

The Influence of Taste Sensitivity and Adventurousness on Generation Y's
Liking Scores for Sparkling Wine

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This paper will review Gen Y and present some data from a preliminary study that examines the influence of adventurousness and taste sensitivity on liking of sparkling wines amongst this generational cohort. This study is part of a larger international programme that seeks to more fully understand the drivers of Gen Y's attitudes and behaviour toward sparkling wines.

Generation Y

"The children now love luxury. They have bad manners, contempt for authority; they show disrespect for elders and love chatter in place of exercise."

- Plato (quoting Socrates)

There is nothing particularly new about attempting to understand the young (Wolburg & Pokrywczynski, 2001). Gen Y is a rather large generational cohort, particularly in contrast with Generation X, and as a result marketers, parents and even philosophers will spend a significant amount of time trying to understand them. Known variously as Gen Y, the Echo Generation, Millennials, Nexters, TNBT (i.e., The Next Big Thing) (Beaton, 2007) this demographic cohort is generally accepted to be the children of the Baby Boom Generation. There is no precise agreement as to the specific birth years for this cohort. Some Australian researchers have defined Gen Y as those Australians born from 1982–2000 (Rugimbana, 2007); some Americans have used 1977-2000 (Thach & Olsen, 2006; Lancaster & Stillman, 2003), others 1977-1994 (Morton, 2002; Shepherdson, 2002); some Canadians 1982-2003 (Young, 2008) or 1980-1995 (Kwon, 2007); others define Millennials as the youngest cohort within the Gen Y cohort (Phillips, 2007); while others use Millennials and Gen Y interchangeably (Dominiak, 2007; Garlick and Langley, 2007). However, for the purposes of this study Gen Ys are loosely considered to be the youngest age cohort that can legally purchase and consume alcoholic beverages (18 years of age in three Canadian provinces and 19 in the remainder of the country). The relevant Gen Ys for the study were those born between 1976 and 1986.

Despite some slight cultural and definitional differences in defining the category, the importance of the Gen Y cohort to marketers is beyond debate, if for no other reason than the size of the group. This cohort represents 26% of the US population (Thach & Olsen, 2006); 28% of the Australian population (Rugimbana, 2007); 21.3% of the Canadian population (Kwon, 2007). Perhaps more importantly, they have significant buying power (Morton, 2007; Rugimbana, 2007; Peskett, 2006; Thach & Olsen, 2006; Wolburg & Pokrywczynski, 2001), and also have a significant effect on household purchasing (Garlick and Langley 2007).

Beyond basic demographics, marketers need to be aware of the psychographic, behavioural and attitudinal make-up of these young adults. Gen Y consumers are savvy and cynical (Garlick & Langley, 2007; Nowak et al., 2006; Sebor, 2006; Wilson, 2007); optimistic and self-entitled (Garlick and Langley, 2007; Wilson & Field, 2007); influenced heavily by peer groups and word-of-mouth (Dominiak, 2007; Garlick and Langley, 2007; Morton, 2002; Wilson & Field, 2007); are impatient and in need of instant access to information (Sebor, 2006; Wilson

& Field, 2007); proficient with, and not frightened by technology (Beaton, 2007; Nowak et al., 2006); have low tolerance for intrusive, hard-sell ads (Morton, 2002; Sebor, 2006), and prefer ads with humour (Morton, 2002; Neuborne, 1999; Wilson & Field, 2007); prefer magazines to newspapers, but get their news from “The Daily Show” (Phillips, 2007); communicate by Facebook, not e-mail (Phillips 2007); less health conscious than Generation X, and more likely to purchase fast food (Kwon, 2007); have seen 23 million media messages by the age of 21 (Sebor, 2006); are notoriously brand disloyal (Morton, 2002; Rugimbana, 2007; Sebor, 2006); spend 28% more time online than Gen X (Sebor, 2006); risk averse (Morton, 2002; Paul 2001); value-oriented (Nowak et al., 2006; Morton, 2002; Thach & Olsen, 2006); find it important that their purchases have “street credibility” (Garlick & Langley, 2007; Morton, 2002); influenced by celebrities and athletes, but are on-guard for hype and phoniness (Fernandez-Cruz, 2003; Thach & Olsen, 2006; Morton, 2002).

