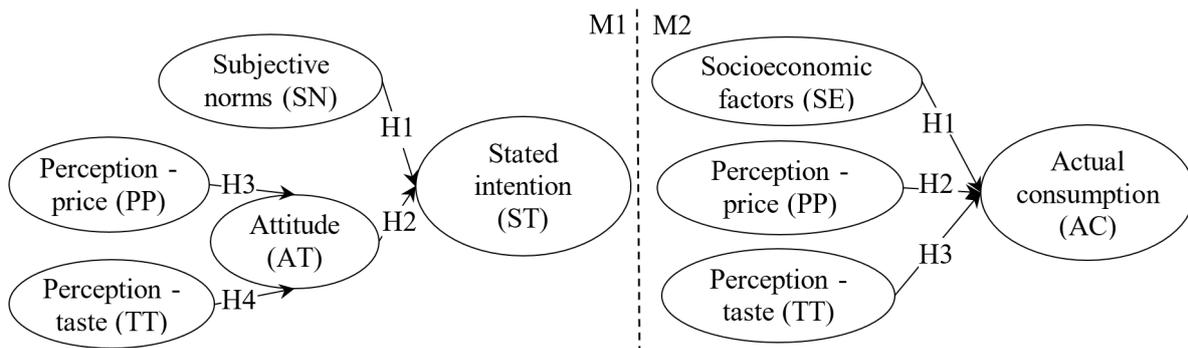
M4 is the same model previously showed but considering actual consumption, so

$$AC_i = \beta_{16i} SN_i + \beta_{17i} AT_i + \beta_{18i} SE_i + \beta_{19i} PP_i + \beta_{20i} TT_i + \zeta_{6i} \quad [6]$$

and

$$AT_i = \beta_{21i} PP_i + \beta_{22i} TT_i + \zeta_{7i} \quad [7]$$

In addition, we hypothesize regarding the strength of the relationships in the comparison of conceptual



**Figure 1.** Conceptual model for stated intention (M1) and actual consumption (M2). *Source:* Authors' elaboration.

models M3 and M4. Those hypotheses were formulated depending on the theoretical approaches which highlight each concept, and those are as follows:

- H8: Subjective norms have a higher impact on stated intention than on actual consumption.
- H9: Attitude has a higher impact on stated intention than on actual consumption.
- H10: Socioeconomic factors have a higher impact on actual consumption than on stated intention.
- H11: Price has a higher impact on actual consumption than on stated intention.
- H12: Taste has a higher impact on actual consumption than on stated intention.

Our last hypothesis analyses the intention-behaviour gap. We assumed a direct relationship between stated intention and actual consumption. Indeed, scholars, such as Towler & Shepherd (1991), Kim & Hunter (1993), Povey *et al.* (2000), or Gollwitzer & Sheeran (2006), study the potential of this relationship, being the hypothesis:

- H13: Actual consumption increases according to positive stated intention.

Therefore, the following equation is added to M3

$$AC_i = \beta_{23i}ST_i + \zeta_{8i} \quad [8]$$

Based on the hybrid approach developed here, Figure 2 presents the conceptual framework for M3 and M4.

## Research method

To test the theoretical models, the chosen agri-food product was olive oil, and the data were collected from consumers in Southern Spain. Olive oil was selected because it is a traditional daily consumption product, widely incorporated to the Spanish diet, where it represents approximately 61% of the total vegetable oils and fats consumption (MAGRAMA, 2017). It is available in all types of retail formats at affordable objective prices – approx. 3.65 €/kg of average price from July 2013 to 2016 (MAGRAMA, 2017). Those features allow consumers to have behavioural control over the action of buying and consuming it.

