Sensing or Knowing?
Investigating the influence of knowledge and self-confidence on consumer beliefs regarding the effect of extrinsic cues on wine quality

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Abstract
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Key Words: Extrinsic cues, intrinsic cues, price, country of origin, COO, conjoint analysis, consumer knowledge, consumer self-confidence

The purpose of the study was to quantify the ability of consumer knowledge and personal self-confidence to moderate reliance on the influences of price and country of origin (COO) as extrinsic cues on consumer evaluations of wine quality, when all intrinsic cues are experienced through sensory perceptions. This was achieved by conducting taste testing experiments (N =263) using unwooded chardonnay wine as the test product, in a three (COO) x three (price) by three (acid level) conjoint analysis fractional factorial design. At the same time, specific measures were employed to quantify consumer objective knowledge, subjective knowledge and personal self-confidence as clearly delineated constructs, in order to investigate the ability of each to moderate cue usage. Findings showed that price and COO were both found to be more important contributors to perception of wine quality than taste, irrespective of knowledge (objective or subjective) or self-confidence levels. This reliance was found to remain extremely consistent although objective product quality was manipulated to three differing levels in a controlled laboratory environment. The research clearly demonstrates that consumer belief in the price/value schema dominates quality assessment for consumers, with COO also found to be a strong influence. This is in spite of varying knowledge and self-confidence levels. These findings mean that marketers cannot assume that intrinsic product attributes, even when experienced, will be weighted and interpreted accurately by consumers. The research significantly advances our understanding of consumer knowledge (type and level) and their use of extrinsic cues (price and COO specifically), in relation to their respective influence in their determination of both expected and experienced quality.

Australian Government

Grape and Wine Research and Development Corporation

Introduction

Consumers form opinions regarding quality based one their subjective impressions of a how well a product's attributes meet their personal expectations or desires and these may, or may not, reflect an accurate assessment of objective quality (Alba & Hutchinson, 2000; Bredahl, 2003). Theoretically, all products consist of a 'bundle' of related characteristics or cues. Intrinsic cues are those that form any physical part of the product and cannot be altered without changing product performance or technical specifications; alternatively, extrinsic cues are any aspects only associated with the product (Aaron, Mela, & Evans, 1994). Logically, research has shown that consumers generally rely more heavily on intrinsic rather than extrinsic cues to assess or predict quality. However, the market specific variables of consumer knowledge and self-confidence have been found to influence the use and understanding of both intrinsic and extrinsic cues alike, suggesting managers should not assume consumers form opinions of quality based on rational or objective criteria (Aaron et al., 1994; Alba & Hutchinson, 2000; Alba, 2000; Andreassen & Lindestad, 1998). Whilst numerous studies have found consumer knowledge and self-confidence to be influential, results are often ambiguous and conflicting. This is due to a general lack of consistency in defining knowledge and/or personal self-confidence and, therefore, in the measures employed (Flynn & Goldsmith, 1999; Park, Mothersbaugh, & Feick, 1994). For example some researchers measure only category familiarity, usage levels or self-assessed product knowledge and deem this to be objective knowledge for the purpose of the study (Alba & Hutchinson, 2000; Spence & Brucks, 1997). Since consumer knowledge and self-confidence are considered important dimensions in understanding consumer product evaluations, there is clearly a need to better understand the nature of theses characteristics and how they impact information processing relevant to intrinsic and extrinsic cues alike. The risk for marketers is that scarce resources may be wasted, emphasizing product attributes that are misunderstood or of little importance to buyers, rather than exploiting those product attributes (under various situations) consumers rely on more to form opinions about products and drive their buying decisions.

The research seeks to define consumer knowledge and personal self-confidence more clearly and quantify levels in order to specifically measure their moderating effect on intrinsic and extrinsic cue usage. The study employs a full profile conjoint analysis experimental design testing the specific influence of price and COO as extrinsic cues on consumer perceptions of wine quality while respondents experience all intrinsic cues via sensory evaluation.

Background to the research

Consumer knowledge is comprised of two distinct aspects, *objective knowledge* and self-assessed or *subjective knowledge*. Consumers will naturally have differing levels of knowledge about different categories of products and their levels of knowledge, both objective and subjective, may vary over time. For instance, an individual can develop a high level of objective knowledge in relation to cars due to a personal interest or because of research conducted prior to a purchase decision, but if not constantly updated and maintained with current information this knowledge will not remain current or reliable. Therefore, expertise developed as a result of objective knowledge should not be confused with product familiarity or past experience alone when assessing knowledge levels. Objective knowledge is accurate and current information stored by an individual in their long-term memory based largely on cognitive type learning and experience with the product category via instrumental learning (Alba & Hutchinson, 1987). Consumers with high levels of objective knowledge have been found to distinguish more easily and more precisely between important product and

