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Predicting Consumption, Wine Involvement and Perceived Quality of Australian Red Wine

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ABSTRACT Australian wine drinkers' ($n = 310$) questionnaire responses measured consumption dimensions, product involvement, subjective knowledge, personality traits and socio-demographics to predict red wine consumption and perceived quality. Total red wine consumed/week was predicted by wine involvement (product involvement); being male and self-monitoring (ability); the number of days/week drinking red wine was predicted by age and wine involvement (product sign) and higher income. Higher self-monitoring predicted buying more expensive wine. Wine involvement was predicted by wine subjective knowledge, reward responsiveness, need for cognition and, negatively, by impulsivity (non-planning). Perceived quality was predicted by sensitivity to reward and older wine company and, negatively, by higher expenditure.

KEY WORDS: consumption, quality, predictors, psychological, socio-demographics

Introduction

The success of Australian wine is threatened by a highly saturated local market and fierce competition in international markets. In the face of these threats the industry is concerned with how consumers make decisions and what differentiates one wine bottle from another. Industry feedback suggests that a current concern is understanding how consumers develop perceptions of wine quality. One of the biggest challenges in the Australian wine industry today is the need to understand perceived quality based on a desire to increase consumer appreciation for higher quality wines at higher price points in the market (<http://www.gwrdc.com.au/ourRDPlan.asp>).

Quality can be a difficult construct to operationalise and may be construed as either objective, relating to technical product specifications (e.g. absence of defects), or as subjective; how the consumer *perceives* the quality. The food choice literature provides guidance in this respect and a useful starting point is a definition of perceived quality as “the mediator between objective product characteristics and consumer preferences”

(Steenkamp, 1989). In this respect it may differ from ‘objective’ quality because it encapsulates personal and situational factors. Search (e.g. label), experience (e.g. tasting) and credence (e.g. credible information) attributes can influence perceived quality (Bech *et al.*, 2001) and consumers may use incomplete information, that is, selected salient attributes to make judgements (Holm and Kildevang, 1996). The attributes used can be broadly labelled extrinsic and intrinsic product attributes. Extrinsic attributes or cues refers to quality based on information not physically part of the product such as, for wine, region, year, label structure, winemaker, etc. Intrinsic cues are related to both expected and experienced quality and refer to sensory properties of the wine itself (Jover *et al.*, 2004). While it is acknowledged that consumers may differentiate between subjective wine enjoyment and the idea that an abstract verifiable quality rating is possible for wine (Charters and Pettigrew, 2007), the present study is concerned with perceived wine quality and how this perception is constructed. Based upon priorities suggested by Australian wine industry representatives, the current research focused on red wine consumption. To this end the research goals for this study were as follows:

- 1) Understand the drivers of current (reported) red wine consumption.
- 2) Identify product and consumer variables that predict consumers’ perceptions of wine quality.

Past research measuring determinants of wine consumption has been limited. For example, Australian market research data (Levine and Pownall, 2004) has identified that 60% of wine volume is consumed by those aged 35 – 64 years, a notably wide age range. Others (Quester and Smart, 1996) have identified wine involvement while in the USA, Hussain *et al.* (2007) found wine knowledge to be the best predictor of consumption. While others (Hall *et al.*, 2004) have identified a range of motivational factors (and some age differences) for wine consumption (within Australian hospitality settings) they did not use those motivations to predict consumption.

Previous studies on wine quality have taken differing approaches. Some have compared ‘experts’ with consumers’ perceptions. Early research (Lockshin and Rhodus, 1993) compared wine quality evaluations by wine consumers and wine wholesalers for the same Chardonnay wine at differing price and oak levels. Consumers judged wines mainly by price, regardless of the oak level and wholesalers were unable to predict consumers’ perceptions. Others have focused on single aspects of extrinsic attributes, for example, low alcohol labels (Masson *et al.*, 2008) or region (Johnson and Bruwer, 2007). Recent econometric analysis (Dahlström and Åsberg, 2009) has taken a multivariate approach to a comprehensive Swedish consumption dataset, to predict media critics’ ratings of wine quality. Another recent study (Gergaud and Livat, 2007) on 6000 European wine consumers, both connoisseurs and non-connoisseurs, used a set of available signals (price, umbrella branding, goodwill, past consumption) to assess the quality of Bordeaux wines where price is the main source of information on quality. Connoisseurs used this signal less intensively than non-connoisseurs. That study concluded that price represented a substitute for umbrella branding where consumers are not aware of who is beneath this umbrella, and where this signal is thus of no help to them.

Recent European studies have therefore taken a multivariate approach. However, they remain culturally specific and there are insufficient data with which to draw conclusions on determinants of perceived wine quality. Importantly, in the current study, a multivariate approach was taken whereby a range of potential predictors

(for both consumption and quality perception) were modelled on Australian consumers' responses to a range of model Australian red wines.

A number of factors may relate to the development of perceptions of wine quality and predict actual consumption. These may include: extrinsic attributes of the wine, current/previous consumption and characteristics internal to the individual for example, product involvement and knowledge as well as a range of psychological factors.

