

Vienna 2019 Abstract Submission

Title

Does wine training improve tasting ability? Measuring the effect of blind wine tasting training on olfactory and taste threshold, discrimination, and identification

I want to submit an abstract for:

Conference Presentation

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Keywords

blind wine tasting, training, olfactory sensitivity, gustatory sensitivity, expertise

Research Question

Can blind wine tasting training actually improve someone's smelling and/or tasting ability? Or is wine expertise acquisition it just a matter of cognitive enhancement?

Methods

We have developed a series of tests to measure olfactory/gustatory threshold, sensitivity, and identification abilities of people before and after an intensive five-week blind wine tasting training period.

Results

The study will be conducted in January-February 2019, during the Oxford varsity blind tasting training period - a unique opportunity to study how training influences the same participant over time.

Abstract

Study aims

The study proposes to measure the olfactory/gustatory ability of people participating in the annual Oxford varsity blind tasting training period, both before and after undergoing training. Each year, approximately 15-20 people undergo five weeks of blind tasting training (3-5 sessions a week) in preparation for the annual Oxford-Cambridge varsity blind wine tasting match. These intense training sessions have been shown to improve accuracy in blind tasting in terms of identifying grape varieties (Wang & Prešern, 2018), but it remains unknown whether wine tasting training can actually improve people's olfactory/gustatory abilities. Working together with researchers at

the Flavour Institute (Aarhus University, Denmark), we have developed a series of tests to measure olfactory/gustatory threshold, sensitivity, and identification abilities.

Background: Is wine expertise about sensitivity or analytical ability?

Training seems to improve people's ability to discriminate flavours when tasting wine (Owen & Machamer, 1979). However, that is possibly because trained panellists 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).

Study impact:

With the annual blind wine tasting training period at Oxford, we have the unique opportunity to study the effect of training on the same participant over time. The results from the study will be used to help us understand whether wine tasting training can improve olfactory/gustatory abilities, or whether such training only improves cognitive/analytical abilities in tasters. These results will contribute to our theoretical understanding of olfactory/gustatory function. Furthermore, given the rapid rise of knowledgeable tasters in developing wine markets, it is crucial to understand how wine perception changes with the acquisition of expertise.

Experiment Design:

Around 15-20 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 2018.

The blind tasting training scheme consists of a longitudinal study over 5 weeks (January 12 – February 16, 2019), with 3-4 training sessions per week. We will conduct two study sessions, one at the beginning and one at the end of the training period. To take into account any natural improvements in olfactory/gustatory function over time, we will also recruit an approximately age- and gender- matched control group to participate in the same sessions, spaced over 5 weeks in time.

Each session lasts approximately 50 minutes and consists of three parts:

- a. Olfactory assessment: A standard Sniffin' Sticks test (Burghart, Messtechnik GmbH) will be administered. It consists of 3 sub-tests to measure olfactory threshold, discrimination, and identification. This is a standard test validated in several European countries including the UK (Hummel et al., 2007; Neumann et al., 2012; Rumeau et al., 2015). It is easy to use, since subjects are asked to smell felt pens whose tips are impregnated with 4 mL of odorants (Rumeau et al., 2015). In addition to the Sniffin' Sticks test, participants will also be asked to smell up to three samples of odorant mixtures (consisting of spices/herbs frequently used to describe wines) and to identify its component parts.
- b. Taste assessment: A Taste-DROP-Test (Fjaeldstad et al., 2018) will be administered. This involves presenting participants with small drops of sweet, sour, salty, or bitter tastants on the tongue, and the participant is asked to identify the tastant as one of sweet/sour/salty/bitter/neutral. The tastants are presented in small dilution steps, and sensitivity is determined in a stepwise manner starting with the lowest concentration. The tastants solutions are produced from sucrose, NaCl, citric acid, and quinine. The Taste-DROP-Test has been shown to be both more sensitive and having a higher re-test reliability than the standard Taste Strips gustatory test (Fjaeldstad et al., 2018).
- c. Questionnaires: Each participant will be asked to complete a individual significance of olfaction questionnaire

(Croy et al., 2010) with 20 questions, as well as a Sino-Nasal Outcome Test (SNOT22). The SNOT22 questionnaire is a validated and widely clinically used questionnaire on sino-nasal symptoms, which reflects nasal air flow, nasal secretion and olfactory deficits the last two weeks. As we cannot conduct nasal/ENT examinations on the participants, this can function as a marker for blocked olfactory function.

Results

The study will be conducted in January-February 2019, during the Oxford varsity blind tasting training period. We will compare the test results from the same participants before and after training. We will also compare differences in the smell/taste ability of the varsity trainees with those of control subjects, to account for the passage of time and familiarity with the tests.

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AAWE Abstract

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