service attributes, disregarding those product characteristics that are less critical to making a sound assessment of quality or buying decision. They have also developed the ability to efficiently search out and accurately filter new pieces of information, be they related to intrinsic or extrinsic cues, due to these enhanced diagnostic skills (Brucks, 1985; Kardes, Kim, & Lim, 2001; Mason & Bequette, 1998; Park et al., 1994; Wirtz & Mattila, 2003). This more logical application of information relevant to product performance results in a bias towards intrinsic cues due to their impact on actual product performance. Extrinsic cues, however, are not discounted if they are truly predictive of quality (Andreassen & Lindestad, 1998; Heimbach, Johansson, & MacLachlan, 1989; Rao & Olson, 1990). Alba and Hutchinson (1987) also found in their early research that even true 'experts' can still be influenced by 'biases' if they are felt strongly enough, leading to improper weighting of both intrinsic and extrinsic cues.

In contrast, consumers relying on subjective knowledge lack an extensive base of pertinent information to draw upon leading to a limited recall of brands, models and specific product attributes (Mitchell & Dacin, 1996). Rather, these consumers are inclined to use only their own experiences (however limited) as the basis for their perceived expertise and tend to limit their external search for up-to-date information, often believing they already 'know enough'. For these consumers, extrinsic cues are more influential because their objective knowledge is low or not considered necessary (Brucks, 1985; Harrison-Walker, 1995; Monroe, 1976; Sullivan & Burger, 1987). For example, in his study of consumers assessing financial institutions Devlin (2002) found consumers with higher levels of objective knowledge put emphasis on intrinsic cues such as interest rates and fees, whereas higher subjective knowledge respondents were more concerned with testimonials and retail location. Maheswaran (1994) in his study measuring the impact of COO on consumer preferences for personal computers reported that while the majority of respondents were relatively 'familiar' with personal computers through use and experience, only those with strong objective knowledge (IT students) could properly assess the significance of described intrinsic attributes. Conversely, respondents using subjective knowledge placed a significantly stronger reliance on the COO cue in their assessment of expected quality. This suggests that individuals relying on subjective knowledge alone lack the ability to filter out the attributes which are unimportant to objective product performance. Instead, filtering out those they do not understand, and use extrinsic cues such as brand, price or COO to fill any gaps (Cordell, 1992; Schaefer, 1997).

Empirical evidence has established that consumers generally, do not possess the level or quality of objective knowledge they believe they do, creating a gap between their own perception of what they believe to be true regarding product offerings and an accurate judgment (Alba & Hutchinson, 1987, 2000; Alba, 2000; Heimbach et al., 1989). Given that there are relatively few true 'experts' in most consumer markets, the importance and weight given to extrinsic cues cannot be underestimated (Alba & Hutchinson, 1987, 2000; Alba, 2000). While there is extensive existing literature pertaining to how consumers use knowledge, many studies have generated conflicting and ambiguous results; contributors to this are inconsistencies in methodologies and definitions of what consumer 'knowledge' is and how it should be measured. For example some researchers measure only usage levels, category familiarity or self-assessed knowledge and deem this objective knowledge for the purpose of the study (Alba & Hutchinson, 2000; Spence & Brucks, 1997).

Personal self-confidence levels have also been found to effect the interpretation and use of both intrinsic and extrinsic cues (Bearden, Hardesty, & Rose, 2001; Bell, 1967; Wilson &

Brekke, 1994). Individuals with low levels of self-confidence may lack self-belief to the point, where if faced with a strong opposing opinion or predictive extrinsic cues, they will allow their better judgment to be overridden. This may even occur when an individual is a true product expert in a specified category. Alternatively, consumers with high levels of self-confidence often possess strong product attitudes that are very difficult to change due strong self-belief (Olsen, 1999). This strength of conviction leads them to hold on to their beliefs irrespective of support by others or legitimacy (Rao & Olson, 1990). Interestingly, people with low self-confidence can become stubborn also becoming defensive under the pressure of decision making, not because they necessarily believe they are right (Bell, 1967). Although highly self confident consumers may believe themselves to be 'experts', it is more likely their knowledge is only subjective. An early study by Bell (1967) illustrates some of these points. In his research, he investigated consumer confidence levels in relation to new car purchases. His work revealed that individuals with higher self-confidence levels used the opinions of friends less, as they had a stronger belief in their own ability to decide; whereas, those with less confidence used the opinions of friends and adopted buying 'teams' to make purchasing decisions. As this does not appear to have been measured concurrently with objective and subjective knowledge in previous studies, it may be another contributing factor to inconsistent and conflicting results (Bearden et al., 2001; Bell, 1967; Fazio & Zanna, 1978).