Consumer behaviour is frequently explained in terms of product involvement, including wine purchasing (Quester and Smart, 1996). However, the term involvement has been conceptualised differently by researchers (Jain and Srinivasan, 1990; Kapferer and Laurent, 1993; Zaichkowsky, 1985). Mittal and Lee (1989) have proposed that the common thread among definitions is that: "involvement is the perceived value of a 'goal-object' that manifests as interest in that goal-object. This goal-object can be a product itself (as in product involvement) or a purchase decision (as in brand-decision involvement)" (p. 365). Product involvement is seen as stemming from the consumer's perceptions that the product class meets important values or goals. Purchase involvement is the interest taken in making the product selection and is seen to relate to the effort and deliberative nature of the choice decision process. Involvement with wine as a product can be seen in the differing ways in which consumers can be segmented based on the role wine plays in their lifestyle (Bruwer and Li, 2007; Bruwer *et al.*, 2001, 2002; Keown and Casey, 1995). We hypothesised that involvement would be predictive of consumption; however, in contrast to previous evidence in the wine domain we included a more comprehensive measurement of involvement (see methodology below).

It would be reasonable to hypothesise that knowledge of wine would be strongly indicative of product involvement and may be related to differences in consumption and purchase decisions (Dodd *et al.*, 2005; Perrouy *et al.*, 2006); indeed, this has been shown to predict consumption in a US sample (Hussain *et al.*, 2007). However, there is a distinction between subjective and objective knowledge with potential differing implications for purchase decisions, differing behaviours and variation in product familiarity (Philippe and Ngobo, 1999). Attempts to develop scales assessing objective knowledge of wine (Dodd *et al.*, 2005) have resulted in wide content differences and lack of consensus. Perceptions of subjective knowledge are easier to assess, not so problematical and were hypothesised to predict consumption and perceived quality in the current study.

With the exception of aspects of involvement and knowledge there has been limited use of psychological predictors (validated scales) within the wine literature. Hence a range of potentially useful personality trait predictors were identified. Need for Cognition (NFC; Cacioppo and Petty, 1984) refers to an individual's tendency to engage in and enjoy effortful analytical activity. Considering the complicated nature of wine as a product and the varied cues to quality that may be relevant, a basic tendency to enjoy or dislike thinking about information could be influential in the decision-making process. Indeed, NFC has been shown to have an impact on other product choices, for example, daCosta *et al.* (2000) and Pieniak *et al.* (2007) have shown that NFC is related to food label use. We hypothesised that Need for Cognition would be associated with consumption and perceived quality.

Previous literature (Barber *et al.*, 2007; Olsen *et al.*, 2003) has identified wine as a rewarding or a risky purchase, however, there have been no direct measures of sensitivity to reward or, conversely, punishment related to wine consumption. We hypothesised that individuals' motivation to seek reward and motivation to avoid punishment would predict wine consumption and perceived quality.

Impulsivity or a tendency to make quick decision or act ‘on the spur of the moment’ is another variable with clear connections to the decision-making process. We hypothesised that impulsivity would be negatively associated with wine consumption because of the cognitive demands of choosing a (potentially) complicated product (see above, cognitive effort).

A factor commonly cited in the wine research literature is limited consumer confidence in their ability to make decisions in the face of an abundance of information and choices resulting in anxiety and stress (Barber *et al.*, 2007). Therefore a measure of self-efficacy or confidence was considered appropriate. While a consumer self-confidence scale has been developed for use within the wine arena (Bearden *et al.*, 2001; Olsen *et al.*, 2003), this scale is lengthy and many items irrelevant to the current study. A commonly used construct within social science research is that of self-efficacy (a personal sense that you can achieve, overcome obstacles and have control over situations and environment). While self-efficacy is often conceptualised as being domain-specific (for example, feeling efficacious of being able to drive a car but low self-efficacy in regards to choosing wine) there is no self-efficacy scale specifically relevant to purchasing wine. However, there is work supporting the notion of a generalised sense of self-efficacy referring to global confidence in one’s coping ability across a wide range of situations.

Wine consumption and purchasing may be seen as serving a value expressive function, that is, expressing characteristics about oneself. It is highly plausible that, based on contextual cues, certain people may modify their purchases to reflect desired traits, for example, buying expensive bottles of wine to impress others. We hypothesised that value expression would predict consumption and perceived quality.

Consumption

In this study we used consumption measures as both the dependent variable (objective 1) and as independent variables, that is, how current consumption may impact on perceived wine quality (objective 2). Typically consumption is measured with one or two questions concerning how many glasses of wine are consumed. However, perceptions of what constitutes a ‘glass’ may differ widely and people’s recall of serving size or frequency can be highly inaccurate (Frobisher and Maxwell, 2003; Gruenewald and Johnson, 2006; Searles *et al.*, 2002; White *et al.*, 2005). As this measurement error may not be systematic a more accurate assessment of consumption is needed and has been attempted in the present study.

Numerous dimensions of consumption are used as dependent variables in a test of wine consumption. Similarly consumption dimensions were used as independent variables in predicting perception of wine quality.

Perceived Quality Ratings

Perceived quality as a dependent variable was derived from perceived quality ratings of model wine concepts based on the attributes: cost, award, region, variety, and vintage (see methodology below for details).

Context

Both consumption and the initial purchasing decision can be greatly affected by the context of that consumption (Collins *et al.*, 1985; Goodman *et al.*, 2006, 2007a, 2007b;

Morey *et al.*, 2002; Orth, 2005; Quester and Smart, 1998) or the perceived role of wine in one's lifestyle (Thach and Olsen, 2004). It is therefore important to rigorously control the context, hence, in the current study, for the perceived quality objective, the specific context was 'purchasing a bottle of wine for dinner at home with friends'.

