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Judging wine quality: Do we need experts, consumers or trained panelists?

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ABSTRACT

A Descriptive Analysis panel, wine experts and consumers evaluated 27 Californian Cabernet Sauvignon wines with varying quality scores. Descriptive Analysis revealed several aroma and flavor descriptors driving quality scores. For all consumer segments as well as the wine experts, hedonic liking was shown to highly correlate to perceived quality, but for some consumers liking and perceived quality was not at all correlated to the quality scores of the wines. Wine experts were able to find significant differences in liking and quality, but did not agree completely with the assigned quality scores from the wine judgment. Wine experts also used a combination of both descriptive and hedonic terms when describing a high quality wine, indicating that they are better at communicating and describing what they like.

1. Introduction

The quality of wine is hard to define, mainly due to the lack of agreement on the quality term in general, and this discussion is not limited to wine alone. People who study wine quality therefore talk about perceived quality, and how various populations differ in their wine quality perception (Charters & Pettigrew, 2007). The advantage of using a holistic approach, e.g. quality perception, lies in the global assessment of quality, which is the result of individuals' conceptions and previous experiences, and incorporates all different levels of quality into one judgment (Charters & Pettigrew, 2007). Nevertheless, the overall quality perception can be broken into several dimensions of extrinsic and intrinsic layers (Charters & Pettigrew, 2007; Verdú Jover, Lloréns Montes, & Fuentes Fuentes, 2004). Extrinsic factors include grape growing and winemaking, and, at a lower level, the "technical correctness" including the most basic definition of wine quality as the absence of faults and/or drinkability. The intrinsic dimension is more defined by the drinking experience, including factors such as pleasure, aroma, flavor and mouthfeel, appearance, as well as factors that are typically more important for people with a high involvement such as origin, variety, typicality and potential.

When talking about the different dimensions of quality, one needs to keep in mind that the two levels influence each other, as shown by Siegrist and Cousin (2009), who found that extrinsic information, such as wine critic scores, directly influence the expectation and therefore, also the tasting experience. Similarly, consumers found significant differences in liking of Champagne wines when they were able to see the labels, but in contrast, could not differentiate among the same Champagne wines when tasted blindly (Lange, Martin, Chabanet, Combris, & Issanchou, 2002).

Consumers are influenced by extrinsic information, however, they report that the intrinsic tasting experience is the most important reason for drinking wine (Charters & Pettigrew, 2007), indicating the importance of flavor, i.e. as defined by the ASTM as the "... *perception resulting from stimulating a combination of the taste buds, the olfactory organs, and chemesthetic receptors within the oral cavity* ..." (ASTM International, 2009). In the end, consumers of wine want to drink and enjoy "quality" wine, a fact, that is true for everyone independent of the degree of wine involvement (Charters & Pettigrew, 2007). This also indicates that perceived quality is linked to hedonic liking (Lawless, Liu, & Goldwyn, 1997). However, the average consumers, especially those with a lower degree of wine involvement, do not necessarily have the tasting experience and expertise to select appropriate wines, and so turn towards wine experts and trusted sources for guidance, followed by brand, awarded medals and wine articles. They also tend not to use back and front labels or store display information in their decision making process (Thach, 2008).

Ideally, wine experts screen wines and award some kind of quality score, which would then give consumers an indication whether they would enjoy and like a wine or not.

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Experts are known to act more analytically when assessing quality compared to inexperienced consumers (D'Alessandro and Pecotich, 2013). However, as with every product, levels of liking and also perceived quality show large variabilities, not only among consumers, but also among wine experts (Hodgson, 2008, 2009). Hodgson (2009) calculated that being awarded a Gold Medal in one of the many wine judgements is simply a matter of how many competitions you enter, as he could not find concordance in gold medals awarded among the 13 U.S. wine competitions studied.

These factors and previous studies on perceived wine quality, using either experts or consumers, set the stage for our study, where we evaluated a set of wines, varying in quality, with three different populations – wine experts, trained panelists and consumers, in an attempt to gain a broader understanding of perceived wine quality in a set of commercial Cabernet Sauvignon wines from California.

2. Materials and methods

The study was approved by the UC Davis Institutional Review Board (IRB, protocol number 305379-2).

2.1. Samples

Twenty-seven Cabernet Sauvignon wines from 9 Californian wine regions were selected for the study based on their performance in the 2012 California State Fair Commercial Wine Competition. Any bonded winery can enter their grape or fruit product grown in California in the competition. The entered wine must be from a lot of at least 300 gal (i.e. 1135.62 L), and at least 240 gal (i.e. 908.50 L) of this lot must be available for sale (http://www.bigfun.org/wp-content/uploads/2012/02/2012-Com-Wine-Pros-4pages.pdf).

