Title
Can metaphors help us better remember wines? The effect of wine evaluation style on short-term recognition of red wines

I want to submit an abstract for:
Conference Presentation

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Keywords
memory; wine perception; wine language; wine expertise; metaphor; multisensory perception

Research Question
Does writing a tasting note, especially one that uses multisensory metaphorical descriptors instead of analytical smell and taste descriptors, help novices better remember the flavour of a wine?

Methods
The study compared how three wine evaluation methods (multisensory metaphors, analytical smell and taste, and a control condition with no writing) impacted 153 participants’ ability to remember a target wine.

Results
The study revealed no recall difference between the different experimental conditions. Wine liking was positively correlated with better recognition performance, and more cognitively demanding description tasks led to better memory.

Abstract
Aims
People are generally poor at remembering complex food stimuli, such as wine. However, giving novices a framework in which to evaluate the wine may help the memory process. Using a short-term recognition task, this experiment compared different forms of wine evaluation on the to-be-remembered wine sample, using either 1) a classic smell and taste evaluation, 2) a multisensory metaphor selection task, or 3) a no-writing control condition.

Background
Without specific training, people are generally poor at describing the flavour of foods (Majid et al., 2017). Unlike visual and auditory senses, people do not usually receive education on how to describe smell and taste. In wine, a beverage with complex chemosensory attributes (Parr et al., 2002), being able to precisely describe one’s tasting experience is a characteristic of experts (Gawel, 1997; Herdenstam et al., 2009).

Writing a tasting note is one way for people to describe and reinforce their tasting experiences, helping them to better remember what they taste. Hughson and Boakes (2009) found that writing a description of the target wine improved recognition in both novices and intermediates. Despite the benefits of tasting notes, it is difficult for novices to communicate through them (Gawel, 1997; Solomon, 1990). Novices and experts often use different vocabularies when describing foods, with wine experts outperforming novices in memory and description-matching tasks due to superior cognitive knowledge (Hughson & Boakes, 2002; Parr et al., 2002).

However, source-based descriptors may not be the only way to construct memorable, consistent tasting notes. Studies have found that people can make consistent associations between specific smells and tastes and attributes from other sensory modalities (e.g., Wang et al., 2019). These associations between different sensory modalities are referred to as crossmodal correspondences (Spence, 2011) and can be considered a form of metaphor. If wine expertise relies on knowledge (Hughson & Boakes, 2002), these stable metaphorical associations can level the playing field by helping novices access commonly agreed-upon vocabulary whose acquisition does not require extensive training.

Design
153 participants (18-50 years with normal subjective sense of vision, smell, and taste) took part in the study. While no previous studies have investigated the effect of metaphors on food memory, our study is a partial replication of Hughson and Boakes (2009), which included only 20 participants per condition (control versus description writing).

The study used a between-subjects design with three wine evaluation conditions, consisting of one approximately 20-minute session. All participants were informed that the study was a food and memory study in which they would be tasting a wine and then performing a recognition task. First, the participants had four minutes to taste a wine sample (the “target”), during which they were randomised to one of three conditions:
1) Evaluate the wine using metaphors. This consisted of answering a series of nine semantic differential scales that involved visual (e.g., round vs. angular), auditory (e.g., loud vs. quiet), and tactile (e.g., sharp vs. dull) metaphors.
2) Evaluate the wine by making nine smell- and taste-related evaluations adapted from formal wine education tasting methods.
3) A control condition with no explicit wine evaluation.

Afterwards, all groups answered questions on the difficulty of the description task (1 = extremely easy, 7 = extremely difficult) and wine liking (1 = not at all, 7 = very much).

After a four-minute break, participants were given four more wine samples, one at a time, one of which was the target sample. The wines were presented in the same order for all participants. For each wine sample, they answered the following questions:
- On a scale of 1-7, how certain are you that the sample is the target sample (1 = not at all, 7 = very certain)?
- On a scale of 1-7, how certain are you that the sample is not the target sample (1 = not at all, 7 = very certain)?
- Can you briefly explain what was the reason behind your answer (free text response)?

After tasting all samples, participants rated how difficult the overall recognition task was on a scale of 1-7 (1 = extremely easy, 7 = extremely difficult). Finally, participants answered demographic questions and questions about their wine-drinking habits and self-rated expertise.
Results
89 (58%) out of 153 participants correctly identified wine 3 as the target wine by assigning it the highest confidence score (metaphor: 32/51; analytical: 29/50; control: 28/52).

The ANOVA test revealed no significant difference between the groups who explicitly evaluated the wines (metaphor and analytical) versus the control group (F (1, 149) = 0.21, p = .645, ηp2 = .001). There was no difference between the metaphor and analytical groups (F (1,97) = 0.32, p = .572, ηp2 = .003).

Following secondary analysis comparing self-rated expertise with experimental conditions, we found a significant interaction between expertise and condition (F (2,147) = 4.89, p = .009, ηp2 = .062), while there were neither significant main effects of expertise (F (1,147) = 1.22, p = .271, ηp2 = .008) nor condition (F (2,147) = 0.25, p = .780, ηp2 = .003). The interaction effect was driven by a significant difference between novices and intermediates in the control condition, where novices performed significantly better (Mnovice = 3.21, SE = 0.43, Mintermediate = 1.36, SE = 0.43, p = .003).

Since the overall recognition score was not significantly different between the three groups, we investigated within-group drivers of obtaining higher recognition scores. In the control group, higher recognition was significantly and positively associated with higher liking for the wine to be remembered. There was also a negative association with recognition task difficulty, with participants doing worse the more difficult they perceived the task, and a strongly negative correlation with self-rated expertise, with higher expertise participants performing worse. Interestingly, in the analytical group, having higher recognition scores was associated with higher description task difficulty.

MANOVA analysis revealed a significant influence of experimental condition on description task difficulty (F(2,149) = 28.11, p < .001, ηp2 = .27) but not on recognition task difficulty (F(2,149) = 0.38, p = .687, ηp2 = .005). The control condition was rated as easier than the metaphor and analytical condition (Mcontrol = 2.94 (SE =0.19), Mmetaphor = 4.71 (SE = 0.20), Manalytical = 4.78 (SE = 0.20), p < .001 for both comparisons), where there was no difference in difficulty between the metaphor and analytical conditions. In contrast, the recognition task difficulty level was rated around 4 out of 7 for all 3 conditions (Mcontrol = 3.98(SE = 0.19), Mmetaphor = 4.21 (SE = 0.19), Manalytical = 4.14 (SE = 0.19)).

Conclusion
The study aimed to explore different evaluation strategies to remember wines. It explored the use of visual, auditory, and tactile metaphors in addition to smell and taste analytical assessment as a tool to help participants better remember wine. However, the study revealed no difference between the experimental conditions. Secondary analyses demonstrated that wine liking was positively correlated with better recognition and that more cognitively demanding description tasks enhanced memory. Although analytical and metaphorical descriptions showed limited effectiveness in a wine memory task, the study nevertheless serves as a valuable guideline for the design of future tools to help consumers better remember what they eat and drink.

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