

Studying Uruguayan consumers' perception of vegetable oils using word association

Estudando a percepção de consumidores uruguaios em relação a óleos vegetais usando associação de palavras

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■ Summary

The proliferation of extra virgin olive oil produced in Uruguay makes necessary the study of Uruguayan consumers' needs and expectations for olive oils. In this context, the aims of the present work were to gather information about consumers' perception of olive oil and to compare those perceptions with those of common vegetable oils commonly found in Uruguayan market. A total of 168 consumers completed a word association task about five types of vegetable oil: olive oil, corn oil, sunflower oil, soybean oil and rice bran oil. Consumers were asked to write down the first four images, associations, thoughts or feelings that came to their minds when thinking of each of the oils. The different associations were grouped into eighteen categories and the frequency of mention of each of them was determined for each of the evaluated oils. The evaluated vegetable oils raised clearly different associations in consumers' mind, suggesting that the personal constructs behind their consumption might differ. Olive oil was perceived as clearly different from the other oils and was described using categories such as *Dressing*, *Good quality*, *Positive effect on health*, and *Positive feelings*. On the other hand, soybean oil showed the opposite profile, being associated with the categories *Bad quality*, *Price*, *Negative feelings*. The other three oils were perceived as multipurpose common oils and were associated with categories such as *Frying*, *Ingredient in food products*, *Nutritional content*, *Consumption occasions*, *Packaging material*, *Raw material*, *Appearance* and *Texture*. Consumption frequency of olive oil strongly affected consumers' associations of this product, suggesting the importance of familiarity and previous experiences with the product in determining consumers' perception. The findings of this qualitative study provide a valuable insight for developing marketing strategies for promoting the consumption of olive oil among Uruguayan consumers.

Key words: *Vegetable oils; Word association; Consumer studies; Qualitative techniques.*

■ Resumo

A proliferação do azeite de oliva virgem produzido no Uruguai requer o estudo das necessidades e expectativas do consumidor uruguaio. Nesse contexto, o objetivo do presente trabalho foi obter informação sobre a percepção do consumidor em relação ao azeite de oliva e compará-la com a de óleos vegetais comuns encontrados no mercado uruguaio. Os dados de 168 consumidores sobre cinco tipos de óleos vegetais (oliva, milho, girassol, soja e arroz) foram coletados a partir da metodologia denominada associação de palavras. Os consumidores foram solicitados a escrever as quatro primeiras imagens, associações, pensamentos ou emoções que vieram em suas mentes quando pensaram em cada um dos óleos. As diferentes associações foram agrupadas em 18 categorias e a frequência de menção de cada uma foi determinada para cada tipo de óleo avaliado. Os diferentes óleos vegetais produziram distintas associações na mente dos consumidores, sugerindo diferenças em relação às características individuais, além das relativas ao consumo desse tipo de produto. O azeite de oliva foi diferentemente percebido dos demais óleos, tendo sido descrito com categorias como Molho, Boa qualidade, Efeito positivo na saúde e Sentimentos positivos. Por outro lado, o óleo de soja mostrou um perfil oposto, sendo associado com as categorias Má qualidade, Preço, Sentimentos negativos. Os outros três óleos foram percebidos como produtos de múltiplo uso, tendo sido associados a Fritura, Ingrediente em produtos alimentícios, Conteúdo nutricional, Consumo em determinadas ocasiões, Material de embalagem, Matéria-prima, Aparência e Textura. A frequência de consumo do azeite de oliva afetou fortemente as associações dos participantes, sugerindo a importância da familiaridade e experiências prévias com o produto na determinação da percepção do consumidor. Os resultados desse estudo qualitativo forneceram informações úteis para o desenvolvimento de estratégias de marketing para promover o consumo de azeite de oliva entre consumidores uruguaiois.

Palavras-chave: *Óleos vegetais; Associação de palavras; Estudos de consumidor; Técnicas qualitativas.*

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1 Introduction

Consumers' beliefs and attitudes with regards to food products are strongly dependent on their cultural traditions and on their education and culinary habits (ISSANCHOU, 1996). Traditional foods are an important element of European culture and have been defined by European consumers as "foods which are frequently consumed or associated to specific celebrations and/or seasons, transmitted from one generation to another, made in a specific way according to the gastronomic heritage, naturally processed, distinguished and known because of their sensory properties and associated to a certain local area, region or country" (VANHONACKER *et al.*, 2010). Extra virgin olive oil is a traditional food product for European consumers and plays an important role as a typical example of Mediterranean diet component. For example, in 2004 the average per capita consumption of olive oil in Spain was 12.9 L; whereas it represented 2% of the total household expenditure (ESPANHA, 2005).