Methodology

Scale Selection

Involvement

Adapting earlier work (Kapferer and Laurent, 1985), Mittal and Lee (1989) developed a generic product involvement scale modifiable to specific products. This scale consists of eight, three-item subscales: product involvement; brand decision involvement; product sign-value (or the social status, self-expressive function of the product); brand sign-value; product hedonic value; brand hedonic value; product utility; and brand risk (the perceived danger or problems caused by purchasing the wrong brand). Previous wine studies have used selected sub-scales of this tool (Aurifeille *et al.*, 2002; Hollebeek *et al.*, 2007; Lockshin *et al.*, 1997, 2001); however, in the current study all sub-scales, except for product utility, were used.

Subjective knowledge

An eight-item scale initially used by Goldsmith *et al.* (1997), validated for use with wine products (Flynn and Goldsmith, 1999) was chosen for the current study.

Cognitive effort

The shortened 18-item Need for Cognition scale, validated within an Australian context (Forsterlee and Ho, 1999), was used in the current study.

Sensitivity to reward and punishment

Two related scales were selected (Carver and White, 1994). The behavioural activation system (BAS) is posited to be sensitive to signals of reward, non-punishment and escape from punishment. This should translate into more goal-directed behaviour and positive feelings when exposed to cues of impending reward (e.g. opening a bottle of 'quality' wine). The behavioural inhibition system (BIS) measures behaviour that may lead to negative or painful outcomes and is sensitive to signals of punishment and non-reward (e.g. making the wrong choice of wine). In summary, these two systems measure motivation to seek reward and motivation to avoid punishment.

Impulsivity

After reviewing a variety of impulsivity measures (Braithwaite *et al.*, 1984; Dickman, 1990; Eysenck *et al.*, 1985; Franken and Muris, 2005; Magid and Colder, 2007; Smillie and Jackson, 2006; Van der Linden *et al.*, 2006; Whiteside and Lynam, 2001; Whiteside *et al.*, 2005) the commonly used and validated Barratt Impulsiveness Scale was chosen. The 15-item short version, containing three five-item subscales: Attention impulsivity; Motor impulsivity and Non-planning (Braithwaite *et al.*, 1984; Patton *et al.*, 1995; Spinella, 2007), was used.

Self-efficacy

The General Self-Efficacy Scale, widely used and validated cross-culturally (Scholz *et al.*, 2002), was chosen for the current study.

Value expression

Assessing value expression in a self-report questionnaire can be difficult as it may be seen as confessing to pretentiousness. Related materialism and competitiveness scales (Christopher *et al.*, 2004; Houston *et al.*, 2002; Richins and Dawson, 1992) were considered and rejected for the topic at hand. We also rejected a number of social desirability measures (Crowne and Marlowe, 1960; Fischer and Fick, 1993; Loo and Loewen, 2004; O’Gorman, 1974; Paulhus, 1984; Stöber, 2001; Stöber *et al.*, 2002) as social desirability is a distinct concept from wishing to present a particular image to others. A more pertinent construct was deemed to be ‘self-monitoring’: the extent to which people can and do observe and control their expressive behaviour and self-presentation. A perceived need to and subsequent ability to interpret social and interpersonal cues and modify one’s self-presentation to achieve a desired public appearance was considered relevant to the current study and has been used in the advertising domain (Gangestad and Snyder, 2000; Snyder, 1974; Snyder and Gangestad, 1986). The Lennox and Wolfe Revised Self-Monitoring Scale is a recent validated measure of self-monitoring that has been used in consumer work. This scale has two subscales: Sensitivity (awareness of cues to change behaviour or to read people’s emotions) and Ability (ability to modify ones behaviour to change the impression you present) and comprises 12 items (Lennox and Wolfe, 1984).

Figure 1 summarises the dependent and independent variables explored in the current study in a conceptual model.

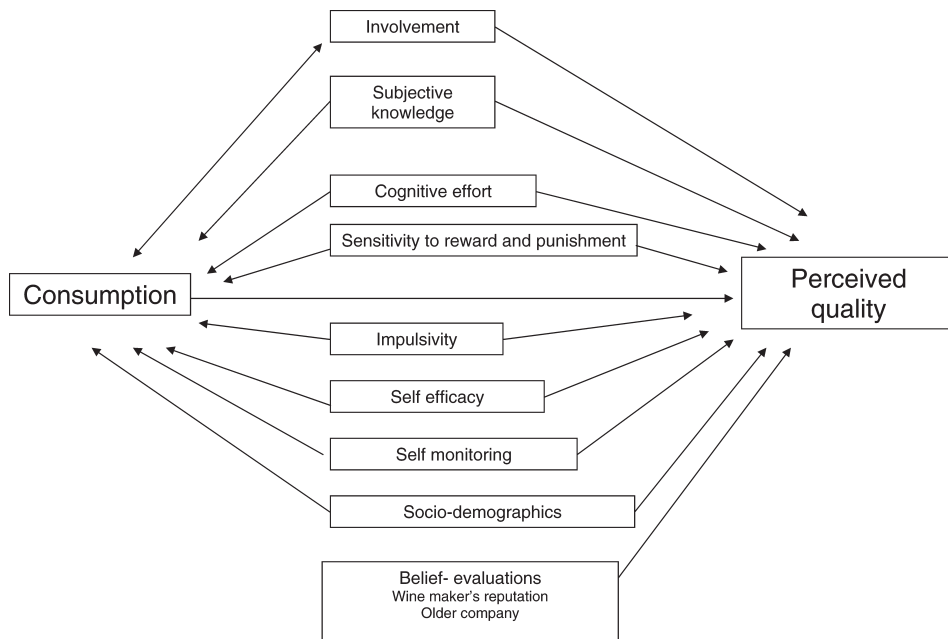


Figure 1. A model of the dependent and independent variables hypothesised to predict consumption of red wine and perceived quality.