Research questions
The literature indicates that the particular combination of knowledge (type and level) with self-confidence levels significantly moderates the credence given to extrinsic cues. This study investigates the respective influence of selected extrinsic cues (price and COO) on consumer opinions of experienced product quality. This is based on their simultaneous evaluation of intrinsic and specified extrinsic cues, with knowledge and personal self-confidence levels as variables potentially moderating their use. Therefore the focal research questions are:

What are the relative influences of the extrinsic cues of COO and price on wine product quality judgments when all intrinsic cues are experienced?

   a. *Are these influences moderated by consumer knowledge (type and level)?*
   b. *Are these influences moderated by personal self-confidence?*

Methodology

Data was collected for analysis through taste testing experiments utilizing a full profile conjoint analysis experimental design using COO, price and a chardonnay wine product as stimulus. The study created specific and measurable differences in an intrinsic objective quality predictor, whilst manipulating the extrinsic cues of price and COO in a controlled manner. Objective and subjective consumer knowledge and consumer personal self-confidence were measured as individual constructs and their ability to influence cue usage investigated.

Use of full profile conjoint analysis:
Conjoint analysis is a well established multivariate technique based on the belief that consumers do not evaluate the value or quality of a product based on a single attribute, but instead, evaluate each product alternative holistically considering the overall product offer by combining the separate amounts of 'utility' (value or attractiveness) provided by each product attribute level (Jaeger, Hedderley, & MacFie, 2000). The allocated score or rating given to a product profile is a reflection of a process where evaluations are determined by 'trading off'

some product features in order to satisfy a desire to gain (or retain) others, thus giving higher scores to those profiles that include the most desirable attributes at the most preferred level (Hair, Anderson, Tatham, & Black, 1995). Conversely, those product profiles given low scores will be comprised of attribute levels considered to be of little value or undesirable (Huber, 1997; Kupiec & Revell, 2001). In the analysis, the 'quality' rating is decomposed and transformed into these utility values and allows for the computation of average 'importance' for each attribute; hence, revealing which attributes are making the strongest contribution to opinions and which attribute levels are most and least preferred (Dean, 2004; Hair et al., 1995). Also, each product profile tested can obtain a comparable overall utility value (quality) score by combining a positive constant term and the average utility value achieved by each attribute level. From this, the product profile that was perceived to be comprised of the most attractive levels of each attribute can be determined. Figure 1 illustrates the associations that will be tested between the variables of the average importance of COO, price and wine acid levels to product quality ratings and the potential influences of knowledge and self-confidence. The stimulus used and measures of independent variables are discussed in the following sections.

Figure 1. Moderating effects of knowledge and self-confidence on product cue usage
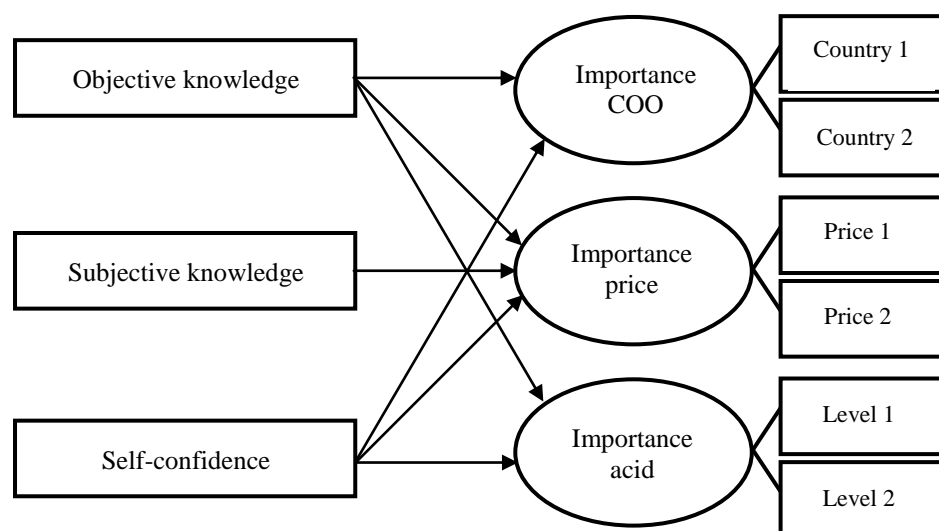
Intrinsic and extrinsic attribute levels
Chardonnay wine is a product widely consumed in Australia, thus allowing the use of a general population sample (ScanTrack-Liquor, 2005) and price and COO have been found to influence consumer perceptions of wine products (Gluckman, 2001; Jover, Montes, & Fuentes, 2004; Keown & Casey, 1995; Manrai, Lascu, & Manrai, 1998; Quester & Smart, 1998). For example, old world countries such as France or Spain, are strongly and positively associated with wine and would therefore be expected by respondents to be sources of high quality wines (Jover et al., 2004; Keown & Casey, 1995). Conversely, countries such as Chile, the United States and Canada are far less famous in Australia for producing high quality wines and more likely to be associated with wines of lower quality. Further, price has been used in the decision making process specific to wine as a proxy reflecting quality (Jover et al., 2004; Kardes, Cronley, Kellaris, & Posavac, 2004; Quester & Smart, 1998). Results from two focus groups largely the confirmed the literature. Respondents indicated that chardonnay was considered a familiar and commonly purchased wine product. Importantly, price and COO were suggested (unprompted) by the majority of members in both groups to be important considerations when evaluating quality wine. In terms of agreeing potential

