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Title

Can novices as well as experts blind taste wine quality?

I want to submit an abstract for:

Conference Presentation

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Keywords

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Research Question

Can people blind taste wine quality? Does this depend upon wine expertise?

Methods

168 participants (79 experts) blind tasted three wines and rated their quality. Two wines were blind duplicates and the third wine was a higher level offering from the same winery.

Results

Participants (at all expertise levels) rated the higher quality wine as significantly higher in quality, complexity, length and intensity.

Abstract

Study aims:

Understanding the mechanisms underlying wine quality perception is important as it is a key element underlying wine purchase decisions. Wine is especially unique within the general food and beverage domain, as the judgment of wine quality by wine experts exerts a critical influence on wine market. This study investigated how both wine experts and novices make quality evaluations, by putting them in a blind tasting situation with two identical lower quality wines and one higher quality wine by the same producer.

Background: Can people discern wine quality?

Over the years, a number of studies have tried to tackle the multi-dimensional nature of wine quality perception. One popular method is to compare expert quality assessments with sensory panel and chemical analyses to arrive at sensory characteristics or molecules/elements that correspond with high quality assessments (Hopfer & Heymann, 2015; Saenz-Navajs et al., 2015). However, these studies only report limited correlations, possibly because wine experts' quality assessments are driven by higher-level, specialised wine attributes such as complexity and balance, instead of individual sensory descriptors or the presence of specific chemical compounds. For instance, the Wine and Spirits Education Trust (WSET), a British organisation which awards professional certifications for those in the wine trade, teaches that wine quality is based on the assessment of balance, length, intensity, and complexity (Fielden, 2009). Problematically, there is currently a lack of quantifiable measurement of these specialised wine attributes.

Nevertheless, wine competitions rely on the assessment of wine quality. Despite the ever-growing number of wine competitions, a number of studies have questioned the consistency, reliability, and efficacy of such competitions (Gawel & Godden, 2008; Hodgson, 2009a, 2009b; Honore-Chedozeau et al, 2015). Most notably, Hodgson (2009a) first analysed results from 13 U.S. wine competitions, which showed little concordance amongst Gold medal winning wines. Furthermore, the fact that wine competitions are judged by wine experts is perhaps of questionable value, since there is apparently little agreement between experts and novices (Honore-Chedozeau et al., 2015; Hopfer & Heymann, 2014; Saáenz-Navajs et al., 2013, 2015).

That said, the above-cited studies have involved quite different wines from different regions and producers. In this study, we aimed to discover whether people can tell in a blind tasting setting a higher quality wine from lower quality wines by the same producer. Furthermore, we wanted to investigate whether people (even those without training) can give consistent quality ratings to blind wine duplicates.

Experiment design:

A total of 168 participants (76 women, 85 men, 7 unreported) took part in this study, which took place at a Neuroscience and Wine symposium in Barcelona, Spain. The symposium involved both those in the wine trade as well as students and other professionals. 44 participants were in the 18-35 years age group, 118 in the 35-60 years age group, and 2 in the 60 years or above age group (5 unreported). The participants self-reported their level of wine expertise, with 22 beginners (defined as “I drink socially but don't know much about wine”), 62 intermediates (defined as “I know which wines I like and have been to some classes”), 79 experts (defined as “I work in the wine trade and/or have 5+ years experience tasting wine formally”), and 5 unreported.

The study involved two wines by the Scala Dei winery in Priorat, Spain. One was the basic level Garnatxa (2016 vintage), the other was a higher level cuvée called Cartoixa (2014 vintage). The Garnatxa is produced from 100% Grenache grapes from red clay soil vineyards in the foothills of the Sierra del Montsant, fermented in stainless steel tanks with natural yeasts and aged in tank for 6-8 months before bottling (<https://www.codorniu.com/other/scala-dei-garnatxa.html>). The wine has 14.5% ABV and retails for approximately \$20 USD. The Cartoixa is produced from 75% Grenache and 25% Carignan grapes, selected from the 60 year old vines planted on sleep slate terraces. The wine is aged in French oak barrels for 18 months before bottling (<https://www.codorniu.com/other/scala-dei-cartoixa.html>). It has 15% ABV and retails for approximately \$50 USD.