On the other hand, olive oil is a relatively novel food product for consumers in many countries outside Europe, such as Uruguay. In this country the average per capita consumption in 2006 was 0.2 L (PRESIDENCIA DE LA REPÚBLICA ORIENTAL DEL URUGUAY, 2007). However, Uruguayan olive oil production and consumption has been rapidly increasing in the last 5 years. According to the Uruguayan Association of Olive Producers (ASOLUR) there are more than 70 olive oil producers in Uruguay, of which more than 95% are new producers who have 5-years old olive trees that are just starting their olive production. Uruguayan producers are trying to obtain relatively small amounts of high quality extra virgin olive oil.

Uruguayan consumers' perception of olive oil might differ from that of European consumers due to the influence of culture and tradition (NIELSEN *et al.*, 1998). Therefore, proliferation of extra virgin olive oil produced in Uruguay makes necessary the study of Uruguayan consumers' needs and expectations for olive oils, in order to promote the consumption of this product. In particular, when developing marketing strategies with regard to olive oil it is interesting to understand consumers' perception of this product in comparison with other vegetable oils commonly consumed in Uruguay.

Few studies have been found studying consumers' perception of different types of vegetable oils. Nielsen *et al.* (1998) compared consumers' perception and purchase motives of different types of vegetable oil (rape seed, virgin olive, normal olive, grape seed, sunflower seed, corn, salad, vegetable, isio, and peanut) in Denmark, France and England, using a laddering technique. These authors found that there were large differences in the perceptions of the vegetable oils considered. For French, English and Danish consumers, virgin olive oil was associated with health, sensory and hedonic characteristics; being clearly perceived as different from the other types of oils considered. Furthermore, Santosa *et al.* (2010) found that

Californian consumers' perception of extra virgin olive oil was strongly related to its sensory characteristics and good cooking results.

Qualitative techniques are useful for studying consumers' perception of food products and for determining the key drivers of consumer choice for a particular product category (VAN KLEEF *et al.*, 2005). In spite of the fact that focus group discussion is one of the most commonly used qualitative techniques, in some cases results may be strongly influenced by stereotypes which may lead consumers to bias the expression of their feelings, thoughts or real behaviour (WILL *et al.*, 1996; KRUEGER, 1998). On the other hand, projective techniques might be able to reveal consumers' internal thoughts and feelings since they are based on more ambiguous and unstructured procedures (DONOGHUE, 2000). Word association is a projective technique commonly used in psychology and sociology (HIRSH and TREE, 2001; ROSS, 2003; HOVARDAS and KORFIATIS, 2006) that has been recently applied for understanding consumers' perceptions of food products (ROININEN *et al.*, 2006; ARES *et al.*, 2008; GUERRERO *et al.*, 2010). According to Ajzen and Fishbein's Theory (1980), if a conceptual stimulus or object is provided to consumers and they are requested to freely associate the ideas that come to their minds, a relatively unrestricted access to the mental representations produced by the given stimulus is likely to be obtained. It has been stated that the ideas expressed using a word association procedure are spontaneous productions subject to fewer constraints than those typically imposed during interviews or during the performance of closed questionnaires. For food products, the first associations that come to consumers' minds might be those most relevant for the selection and purchase of food products (ROININEN *et al.*, 2006).

The aims of the present study were: a) to gather information about consumers' perception of olive oil using a word association technique; b) to compare those perceptions with those of vegetable oils commonly found in Uruguayan market; and c) to study whether consumers' perception of olive oil is affected by their consumption frequency of this type of oil.

2 Materials and methods

2.1 Participants

The study was conducted in the city of Montevideo (Uruguay) using a convenience consumer sample. Convenience samples are usually used in qualitative studies when they are aimed at getting an approximation to a research subject and involve recruiting available participants who meet specific criteria (KINNEAR and TAYLOR, 1993). The criterion for selecting participants was their interest in participating in the study. At recruitment stage, no information about the specific aim of the study was provided.

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A total of 168 consumers (118 females, 51 males, age range 18-72 years old) consumers were randomly recruited at shopping areas, universities, restaurants and other public places.