source countries for wines of differing quality levels, consensus was easily reached by both groups supporting France as the most likely source of the highest quality wines. Whilst some divergence of opinion was evident regarding source countries for average and lower quality wines, in general, wines from North America were expected by most to be at least 'average' in quality with wines from South America expected to be comparatively lower in quality. Therefore, based on the literature and the qualitative data collected in this stage of the study, potential countries likely to be associated with wine products of different quality levels were decided for testing in the quantitative studies.

Guided by industry experts an unwooded chardonnay was deemed a suitable wine product use in the sensory experiment as the single intrinsic cue of acidity can easily and accurately be manipulated to produce significant differences in its objective product quality. Increasing the acid level in chardonnay wine produces sour wines (termed 'green') that are sharp and unpleasant on the palate (Baldy, 1993). Results of paired-sample testing and triangle testing of the planned acid level manipulations confirmed that each treatment level was readily discernable and that the untreated wine was considered to be high quality (good tasting), with the wine found to taste progressively worse as acid levels were increased. Comments from participants in this step of the research established that the lowest quality level of wine was, indeed, unpleasant to the taste using descriptors such as 'sour', 'awful' and 'like vinegar'. Therefore, the highest quality wine level was represented by the omission of additional acid, the addition of 0.5 grams of tartaric acid per liter (average quality) and the addition of 1.0 grams of tartaric acid per liter (low quality).

Table 1. Chardonnay attributes and levels

COO levels	Chile
	U.S.
	France
Price Levels	$ 6.00
	$16.00
	$53.00
Acid Levels	+1.0 gram tartaric acid
	+0.5 gram tartaric acid
	Untreated (0.7 gram/L)

The final conjoint analysis design consisted of a three (country) x three (price) x three (acid level) experimental design. France represented the likely source country of the highest quality wine with the USA average quality and Chile low quality respectively. The three different price levels matched actual examples of wine retail prices for bargain, moderate and premium priced chardonnay wine products. Table 1 shows the attributes and levels in the experimental design. A fractional factorial design was developed from the original plan shown in Table 1 and was translated into a self-administered questionnaire based on nine individual product profiles and the addition of two 'hold out' profiles (for each product) to be completed by respondents first as a 'warm up' exercise as recommended by previous researchers (Louviere, 1988).

Measures of knowledge and personal self-confidence

Commonly, subjective knowledge has been measured by a single self-report item; other methods include semantic differential scales and ad hoc multi item scales developed specifically for the pertinent study (Flynn & Goldsmith, 1999). The eight item scale used in this research was validated through testing across eight different product categories (including

two wine products) in three separate studies by Flynn & Goldsmith (1999). Validation testing resulted in a one factor solution with a total variance explained (Eigenvalues >1) of 62%. The Cronbach Alpha coefficient and KMO and Bartlett's testing results exceeded required thresholds for scale validity and reliability (Malhotra, Hall, Shaw, & Oppenheim, 2002).

In developing the test for objective knowledge it was believed critical to develop questions that measure what typical wine consumers could reasonably be expected to know, rather than what experts in aspects of the wine industry or wine education might know. In her study, Brucks, (1985) suggests the inclusion of items that test knowledge of: important product terminology, critical intrinsic attributes, commonly found attributes (intrinsic or extrinsic), criteria to evaluate these important attributes, product usage situations and 'decoy questions'. Decoy questions test commonly believed (but erroneous) relationships between attributes or product myths. Questions in the final instrument were developed based on information commonly found on wine labels and the advice of industry experts. Whilst ensuring that the assessment remained relatively short and easy to complete, an attempt was made to include as many examples of each area recommended by Brucks (1985) as achievable. This was done using a multiple choice format where each question offered three possible answers and the option of 'don't know' to discourage 'guessing'. Where feasible, the three answers encompassed: the 'best' answer, the opposite to the 'best' answer and a 'decoy' response. Respondents became quite engaged in the test, often commenting they found it interesting and easy to complete, with some even asking for an 'answer sheet' to determine how well they had scored.