Euromonitor International (2008) has summarized the characteristics of Generation Y as technology adopters, online community dwellers, peer to peerers, egocentric, hedonistic spenders, fashion influencers, media mistrusters, spin detectors, civic minded, socially conscious, mass-advertising rejecters, word-of-mouthers, debt incurrers, work life balancers, obedient but not subservient, tolerant, apathetic and sometimes frivolous. In short, the size and purchasing power of this segment serve to ensure that it will continue to be one of the most extensively studied population cohorts ever.

Generation Y and Alcoholic Beverages

The most significant work on this cohort and alcoholic beverages comes from California. Nowak, Thach & Olsen (2006) and Thach & Olsen (2006) provide the best discussions of the marketing implications of the Generation Y cohort for the wine industry. Nowak et al., (2006) concluded that wineries could usefully attempt to develop a relationship with this segment by attempting to give them a sense of belonging and camaraderie; a positive emotional experience. Thach & Olsen (2006) suggested that wine marketers need to target this group with advertising that emphasizes fun, relaxed social settings. They also concluded that “value” wines would work well with young adult wine drinkers. In addition, they suggested that Gen Y wine drinkers consumed wine for social reasons, not to get drunk. They viewed wine as a beverage to consume with friends and family over a meal. Reasons that they gave for not drinking wine included the taste (57%) and a perception that it is too ritzy and not cool (11%). The four most-often used descriptors for wine by this cohort were reported as “Expensive, Snobby, Snooty and Way Too Serious.”

There is little academic research on Generation Y specific to sparkling wine. There are, however, some very interesting developments in the popular press. The rapper Jay-Z has become a central figure in the relationship of Millennials to sparkling wine. Champagne, and in particular *Cristal*, had become part of the HipHop generation’s signal of success, appearing in numerous videos, and being referred to in rap lyrics. Gen Ys are influenced by peers and celebrities who have “street cred” (Dominiak, 2007; Euromonitor, 2008; Garlick and Langley, 2007; Morton, 2002; Wilson & Field, 2007). The work of Thach & Olsen (2006) suggests that Gen Ys see wine as expensive, snooty and snobby. It is not too much of a leap to suggest that this might even be more of a problem for sparkling wine, and particularly for Champagne. However, the prominence of Champagne in numerous rap videos suggests that Gen Ys might

actually try to emulate what they see on the videos, and the importance of peer groups to Gen Ys suggests that consumption of Champagne might be seen as giving them the “cool” image they desire. This perception may not extend to cheaper alternatives such as domestic sparkling wines, or even sparkling wines from other countries that are not Champagne, such as cava or prosecco. The “street cred” brings with it certain risks. The makers of *Cristal* were not thrilled with the pairing of their product with HipHop, rap music, and let this concern be known. Jay-Z, in particular, took offence and boycotted *Cristal* in his videos and the clubs that he owns, switching loyalty to *Armand de Brignac*.

Wine and Sparkling Wine in Canada

Canada is primarily a beer and spirits producing and drinking nation. However, wine is gaining ground (Beech, 2007). During the fiscal year ending 2006, Canadians consumed 2.2 billion litres of beer worth C\$ 8.4 billion, while wine consumption over the same period was 378.7 million litres worth C\$4.6 billion. Sales increases over fiscal 2005, however, were 8.9% for wine, more than four times the increase in beer sales and twice the increase in sales of spirits (Statistics Canada, 2008). Over the past decade, sales of wine in Canada have more than doubled whereas beer has increased by less than 50% over the same period. Two provinces (Quebec 35%, and Ontario 24%) account for more than half of the wine sold in Canada. Canada’s wine consumption at 12 litres per person per year is approximately a fifth of most western European nations (Euromonitor International, 2008). Sales of sparkling wine in Canada have held constant at approximately 11.0% of total wine sales each year from 2001 to 2006, with 0.8% of this being Champagne. The C\$ (millions) value of the sparkling wine sales in Canada has increased from 272.5 in 2001 to 313.5 in 2006 with Champagne constituting C\$ 58.1 million and C\$ 67.0 million of these amounts in 2001 and 2006 respectively. The fastest growing sector of sparkling wine was the C\$25 and over category (Euromonitor International, 2008).