Participants

Participants were recruited through a sensory and market research company (Sensometrics Ltd) from the Sydney metropolitan area. Eligibility criteria for participants were: legal age to consume alcohol in Australia (18 years or over), under 65 years of age and drinking red wine on at least two days a week. Assessment took place in May 2008 and consisted of two stages.

Administration and perceived quality attributes

Stage one was completed online on the participants' personal computers. This stage took approximately 30 minutes to complete and included 18 conjoint profiles of wine labels. The main findings of the conjoint data will be reported elsewhere (Melo *et al.*, submitted) however the attributes modelled were used in the current study to understand perceived quality (objective 2). Those attributes were: cost (three levels: \$8 – \$12, \$15 – \$19, \$22 – \$26), award (two levels: presence or absence), region (three levels: Barossa Valley, Heathcote, McLaren Vale), variety (two levels: Shiraz, Cabernet Sauvignon), vintage (three levels: 2004, 2005, 2006). Briefly, at a group level, price (linear) was the most important attribute (supported by Hollebeek *et al.*, 2007), followed by region of origin (respectively, Barossa, McLaren Vale, Heathcote) and supported by Tustin and Lockshin (2001); only minor effects were reported for vintage (04, followed by 05 and 06), supported by (Gil and Sanchez, 1997); wines that had an award were perceived as higher in quality than those with no award; there were higher ratings for the Cabernet Sauvignon variety over Shiraz, although these effects were quite small. In general, our wine concepts, created using known important extrinsic attributes (see Martinez-Carrasco Martinez *et al.*, 2006, for a review), were rated consistently with the previous literature.

These attributes were derived from a sorting task (Chrea *et al.*, 2008; Melo *et al.*, submitted) and represented tangible attributes that were considered important in sorting wine by perceived quality. Other attributes identified in the sorting task that were considered difficult to model were tested using belief-evaluation questions (see below) derived from expectancy-value theory (Conner and Armitage, 2006). Participants rated the 18 profiles for 'perceived quality' on a 100-point visual analogue scale (and 'likelihood to purchase' on a seven-point Likert scale ranging from 'Not at all likely' to 'Extremely likely'). Following this, participants completed the Need for Cognition (Cacioppo *et al.*, 1984), Product Involvement – Wine (Mittal and Lee, 1989) and Wine Subjective Knowledge (Flynn and Goldsmith, 1999) scales and socio-demographic questions. Socio-demographic questions were based on ABS census questions (<http://www.abs.gov.au/websitedbs/d3310114.nsf/home/Census+data>) and included gender, age, marital status, income, education and employment status.

Stage two was a paper questionnaire administered at a central location including an assessment of the participant's current patterns of wine consumption. Average glass size (ml) for the individual was determined using drawings of life sized glasses with marks indicating volume at various points on the glasses.¹ The number of days a week red wine (not including sparkling red) and other wines (white, rosé, sparkling red or sparkling white but not fortified wines, e.g. port or sherry) was recorded as were the average number of glasses of each consumed in a week. The average number of bottles of red and other wines purchased for home use in a month was recorded as was the average amount usually spent when buying a bottle of red wine for dinner with friends at home (Below \$8, \$8–12, \$15–19, \$22–26 and Above \$26). Psychometric tools employed at this stage

included: Impulsivity Scale (Spinella, 2007), Self-monitoring Scale (Lennox and Wolfe, 1984), General self-efficacy Scale (Scholz *et al.*, 2002) and the Behaviour Inhibition Scale and Behaviour Activation Scale (BIS/BAS) (Carver and White, 1994).

In addition, 17 belief/evaluation questions were developed assessing factors relating to perceptions of wine quality and their perceived importance when purchasing a bottle of wine for dinner at home with friends. These followed the standard format for belief/evaluation questions (Conner *et al.*, 2005) and addressed a range of attributes (see Table 3). For example: 'I believe that traditional designs on a wine bottle label are an indication of quality wine' (belief item) was matched with 'Having a traditional wine bottle label design is important to me when buying wine' (evaluation item). Both sets of questions were answered using seven-point Likert-type scales.

The questionnaire formats were pre-tested and feedback was incorporated. Questionnaires are available from the corresponding author upon request.

Data Analysis

Analysis involved a range of standard mean difference tests (ANOVA, independent *t*-tests). For tests assessing the impact of socio-demographics these included gender, age, marital status, income, education, employment status. Due to large variation in age and income, these variables were also divided into tertiles (age: younger, middle aged, older; income: low, middle, high) and differences explored. Due to the small number of respondents in particular categories, for some analyses the marital status, education and employment variables were reduced: Marital status: single; married/*de-facto*, separated/divorced; Education: some high school, completed high school, technical or trade certificate (not university), bachelor degree, graduate diploma/certificate, postgraduate degree; Employment: full-time/self-employed, part-time, casual, home duties, student, retired/pensioner.

Correlations and data reduction techniques (Principal Components Analysis) were also employed. In addition, modelling techniques were used for predictive work, standard and logistic regressions were performed to determine what socio-demographic and psychological factors may be predictive of consumption and purchasing behaviour. Outliers were determined through the calculation of *z* scores, with a value in excess of 3.29 being labelled an outlier (Tabachnick and Fidell, 2001). Variable normality was determined through examination of normal probability plots. Examination of these plots showed that the total amount of red wine drunk in a week was non-normally distributed and was therefore transformed using a natural log transformation. Multivariate outliers were excluded based on calculation of Mahalanobis distance. Regression analyses used listwise treatment of missing data.