2.2 Study

The target stimuli were the names of the different types of vegetable oil commonly consumed in Uruguay: olive oil, corn oil, sunflower oil, soybean oil and rice bran oil. The names of the oils were printed on cards. Respondents received five cards with the name of the oil printed on them. The cards were presented monadically in balanced random order. Participants had to evaluate each card and to write down the first four images, associations, thoughts or feelings that came to their minds when thinking of the words on it.

After that, participants answered a few questions regarding their personal background such as age, gender, and academic level, consumption frequency of each of the evaluated oils.

Participants were given the cards and an evaluation sheet, and were asked to fill the questionnaire on their own at the recruitment site, in order to minimize the influence of the interviewer's participation.

2.3 Data analysis

2.3.1 Analysis of elicited words

The elicited associations were analysed qualitatively. All the associations provided by participants were considered for the analysis. First, a search for recurrent terms within each type of oil was performed. Then, the associations were grouped into different categories. The grouping procedure was performed independently by three of the researchers who authored the study, considering personal interpretation of the meaning of the words and word synonymy as determined by a Spanish dictionary. After individually evaluating the data, a meeting of the researchers was undertaken in order to check the agreement between their classifications. The final categories and their names were determined by consensus between the three researchers considering their three independent classifications and discussion between them.

Frequency of mention for each category and dimension were determined by counting the number of consumers that used similar words to describe the concept. Categories mentioned by more than 10% of the consumers were considered for the analysis.

A Chi-square test was performed for evaluating the differences in consumers' perception of the different types of oil considered.

Frequencies of mention of each category for each vegetable oil were also calculated separately for the three identified consumer groups with different consumption

frequency of olive oil and statistical differences were checked using chi-square test.

2.3.2 Correspondence analysis

Correspondence analysis was applied in order to visualize the relationship between concepts and categories for each of the identified clusters. Correspondence analysis is a descriptive/exploratory technique designed to analyze simple two-way contingency tables containing some degree of correspondence between the rows and the columns. Row and column variables were spatially represented using this technique, which allowed for a visual representation of the data. This analysis was performed for the whole consumer sample and separately for the three consumer groups with different consumption frequency of olive oil.

All statistical analyses were performed using XL-Stat 2009 (Addinsoft, NY).

3 Results and discussion

3.1 Word association

All the elicited words were grouped into categories in order to overcome the possible bias of considering individual words. Only those categories mentioned by more than 10% of the consumer sample for at least one type of oil were considered for further analysis. Table 1 shows the identified categories, as well as examples of individual associations. The most frequently mentioned categories were related to the uses of the evaluated oils (*Dressing, Frying, and Consumption occasions*), the raw materials used to produce the oils, the positive effect on health of some of the evaluated oils, and their flavour. According to chi-square statistical test highly significant differences were found in the words association frequency for the evaluated oils ($\chi^2 = 506.5$, $p < 0.0001$). This suggests that the different types of oils raised different associations in consumers' mind and therefore the personal constructs behind their consumption might be different. As shown in Table 1, olive oil was mainly associated with the categories *Dressing, Good quality, Raw material, Price, Positive effect on health, Appearance, Flavour, Positive feelings* and *Geographic origin*.

Considering the individual words used for describing this type of oil it could be concluded that olive oil is mainly regarded as a high quality gourmet and special product, which it is mainly used by Uruguayan consumers as dressing in salads.

Consumers seemed to appreciate the appearance and flavour of this oil, associating it with positive feelings such as joy and happiness. Olive oil's sensory characteristics have been associated with volatile compounds that impart a complex set of aromas, and with phenolic compounds that are responsible for bitter and pungent flavours (ANDREWES *et al.*, 2003; BELTRÁN *et al.*, 2007).

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Table 1. Frequency of mention of the categories for the evaluated oils and examples of individual associations.