Taste Sensitivity

Batt and Dean (2000) found that 72% of Australian wine consumers do not like sparkling wine. The work of Thach and Olsen (2006), in the United States, suggested that the main reason for not liking champagne was the taste. Charters (2005) classified symbolic attributes of sparkling wine as the reasons most often given for liking sparkling wine, whereas the hedonic attributes of taste and pleasure are more typically reported as the reasons for disliking sparkling wine. Marketing studies focusing solely on the image or cultural dimensions of the product are missing much of the story. The drivers of liking must include taste, and an understanding of taste sensitivity for Generation Y must be included in a complete depiction of their behaviour toward the product.

PROP/taste sensitivity.

Sensitivity to 6-n-propylthiouracil (PROP) is genetically inherited (Guo & Reed, 2001), and individuals can be classified into three groups reflecting their ‘PROP taster status’ (PTS): non-tasters (NT), medium-tasters (MT) and super-tasters (ST) (Bartoshuk, 2000). ST experience PROP as intensely bitter, MT perceive PROP but less intensely than ST, and NT cannot taste

PROP or experience it as a very mild sensation. Recent research has begun to shed light on the underlying molecular and genetic basis for PROP sensitivity (Duffy *et al.*, 2004; Bufe *et al.*, 2005). Physiologically, papillae and taste bud densities are positively correlated with PROP sensitivity, along with greater peripheral innervation of these structures (Miller and Reedy, 1990; Reedy *et al.*, 1993).

Importantly, PTS serves as an index of general sensitivity to oral stimuli; the perceptual differences between PTS groups extend to other bitterants (Bartoshuk, 1979; Bartoshuk *et al.*, 1988; Bartoshuk *et al.*, 1993; Bartoshuk *et al.*, 1996; Delwiche *et al.*, 2001); sweet compounds (Gent & Bartoshuk, 1983), salty compounds (Bartoshuk *et al.*, 1998), and substances that produce oral irritation/pain (Cunningham, 2000; Karrer & Bartoshuk, 1991) and tactile sensations (Duffy & Bartoshuk, 1996; Tepper & Nurse, 1997), including astringency (Pickering *et al.*, 2004; Pickering *et al.*, 2006; Pickering and Robert, 2006). Some data suggests that PROP sensitivity may also be associated with perception of retronasal aroma (i.e. 'flavor'; Pickering *et al.*, 2006). PTS has been linked with individual food and beverage acceptance, preference and selection (Drewnowski *et al.*, 1997; Akella *et al.*, 1997; Intrantuovo & Powers, 1998; Bartoshuk, 2000; Kaminski *et al.*, 2000; Tepler *et al.*, 2001; Turnbull & Matisoo-Smith, 2002), although the literature is somewhat equivocal on this (Drewnowski *et al.*, 1998; Yackinous & Guinard, 2001; Corin & de Kock, 2003).

The flavour of a food has been reported as the single most important factor influencing the food choices of consumers (Glanz *et al.*, 1998). Wine is a complex beverage that can elicit sweet, sour, bitter and salt taste responses as well as numerous tactile sensations (Thorngate, 1997). Additionally, sparkling wine elicits 'tingling' and other sensations related to its bubbles that are responsible for much of the consumer appeal of this wine style. Is perception of the sensory properties of wine related to PTS? Pickering *et al.* (2004) found that bitterness, astringency and sourness intensities elicited by red wines were all correlated with PTS; NT gave significantly lower intensity ratings than MT and ST for these attributes. Pickering and Robert (2006) showed that perception of 11 of 13 taste and tactile sensations elicited by red wines varied with PTS, including 'tingle/prickle'. Finally, Pickering *et al.* (2006) reported that ST rated the retro-nasal aroma intensity of 3 wine-relevant odorants higher than NT and MT. How these differences between individuals in perception of the sensory characteristics of wine associate with liking and purchase behaviour has not been determined and is the subject of the current study.