To predict what factors were driving perceptions of quality a multi-level linear model was used. This allowed inclusion of the wine specific characteristics (manipulated in the conjoint profiles; see Melo *et al.*, submitted) and respondent specific characteristics (psychometric scores, socio-demographics and red wine consumption) in the one predictive model. All 18 multiple instances of the dependent variable (perceived quality) per respondent were used while accounting for the clustering of the multiple responses. Using all 310 participants across the 18 responses resulted in a potential pool of approximately five and a half responses while still accounting for the repetition of participant specific predictors. The multi-level linear model developed one predictive model that allowed the large pool of responses to be considered as 310 groups of 18 quality ratings (not independent observations). Fixed effects, random effects and interactions were examined in the model. The key output

of the multi-level linear model were estimates which refer to the impact on the dependent variable, in this case the 100-point score of quality, from a one unit change in the predictor variable. Consequently, interpretation of the effect size of estimates needs to take into account the relative scales of both the dependent and the independent variables. For categorical predictors the estimate will refer to the difference in quality perceptions between two categories. Using the guidelines of Bickel (2007) variance accounted for by the model was calculated using the following equation: $R^2 = 1 - (\text{Residual variance of Conditional Model} + \text{Intercept variance of Conditional Model}) / (\text{Residual variance of Unconditional Model} + \text{Intercept variance of Unconditional Model}) * 100$. Where the conditional model is the analysis containing fixed and/or interaction effects for all predictors and the unconditional model is the 'null model' without those predictors and only contains the random intercept.

Results

Three hundred and thirty nine participants were eligible and completed both stages of the study. Univariate outliers were excluded resulting in a final sample size of 310.

The sample comprised 150 (48.4%) men and 160 (51.6%) women. Age distribution of the sample was generally representative of the Australian population (www.censusdata.abs.gov.au) as a whole, with some over representation in the 25 – 29-year age range. The sample was highly educated (59.7% had a bachelor degree or above) in comparison to the general population (21%, www.abs.gov.au).

Scale Reliability

Cronbach alpha scores were calculated for all of the psychometric scales to ensure internal reliability. All total scale scores showed acceptable scores (>0.7), ranging from 0.763 for the Behavioural Inhibition Scale to 0.870 for the Self-monitoring Scale.

Behaviour

The wine consumption variables are summarised in Table 1. The consumption habits and the amount of red wine consumed displayed quite diverse patterns with large variations in the amount consumed and the regularity with which one drinks red wine over the course of a week. The average number of bottles of red wine purchased for home use in a month roughly aligns with the average amount consumed in a week.

Few significant differences emerged. Men reported purchasing more bottles of red wine in a month ($t = 2.13$ (308), $p < .05$); however, this had a small effect size, $\eta^2 = 0.014$, and was equivalent to slightly less than one bottle a month. Men also reported consuming more red wine over the course of a week ($t = 3.38$ (307), $p = .001$). This had a small effect size, $\eta^2 = 0.036$, and was equivalent to approximately 250 ml. Reflective of

Table 1. Reported red wine consumption

	Mean (SD)	Min	Max
Average glass of wine (ml)	205 (45)	100	350
Days consume red wine	2.85 (1.5)	1	7
Glass of red wine a week	5.3 (2.9)	2	16
Total red wine consumed in a week (ml)	1088 (646)	200	3240
Bottles of red wine purchased for home use in a month	5.8 (3.8)	0	20

Table 2. Average spend (Australian \$) on a bottle of red wine purchased for a dinner party with friends

	<i>N</i>	Percentage
Below \$8	4	1.3
\$8 – \$12	62	20.0
\$15 – \$19	182	58.7
\$22 – 26	58	18.7
Above \$26	4	1.3

this, men also reported drinking more glasses of red wine during the week ($t = 2.81$ (308), $p < .01$). This relationship showed a very small effect size ($\eta^2 = 0.009$) and equated to a little under one glass more per week than women. There was also a slight impact of age in relation to the size of the average glass of wine. Post-hoc analyses of the age variable divided into tertiles showed that the younger age group had larger glass sizes than the older age group ($F = 5.81$ (2, 306), $p < .01$). However, the effect size was low, $\eta^2 = 0.037$, and the mean difference was only 20 ml.

When purchasing wine for a dinner party with friends at home, participants displayed a strong preference for the middle price range of \$15 – \$19 (Table 2). This finding was consistent with the conjoint analysis results to be reported elsewhere (Melo *et al.*, submitted) and also with the multi-level regression work below (Table 4).

Descriptive statistics and socio-demographic differences are reported on the wine involvement and wine subjective knowledge scales because of their subsequent importance (see below). For the Wine Involvement Scale (possible range 21 – 147) the sample scores ranged from 47 to 135, mean of 98.2 and standard deviation of 15.0. The only socio-demographic difference was those with a postgraduate degree were higher in wine involvement than those with only high school qualifications ($F = 2.33$ (5, 302), $p < .05$). However, the effect size was small, $\eta^2 = 0.037$. For the wine subjective knowledge scale (possible range 8 – 72), the sample ranged in scores from 15 to 71, with a mean of 42.8 and a standard deviation of 10.0. There were no significant differences in terms of socio-demographics.

Research Goal 1: Predicting Red Wine Consumption

Total red wine consumed in a week was regressed against the psychometric scales, age, gender, income and education. The total final model was significant and explained 16% (adjusted) of the variance ($R^2 = .160$, $F = 1.86$ (23, 225), $p < .05$). In the final model, only three variables were significant predictors of the total amount of red wine consumed in a week: Self-monitoring – ability ($\beta = .160$, $t = 2.19$, $p < .05$), Wine Involvement – Product involvement ($\beta = .247$, $t = 2.23$, $p < .05$) and Gender ($\beta = -.175$, $t = -2.52$, $p < .05$). Being male, having a tendency to be more self-monitoring and those more involved with wine as a product were predictive of higher red wine consumption.

