AAWE Scholarship Project Proposal

Does blind tasting work? Investigating the impact of training on blind tasting accuracy and wine preference

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1. Motivation

There is a wide body of literature on differences between wine novices and experts when it comes to perceptual sensitivity, the use of descriptions, and wine preference (D'Alessandro & Pecotish, 2013; Gawel, 1997; Hughson & Boakes, 2014; Parr et al., 2002; Royet et al., 2013; Weil, 2007). What is relatively lacking, however, is an assessment of how the experience of wine tasting changes with the acquisition of expertise. As the Oxford University Blind Tasting Society prepares for its annual varsity blind tasting match against Cambridge, we have a unique opportunity to follow the progress of a group of relatively novice tasters as they go through an intensive five-week training program.

Is blind tasting just nonsense? Rosenheck (2017) performed an analysis of guesses made at the 2017 varsity blind tasting match and deduced that most wines were deduced at a rate better than chance. By collecting participants' tasting sheets and guesses over their training program, we aim to assess the impact of blind tasting training in terms of group accuracy (variability of guesses amongst the group as a whole) as well as individual accuracy (including accuracy in determine structural elements such as acid, alcohol, presence of oak, etc.). We will also use natural language processing to analyse changes in language usage in participants' tasting notes as they become more experienced in blind tasting. Finally, we will keep track of any changes in wine preference throughout the training session, to study how the acquisition of expertise may shape purchase intentions. While wine preference is not explicitly a part of the blind tasting match, we believe it is an important question to investigate. Given the rapid rise of knowledgeable wine tasters in developing markets (e.g. China, see Li & Bardaji, 2017), it is crucial to understand how increasing expertise can influence preference for specific wine styles (e.g., less fruit-driven, higher acid, more bottle maturation, etc). Because the wines will be given blind, we will be able to track preference for only wine-intrinsic attributes without the participants being biased by the label, price, or origin information (Almenberg & Dreber, 2011; Cordeaus et al., 2013; D'Alessandro & Pecotish, 2013; Mueller & Szolnoki, 2010).

2. Background

The Oxford-Cambridge varsity blind tasting match

The varsity match, now in its 65th year, is the oldest university based wine competition in the world (Segal et al., 2013). The competition involves two flights – one white, one red - of six wines each. All wines are served at room temperature in ISO glasses from numbered clear glass bottles (the original bottles are hidden, rather than merely covered with a wine sock, as to not give away information based on their shape). Competitors are given 40 minutes per flight, and must guess the grape variety, country, region, sub-region, vintage of each wine in addition to giving justifications for each guess in terms of a brief tasting note. The wines can originate from anywhere in the world, as long as they are accessible on the UK market and have a dominant variety of at least 70%. While sweet wines can be included in the match, rosé, sparkling, and fortified wines are not allowed in the match. For the most part, the wines come from major wine producing countries and are no more than twenty years old.

Influence of wine expertise and training on the wine tasting experience

Training improves people's ability to discriminate flavours when tasting wine (Owen & Machamer, 1979). However, that is possibly because trained panelists and experts can adapt an analytical strategy that helps them to distinguish different components of wine flavours, when compared to untrained panelists (Arvisenet et al., 2016). Furthermore, several neuroimaging studies involving wine have been conducted with the goal of pinpointing the influence of expertise on multisensory integration in wine evaluation. Sommeliers activate those brain regions that are involved in high-level cognitive processes such as working memories and behavioural strategies when they taste wine – unlike novices who activate the primary gustatory cortex and emotional processing areas more (Castriota-Scanderbeg et al., 2005). In a follow-up study focused on the effect of expertise during the different phases of tasting (i.e., during vs. after tasting), Pazart et al. (2014) observed that wine experts activated those brain regions responsible for sensory integration immediately during the wine tasting phase, whereas for control participants they were only activated during the after tasting phase. This result implies that experts are able to analyse the sensory properties of wine more efficiently than untrained participants.

In terms of odours, expertise has been shown to increase sensitivity and discrimination (see Royet et al., 2013, for a review), possibly giving rise to structural reorganisation in olfactory brain regions (Delon-Martin et al., 2013). However, there seems to be no evidence that wine

experts experience increased sensitivity when it comes to wine tasting. In fact, there seems to be no differences in sensitivity to odours in general – either those typically found in wine or otherwise (Brand & Brisson, 2012; Parr et al., 2002).

In terms of language usage, wine experts use a different vocabulary when describing wines, using analytical terms whereas non-experts use holistic terms (Challoet & Valentin, 2000; Weil, 2007). Moreover, there is evidence that experts are more consistent in terms of vocabulary usage due to an alignment of sensory concepts (Hughson & Boakes, 2002; Ishii & O'Mahony, 1991), not only in terms of concrete descriptors but also of complex and technical terms such as malolactic fermentation (Gawel, 1997).