Category	Examples of individual associations	Olive oil	Soybean oil	Rice bran oil	Corn oil	Sunflower oil
1. Dressing	Dressing, salads	93	23	24	48	42
2. Frying	Fried foods, French fried potatoes, milanesas	9	23	60	49	70
3. Ingredient in food products	Cake, food, cooking	18	12	14	21	21
4. Bad quality	Bad quality, rancid	3	20	3	0	7
5. Good quality	Gourmet, good quality, exclusive, delicate	27	3	18	7	5
6. Nutritional content	Calories, fatty acids, cholesterol-free	10	18	6	16	31
7. Consumption	Frequent consumption, I commonly use it	13	51	67	56	66
8. Packaging material	Glass, bottle, plastic	16	9	17	19	18
9. Raw material	Olives, sunflower, grains	51	28	31	46	51
10. Price	Expensive, cheap, adequate price	44	46	23	21	26
11. Positive effect on health	Good for cholesterol, healthy, nutrition	82	25	51	39	18
12. Appearance	Yellow, green, transparent	42	27	34	46	38
13. Odour	Aromatic, nice odour	14	37	27	7	11
14. Flavour	Good flavour, Sorong flavour	69	46	26	39	31
15. Texture	Thick, sticky, viscous	14	17	26	21	17
16. Negative feelings	Disgust, boring, sadness	9	36	11	4	5
17. Positive feelings	Happiness, joy, pleasure	29	4	7	20	9
18. Geographic origin	Jaén, Mediterranean countries, Spain	22	12	9	3	4

Another relevant issue is that consumers seemed to be aware of the potential positive effect of its consumption due to its relationship with the Mediterranean diet. Due to its chemical composition and high concentration of antioxidants, olive oil consumption has been associated with positive effects on health such as lowering the risk of coronary disease, preventing certain kinds of cancer, and reducing inflammation (BENDINI *et al.*, 2007; SERVILI *et al.*, 2004; TRIPOLI *et al.*, 2004).

The results mentioned above are in agreement with those reported by Nielsen *et al.* (1998) for Danish, English, and French consumers. According to these authors in a laddering task olive oil was mainly regarded as a healthy oil with good odour and flavour; attributes that led to good cooking results, enjoyment, and feeling good about oneself. It is interesting to consider that even though olive oil is not a traditional product for Uruguayan consumers, their perception of this product did not differ from that of French consumers. Uruguayan consumers' seemed to be interested in olive oil due to its sensory characteristics and its potential positive effect on health.

The relatively frequent mentions to the category Price through words such as "expensive" or "high cost" suggest that expensive pricing could be a limitation to olive oil consumption in Uruguay. Another interesting result is that Uruguayan consumers mainly mentioned European countries as the geographical origin of olive oil, suggesting that Uruguayan extra virgin olive oil is not strongly present in consumers' mind yet.

On the other hand, soybean oil showed different associations, being the type of oil most frequently associated with the category *Bad quality*. Consumers elicited words such as rancid or bad to when thinking about this oil. Furthermore, this type of oil was associated

with the categories *Price* and *Consumption occasions* since consumers mentioned words such as "cheap", "low cost" and "not frequently consumed" when thinking of this type of oil. Moreover, other relevant categories for this oil were categories *Odour* and *Flavour*. Consumers used words such as "disgusting smell", "rancid flavour" and "bad taste" for describing their perception of soybean oil. Another relevant category mentioned by consumers for this oil was that related to *Negative feelings*; particularly consumers elicited words such as "sadness" and "disgusting", which could be related to the negative quality and bad sensory characteristics that consumers associated to this product. Consumers' associations of soybean oil could be explained considering the high proportion of unsaturated fatty acids in its composition.

As shown in Table 1, rice bran oil was mostly associated with the categories *Frying*, *Consumption occasions*, and *Positive effect on health*. Due to the high proportion of saturated fatty acids in its composition the main use of this type of oil for consumers is frying. However, this type of oil seems to be not much used by consumers since the words elicited when referring to consumption were related to "not much consumed" and "not frequently consumed".

Corn and Sunflower oil showed similar associations, being the most popular oils in Uruguay. These oils were associated with the categories *Dressing*, *Frying*, *Consumption occasions*, *Raw material*, and *Appearance*. Therefore, these oils seem to be multipurpose oils, used for cooking and as dressing in salads, which are regarded by consumers as familiar and common. Regarding their sensory characteristics, consumers described these oils as transparent, neutral, and having a mild taste, odour and light texture. These results are similar to those reported

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by Nielsen et al. (1998) for consumers in three European countries.