Models seeking to predict the number of bottles of red wine purchased for home use in a month all proved non-significant.

The number of days drinking red wine (using the same predictors as total red wine consumed) was significantly predicted ($R^2 = .169$, $F = 2.00$ (23, 226), $p < 0.01$) by, in the final model, only two variables: Age ($\beta = .253$, $t = 3.57$, $p < 0.001$) and Wine involvement – product sign ($\beta = .202$, $t = 2.39$, $p < 0.05$).

To explore if any factors could predict purchase price (category) a direct logistic regression was performed including psychometric, socio-demographic and wine consumption variables. This excluded the highest and lowest purchase price as they involved too few cases. This model could not accommodate the psychometric subscales so only total scale scores were included. This accounted for 26% of the variance ($R^2 = .256$) in the final model. Three variables showed significant impact on the odds ratios. For every unit increase in income the odds ratio for belonging in the \$8–12 category versus the \$22–26 category is 0.64 ($p < 0.01$) and the odds ratio for belonging in the \$15–19 category versus the \$22–26 is 0.76 ($p < 0.01$). For every unit increase in self-monitoring total scale score the odds ratio for belonging in the \$8–12 versus the \$22–26 category is 0.929 ($p < 0.05$). For every unit increase in number of days drinking red wine in a week the odds ratio for belonging in the \$15–19 category versus the \$22–26 category is 1.42 ($p < 0.05$). To summarise, higher income and higher self-monitoring are predictive of buying wine in the more expensive category. Drinking red wine on more days of the week increased the likelihood of buying \$15–19 bottles of wine rather than more expensive bottles but no difference was observed in likelihood to purchase even cheaper bottles.

Predictors of wine involvement

Because wine involvement proved to be an important predictor of some aspects of wine consumption, the potential psycho-social antecedents of wine involvement were investigated further using multiple regression that included the psychometric scales, age, gender, income, education, total red wine consumed in a week, number of days consuming red and bottles of red purchased for home use in a month as independent variables. The final model explained 42% of the variance in the wine involvement score ($R^2 = .423$, $F = 8.87$ (19, 230), $p < 0.001$). Wine involvement was significantly predicted, in order of strength, by four variables in the final model: wine subjective knowledge ($\beta = .469$, $t = 8.52$, $p < 0.001$), BAS – reward responsiveness ($\beta = .175$, $t = 2.88$, $p < 0.001$), Impulsivity – non-planning ($\beta = -.132$, $t = -2.33$, $p < 0.05$) and need for cognition ($\beta = .125$, $t = 2.14$, $p < .05$).

Research Goal 2: Understanding Perceptions of Red Wine Quality

Belief/evaluation

The belief/evaluation questions regarding factors relevant to perceptions of wine quality and their perceived importance when purchasing a bottle of wine for dinner at home with friends were multiplied together to result in a final score for each item. The belief questions were scored from -3 to $+3$ and the evaluation questions from 1 to 7. Hence, final scores for each item could range from -21 to 21 , with scores around the zero mark indicative of a lack of perceived relevance of that item in quality perceptions/purchasing. Belief/evaluation scores are shown in Table 3.

In an attempt to identify patterns of responses among the belief/evaluation scores a Principal Components Analysis was performed. Data assumptions were met and assuming an orthogonal structure (Varimax rotation), resulted in a four component matrix explaining 49.9% of the variance. However, the items within each component did not hang together in a sensible manner so component scores were not generated. No difference to the content of the components or variance explained was found when assuming an oblique structure (Direct Oblimin rotation).

All mean differences from zero (Table 3) were negative except for boutique winery, ability to cellar the wine, winemaker's reputation and older wine company. While the

Table 3. Belief (agreement) and Evaluation (importance) results (n = 310) on influences on wine quality

	Mean (SD) Belief/evaluation	Range	t-test mean difference from 0 (two-tailed)
Label design	1.6 (6.9)	–18 to 21	.000
Traditional label	–0.5 (4.7)	–18 to 21	.057
Modern label	–2.0 (4.5)	–18 to 12	.000
Coloured labels	–2.2 (4.5)	–18 to 18	.000
White labels	–2.7 (4.1)	–21 to 10	.000
Black labels	–1.5 (4.1)	–12 to 12	.000
Bottle shape	–2.1 (5.5)	–15 to 14	.000
Burgundy bottle shape	–1.8 (4.1)	–12 to 14	.000
Bordeaux bottle shape	–0.4 (5.3)	–18 to 21	.000
Description of wine sensory characteristics	–0.6 (6.8)	–21 to 21	.122
Ability to cellar	2.2 (7.2)	–21 to 21	.000
Company size	–1.8 (5.4)	–15 to 15	.000
Large company	–0.2 (5.9)	–18 to 18	.653
Small company	0.1 (5.0)	–15 to 18	.946
‘Boutique’ company	1.8 (5.4)	–10 to 18	.000
Older company (‘long established winemaker’)	5.7 (5.7)	–10 to 21	.000
Winemaker’s reputation	8.3 (6.1)	–18 to 21	.000

majority of belief/evaluations were significantly different from zero the magnitude of the differences were very small and unlikely to be meaningful. In terms of mean scores, only an older company and the winemaker’s reputation would seem to be regarded as indicative of quality and relevant when purchasing red wine. Hence these two variables were included in the multi-level regression analysis below.