Wine and food adventurousness

Differences in food/beverage adventurousness may be postulated as one explanation for the contradictory findings on the significance of PTS to actual food/beverage preference and liking outlined above. Previous studies may have overestimated the influence of PTS on rejection of strong-tasting foods and beverages by not distinguishing individuals by food adventurousness (Ullrich *et al.*, 2004). Certainly, food neophobia (Logue and Smith, 1986) and sensation seeking (Rozin and Vollmecke, 1986) have been linked with different food and/or beverage preferences amongst individuals. Compared with many other foods and beverages, wine can be viewed as a product for which there is more individual 'risk' associated, given its social cachet and the milieu surrounding its consumption. Arguably, this may attach greater importance to the role of adventurousness in mediating consumer preference and purchase decisions regarding wine.

Further, the general risk-aversion of Gen Y in relation to older cohorts (Morton, 2002; Paul 2001), if it extends to alcoholic beverages, may predict different attitudes and behaviours toward sparkling wines. To our knowledge Gen Y has not previously been described with respect to their taste sensitivity, as indexed by PTS, nor their wine adventurousness. This study will explore these factors and their interaction in regard to Gen Y's liking of sparkling wines.

Methods

A convenience sampling of 406 consumers of alcoholic beverages was taken in Ontario, Canada in 2004/2005. The principal venues for recruiting participants were 3 Niagara wineries, 3 Liquor Control Board of Ontario (LCBO) retail liquor stores, and various wine-orientated events at Brock University. Participants completed a 2-page questionnaire, and a simple taste test to assess PROP sensitivity. The first page of the questionnaire consisted of questions concerning basic demographic information, alcoholic beverage consumption information, involvement with wine and 3 questions concerning food/wine adventurousness. Specifically; (i) How often do you try unfamiliar foods? (ii) How often do you try unfamiliar alcoholic beverages, and (iii) How often do you try wines that you haven't tried before? Question (i) and the range of possible response for all 3 questions (never, rarely, some of the time or most of the time) are from Ullrich et al. (2004). Page 2 consisted of a 7-point liking scale for a wide range of alcoholic beverages. It was anchored at either end with *like extremely* and *dislike extremely* and with the intermediate adjective *neither like nor dislike*. A *don't know, have never tried or do not drink because of allergy* response option was also included. Respondents did not taste any alcoholic beverages at this time; rather, they completed the questionnaire based on their previous experience with the various beverage categories. Liking responses for the 2 sparkling wine categories included in the questionnaire (dry sparkling wine and sweet sparkling wine) are considered here, and data for other alcoholic beverages will be reported elsewhere.

PROP sensitivity was determined using the method of Zhao et al. (2003). Disposable one-use filter paper disks impregnated with 50 mmol/l PROP were assessed for bitterness by participants. Participants placed the disk on their tongues and used the labeled magnitude scale (LMS; Green et al., 1996) to rate the bitterness sensation experienced. Participants were classified as NT, MT or ST based on the bitterness rating they assigned (NT: ≤ 15.5 mm; MT: >15.5 mm and <51 mm; ST: ≥ 51 mm; Tepper *et al.*, 2001). Participants were allocated to four generational groups based on their birth-years: *Gen Y*: 1976-1986; *Gen X*: 1965-1976; *Babyboomers*: 1946-1964; *Older*: <1946 . The legal drinking age in Ontario is 19 years, which sets the upper boundary on birth-year for Gen Y designation. Participants were coded as having a 'low', 'medium' or 'high' involvement with wine. High involvement participants were coded as such if any of the following criteria were true: a professional winemaker, a wine writer, an LCBO Product Consultant, some other type of wine professional, served as a judge of commercial wine at wine show(s) or consume wine on average on 12 or more occasions per month. Participants were coded as having medium involvement if they indicated "I drink wine occasionally and low involvement if they indicated "I drink wine only on rare occasions".

All statistical procedures were performed using XLSTAT[®] version 2007.2 (Addinsoft, 40, rue Damrémont, 75018 Paris, France). ANOVA was used to examine the effects of PTS, wine adventurousness, wine involvement, gender and their interactions on liking score for each

of the 2 sparkling wines. Alpha was set at 0.10, and Tukey's HSD_{0.05} was used as the means separation test following a significant F-value.