Results from correspondence analysis showed the relationships between oils and associations (Figure 1). Olive oil was clearly separated from the rest of the evaluated oils, being associated with the categories *Dressing*, *Good quality*, *Positive effect on health*, *Positive feelings* and *Flavour*. Soybean oil was located in a differential position in the map, being located at positive values of the first two dimensions and associated with the categories *Odour*, *Bad quality* and *Negative feelings*. Meanwhile, the other three oils were close to each other and associated with categories such as *Frying*, *Ingredient in food products*, *Nutritional content*, *Consumption occasions*, *Packaging material*, *Raw material*, *Appearance* and *Texture*. Therefore, consumers' associations when thinking of the commonly consumed oils in Uruguay suggest that Rice bran, Corn and Sunflower oil are mostly considered multipurpose oils which are mainly used for cooking and that do not raise special associations or feelings in consumers' minds. On the other hand, olive oil seems to be considered as a special gourmet product, mainly used as dressing and associated with positive feelings such as pleasure, joy and happiness. On the other hand, soybean oil showed the opposite profile, being considered a bad quality product associated with negative feelings such as disgust and sadness.

3.2 Comparison of associations for consumers with different consumption frequency of olive oil

Based on their consumption frequency of olive oil, three groups of consumers were identified: Group 1, composed of 81 participants, frequent consumers of olive oil (who consumed olive oil more than 4 times a week), Group 2 (comprising 62 participants), occasional consumers of olive oil (less than 3 times a month), and

Group 3 which was composed of 25 people who did not consume olive oil.

These groups of consumers significantly differed in the frequency in which they mentioned the different categories when thinking of olive oil ($\chi^2 = 54.4$, $p = 0.0148$). As shown in Figure 2, as consumption frequency of olive oil decreased the percentage of mention of the categories *Dressing*, *Ingredient in food products*, *Good quality*, *Positive effect on health*, *Appearance* and *Positive feelings* decreased; whereas the frequency of mention of the categories *Negative feelings* and *Price* increased.

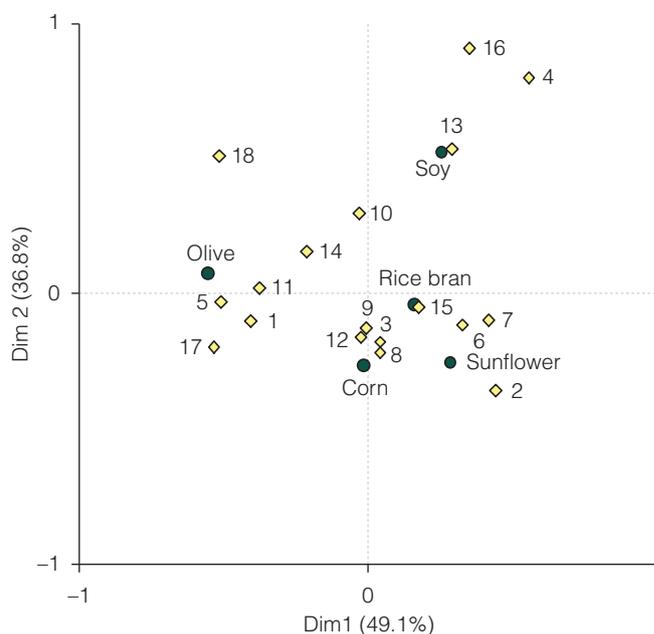


Figure1. Correspondence analysis plot for categories associated with the different types of oil during the word association task for the whole consumer sample.