A review of the 31 scale item scale developed by (Bearden et al., 2001) to measure consumer self-confidence revealed that many items suggested subjective knowledge of a specified product category, making the scale more of a combined instrument to gauge self-confidence and purchase confidence rather than personal self-confidence alone. A scale determining self-image was also reviewed and considered, but rejected on the same premise (Malhotra, 1981). Given the stated objectives, the items developed by Day and Hamblin (1964) designed to gauge generalized personal self-confidence specifically, was deemed more appropriate and were updated to reflect current language usage and tested and validated as an appropriate measure of personal self-confidence for use in this study. In validity testing the items used loaded onto one factor accounting for 55% of total variance explained (Eigenvalues >1), in addition to surpassing required thresholds for Cronbach Alpha coefficients and KMO and Bartlett's testing (Malhotra et al., 2002).

Data collection

A general population sample of 263 respondents (aged 18 years or older), was determined by drawing upon a variety of sources within the general metropolitan area of Adelaide, South Australia, with an incentive paid to encourage participation. Every wine profile was assigned a random and unique number and was shown individually on its own page of the questionnaire and assessed by respondents using a ten point scale anchored with 'low quality' represented by the lowest score and 'high quality' represented by the highest score. The extrinsic cue levels of price and COO were provided in each profile description but the intrinsic cue of acid level was not, ensuring that the influence of this cue would only be evaluated according to sensory experience. The experiment was conducted over a one month period with between four and eleven participants in each session. Groups were allocated approximately two hours to complete all tasks, including the self-confidence and subjective knowledge scales and objective knowledge test. Wine sample trays were prepared just prior to tasting sessions and kept covered and in a temperature controlled environment to maintain

consistency in product quality for each group. Each respondent was stationed in an individual tasting booth, tasting and rating each wine individually. To counter expectations of color variations in the wine samples, yellow lighting designed specifically to neutralize color variations was used.

Results

Table 2 shows the average importance of chardonnay attributes tested and the individual utilities for each attribute level. The utility values specific to the levels of acid described confirm that respondents were able to differentiate between the acid levels and to rank them correctly in terms of better versus diminishing objective quality. However, the experienced acid levels were appreciably less important to respondents' quality assessment overall than price and slightly exceeded by the power of COO. As expected, France was believed to provide the highest quality chardonnay and Chile and the USA considered comparable; however, far less attractive than France. The results relating to wine price levels are, again, consistent with the literature and show that a particularly low price is likely to be associated with correspondingly low quality, and conversely, a high price with higher quality (Jover et al., 2004; Kardes et al., 2004; Zeithaml, 1988). Table 3 illustrates the minimum, maximum and average total utility value for each profile tested, ranked from the highest total average utility value to the lowest. Those profiles combining the most favored attribute levels achieve higher average utility scores. The dominant influence of price on quality perceptions appears clearly, with the three wine profiles priced at $53.00 achieving the highest utility values in spite of differences in acid levels. The prevalence of price over acid is further demonstrated by the ranking of remaining wine profiles, since other wines with 'average' acid levels were downgraded against lower quality products when associated with lower prices.

Table 2. Summary of attribute utility values (N = 263)

Attribute and level	Utility Values	
Ave imp COO	15.08	
Chile		-0.1383
U.S.		-0.1014
France		0.2396
Ave imp price	71.81	
$ 6.00		-0.8831
$16.00		-0.0365
$53.00		0.9177
Ave imp acid	13.10	
+1.0 gram tartaric acid		-0.2095
+0.5 gram tartaric acid		0.0908
Untreated (0.7 gram/L)		0.1187
Kendall's tau 1.000 sig. 0.000	Pearson's r 0.998 sig 0.000	

Table 3. Average utility levels per profile **N = 263**

Profile	Attribute levels			Min	Max	Mean	SD
823	France	$53.00	Untreated	1.22	10.89	7.09	1.98
924	Chile	$53.00	+ 0.5 gram	0.89	10.89	6.69	1.93
279	U.S.	$53.00	+ 1.0 gram	0.00	10.56	6.49	1.92
253 (H)	France	$16.00	Untreated	0.89	10.33	6.07	1.76
950	France	$16.00	+ 0.5 gram	0.22	10.44	5.96	1.91
595	U.S.	$16.00	Untreated	0.89	9.67	5.79	1.77
481	Chile	$16.00	+ 1.0 gram	0.33	9.11	5.43	1.71
582 (H)	U.S.	$ 6.00	Untreated	-1.00	11.00	5.02	1.97
494	Chile	$ 6.00	Untreated	0.00	11.11	4.98	1.97
696	France	$ 6.00	+ 1.0 gram	-0.22	10.11	4.96	1.90
152	U.S.	$ 6.00	+ 0.5 gram	-0.11	10.78	4.92	2.08
(H) signifies this profile is a 'holdout'							

