

I don't like red wine. I have unshakeable faith that there is a difference between how red wines taste and smell and I will pass them over in favor of a white wine regardless of type or origin. I also know that this has no basis in reality.

A 2001 psychological study led by Frédéric Brochet from the University of Bordeaux invited a panel of 54 wine experts to evaluate the flavor and scent of one white wine and one red. The experts responded by describing white wines in terms commonly used when speaking about white wines while the red wines were described in typical red wine terms, with phrases like "crushed red fruit" and "jammy." The problem is that the wines were, in fact, identical white wines, one of which had been dyed with scentless artificial food coloring. The flavor and olfactory differences reported were not qualities of the wines themselves, but ascribed based on pre-existing associations with visual information. Rather than describing the wines, the experts were describing their assumptions about wine color.¹ [If people who have devoted their careers to the categorization, description, and experience of wines can't tell the difference between whites and reds, what chance do I have? But despite this knowledge, I cannot suppress this automatic response to wine color, which Brochet described as "a perceptual illusion."](#)²

The fact that we may not be able to tell the difference between whites and reds based on taste and scent alone doesn't mean that wine color is irrelevant. In fact, it demonstrates just how central color is to shaping our experiences of wine and [how vital color is to sensory perception](#). As Ronald S. Jackson points out in *Wine Tasting: A Professional Handbook*, "Color is such is a critical element in sensory memory that identification may become markedly distorted without it."³ [Under the larger umbrellas of white and reds, specific hues within each category can deeply affect our sensory expectations and associations and, by extension, inform how we ultimately understand a particular wine. Fully harnessing the potential of this perceptual phenomenon to create wines that speak to consumers requires thorough color measurements to evaluate the color quality of each wine.](#)

Factors Impacting Wine Color

The color a wine takes is the result of both its innate qualities and ongoing environmental influences throughout the lifespan of a wine. The type and variety of grape, where it is grown, its growing conditions, its maturity at harvest, and its physical properties all have a significant impact on the hue the wine will eventually acquire. Processing of the grapes, bottling, and storing of the wine introduce a host of new factors that will shape color, including phenol composition, [alcohol level](#), [oxygen and sulphate dioxide concentration](#), [temperature](#), [anthocyanin to tannin ratios](#), and [the natural aging process](#).⁴

As such, color can serve as a kind of visual history of a wine, signaling its age and quality and alerting the wine producer to potential issues should it not conform to color expectations. Often, [wine producers will use a spectrophotometer to measure the spectral absorbency of wines](#) in order to determine whether or not it is performing as it is meant to at various stages of production. For example, young red wines typically reach maximum absorbency at 520nm, but as it ages "the maximum absorption decreases" from 520 nm and increases at 420 nm, the yellow color region. This explains the shift in well-aged wine from a red to an orange hue, and brick red color."⁵ [Premature darkening of red wines may be an indicator of compromised quality and require a reassessment of production methods. However, while the spectral absorption method of color analysis can be used by wine producers to monitor color as abstract data for purposes of process analysis, spectral absorption does not necessarily correlate to human perception of wine color and our attendant sensory response.](#)

Measuring Wine Color to Enhance Sensory Perception

To more reliably analyze wine color for the purposes of sensory enhancement, a spectrophotometrically-based method that combines instrumentation allowing for analysis of color over "the full range of the visible spectrum" with [specialized software to calculate CIE L*a*b* values](#) is needed. [Designed to mimic the way humans see color, this measurement method allows researchers and wine producers to meaningfully](#)

quantify wine color as it is perceived by the human eye. The data produced can be used to evaluate the quality of a particular wine while also facilitating a precise combination of blended wines, which now represent “some of the most sought-after wines in the market today.”⁶ More importantly, this data may be used to create industry color standards that Jackson believes would “increase the value of color in sensory observation.” As a result, wine producers would be able to tailor their production methods to enhance the sensory appeal of their products to consumers and color could become a more stable and meaningful indicator of smell and taste.

Full article with photos available here:

<https://www.hunterlab.com/blog/color-food-industry/spectrophotometric-analysis-of-wine-color-can-enhance-sensory-perception/>