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## Emotional response to wine: Sensory properties, age and gender as drivers of consumers' preferences

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### ABSTRACT

Previous research has shown the relevance of studying consumers' emotional response to products for product development and as a marketing tool to attract the widest range of consumers. This study aims (1) to explain the relationship between emotional and sensory traits of wine products and (2) to understand the effect of gender and age in wine preferences and evoked emotions.

Six different commercial wines with very different sensory properties were selected. Sensory analyses performed by a trained panel of 11 assessors were used to describe wines. Degree of liking and emotional response were rated by a consumer panel (n = 208) drawn from different age segments using a modified version of EsSense25. The results showed that EsSense25 was able to measure emotional response in the set of studied wines. Also, sensory and emotional profiles of the same set of wines revealed a relationship between attributes like fruity and floral and positive emotions, and liquorice, clove and vanilla and neutral and negative emotions. Differences in emotional response by gender and age were found: in general, men reported higher scores on significant emotions than women for all the wines, but women, although they gave generally lower ratings than men, reported greater differences between the wines and were able to discriminate among the wines regarding emotions such as joyful. Also, regarding age segments, all of the wines evoked significantly higher scores in older adults than in middle-aged and young adults for most emotional terms. However, young adults showed higher discrimination between wines than the other age groups, in terms of emotional responses towards the set of wines tested in this study.

### 1. Introduction

Wine has been considered a meal accompaniment for the best moments and has symbolic value (Barrena & Sanchez, 2009) as a product that creates an association between emotions and aspects of culture (van Zyl, 2016).

In recent years, through the effects of globalization, economic changes, pursuit of pleasure and the development of common trade areas, regional drinking patterns have been influenced and modified (Smith & Mitry, 2007). Incrementally, national and cultural borders have become blurred. As a result, consumer preferences for types of alcoholic beverages, particularly wine, seem to be less driven by regional traditions and more by globalization, the mixing of cultures and the opening of the markets (Campbell & Guibert, 2006).

All of these aspects have established a new competitive environment in the wine industry. Old World wine producers, such as Italy, France

and Spain, have been challenged in all foreign markets by New World producers, like Australia, New Zealand, Chile, the USA, Argentina and South Africa. New World producers have implemented strong marketing strategies with the aim of attracting the widest number of consumers (Campbell & Guibert, 2006).

Thus, to be competitive, the wine industry needs new strategies to ensure the production of wines that are liked by consumers. Through these strategies, wine producers should seek to open new markets and offer each target consumer a specific product.

Wine products vary widely in sensory properties, which can trigger very different responses in the consumer. This diversification could be taken into account for the identification of new market segments. One of the aspects usually found to differentiate consumer responses towards food product consumption, beyond liking, is emotional response. Meiselman (2015) concluded in his study that the introduction of food-evoked emotions in sensory consumer research provides the industry

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with additional consumer insights. Studies carried out by Barrena and Sanchez (2009) and Silva et al. (2016b) showed that consumers discriminate between products more for their emotional benefits than for their technical or functional properties. Therefore, the study of consumer preferences and emotional responses could provide solutions for making their products more competitive to the wine industry (Silva, 2017) by using the emotional characterization of beverages as a new marketing tool to connect with consumers (Barrena & Sanchez, 2009; Silva et al., 2016b).

In the absence of other information related to the stimuli, food-evoked emotions in blind tastings are linked to sensory attributes. It is known that there are specific sensory attributes linked to particular emotions. For example, Thomson, Crocker, and Marketo (2010) associated *powerful* and *energetic* with *cacao* flavour in dark chocolate, Jager et al. (2014) found that *mint* flavour in chocolate was associated with the emotion *energetic*, Chaya et al. (2015) discovered that *sweetness* in beers was related to less pleasant emotions, Mojet et al. (2015) concluded that *vanilla* flavour in yogurt was related to positive emotions, and Silva, van Zyl, and Voss (2017) found positive correlations between *herbal* flavour and *sadness* and between *citrus* flavour and *disappointment* for beer products.

According to the suggestion that emotional aspects are strongly linked to sensory experience and that those emotions could determine the preference for a product, Ferrarini et al. (2010) proposed characterizing wines by making associations between sensory and emotional profiles as means to improve the products' position in the market. Silva et al. (2017) studied the relationship between the emotional responses elicited by two similar wines and the sensory properties of each one. They suggested that in similar sensory products, the same emotions caught the most consumer attention. To the authors' knowledge, there is currently no information about how different wine sensory attributes could be demonstrated to elicit a different emotional response.