Influence of knowledge and self-confidence

Results from the objective knowledge test shows respondents achieved a mean score of only 4.71 correct answers out of the 14 multiple choice questions, with 91% of respondents scoring 7 correct answers or less. Table 4 illustrates standardized mean scores from the objective knowledge tests with comparable mean scores of respondents' subjective knowledge. In line with the literature, subjective knowledge scores indicate that while respondents did not believe themselves to be wine 'experts' they still believed their knowledge to be significantly better than suggested by their objective knowledge test scores. On average, respondents exhibited reasonably high levels of self-confidence (Table 4).

Table 4. Comparison of knowledge and self-confidence levels (N=263)

Where 0 is the lowest and 9 the highest possible score	Mean	SD
Objective knowledge chardonnay (standardized)	2.93	1.46
Subjective knowledge chardonnay	4.55	1.72
Self-confidence	6.34	1.45

The respective influence of knowledge (subjective and objective) on cue usage was investigated using a staged approach. As attribute average importance was calculated for each case, correlation coefficients were calculated to quantify any significant relationships between the knowledge and self-confidence variables and the dependent variables of average importance placed on COO, price and acid. Following this, correlation coefficients were computed for the same independent variables and the nine tested attribute level utilities. As many of the variables failed tests for normality, non parametric methods were used. Results revealed a significant, positive relationship between subjective and objective knowledge (0.516). This is to be expected as individuals would have some cognition of their own levels of knowledge, even if they are not entirely accurate. Also, product 'experts' are individuals that possess both types of knowledge at reasonably high levels, therefore a degree of simultaneous development would be expected (Alba, 2000). There was also a weak (0.138) but significant relationship between subjective knowledge and self-confidence. This also was not unexpected as subjective knowledge is self-assessed, and those individuals who are highly self-confident would also be more likely to think of themselves as 'knowledgeable'. The three utility levels for each attribute respectively, must be significantly correlated as are the resulting calculations of average importance of the attributes. This is due to the conjoint

analysis methodology where derived utility levels are a reflection of the relative attribute and level 'trade-offs' made by consumers when scoring the product profiles. Hence, the effect of favoring one aspect (e.g. price) is to diminish the importance of another. However, no significant relationships were revealed between the independent variables and determined average importance for any of the attributes tested. Further, only one significant correlation coefficient (0.128) was revealed between the independent variables and any of the attribute level utilities; this was between subjective knowledge and wine from the U.S. This correlation must be considered somewhat cautiously given its isolated occurrence and weak nature. In contrast to previous results, no strong evidence was found to suggest that knowledge (of either type) or self-confidence had moderated the impact of extrinsic cues on respondent determination of product quality.

Knowledge (both subjective and objective) may not have exercised a strong influence on cue usage because the levels of subjective and objective knowledge were found to be quite low overall. However, while low levels of knowledge can be expected to induce greater reliance on extrinsic cues when products are merely described, the analysis of the test results shows that the influence of extrinsic cues was not diminished even when low quality products were actually experienced. The apparently neutral effect of self-confidence is also unexpected given the healthy levels amongst the group and the greatly reduced objective product quality experienced when tasting some samples (e.g. high acid profiles). This may be an indication of consumer 'stubbornness' driven by ego as discussed in the literature, where a belief regarding an extrinsic cue (however misleading) will be supported regardless of actual experience (Bell, 1967; Owens, 1993). This 'stubbornness' may not only be confined to those with high self-confidence; as Bell (1967) has described low self-confidence individuals who also relied on their beliefs regarding extrinsic cues as a form of 'security', when put under pressure for a decision.