A total of 333 Cabernet Sauvignon wines were entered in the competition in 2012, coming from 9 wine regions in California, which are geographically designated and established by the official legal body, the Alcohol and Tobacco Tax and Trade Bureau (TTB). From each region three wines were selected, one considered high in quality (i.e. the highest scoring wine, in most cases either a Gold or a Double Gold wine, except for region H where the highest scoring wine was a Silver medal (W27)), one low in quality (i.e. a No award wine, scoring lowest in the region), and one wine of medium quality (around the average point score between the high and the low quality wine). For 7 out of the 9 regions wines from all three quality categories could be acquired, with the exception of region H (no Gold or Double Gold available) and region G (no No award wine available). From region H we had two No award wines (W5 and W21), one Bronze wine (W7) and one Silver wine (W27). Wine vintages varied between 2001 and 2011 (median=2009), and retail prices varied between $9.99 and $70.00 per bottle with a median price of $26.95 (Table 1).

2.2. Descriptive Analysis (DA) panel

All wines were characterized by a generic Descriptive Analysis (DA) (Lawless, 2010), using a panel of 15 trained judges (10 males;

Table 1
Wines used in the study together with their information (code, region, awarded points and medals in the wine competition, bottle retail price) and average hedonic liking (HL) and quality (Q) scores for the consumers (cons) and experts (exp). Letters denote significant differences in HL and Q using 1-way ANOVA and post hoc analysis according to Tukey ($P \leqslant 0.05$). Columns that share the same letter are not significantly different from each other ($P \leqslant 0.05$).

Code	Vintage	Region[a]	Pts.	Awards[b]	Retail ($)price	HLcons	Qcons	HLexp
W1	2008	G	82	NA	26.95	4.10 e	4.56 abc	2.89 e
W2	2009	B	89	S	39.00	4.60 abcde	4.99 a	3.54 cde
W3	2009	I	95	G	21.00	4.86 abc	4.91 a	5.04 abcd
W4	2008	G	90	S	34.00	4.87 abc	4.53 abc	4.25 abcde
W5[c]	2006	H	83	NA	15.00	4.90 abc	4.34 abc	2.68 e
								3.68 cde
W6	2009	C	90	S	55.00	4.97 abc	4.89 a	5.30 abc
W7	2010	H	86	B	25.00	4.98 ab	4.88 a	5.00 abcd
W8	2008	C	98	DG	47.00	5.04 ab	4.63 abc	5.32 abc
W9	2009	D	94	G	25.00	5.24 a	4.65 abc	5.32 abc
W10	2009	A	94	G	9.99	4.10 e	4.68 abc	5.11 abcd
W11	2007	A	82	G	38.00	4.11 de	4.39 abc	3.86 bcde
W12[c]	2009	F	89	S	15.00	4.24 cde	4.70 abc	5.00 abcd
								5.25 abc
W13	2007	D	88	S	34.00	4.41 bcde	4.40 abc	4.07 abcde
W14	2008	B	84	NA	45.00	4.42 bcde	4.47 abc	3.89 abcde
W15	2009	I	89	S	24.99	4.45 bcde	5.00 a	4.39 abcde
W16	2011	E	82	NA	10.00	4.47 bcde	4.51 abc	5.11 abcd
W17[c]	2009	F	95	G	19.99	4.47 bcde	4.88 a	5.70 a
								4.96 abcd
W18	2007	G	98	DG	70.00	4.54 abcde	4.39 abc	3.68 cde
W19	2010	F	87	B	22.00	4.56 abcde	4.91 a	5.07 abcd
W20	2010	B	94	G	19.99	4.64 abcde	4.17 bc	4.93 abcd
W21	2007	H	83	NA	29.00	4.66 abcde	4.46 abc	5.68 ab
W22	2010	F	83	NA	13.00	4.71 abcde	4.62 abc	4.50 abcde
W23	2010	E	89	S	14.00	4.72 abcde	4.33 abc	4.43 abcde
W24	2009	A	88	S	28.00	4.76 abcde	4.72 ab	4.96 abcd
W25	2008	D	82	NA	32.00	4.78 abcde	4.60 abc	4.00 abcde
W26	2009	C	83	NA	59.00	4.83 abcde	4.07 bc	3.39 de
W27	2001	H	92	S	45.00	4.85 abcd	4.01 c	3.04 e
Min	2001		82		9.99	0.74[d]	0.71[d]	1.83[d]
Max	2011		98		70.00			
Median	2009		89		26.95			

[a] A – North Coast – includes everything except Napa and Sonoma; B – Sonoma County, C – Napa County, D – Greater Bay Area, E – North Central Coast, F – South Central Coast, G – South Coast, H – Sierra Foothills, I – Lodi/Woodbridge Grape Commission.
[b] DG – Double Gold; G – Gold; S – Silver; B – Bronze; NA – No Award.
[c] Three wines were presented twice to the experts.
[d] Honestly significant difference (HSD) according to Tukey.