Results and discussion

Description of participants

Table 1 describes the participants in the study. Data on other generational cohorts is included for comparative purposes.

Table 1 - Description of participants

	Generational cohort			
	<i>Gen Y</i>	<i>Gen X</i>	<i>Baby-boomers</i>	<i>Older</i>
No. of participants	117	86	172	31
Average age (yrs)	21.7	33.7	48.7	66.7
Median age (yrs)	22	34	49	66
% male / % female	50/50	52/48	60/40	65/35
% white / % non-white	93/7	93/7	96/4	87/13
Involvement with wine	Low – 17% Medium – 67% High – 16%	Low – 1% Medium – 54% High – 45%	Low - 4% Medium - 34% High - 62%	Low – 0% Medium – 52% High – 48%
Frequency of wine consumption/month *	8.2 ± 0.8	14.7 ± 1.3	22.3 ± 1.1	19.3 ± 2.4
Frequency of other alcoholic beverage/month *	11.8 ± 1.1	11.2 ± 1.1	10.5 ± 0.7	11.3 ± 1.9
Wine as % of total freq of alcoholic beverage/month	41%	57%	68%	63%
Wine adventurousness (mean score /4) *	3.42 ± 0.07	3.40 ± 0.07	3.02 ± 0.06	3.00 ± 0.11
PROP taster status (PTS) (%)	Non-taster: 26% Medium-taster: 40% Super-taster: 34%	Non-taster: 29% Medium-taster: 37% Super-taster: 33%	Non-taster: 31% Medium-taster: 42% Super-taster: 27%	Non-taster: 35% Medium-taster: 35% Super-taster: 29%

* Data represents average value ± standard error of the mean.

While it should be stressed that these participants were recruited based on convenience rather than a true sampling of generational cohorts, all participants were consumers of alcoholic beverages, and some informative comparisons can be made. Cohorts are similarly distributed for race (which has previously been associated with PTS) and for gender balance, although there is a trend of an increasing proportion of males:females with increasing age in this sample. 84% of Gen Y has only a low or medium involvement with wine, while the proportion with a high involvement is 3-4 times lower than other generation cohorts. All cohorts consume alcohol at a similar monthly frequency, although wine forms a smaller percentage for Gen Y.

All cohorts rate their level of wine adventurousness at 3 or higher. Interestingly, adventurousness increases inversely with cohort age, with Gen Y scoring highest with a mean

response approximately halfway between ‘some of time’ and ‘most of time’ to the question *how often do you try wines that you haven’t tried before?* This result is unexpected, given previous findings indicating Gen Y are significantly more ‘risk averse’ than older cohorts (Morton, 2002; Paul 2001). It is possible that this risk aversion does not apply to food and beverage behaviour, and indeed this dimension has not been well investigated in studies that have sought to characterise generational cohorts. The studies that have addressed the risk aversion of Gen Ys do so in a tangential fashion. Risk aversion has not been the primary focus of the studies suggesting that the cohort is more cautious than either Generation X or the Babyboomers. The proportion of different PROP taster groups is similar for the 4 generational cohorts.

Influence of PTS, wine adventurousness and wine involvement on liking scores

Table 2 gives the results of the ANOVA for Gen Y liking scores for both sparkling wine styles.

Table 2 – Analysis of variance results for liking scores of dry and sweet sparkling wines
(N= 100 Gen Y participants)

Source	Pr > F	
	Dry	Sweet
Prop taster status (PTS)	NS	NS
Adventurousness (A)	NS	NS
Involvement (I)	0.011	0.050
Gender (G)	NS	NS
Prop taster status x Gender	0.076	0.061
Prop taster status x Involvement	NS	NS
Prop taster status x Adventurousness	NS	NS
Adventurousness x Involvement	NS	NS
Adventurousness x Gender	NS	NS
Involvement x Gender	NS	0.011
PTS x A x I	NS	NS
PTS x A x G	NS	NS
PTS x I x G	NS	NS
A x I x G	NS	0.065

PROP taster status and wine adventurousness were not significant sources of variation in liking scores for either wine style. However, a significant interaction between PTS and gender is observed for both sparkling wine styles (Figures 1 and 2). Female non-tasters give higher liking scores than males, particularly for sweet wines, reversing the trend observed with the other 2 taster groups.