Next the sample was segmented between those with high and low levels of knowledge (objective/subjective) and self-confidence. Contrasting levels of reliance on cue types may be more obvious amongst those with more extreme scores specific to these characteristics. Discrimination between respondents was calculated according to quartile range values for each variable. Respondents achieving scores in the lower 25% of the data distribution were deemed to be 'low' in knowledge (objective/subjective) and self-confidence while respondents scoring in the highest 25% were considered to possess high levels. Those scoring in the mid range of the data array were eliminated from further testing. High and low segments per variable are obviously mutually exclusive; a respondent cannot possess high and low levels of the same characteristic. However, a respondent may be high in subjective knowledge and objective knowledge and even self-confidence, or low in all, or possess any combination of levels possible according to the rotation of characteristics and levels. Hence, the segmentation process did not exclude a respondent from being represented in both segments for the purposes of correlation testing. Preliminary cluster analysis was completed to determine if sufficiently homogenous segments existed within the sample where groups possessing similar levels across all three independent variables could be identified. However, testing with these clusters was not useful, as the influence of the respective individual characteristics was obscured in the results. Therefore, to gauge the degree of commonality across consumer characteristics, correlations for all three independent variables are included in each matrix (by segment) in order to quantify the degree of variable inter-correlation without losing the opportunity to measure the specific influence of each.

Correlation testing between the independent variables and utility values for each of the respective 'high' and 'low' knowledge and self-confidence groups failed to reveal a meaningful pattern of results. One low but significant correlation (0.224) was found between low objective knowledge and the utility for $53.00; this is in line with expectations given those with lower levels of objective knowledge have been found to consistently to use price as an indication of quality. Two significant relationships were found for the low subjective knowledge group and utility values for Chile (-0.334) and France (0.302) indicating a typical 'Halo' effect in favor of France (country image highly congruent with wine) and against the South American country, as would be expected from group with little category knowledge (Han, 1989). For the high self-confidence group, correlations were found between self-confidence and the utility values for the USA (0.296) and France (-0.354), representing an opposite opinion to those correlations discussed above. These relationships suggest that higher levels of self-confidence are supporting an 'against stereotype' attitude towards the French product and a greater willingness to support wines from the USA. The last significant correlation for this group is a weak and negative coefficient (-0.280) with the utility for untreated wine. Given this level represented the best objective quality, this may be another suggestion of the potential for stubbornness in more self confident consumers in support of extrinsic cues even when faced with diminished objective quality (Bell, 1967). The last significant correlation is found for the low self-confidence group and the utility value for $53.00; as with the low objective knowledge group, reliance on a price cue for quality by this group is not unexpected. Table 5 illustrates these seven significant correlations found from this stage of the analysis. Importantly, there is no indication that those with higher levels knowledge (either type) have acknowledged the manipulation in objective product quality, and only a low correlation (in the wrong direction) with higher levels of self-confidence. Whilst these results provide some evidence that those with 'lower' levels of knowledge and self-confidence are exhibiting a weak pattern of extrinsic cue usage, they are far indicating that knowledge or self-confidence underpin cue usage in this instance (Alba, 2000).

Table 5. Summary significant correlations for groups

Attribute Level	Objective knowledge		Subjective knowledge		Self-confidence	
	High	Low	High	Low	High	Low
Chile				-0.334		
USA					0.296	
France				0.302	-0.315	
$53.00		0.224				0.269
Untreated					-0.280	

Table 6 shows a summary of average utility values for each segment. A degree of variation is seen between the respective 'high' and 'low' groups; however, comparison of means testing revealed only two significant differences between these values according to levels of knowledge or self-confidence (as indicated in bold). The first is between the average utility levels for the USA (subjective knowledge groups), where those with higher levels of self assessed knowledge were more favorable towards this level than those with less category familiarity. Whilst significantly different, scrutiny of the utility levels shows a substantively small variation and there are no other significant differences between mean utility values for the subjective knowledge segments. The second significant difference is not surprising given the moderate and negative correlation discussed between those with high levels of self-confidence and the utility for France; while those with low levels of self-confidence indicate a relatively strong propensity to favorably link wine with a congruent country image.

Importantly, no significant differences were found between average utility levels for the intrinsic attribute tested for the 'high' and 'low' segments.

Table 6 Average utilities for high and low knowledge and self-confidence groups
*Significant differences between average utilities in **bold** (sig. <0.05)

Attribute Level	Objective knowledge		Subjective knowledge		Self-confidence	
	High	Low	High	Low	High	Low
Chile	-0.1051	-0.0274	-0.1776	-0.0365	-0.0422	-01984
USA	-0.0072	-0.0850	*** 0.0698**	***-0.2454**	0.0578	-0.1413
France	0.1123	0.1125	0.1079	0.2819	***-0.0156**	***0.3397**
$ 6.00	-0.8043	-0.8999	-0.9873	-0.8823	-0.8222	-0.9698
$16.00	-0.0616	0.0878	0.0841	0.0614	-0.0689	-0.0984
$53.00	0.8659	0.8121	0.9032	1.0033	0.8911	1.0683
Untreated	0.1268	0.1536	0.1558	0.2819	0.2378	0.2222
+ 0.5 gram	0.0797	0.0137	0.0841	0.0083	0.0178	0.1511
+ 1.0 gram	-0.2065	-0.1674	-0.2397	-0.2902	-0.2556	-0.1289
	N=92	N=81	N=70	N=67	N=78	N=58
Kendall's tau and Pearson's r statistics all significant, ranging between 0.817 and 0.997						

