# BIOE 32Q Final Project Proposal: Science and Psychology of Wine Tasting

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## 1 Theory

The art of understanding wine is a multisensory experience dating back centuries. In its complexity, there are a multitude of factors that would affect one's perception of a wine, from its price and presentation to its age and origin. For our final project, we propose to investigate into the variety of attributes that would influence our analysis of different types of wines. We will begin by looking into the theory of wine science as articulated by researchers in food science academia, so we can gauge the current conversation around this topic.

"Wine Psychology: basic & applied" is one such paper by Charles Spence, famed experimental psychologist at the University of Oxford. Here, he observes, in detail, the psychological connotations that the visual appearance, marketing, and environment of tasting would have on one's opinion on a wine. This paper would go hand-in-hand with the experimental portion of our project, where we will put Spence's findings to the test. "Do more expensive wines taste better? Evidence from a large sample of blind tastings" is another paper that covers similar subject matter and is frequently cited in this field. Goldstein et. al observe that individuals actually enjoyed expensive wines less than inexpensive wines, but those with history of wine training reported the opposite. After doing our own preliminary research into the different factors to look for, we can compare our findings to the outcome of these blind tests.

Another excellent paper on wine science is "A taste of science: Making the subjective objective in the California wine world" by Steven Chapin, a historian and sociologist at Harvard University. Chapin focuses more on the taste aspect of wine rather than visual and audio-sensory, in contrast to Spence. These include differences in the climatical regions that the grapes are grown, the history of wine tasting throughout the centuries and what has shifted in our evaluation, the chemistry of a wine's odor, among many other analyses. "Expectations influence sensory experience in a wine tasting" by Michael Siegrist and Marie-Eve Cousin also goes into the science of wine tasting in an experimental fashion. In this study, subjects were either given positive or negative information about a

wine before tasting it and then reported their perceptions of it. As expected, negative information resulted in negative reviews, but positive information resulted in positive views. After looking into the psychology of these findings, we can compare them to our own experimentation.

# 2 Experimentation

## 2.1 Effects of Production Conditions

Beyond the types of grapes and the methods used to produce the wine, research shows that a wide variety of exogenous variables, such as the temperature or humidity in which the grapes were grown affect the qualities of resultant wine. For example, wine made from grapes grown in warmer climates such as in Austrailia tend to exhibit more structure and less acidity compared to wine made from grapes grown in cooler climates such as France. In our project, we aim to explore how one of these input features affects the quality of the wine. Specifically, we will select two wines that mostly differ on a single axis, say growing temperature, observe the quality of the wine including taste, texture, and aroma, and compare the results. Though two wines can differ drastically on a variety of axes, we will try to make the wines as comparable as possible, i.e. selecting wines using the same grape varietal(s) in order to limit most of the variation to the selected axis. Given limitations on how much data can be gathered in the scope of this project, the applicability of our analysis will be narrow; however we will put our analysis into conversation with previous research to either show that our experimental results match the theoretical findings or suggest reasons why the wines in our specific experiment may differ.

## 2.2 Psychological Effects

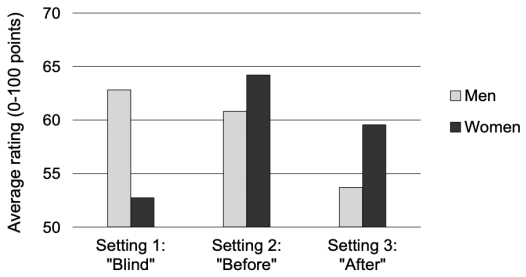


Figure 1: Average rating of $40 wine by gender and price awareness at various stages of tasting

Research indicates that a variety of psychological phenomena contribute to the perceived quality of wine. Notably, knowledge of the price of wine can dras-

tically change the perceived quality. Moreover, this difference is not consistent for all consumers. While some consumers may report finding better qualities in more expensive wine when they are price-aware, while others may report the opposite. For example, on average, both men and women rate the quality of a $40 wine lower when told the price after tasting compared to before. However, men rate wine approximately the same on average between price-blind tasting and being price-aware before tasting while women rate wine higher when being price-aware before tasting compared to a blind setting. (Figure 1) In this project, we will explore some psychological effects on perceived wine quality. Specifically, we will select two similar wines at different price points and have a third party present the wines. They will select one participant to be "standard" i.e. told that the more expensive wine is more expensive, and the other participant to be "reversed" i.e. told that the more expensive wine is less expensive. Both participants will independently rate the qualities of the wines and then we will analyze the results. Due to the lack of particpants available to us, we will consider both the psychological and gender effects jointly on our results.