Multi-level regression on perceived quality

Using the 18 perceived quality scores from the related conjoint study (Melo *et al.*, submitted) as the dependent variables, multilevel regression was undertaken using all the extrinsic, psychological, behavioural, socio-demographic variables and the two most important belief/evaluation items measured as the independent (predictor) variables. The final model accounted for 21% of the variance and numerous main effects and interaction effects were found (Table 4).

Price sensitivity seemed to be the most important. The higher average spend on wine a participant reported, the greater the negative influence on overall quality ratings (12.2 – 4.7%). Furthermore, the interaction between higher spend and the variety Shiraz was also negative, suggesting that there are limits this variety has for greater perceived quality. However, interaction effects were positive when average spend interacted with wines at higher cost suggesting consistency of price as a marker of quality. Furthermore, small but significant interactions were found between cost and some higher socio-economic status indicators (full-time employment, university education) hence those that can afford to spend more do so and thus perceive their higher cost purchases to be markers of quality. Older wine company was found to have a small direct effect (one third of a point). Sensitivity to reward (BAS) was positively associated with higher overall quality ratings; however, again, the influence was small (about half a point).

Table 4. Significant predictors (un-standardised estimates) of quality perceptions (ratings of conjoint profiles)^a using multi-level regression analysis (R^2 0.208), $n = 310$

Variable	Estimate (Std error)	<i>t</i> score	<i>p</i>
Main effects			
Average spend			
\$22 – \$26	–12.228	–5.305	0.000
\$15 – \$18	(2.305) –4.739 (1.781)	–2.661	0.000
Behaviour Activation Scale			
(sensitivity to reward)	0.471 (0.141)	3.329	0.001
Older wine company	0.327 (0.122)	2.684	0.008
Interactions			
Employment (full-time/student) * cost (\$22 – 26)	3.050 (1.184)	2.577	0.010
Marital status (separated/divorced) * cost (\$22 – 26)	4.689 (1.928)	2.431	0.015
Education (tertiary) * cost (\$22 – 26)	6.524 (1.033)	6.318	0.000
Education (tertiary) * cost (\$15 – 19)	3.137 (1.104)	2.842	0.005
Education (tertiary) * region (Heathcote)	2.800 (1.039)	2.695	0.007
Sex (male) * award	–2.698 (0.854)	–3.160	0.002
Sex (male) * variety (Shiraz)	–2.251 (0.902)	–2.497	0.013
Average spend * cost			
[average spend \$22 – \$26] * [cost \$22 – \$26]	8.533 (1.635)	5.219	0.000
[average spend \$22 – \$26] * [cost \$15 – \$19]	5.399 (1.761)	3.065	0.002
[average spend \$15 – \$19] * [cost \$22 – \$26]	4.472 (1.277)	3.503	0.000
[average spend \$15 – \$19] * [cost \$15 – \$19]	4.078 (1.376)	2.964	0.003
Average spend * variety			
[Average spend \$22 – \$26] * [Shiraz]	–3.810 (1.399)	–2.723	0.006
[average spend \$15 – \$19] * [Shiraz]	–2.419 (1.068)	–2.265	0.024
Award * knowledge	0.132 (0.049)	2.698	0.007
Variety (Shiraz) * age	0.611 (0.213)	2.864	0.004
Cost (\$15 – 19) * bottles per month	–0.467 (0.156)	–2.987	0.003
Award * bottles per month	–0.308 (0.132)	–2.335	0.020
Variety (Shiraz) * glasses of red wine	0.504 (0.207)	2.437	0.015
Award * how many days one drinks	1.047 (0.314)	3.328	0.001

^aDependent variable ‘perceived quality’ derived from ratings of 18 profiles including variety, region; price, vintage, award. (see Melo *et al.*, submitted).

Men interacted negatively with both award and Shiraz variety but no other sex effects were found. Subjective knowledge interacted positively with award, and older age interacted with the variety Shiraz. Current wine consumption presented several contrasting interaction effects with bottles bought, interacting negatively with mid price and award; however, glasses of red wine reported drunk interacted positively with Shiraz and frequent drinking interacted positively with award.

Generally speaking while several predictors were found, overall the effect on the 100-point perceived quality scale was small. Few direct effects were found and most variance depended upon complex interactions.

Discussion

Research Goal 1: Predicting Red Wine Consumption

The present study provides an interesting snapshot of red wine consumption within one Australian metropolitan location. It is clear that consumption patterns vary

considerably across the population. The relatively few and weak effects of socio-demographic characteristics on consumption patterns suggests that these variables may be poor methods of targeting wine marketing strategies. Alternatively, this could be viewed as indicative of the success of wine marketing within Australia. However, this study did not involve a random sample of the population but rather a pool of current red wine drinkers reasonably representative of the age distribution of the Australian population. Consequently, the most that could be claimed is that among our highly educated sample of red wine drinkers, while there were individual differences, there appears to be little systematic (group) differentiation between consumption, barring a slightly higher reported consumption among men than women. However, this was only one glass a week hence, at least with red wine consumption, women report similar consumption to their male counterparts.

When attempting to predict consumption, despite the wide range of predictors included, the low variance explained (approximately 16%) suggests the complicated nature of wine consumption. Wine involvement, as predicted, proved to be relevant with this variable being related to higher total consumption as well as a larger number of days drinking red wine across the week. The direction of this relationship is not known but is likely to be circular and reinforcing, with attitudes (involvement) changing with behaviour (drinking), that is, consistent with expectancy-value models of behaviour (Conner and Armitage, 2006). As age was predictive of the number of days across the week drinking red wine, this could potentially be related to differences in lifestyles and the role wine plays in this. For example, it would seem reasonable to hypothesise that wine may be associated more with dining experiences for older participants as distinct to just drinking while socialising. Investigations into the context of wine how wine is consumed by different age groups would be useful for explaining differences in consumption behaviour and developing strategies that target specific consumption contexts. The role of self-monitoring on wine consumption is less clear. While weakly related to predicting total consumption it may be that being more aware of the social norms and expectations within a particular context could translate to increased consumption if this was a contextual norm.