Taken together, then, the evidence that has been been published to date suggests that training in wine tasting results in a different way of thinking about and describing wine. Wine experts are trained to categorise and look for specific flavours or combination of flavours in a wine, and develop their own prototypes for wine representation that includes sensory as well as inferred (such as referring to the winemaking process) and hedonic information (Brochet & Dubourdieu, 2001).

3. Aims and contributions

The goal of the proposed study is to assess, first and foremost, whether training can improve blind tasting accuracy, which entails amongst other things, accuracy in assessing structural elements in a wine. Notably, unlike previous studies on wine expertise, where there are already separate groups of novice and expert participants, the proposed study aims to get a longitudinal view of expertise acquisition over an intense period of blind tasting training where participants attend four to five tastings a week over five weeks. This will give us the opportunity to study within participant development as well as group-wide accuracy as a whole (e.g. variance of guesses within a group).

The proposed study aims to advance our understanding of how the acquisition of wine tasting training influences wine perception and preference. It will address the question of whether and how training can improve blind tasting accuracy, and, from a commercial prospective, how wine preferences change with increased expertise.

Hypothesis 1: Training will reduce within group variability in guesses (Ishii & O'Mahony, 1991).

Hypothesis 2: Training will make participants more accurate in their structural assessment of wines (Arvisenet et al., 2016; Royet et al., 2013).

Hypothesis 3: Training will make participants more accurate in their guesses (Hughson & Boakes, 2002; Owen & Machamer, 1979; Parr et al., 2002).

Hypothesis 4: Training will change the way participants write tasting notes, leading to the usage of more specific descriptors and a different body of vocabulary (Brochet & Debourdieu, 2001; Gawel, 1997; Langlois et al., 2011; Weil, 2007).

Hypothesis 5: Training will change the tasters' wine preference, leading them to prefer less fruit-forward, more expensive, and/or more structured (higher acid/tannin to alcohol ratio) wines (D'Alessandro & Pecotish, 2013; Goldstein et al., 2008; Weil 2001, 2005).

4. Methods

Participants

Around 15 highly motivated people will participate in the blind tasting training scheme, recruited from the Oxford University Blind Tasting Society. They will have had limited exposure to wine tasting from attendance of several beginner tasting sessions held in autumn 2017.

Wine samples

Still white and red wines from any wine producing region in the world with a dominant (at least 70%) grape variety can be used for training, under the condition that the wine is available on the UK market. The wines are generally in the £15-£40 price range and are from within the last 20 years.

Experiment Design:

The overall training scheme consists of a longitudinal study over 5 weeks (January 13 – February 17), with 4-5 training sessions per week. Tasting sheets from participants will be collected and analysed from all sessions.

Procedure

The training sessions will be conducted at the University of Oxford in various colleges. Each session lasts approximate 2-3 hours and will be held at common wine-consumption times (either around noon or in the evening). In each session, the coach of the blind tasting society or another external presenter will choose 10-12 wines to be tasted at the session. Participants taste the wines blind (i.e., without seeing the bottle), served in flights of 5-6 wines at a time. The wines will be served at room temperature in 30 mL samples, in standard 215 mL ISO glasses. In each session, all participants will be presented with the same wines presented in the same order, although they can choose the order of wines they taste within each flight. On average participants will be given 5 minutes per wine, so a flight of 5 wines will take 25 minutes and a flight of 6 wines will take 30 minutes. All participants will taste the wines in silence. For each wine, participants are asked to guess the dominant grape variety, place of origin (country, region, and subregion) and vintage, as well providing a tasting note backing up their guess and rate their preference for the wine. Preference will be measured via a 5 point scale (1 = pour it out; 2 = finish the glass; 3 = have a second/third glass; 4 = buy a bottle; 5 = buy a case).

After each flight has been tasted, participants compare tasting notes and offer their guesses. The discussion, led by the society coach or the external presenter, is much of where the pedagogical element comes in as people debate why certain guesses are correct or incorrect (for instance, a low acid wine is unlikely to be Riesling).

Data Analysis

First, we will assess within group variability in terms of people's guesses for grape, location, and vintage, over 5 weeks (Hypothesis 1). For each participant, we will analyse accuracy in terms of acid/alcohol/tannin levels, and presence of oak (Hypothesis 2). In addition, we will analyse the accuracy in people's guesses for grape, location, and vintage (Hypothesis 3).

We will use natural language processing (Python version 2.7.10, nltk toolkit) to analyse people's tasting notes, specifically paying attention to the specificity of flavour descriptors (for instance, "red fruit" is vague whereas "ripe strawberries" is precise) and the size of vocabulary pool used by participants on a session by session basis (Hypothesis 4).

Finally, we will analyse patterns in wine preference over time (Hypothesis 5), by analysing session by session correlation values of wine preference with wine price, vintage, climate (new or old world, hot or cool climate), and structure (levels of acidity, alcohol, and tannin for reds).

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