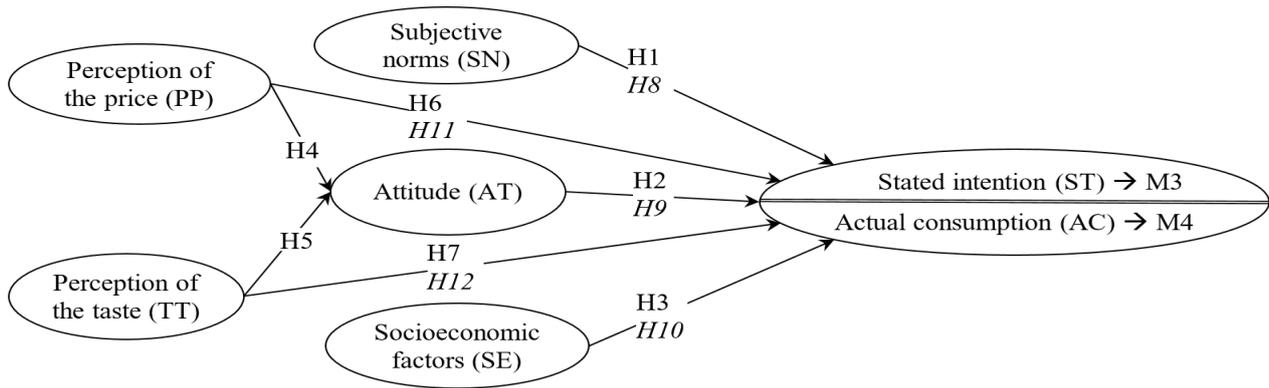
The data were collected through an online questionnaire administered from January to September 2016 to 808 buyers at a household level over 19 years old. The questionnaire was structured into sections, and two pre-tests (8% of the sample) were first carried out to detect potential biases in comprehension (in-person and web-based survey). The sample was selected from

large-size cities (more than 100,000 inhabitants) in Southern Spain since consumers' perceptions in small and medium-sized cities cannot represent the regular consumer behaviour in the olive oils market given that many of them – mostly located in Jaén, Córdoba, Granada and Sevilla – belong to producing areas<sup>1</sup>. The sampling was controlled by age and schooling according to regional data (INE, 2011) in order to avoid the issue of under-representation of some groups, particularly older and lower level of schooling (see Table 1), which is presumed to happen using on-line panels.

The complex concepts involved were considered non-observable or latent variables. It was necessary to characterize and measure each latent variable using observable-variables, which can be seen in Table S1 [suppl.]. Regarding these, it should be pointed out that ST, SN and AT were asked in attempt to follow the principle of compatibility (Ajzen, 2002). Meanwhile, AC was defined as an objective behaviour-related variable through self-reported actual consumption, trying to overcome the drawback of overestimating the relationship between attitude and consumption which happens when behaviour is asked using Likert-scales (Armitage & Conner, 2001). Nevertheless, the stated intention and actual behaviour variables present the drawback of having been asked in the same questionnaire (Towler & Shepherd, 1991). This is also done by the former authors and others such as Myrland *et al.* (2000), Olsen (2003), or Tarkiainen & Sundqvist (2005).

The hypotheses were tested by applying variance-based structural equation modelling by means of PLS, which is widely used in the attitudinal approach when analysing empirical data, but is not commonly used to perform studies using the classical-utility theory (*e.g.*, Del Giudice *et al.*, 2015). It enables researchers to estimate models with both latent and observable variables (Chin, 1998) and is particularly useful in mixed models with both common factors and composite latent variables (Henseler, 2017). The latter is key because there was one reflective latent variable (AT) following psychometric tradition, while the rest were considered composites, *i.e.*, artifacts that were made up of related observable variables (Henseler, 2017). Additionally, the PLS consistent algorithm (Dijkstra & Henseler, 2015) was employed when dealing with reflective latent variable to avoid the well-known consistency at large bias (Lohmöller, 1989). The Rodríguez-Entrena *et al.* (2018) approach was implemented to test the existence of significant differences between PLS parameter estimates by using

<sup>1</sup>Indeed, it is quite common in these small and medium-size cities to buy olive oil directly in the cooperatives which besides only sell extra virgin olive oil so broadening the sampling to these cities would have represented a risk of not observing the actual behaviour of a regular consumer in supermarkets.