Conclusions

The study further demonstrates the ability of extrinsic cues to influence perceptions of wine quality, in this case overwhelming experienced acid levels, in spite of respondents tasting some wines of considerably diminished quality. These outcomes are particularly unexpected given the controlled nature of the experiment, where the usual distractions accompanying consumption were absent, minimizing respondents' distraction from the sensory experience (Van Trijp & Schifferstein, 1995). The analysis also validates price as the most influential product cue amongst those tested with COO also found to be extremely influential. Whilst the effect of consumer belief in the price value schema is quite straightforward, the implications of COO are less clear cut. Overall France was found to be more closely aligned with wines of higher quality reflecting an established country image and product association, hence strong congruence. Interestingly, the utility levels for the USA and Chile indicates that assumptions regarding country image in relation to products should not be made as views do change over time. It was expected that respondents would strongly favor the USA due to the industrialized status of this country and greater familiarity with their brands amongst Australian consumers (Chao, 1989). However, results show that value placed on both countries was variable to a degree, highlighting the need for specific investigation of consumer beliefs rather than assuming a positive or negative COO effect.

Moreover, the research clearly delineates between subjective and objective knowledge and personal self-confidence and quantified levels for each. However, in contrast to expectations the influence of both types of knowledge and self-confidence was found to be sporadic and weak. Correlation coefficient analysis between the independent and dependent variables resulted in little evidence to suggest that knowledge or self-confidence had substantially moderated reliance or emphasis on tested cues. While isolated significant correlation coefficients were found between the independent and dependent variables tested, no reliable pattern of strong relationships was revealed. The comparison of utility values between 'high and 'low' groups shows general differences in the range of opinions due to segmentation criteria; however, further testing found only two average utility values to be significantly

different between clusters. Analysis at this level also revealed isolated instances of significant relationships between groups and the attribute utilities tested; however, there was little additional evidence that these consumer characteristics exert a strong, clear and significant influence on the determination of objective product quality. Importantly, no significant relationships were found between higher and lower levels of knowledge (subjective or objective) and the intrinsic cue of acid levels.

Whilst respondents exhibited generally high levels self-confidence, objective knowledge levels were found to be much lower even than expected, and if knowledge is not there, it cannot exert any influence. The investigation also found little to suggest that high levels of self-confidence provides an effective shield against the influence of potentially misleading and irrelevant extrinsic cues. In fact, a strong belief held in relation to price and COO was upheld even when product quality diminished. Therefore, the study highlights the risk for marketers making assumptions regarding their customers and expectations of their self-confidence, objective knowledge and category familiarity. For example, those tasting the wine were often overcome by their beliefs in price over taste, perhaps thinking their own palates were at fault. Given that wine labels provide acid in levels in g/L, rather than a prescribed descriptor, accurate understanding of the repercussions of this important intrinsic attribute by the majority of consumers is unlikely. From a marketing strategy perspective these results provide further confirmation of the need for careful consideration of the information provided to consumers in relation to wine products, and to better understand those attributes (and levels) strongly associated in consumers' mind with quality.

Limitations

As with other experimental studies, our research presents a number of limitations. Our sample, although representative of a wide cross section of the population, remains one of convenience, limiting the ability to generalize results. Other limitations are inherent to the use of conjoint analysis methodology. In reality, products and services are comprised of a combination of hundreds (perhaps thousands) of intrinsic and extrinsic cues and the methodology only allows the researcher to test a few. The choice of those attributes and levels most critical to the quality evaluation and/or the buying decision is therefore of paramount importance (Jaeger et al., 2000). However, careful scrutiny of the existing literature and analysis of data derived from preliminary focus groups suggest that that the choice of attributes and levels reflected consumers' evaluation of wine products. While the scales employed as measures of subjective knowledge and self-confidence resulted in acceptable total variances for each variable and met or exceeded the required thresholds of validity and reliability testing, the percentages of variance left 'unexplained' by each scale must be considered a limitation. However, the limitations found with these measures also provide an opportunity for further research. Clearly, these findings are also limited to a single product type and need to be further validated across a wider range of products, from low to high involvement. Other product categories and different national samples will be required before we can further generalize those results. Nevertheless, this research significantly advances our understanding of consumer knowledge (type and level) and personal self confidence and the ability of these potentially moderating variables to influence reliance on extrinsic and intrinsic cues in determinations of wine quality.

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