



Preliminary study of the effect of knowledge and sensory expertise on liking for red wines

By: Michael Bom Frøst and Ann Noble

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The authors show that sensory expertise and wine knowledge are two different things and it is a mistake to infer one from the other. They observed that neither wine knowledge nor sensory expertise play an important role in wine preference.

- As we all know, preference or liking of a wine is influenced by many factors in addition to wine flavor itself. Some examples are price, grape variety, origin, expert recommendations, winery reputation, winemaker reputation, bottle appearance, health or ethical connotations, and awards received. The goal of this study was to examine differences in preferences among subjects according to two additional factors suspected to also influence quality perception: degree of **wine knowledge**, and **sensory expertise** or sensory acuity.
- Rather than assuming that some subjects were experts and some others novices for each of these two factors, the authors developed two types of tests specifically designed to objectively measure each type of talent: a **Wine Trivia Quiz** –to measure wine knowledge- and a **Smell Association Test** –to measure sensory expertise. Once the subjects were segmented into groups according to one or the other criteria – or both together-, they ranked their preference for 12 red wines from 1 (dislike extremely) to 9 (like extremely). This allowed the authors to study the preference of each group, that is, which wines each of them were drawn to based on their wine knowledge or their sensory acuity, and what characteristics in these wines drove the subjects to choose them.
- This is how the Wine Trivia Quiz worked. It consisted of 11 wine questions of varying levels of difficulty—from an undergraduate class exam. Accordingly, varying points were given to each correct answer, and the total was calculated. (See Fig. 1 of original text for complete questionnaire. Do you think you would pass the test?) And here is how the Smell Association Test worked. It consisted of 5 questions –accompanied by the corresponding wines- specially formulated to assess the taster’s ability to discriminate (Ex. “which of these two wines is higher is berry aroma?”), *recognize* (Ex. “which is this aroma”), and *describe* (Ex. “describe with a few words the main aroma in this wine”) a variety of aromas. Also, correctly identifying an aroma using terms from the outside tier of the Wine Aroma Wheel received more points than the more general terms on the inner tiers.
- **Test results.** The tests were completed by 57 subjects (26 females, 312 males) recruited from the University of California, Davis campus, 18 of which had wine-related professions or were enology students. Twelve of the 57 subjects answered all the Smell Association questions correctly; and only 1 out of 57 answered all the Wine Trivia questions correctly (this individual also answered all the smell questions correctly). Overall, the scores for both tests were *normally* distributed, that is, many people had an average score, and few performed extremely well or extremely poorly (even though the Smell Association Test was easier and involved fewer questions than the authors would have preferred to adequately separate tasters into groups). When comparing results for both tests (scatter plot), it was

obvious there was no correlation between both types of scores. That is, **it is inappropriate to infer sensory expertise from wine knowledge, and vice versa.**

- **Segmentation in groups.** Based on the distribution of the answers to the Smell Association Test, 3 groups were formed: the lowest quartile (“sensory low”), the highest quartile (“sensory high”), and the remaining subjects (“sensory medium”). Subjects were similarly segmented into 3 groups based on the distribution of the answers to the Wine Trivia Quiz (“knowledge low”, “knowledge high”, and “knowledge medium”). Finally, based on the combined scores for the two tests, the subjects were segmented once again (“overall low”, “overall high”, and “overall medium”).

- **Preferences based on sensory expertise.** The “sensory medium” group rated the wines significantly lower in liking than did the two other groups. Since this was only observed for this middle sensory expertise group, it suggests that an increase in the level of sensory expertise does not have a proportional effect on degree of liking.

- **Preferences based on wine knowledge.** A segmentation based on wine knowledge did not have much effect on “degree of liking” ratings. That is, **individual differences in liking are much larger than the effect of wine knowledge.** Finally, overall expertise segmentation showed also no effect on degree of liking. Overall, groups showed different patterns of liking, suggesting, once again, that the two types of expertise – sensory expertise and wine knowledge- do not necessarily lead to the same preference.

- **Relationship between preference and wines tasted.** (The identity of the wines is not revealed in this paper, and we will refer to them as Wines 1 through 12). Statistical analysis (Partial Least Squares Regression) allowed the authors to draw a map showing the relationship between the wines and their liking ratings. One of the dimensions of the map (X axis) was able to separate “most liked wines” (Wine 1 in a cluster by itself) against “least liked wines” (Wines 10, 11, 12). Similarly, a second dimension (Y axis) was able to show a separation between Wines 3, 8 and 9, on the one hand, and Wines 2 and 7, on the other. These meant that some subjects liked all the wines in the first cluster, and disliked all in the second cluster, and vice versa.

- **Relationship between preference and wine sensory data.** The authors had previously obtained a descriptive analysis of each of the wines in this study by using a trained panel to rate the intensity of each of 14 wine descriptors. Once again, using statistical analysis, they were able to plot a second map, this time relating the liking ratings (Y axis) to the sensory descriptive data of the wines (X axis). They found that the model failed to explain the existing variation in liking ratings, and instead, was only able to account for 25% of this variation -which is very low. Still, based on the map results, the authors were able to make the following observations: 1) the descriptors “leather” and “sour” had a negative effect on preference, that is, subjects liked wines low in these descriptors. 2) subjects seemed to prefer wines with the descriptors “vanilla/oak”, “canned vegetables”, and “green olives”, over wines high in the descriptors “buttery” or even “berry”. Still, as the authors note, these results should be read with caution, as they were unable to explain what was driving the remaining 75% of the variation in liking, that is... most of it.

In summary, the two tests developed by the authors proved useful to segment subjects into groups. The low correlation between the results of both tests indicates that *wine knowledge* and *sensory acuity* are two different types of wine expertise that should not be confused. Segmentation based on *sensory data* had more weight on liking than segmentation based on *wine knowledge*. However, even though sensory expertise was able to affect liking ratings, lower and higher expertise groups didn’t show a systematic increase or decrease in liking. The overall conclusion is that individual differences in preferences – perhaps factors that the authors did not test- may play the larger role in determining wine liking.

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