**Figure 2.** Conceptual hybrid models (M3 and M4). Relational hypothesis is shown in regular letter, strength of the relationships in italics. *Source:* Authors’ elaboration.

the percentile bootstrap confidence interval procedure, deepening the knowledge about the structural model by ranking outstanding latent variables in consumers’ behaviour.

### Results

The measurement model’s statistics for M1, M2, M3 and M4 are summarized in Table S2 [suppl.]. SN, SE and TT showed issues in their composition. However, we kept all the observable-variables for theoretical reasons, given that they were significant in at least one of the models.

In Table 2, the hypotheses’ results are presented for M3 and M4, while Table S3 [suppl.] displays the M1 and M2 results, given that the analyses of the former are our main aim. Table 3 shows path coefficient differences between M3 and M4 and the corresponding significance test.

Subjective norms did not significantly influence the intention to purchase ( $H1_{M3}$ ) and actual consumption ( $H1_{M4}$ ), and there were no significant differences between both parameter estimates (H8). However, positive attitude raised both intention ( $H2_{M3}$ ) and consumption

( $H2_{M4}$ ), with a similar effect size ( $f^2$ ). The similarities in the impact were confirmed by the test for the differences between the path coefficient estimates (H9). It is also worth noting that socioeconomic factors influenced intention ( $H3_{M3}$ ) and consumption ( $H3_{M4}$ ); both effect sizes are small. The relationship was positive, as the sign showed, so higher household incomes, buyers’ age and having lived in rural areas improved the intention, while consumption increased in households with higher incomes, smaller size and whose members had lived in rural areas. Once more, there were not significant differences between parameter estimates (H10). Results also allowed us to confirm that the better the positive perception of products’ attributes, such as price and taste, the higher the positive attitude ( $H4_{M3, M4}$  and  $H5_{M3, M4}$ ), intention ( $H6_{M3}$  and  $H7_{M3}$ ) and consumption ( $H6_{M4}$  and  $H7_{M4}$ ). It is relevant to highlight the medium effect of taste on attitude and the existence of significant differences in its impact on the intention and consumption, so H12 was supported. Nevertheless, we also expected price to exert a stronger and significant influence on consumption compared to intention, which was not confirmed by the statistical comparison (H11).

The intention and consumption hybrid models had high predictive power figures, with explained variances

**Table 1.** Descriptive analysis of sample and population.

|                 | Characteristics    | Sample (%) | Population (%) <sup>[a]</sup> | $\chi^2$ test <sup>[b]</sup> |
|-----------------|--------------------|------------|-------------------------------|------------------------------|
| Gender          | Female             | 51.6       | 51.0                          | $\chi^2 = 0.02$              |
| Age (years)     | 20–39              | 35.4       | 36.4                          | $\chi^2 = 0.63$              |
|                 | 40–54              | 32.1       | 28.6                          |                              |
|                 | 55+                | 32.5       | 35.0                          |                              |
| Schooling level | University studies | 29.1       | 25.7                          | $\chi^2 = 0.60$              |

<sup>[a]</sup>Data from the Census (INE, 2011). <sup>[b]</sup>The  $\chi^2$  values do not exceed the critical values  $\chi^2 (1; 0.05) = 3.841$  and  $\chi^2 (2; 0.05) = 5.991$  so that we cannot reject the null hypothesis which means non-significant differences between the population and sample. *Source:* Authors’ elaboration.