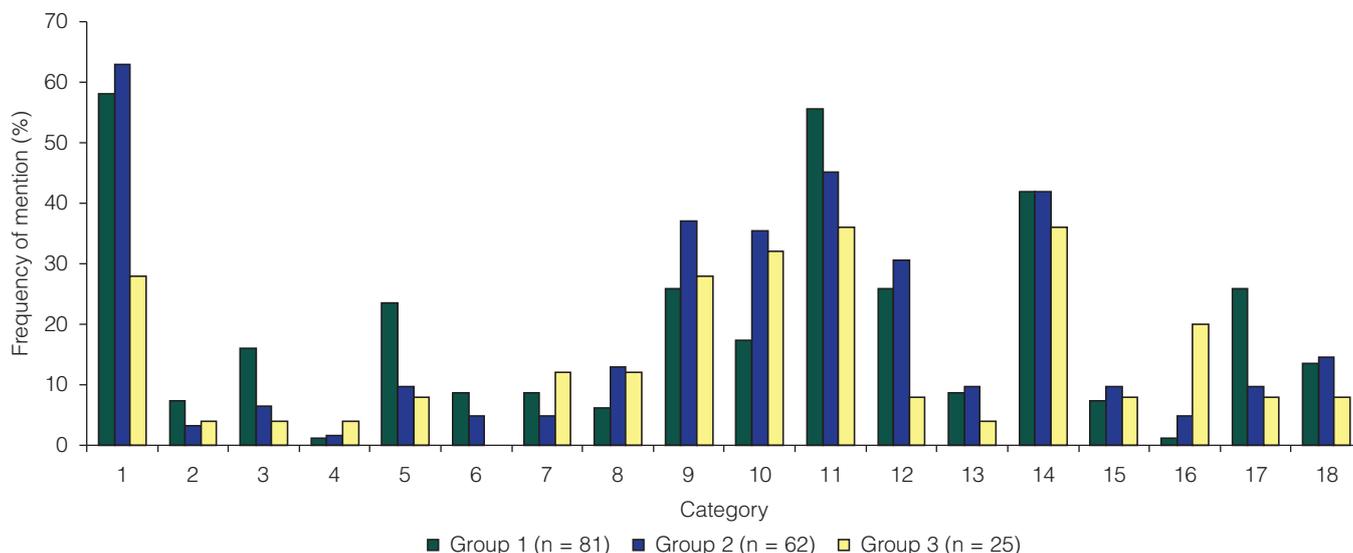


Figure 2. Frequency of mention the categories identified in the word association for olive oil, for consumers with different consumption frequency of olive oil.

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The decrease in the consumption frequency of olive oil led to a decrease of the frequency of mention of the categories related to the uses of this type of product, such as *Dressing* and *Ingredient in food products*.

Furthermore, consumers who frequently consumed olive oil were the ones who mostly elicited words within the categories *Good quality*, *Positive effect on health* and *Positive feelings*, suggesting that these consumers appreciate this type of product due to its quality, sensory characteristics and its healthy image. The frequent elicitation of words related to positive feelings suggests that these consumers might be involved with this product and consider it relevant in their everyday life.

The increase in the frequency of elicitation of words such as "expensive" or "high cost" (corresponding to the category *Price*) as the frequency of consumption of olive oil decreased suggests that expensive pricing might be one of the most relevant limitations for olive oil consumption for Uruguayan consumers.

Moreover, it is also interesting to notice that almost 25% of the non-consumers of olive oil mentioned negative feelings when thinking of olive oil, whereas frequent and occasional consumers of this product did not elicit this type of words.

As shown in Figure 3, correspondence analysis indicated that consumers in the three groups associated