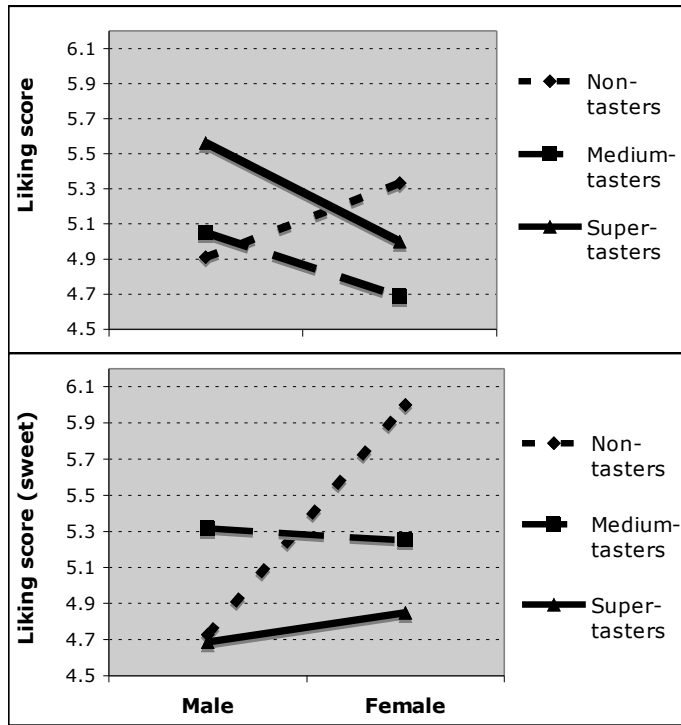


Figure 1 – Interaction between PROP taster status and gender on liking scores for dry (top at left) and sweet (bottom at left) sparkling wines. N= 100 Gen Y participants.

ANOVA was performed again to further investigate PTS and adventurousness with NT and MT recoded as one group and liking scores compared with those of ST. Pickering et al. (2006) have previously shown differences in ratings of sensory intensity scores when these two groups are contrasted. Under this analysis, PTS becomes a significant source of variation for sweet wines ($F=3.5$, $p=0.065$). As shown in Figure 2, ST rated their liking for sweet wines significantly lower than the combined NT+ST group.

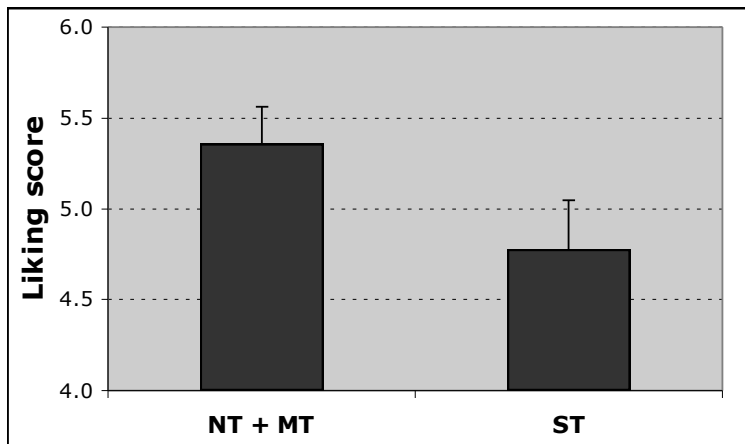


Figure 2 – Liking scores for sweet sparkling wines for PROP super-tasters (ST) and non-tasters + medium-tasters (NT+MT).

(Data represents average value \pm standard error of the mean).

Some earlier studies on alcoholic beverages showed that dark beers and ales are less acceptable to PROP tasters (ST + MT) than to NT, although others did not find a PTS effect with beer. Contrary to our expectation, differences in liking scores between PTS groups were not mediated by wine adventurousness. Ullrich et al. (2004) reported that PROP tasters like more types of strong tasting alcoholic beverages than do NT when the level of food adventurousness is also considered. Specifically, this effect was found with PROP tasters who are more food adventurous compared to NT who are less food adventurous.