**Table 2.** Path coefficients (standard errors in brackets).

| Hypotheses   | Path coefficients | Percentile bootstrap           |        | f <sup>2</sup> [c] |       |
|--|-------------------|--------------------------------|--------|--------------------|-------|
|  |                   | 2.5%                           | 97.5%  |                    |       |
| <b>M3<sup>[a]</sup></b>                                  |                   |                                |        |                    |       |
| SN → ST  | H1 <sub>M3</sub>  | 0.050 <sup>ns</sup><br>(0.035) | -0.024 | 0.118              | --    |
| AT <sup>[b]</sup> → ST                                   | H2 <sub>M3</sub>  | 0.400***<br>(0.041)            | 0.316  | 0.478              | 0.187 |
| SE → ST  | H3 <sub>M3</sub>  | 0.130***<br>(0.030)            | 0.079  | 0.195              | 0.023 |
| PP → AT  | H4 <sub>M3</sub>  | 0.201***<br>(0.035)            | 0.133  | 0.272              | 0.049 |
| TT → AT  | H5 <sub>M3</sub>  | 0.381***<br>(0.035)            | 0.311  | 0.449              | 0.176 |
| PP → ST  | H6 <sub>M3</sub>  | 0.168***<br>(0.033)            | 0.102  | 0.235              | 0.041 |
| TT → ST  | H7 <sub>M3</sub>  | 0.123***<br>(0.036)            | 0.054  | 0.196              | 0.019 |
| <b>M4<sup>[a]</sup></b>                                  |                   |                                |        |                    |       |
| SN → AC  | H1 <sub>M4</sub>  | 0.015 <sup>ns</sup><br>(0.034) | -0.054 | 0.152              | ---   |
| AT <sup>[b]</sup> → AC                                   | H2 <sub>M4</sub>  | 0.360***<br>(0.036)            | 0.288  | 0.429              | 0.172 |
| SE → AC  | H3 <sub>M4</sub>  | 0.082**<br>(0.031)             | 0.031  | 0.152              | 0.011 |
| PP → AT  | H4 <sub>M4</sub>  | 0.199***<br>(0.035)            | 0.130  | 0.271              | 0.048 |
| TT → AT  | H5 <sub>M4</sub>  | 0.375***<br>(0.037)            | 0.302  | 0.446              | 0.169 |
| PP → AC  | H6 <sub>M4</sub>  | 0.125***<br>(0.033)            | 0.060  | 0.189              | 0.028 |
| TT → AC  | H7 <sub>M4</sub>  | 0.355***<br>(0.034)            | 0.285  | 0.426              | 0.152 |
| <b>Relationship stated intentions/actual consumption</b> |                   |                                |        |                    |       |
| ST → AC  | H13               | 0.416***<br>(0.034)            | 0.352  | 0.485              | 0.210 |

SN: subjective norms. ST: stated intention. AT: attitude. SE: socioeconomic factors. PP: perception of the price. TT: perception of the taste. AC: actual consumption. <sup>[a]</sup>Inflation factors of each set of composite predictor constructs are under 3.3 (Diamantopoulos & Siguaw, 2006). <sup>[b]</sup>Stone-Geisser's Q<sup>2</sup> value (omission distant 6) >0. <sup>[c]</sup>Cohens' (1988) f<sup>2</sup> values (effect size index): 0.02, 0.15 and 0.35 result in small, medium and large effects. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ ; ns: non-significant (t-statistic of two-tailed test,  $t_{(4,999)}$  from bootstrapping technique). *Source:* Authors' elaboration.

of 0.309 and 0.378 (adj- $R^2$ ), respectively, compare to M1 and M2 (adj- $R^2$  reached 0.253 and 0.273 respectively, see Table S3 [suppl.]). Thus, the gains in predictive power of the hybrid models are noteworthy. The explained variance accounted for the attitude resulted in 0.177 (adj- $R^2$ ) in M3 and M4, which reveals a sufficient predictive power for a consumer behaviour study according to Falk & Miller (1992).

Last, the results confirm that stated intention influences actual consumption (H17), which is not a

surprising finding, but with only a medium effect size and an adj- $R^2$  of 0.173.