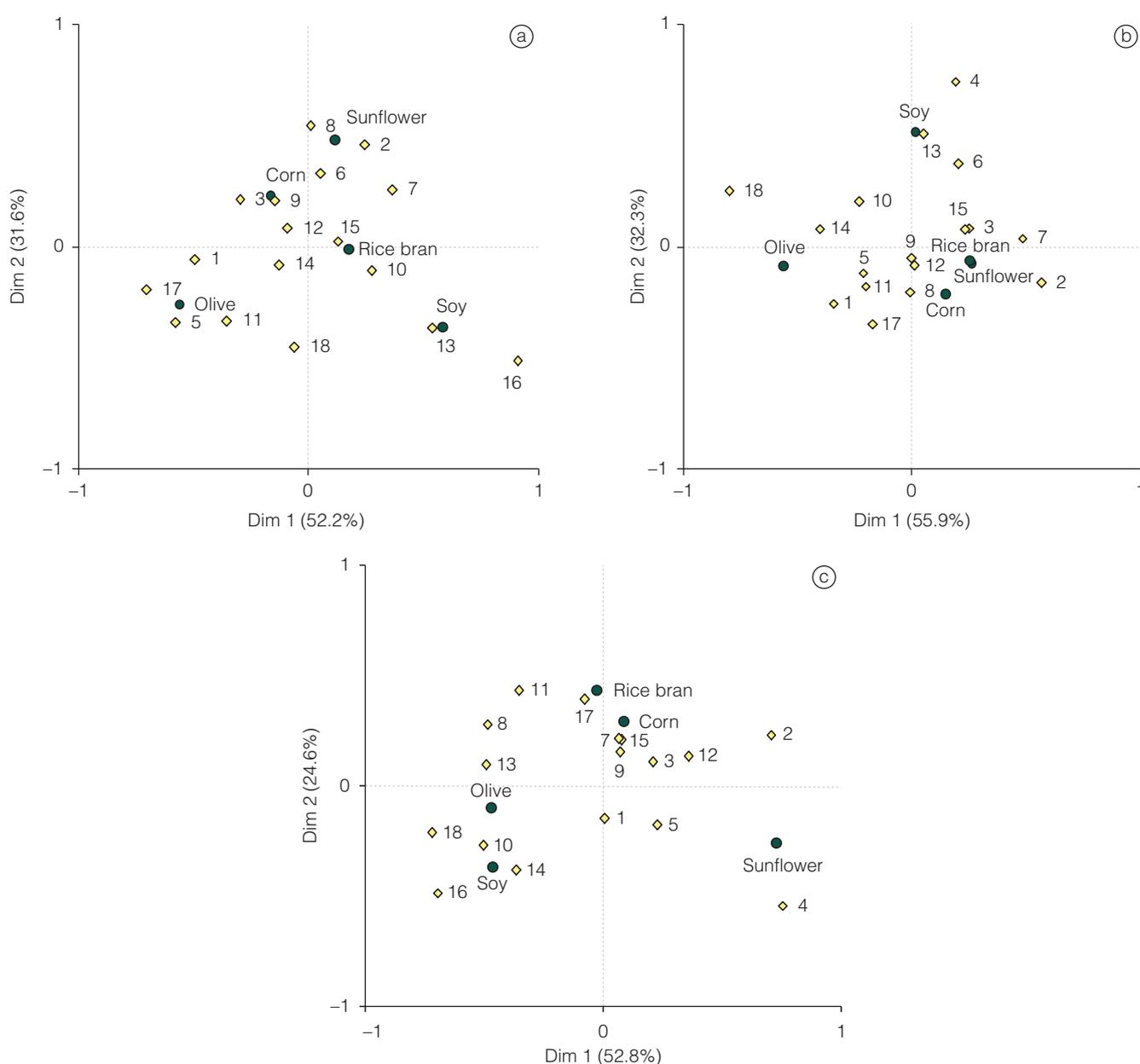


Figure 3. Correspondence analysis plot for categories associated with the different types of oil during the word association task for the three consumer groups with different consumption frequency of olive oil: a) Group 1 = frequent consumers; b) Group 2 = occasional consumers; and c) Group 3 = non-consumers.

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the oils with the identified categories differently (Figure 3). According, to consumers in groups 1 and 2, i.e. frequent and occasional consumers, olive oil was sorted apart from the rest of the oils, showing a differential profile. Frequent consumers of olive oil associated this product with the categories *Dressing, Positive feelings, Good quality, Positive effect on health* and *Geographic origin* (Figure 3a). Meanwhile, occasional olive oil consumers associated this product with the same categories than frequent consumers but also with the categories *Price* and *Flavour* (Figure 3b).

On the other hand, non-consumers of olive oil showed similar associations for soybean oil and olive oil, as shown in Figure 3c. For these consumers olive oil was associated with the categories *Packaging material, Odour, Geographical origin, Price, Flavour* and *Negative feelings*. Considering the high proportion of associations of olive oil with negative feelings it might be interesting to investigate if they are pre-concepts that lead consumers to not consume olive oil or if they were created after experiences with the product. In this sense, studying consumers' memories and previous experiences with olive oil could help understanding how their associations and preferences were shaped.

4 Conclusions

Word association was an easy and quick methodology for gathering useful information about consumers' perceptions of different types of vegetable oils. This methodology allowed the identification of attributes that might be relevant for consumers' decisions regarding which oils they usually buy and consume.

Consumers had different associations of the evaluated vegetable oils, suggesting that these products had different image for consumers. Olive oil showed a clearly different profile, being mainly described as a high quality gourmet and special product, which was associated with positive effects on health and raised positive feelings in consumers. Bran rice, sunflower and corn oil were perceived as regular, multipurpose oils; whereas soybean oil was associated to bad quality and negative feelings.

An interesting finding of the present study was that the frequency of elicitation of positive feelings depended on consumers' frequency consumption of olive oil, as well as the frequency of elicitation of negative feelings. This suggests that large differences existed between the perception of regular and non-consumers of olive oil. In this sense, it might be relevant to study how these constructs and feelings were formed through personal experiences with olive oil or through information received from external channels (i.e. without personal experience).

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