Under the second analysis, PTS x wine involvement became a significant source of variation for sweet sparkling wines ($F=4.3$, $p=0.017$). The differences were due to the responses of the high involvement participants, with PROP ST rating their liking for sweet sparkling wines significantly lower (mean score = 3.7) than did the NT+MT group (mean score = 5.7). Independent of PTS or other variables, participants with a low level of wine involvement gave lower liking scores for dry sparkling wines compared to those with medium and high levels of involvement (Table 2). Mean scores and groupings for low, medium and high involvement were, respectively; 4.2a, 5.1b and 5.9b. Conversely, for sweet sparkling wines, a high level of involvement was associated with lower liking scores. Mean scores and groupings for low, medium and high involvement were, respectively; 4.8ab, 5.4b and 4.5a. Gender x wine involvement was a significant interaction for liking of sweet sparkling wines. As shown in Figure 3, this is largely explained by males with low involvement giving especially low liking scores. The general observation that consumers with low levels of wine involvement tend to enjoy sweeter sparkling wines has also been reported with table wine and other wine styles (Thach & Hanni, 2000).

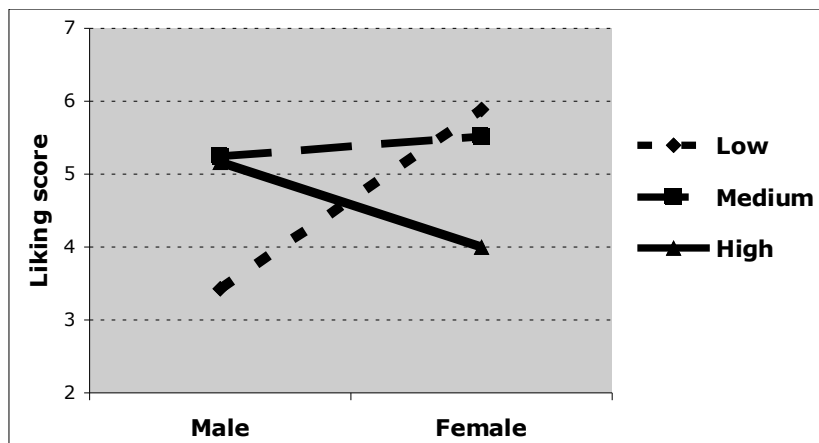


Figure 3 – Influence of level of wine involvement on the liking scores for sweet sparkling wines by males and females.

Summary and further considerations

Sensitivity to the bitterant 6-n-propylthiouracil (PROP) is a genetically determined proxy for general taste acuity, and individuals can be classified into 3 PROP taster status (PTS) groups; non-tasters, medium-tasters and super-tasters. Liking scores for sparkling wines in Gen Y did not vary with PTS across these 3 groups. However, when the responses of super-tasters were compared with those of the combined non-taster/medium-taster group, super-tasters gave significantly lower liking scores for sweet sparkling wines. Additionally, the PTS effect was mediated by gender for both dry and sweet sparkling wines, with female non-tasters giving higher liking scores than males, reversing the trend observed in the other 2 PTS groups. A significant interaction was observed for PTS x wine involvement for liking scores of sweet sparkling wines. Specifically; super-tasters with high involvement liked sweet sparkling wines significantly less than the high involvement non-taster/medium-taster group

Contrary to expectations, adventurousness with trying new wines was not associated with liking scores, although adventurousness increases inversely with the age of generational cohorts, with Gen Y scoring highest. Independent of PTS or adventurousness, liking scores varied with level of wine involvement and gender. While these results indicate that differences in taste acuity in Gen Y are linked with liking of sparkling wines, it is not clear how robust the phenomenon is, and we encourage further research. Concurrent with this, future investigations should consider the opportunities for market segmentation, branding and product positioning that such differences in taste acuity and liking may afford. This should include the question of how self-reported liking scores relate to actual purchase behaviour toward wine in this cohort. Finally, a comparison between the different generational cohorts of their liking for sparkling wines and the underlying drivers would be appropriate. These considerations constitute part of the on-going research effort of our group. Marketers must address both the hedonic and the symbolic dimensions of sparkling wines in attempting to fully understand Generation Y's attitudes and behaviours toward this product.

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