It has been argued that the conventional hedonic response itself is not enough to explain consumers' response to products (Gutjar et al., 2013; Ng, Chaya, & Hort, 2013; Silva et al., 2017b). Research conducted by Silva et al. (2017b) found that emotions and liking were complementary for product characterization. However, while it is not always possible to differentiate products based on the degree of liking by the consumer, it is possible through the study of emotions. Ng et al. (2013) showed that some products with the same hedonic scores do not have the same emotional response and that emotions discriminated between products beyond hedonic response. That is why many lexicons have been developed in order to study the emotional response elicited by food products. King and Meiselman (2010) created the first emotional lexicon for food products, called the EsSense Profile. Shortly after, Thomson and Crocker (2013) developed a single lexicon, in four languages, capable of being used in any product category for consumer research and product development. In addition, a shorter version of EsSense (EsSense25) was developed by Nestrud, Meiselman, King, Leshner, and Cardello (2016). Only Ferrarini et al. (2010), Silva et al. (2016b), Danner et al. (2016) and Jiang, Niimi, Ristic, and Bastian (2016) have developed a specific lexicon for Italian, Dutch and Portuguese, and Australian wine consumers, respectively. To the authors' knowledge, there is no previous work on a general lexicon to be applied to wine products.

Apart from the sensory differences among products, other factors linked to consumers could be included in a study of emotional response. Few papers have shown the effect of gender, age, education level and monthly income on consumer-evoked emotional response to wine (Barrena & Sanchez, 2009; Jiang et al., 2016; Silva et al., 2017a).

On the one hand, no effect of gender on wine consumers' responses has previously been found (Silva et al., 2017a), but looking at other food products, the relationship between gender and emotions is unclear. The literature shows that the effect of gender on emotional responses towards food depends on the product category (Chaya et al.,

2015; Dubé, LeBel, & Lu, 2005; Edwards, Hartwell, & Brown, 2013; King, Meiselman, & Carr, 2010; Parra, Galmarini, Chirife, & Zamora, 2015; Piqueras-Fiszman & Jaeger, 2015).

On the other hand, according to Silva et al. (2017a), the effect of age on wine preferences depends on the previously lived experiences evoked by the sensory perception. Therefore, age and consumers' drinking lifetime define wine flavour preferences, with a linear increase in wine consumption over a consumer's life (Melo, Colin, Delahunty, Forde, & Cox, 2010; Silva et al., 2017a; Silva, Fig ueiredo, Hogg, & Sottomayor, 2014). Silva et al. (2014) concluded that a group of young adults generally perceives that the older they are, the more interested in wine they will be. In another study, Silva et al. (2017a,b) stated that wine is a beverage meant for an older generation. It was also demonstrated that young adults drink wine for reasons related to disinhibition and social status, while older people use it as a social catalyst, to evoke memories and traditions (Barrena & Sanchez, 2009).

In the study of the relationship between age and emotions, it has been shown that regardless of whether an EsSense profile or PrEmo tool is used to gather self-reported emotions, young adults reported more extreme scores in emotions that varied along the valence and arousal dimensions, while old adults gave more neutral scores, varying only along the valence dimension (den Uijl, Jager, Zandstra, de Graaf, & Kremer, 2016; den Uijl, Jager, de Graaf, Meiselman, & Kremer, 2016; Montepare & Dobish, 2014). Other authors have found that older people reported more positive emotions than younger ones with regard to beer (Chaya et al., 2015) and comfort foods (Dubé et al., 2005), recalling typical and memorable meals (Piqueras-Fiszman & Jaeger, 2015). The study carried out by Edwards et al. (2013) showed that young consumers were more critical about food than older people.

In short, given the competitive environment in the wine industry, studying wine preferences or liking is not enough. Analysing the emotional response and the differences associated with age and gender for each type of wine could be a clue for the industry regarding its market strategy. This case study explores the relative influence of sensory properties and consumers' age and gender on the emotional response to wine products, by means of both univariate and multivariate analysis approaches. The work could contribute to a better understanding of consumers' emotional response. To the author's knowledge, this has not yet been investigated.

This research is focused on different commercial wines covering a wide range of sensory properties, in order to investigate (1) the relationship between emotional and sensory traits of products and (2) the differences in emotional response by gender and age for each type of wine.

## 2. Materials and methods

Two different phases have been conducted in order to achieve the objectives of the research: sensory evaluation by a panel of trained assessors and consumer evaluation (hedonic and emotional response) by a panel of consumers.

### 2.1. Wine selection

Six commercial wines (Table 1) were selected with the aim of covering a wide range of sensory properties. The selection was based on three different criteria: 1) type of wine, 2) type of grape and 3) age of wine.

### 2.2. Sensory evaluation

In order to characterize the six wines, a panel of 11 assessors (5 women and 6 men) was trained. The panellists were staff and researchers from the School of Agricultural, Food and Biosystems Engineering at the Universidad Politécnica de Madrid, Spain.

The panel had already been trained to assess wines using the

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