The study was designed with wine type (Garnacha and Cartoixa) as the within-participant factor. The lower level Garnacha was included twice as a blind duplicate. Each participant was seated at a table with a paper questionnaire, a bottle of water, and three glasses of wine ordered from left to right. Half the participants received the Garnacha, Cartoixa, and Garnacha again (left to right). The remainder of the participants received the Cartoixa, Garnacha, and Garnacha again (left to right). No information was provided to the participants concerning the wines, nor the purpose of the experiment, prior to the start of the study. All the participants took part at the study at the same time in the same lecture room.

The participants were asked to taste each wine in order, from left to right. For each wine, they were asked to rate on 9 point scales the following attributes: wine liking, flavor intensity, complexity, balance, length, and finally the wine's quality. They were instructed to rinse their mouths with water between tasting each wine. The participants were instructed to perform the study in silence, without talking or consulting with those sitting next to them. The experiment lasted for around 15 minutes and the participants were debriefed afterwards.

Results:

Significant positive pairwise correlations were found between ratings of liking, intensity, complexity, balance, length, and quality (see Table 1). In other words, high wine quality is associated with pronounced flavour intensity, high levels of complexity and liking, long length, and liking for the wine. Of all the rated attributes, quality is most positively correlated with wine liking, followed by perceived balance and complexity.

A repeated measures multivariate analysis of variance (rm-MANOVA) was conducted with wine type (first Garnatxa tasted, second Garnatxa tasted, Cartoixa) as within-participant factor and wine expertise (novice, intermediate, expert) as between-participant factor. The model included liking, flavour intensity, complexity, balance, length, and quality as measures. Overall, the rm-MANOVA revealed a main effect of wine type ($F(12, 134) = 3.44, p < 0.0005$, Wilks' Lambda = .77) as well as an interaction effect between wine type and expertise ($F(24, 270) = 1.82, p = .12$,

Wilks' Lambda = .73).

In terms of wine type, follow-up univariate tests revealed that there were significant differences between the wines in terms of their quality ($F(2, 290) = 5.72, p = .004, \eta^2 = .04$), flavour intensity ($F(2, 290) = 4.44, p = .013, \eta^2 = .03$), complexity ($F(2, 290) = 10.06, p < .0005, \eta^2 = .07$), and length ($F(2, 290) = 6.89, p = .001, \eta^2 = .05$). Post-hoc comparisons with Bonferroni corrections revealed that the Cartoixa was judged to be higher quality than the first Garnatxa ($p = .002$), more complex than the first Garnatxa ($p < .0005$), more intense than the second Garnatxa ($p = .012$), and longer in length than both Garnatxas ($p = .005, .006$ respectively).

Furthermore, there were significant interaction effects between wine type and expertise for the ratings of complexity ($F(4, 288) = 5.98, p = .027, \eta^2 = .04$) and length ($F(2, 288) = 9.27, p = .003, \eta^2 = .05$). In terms of complexity, the Cartoixa was rated to be significantly more complex than the two Garnatxas by intermediates ($p = .03, .02$) and experts ($p < .0005$ for both), but not by beginners ($p = .18, 1.0$). In terms of length, the Cartoixa was rated to be significantly longer than the second Garnatxa tasted (i.e., the last wine tasted by all participants) by both intermediates ($p = .01$) and experts ($p = .001$). However, beginners judged the Cartoixa to be significantly longer than the first Garnatxa tasted ($p = .006$).

Conclusion

The results of the present study demonstrate that people can in fact blind taste wine quality to some extent. More specifically, the Cartoixa was judged to be higher quality, more complex, more intense, and longer in length than at least one if not both of the Garnatxas. In line with findings by Honore-Chedozeau et al. (2015), ratings by beginners were different from those from intermediates and experts, who were much more consistent in their ratings. Specifically, beginners seem to be more influenced by order effects than more experienced tasters, because they rated the last wine tasted as highest in complexity and length. On the other hand, experienced tasters rated the higher quality Cartoixa to be more complex and longer in length. These results demonstrate that experienced wine tasters do in fact make more objective wine judgments, but no differences between the degree of expertise were found.

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