## Discussion

The first significant finding is the role of subjective norms not to shape either intention or consumption, while being a variable traditionally included by an attitudinal approach. Some studies designed under

**Table 3.** Path coefficient differences.

| Hypotheses | Path coefficients differences | Percentile bootstrap |        |        |
|------------|-------------------------------|----------------------|--------|--------|
|            |                               | 2.5%                 | 97.5%  |        |
| Δ SN → ST  | H8                            | 0.035 <sup>ns</sup>  | -0.061 | 0.130  |
| SN → AC    |                               | (0.048)              |        |        |
| Δ AT → ST  | H9                            | 0.040 <sup>ns</sup>  | -0.065 | 0.145  |
| AT → AC    |                               | (0.053)              |        |        |
| Δ SE → ST  | H10                           | 0.049 <sup>ns</sup>  | -0.036 | 0.134  |
| SE → AC    |                               | (0.043)              |        |        |
| Δ PP → ST  | H11                           | 0.043 <sup>ns</sup>  | -0.050 | 0.136  |
| PP → AC    |                               | (0.047)              |        |        |
| Δ TT → ST  | H12                           | -0.210*              | -0.305 | -0.114 |
| TT → AC    |                               | (0.048)              |        |        |

SN: subjective norms. ST: stated intention. AC: actual consumption. SE: socioeconomic factors. PP: perception of the price. TT: perception of the taste. \* statistical significance at least at  $p < 0.05$ ; ns: non-significative. *Source:* Authors' elaboration.

the umbrella of the TRA, *e.g.*, those by Thompson *et al.* (1994) and Armitage & Conner (2001), show that subjective norms display a low explanatory power or even no significance on intention. This has led to critics on TRA and TPB, with some authors (Chang, 1988) expressing the necessity of changing the relationship of subjective norms towards the attitudes' formation more than the intention, or re-conceptualizing it (Armitage & Conner, 2001). In contrast, Trafimow & Finlay (1996) and Park (2000) depict two types of intentional behaviours: those which are driven by attitudes and those driven by subjective norms. Therefore, the lack of impact in our models, as well as the lack of significant differences between path coefficient estimates, leads to the need for more empirical studies. Nonetheless, for olive oil case, this result may be influenced by the potential transfer of the beneficial effect from the extra virgin olive oil category to the broad concept of olive oil considered without category differentiation, undermining SN's predictive relevance.

Attitude is said to have a higher influence than subjective norms (*e.g.*, Towler & Sheppard, 1991; Thompson *et al.*, 1994; Armitage & Conner, 2001; Webb & Sheeran, 2006) and, in our case, it explains consumption with the same strength as stated intention. Sheppard *et al.* (1988) highlights that both attitude and subjective norms predict intentions better than estimations of behaviour. However, Kim & Hunter (1993) find a slight difference in the correlations between attitude and intention compared to attitude and behaviour, while Kraus (1995) finds attitude significantly influences future behaviour, but it only accounts for 14% of the variance in behaviour on average. In this line, Glasman & Albarracín (2006) assert that strong correlations between attitude and behaviour

only occur when individuals are very involved in thinking about the object, have direct experience with it, receive information about it and think their attitudes are correct. The agri-food product analysed here may influence such results, given that consumers in Southern Spain have both direct experience with olive oil in general, and they can easily receive information about it; however, it should be taken into account that we are explaining actual behaviour not future one. Therefore, consumers can be making stimulus-based and memory-based decisions, since they are able to evaluate the presented product and then access to memory for additional information about products (Van Osselaer & Janiszewski, 2012).

Socioeconomic factors are particularly used in the judgement-choice approach. Those factors prove to be equally important in order to explain our dependent variables. However, studies from the attitudinal approach, which tackle the relationship between the socioeconomic factors and the intention, are truly scarce (*e.g.*, Olsen, 2003; Michaelidou & Hassan, 2010), and those that analyse the whole effect of them as a latent variable are even more unusual (Kim, 2009; Rodríguez-Entrena *et al.*, 2013).

Price and taste explained attitude, intention and consumption. As far as we know price relevance is in line with the judgement-choice approach, being the cornerstone for explaining consumer behaviour from the classical-utility theory. Indeed, the analyses of how different products' attributes modify the willingness to pay for agri-food products (*e.g.* Lusk *et al.*, 2005) are usual, and, in olive oil markets, price becomes a key variable in explaining consumer behaviour (van der Lans *et al.*, 2001; Dekhili & d'Hauteville, 2009). In the relationship between price and intention, Tarkiainen & Sundqvist (2005) assert that price is a kind of perceived behavioural control variable which predicts attitude. In other literature such as Michaelidou & Hassan (2010), price is found to be a driver of attitude, intention, and even consumption (Tarkiainen & Sundqvist, 2005). Nevertheless, the effect of price in consumers' decision-making process is not a well-studied variable in the attitudinal approach, being frequently included in empirical models as a single statement composing a beliefs' latent variable. A similar outcome derives from taste; some scholars (*e.g.* Dekhili *et al.*, 2011) bring it into play as a fundamental factor for food choices, even finding that it has greater weight than price in explaining consumption (Ward *et al.*, 2003), yet it is mainly investigated from an attitudinal point of view and by scarce literature. Some stress the influence of taste on the attitude (Staffleu, 1994; Shepherd, 2001), intention to buy a foodstuff (Thompson *et al.*, 1994; Fotopoulos & Krystallis, 2002) or frequency of consumption

(Chryssohoidis & Krystallis, 2005); however, it is included as a single observable variable in different beliefs' latent variables.

Finally, TPB postulate that, under volitional control, behavioural intention must be the predecessor and the single best predictor of behaviour. That statement is not fully met here. To a great extent, the intention significantly explains the behaviour, as is shown by different empirical research such as Povey *et al.* (2000). However, the strength in the relationship changes across studies, and the level of prediction can range from 24% to 70% (of correlation) for choices of foodstuff (Sheppard *et al.*, 1988). Our result is placed in the low range of the predictive power, which may be caused by different issues. According to Davies *et al.* (2002), TRA proposes measuring actual behaviour objectively, and they criticize self-reported behaviour. Our data comes from a daily product under volitional control where consumption is measured using objective actions of consumption, which may explain the low explanatory power. Young *et al.* (1998) depict that intentions are biased in measuring actual purchasing, either under- or overestimating it, and purchase behaviour generalization should not be based on intentions. Therefore, the bias may be corrected by assuming actual consumption will be steady in the near future and may become a proxy of future behaviour. Indeed, Wood & Quinn (2005) point out that the ability of intentions to predict behaviour relies on both the frequency of behaving and the stability of the surrounded context.

In short, both theories contribute to explaining intention and consumption in a similar way; however, by the hybrid approach, the variance in consumption behaviour is better explained suggesting a better performance. Evidently, the explicative factors can be extended in order to include a higher number of aspects embedded in subjects' salient beliefs, but this implies losing parsimony. Obviously, explaining actual consumption may be different than explaining future consumption, but given the gap between intention and behaviour, when ever possible, it may be interesting to truly learn which and how the determinants of actual consumption perform. Consequently, in order to expand the knowledge about consumer behaviour in agri-food markets, it may be appropriate to integrate variables from different approaches but adopting adequate definitions, measurements and relationships between them based on the paradigms they come from. This will allow unravelling consumer behaviour in order to fully understand agri-food markets functioning and design and implement successful commercial strategies.

This is particularly relevant in the olive oil sector where quality is still a differentiation instrument with

a considerable scope for improvement as a marketing tool. In this regard, this hybrid approach, assessing the whole spectrum of predictors such as subjective norms, attitudes, perception of products' features and socioeconomic factors, can help fighting against the mainstream trend of treating the olive oil as a commodity where extra virgin olive oil (EVOO) and refined olive oil (ROO) are seen as interchangeable products by consumers instead of being fully aware of the differences between them to counterbalance these differentiation failures.

Nonetheless, the hybrid approach developed here has some limitations. A more complete model can be developed taken into account variables such as normative belief and actual control, being the latter a main novelty in RAA due to the moderating effect between the intention and behaviour relationship. In addition, to analyse whether variables from goal-based choice models may capture better the behaviour process, the hybrid models can be also extended. Second, this research only tested a concrete foodstuff, olive oil, and for consumers living in a specific area, Spain. As a consequent, further empirical research is required extending to other agri-food products and geographical areas in order to get testable results about the main predictors in agri-food product choices.

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