While wine involvement was related to consumption, confirming previous studies (Dodd *et al.*, 2005; Perrouy *et al.*, 2006), it is interesting to note that the consumption variables did not predict involvement score. Wine subjective knowledge was strongly related to involvement. The relationships with need for cognition and BAS-reward responsiveness would suggest that those more inclined towards analysis and cognitive effort and who respond well to 'reward' are more likely to become involved with wine as a product. The post-ingestive effects of red wine, the sensory properties of the wine itself, and the perception of wine as a 'high status' beverage could well constitute 'reward', encouraging involvement. Also the ability to apply one's knowledge of wine to make a fulfilling selection may be an intrinsic reward in addition to the prestige associated with knowing a good wine.

As a complicated product it is also reasonable to expect that need for cognition may play a part in encouraging involvement in the product. Perhaps partly due to the complicated product nature, impulsivity was negatively related to involvement.

As the sample strongly favoured purchasing bottles of wine within the mid-price range, it was difficult to highlight variables that would predict how much people were willing to spend on a bottle of wine for a dinner party at home with friends, that is, models were not predictive because of the lack of variation in the dependent variable. As expected, income was associated with an increased likelihood to purchase more expensive bottles of wine. Income was not predictive of how many days one drinks

but drinking wine on more days of the week was related to an increased probability of purchasing mid-price range wine. This would suggest that, generally, habit or lifestyle may be more predictive of purchase price than income. If this finding can be confirmed it should help to target marketing strategies.

Predicting involvement

We are the first to report the underlying psychological antecedents of wine involvement and, while such personality traits may not always be malleable, they may be amenable to targeted communication strategies. For example, emphasising wine as a reward or orientating promotional strategies that includes cognitive effort, that is, advertising with a cognitively demanding 'hook'. Not surprisingly, subjective knowledge was related to involvement, confirming US data (Hussain *et al.*, 2007). Increasing knowledge has the potential to be changed, although there is an absence of literature on how best to approach this within the wine domain. Importantly, in contrast to previous studies (Quester and Smart, 1996) of Australian wine consumers that used only univariate analysis, socio-demographic variables in the current study were unrelated to involvement when put into competition with the psychological variables.

Research Goal 2: Understanding Perceptions of Red Wine Quality

Perhaps the most interesting findings from this study relates to perceptions of wine quality. As evidenced by the generally negative – to zero mean responses to the belief/evaluation questions many of the items assessed would appear to have little general impact on perceived quality.

Nevertheless, the wide range of scores within the belief/evaluation scores is indicative that these consumers construct perceptions of quality and the relevance of those factors in their purchasing decisions are remarkably varied. The only key factors to emerge across the sample from the belief/evaluation questions was 'reputation' and the related concept of being an 'old established winemaker' were generally considered cues to quality and importance when purchasing. Only 'older winemaker' was found to be predictive when in competition with other variables and this only had a small influence. This provides little information from which to construct marketing strategies except that retaining established winemakers of repute or retaining established brands is likely to be important and conversely, establishing new high quality wines may be difficult. We are unable to tease apart whether consumers conceptualise 'winemaker' as an individual, a company or a brand in the current data or from the sorting task (Chrea *et al.*, 2008).

The multi-level regression model could only explain a modest amount of variance. However, considering that this was an a-theoretical exploratory model, some useful information was derived. Current expenditure and the price of the wine concepts tended to be the most important predictors of perceived quality confirming analysis of the conjoint profiles (Melo *et al.*, submitted). Participants who spend on average at the higher price points will rate quality lower but interactions between current expenditure and price point occur and when match will have a positive influence. Hence current purchase behaviour is associated with perception. Once again expectancy-value theory would suggest this is a circular reinforcing process, for example, a consumer's current behaviour (purchasing expensive wines) creates an expectancy of high quality hence, in general, that consumer will rate wines a lower quality (than those who do not purchase expensive wines). Similarly some socio-economic factors

(education in particular interacts) with price to drive quality perception. Need for, or sensitivity to, reward (BAS) was a positive predictor overall, hence appealing to consumers in terms of wine as a reward may be useful in raising perceptions of quality. Current drinking patterns give differential effects with general consumption (bottles per month) interacting in a negative manner with award and these data suggest that men tend not to rate Shiraz highly. It may be important that the industry notes the apparent limits to Shiraz and that perhaps there are opportunities to achieve higher quality acceptance with other varieties.

It is readily apparent that perceptions of quality are highly complicated and the range and relative importance of factors pertinent to these ratings vary considerably between consumers. What is not currently clear is the relationship between perceived quality and purchase intention. As suggestive by people who drink red wine consistently throughout the week, purchasing mid-price range bottles regardless of their income, perceptions of acceptable quality may cover quite a range of products. Spanish conjoint data (Martinez-Carrasco Martinez *et al.*, 2006) found that medium price received highest utility regardless of frequency of consumption or purchasing place (retail or restaurant) also suggesting limits to buying higher value wines.

The concept of quality as 'fit for purpose' may be a useful concept to investigate further. The past literature has sought to address context and occasion (see Hall *et al.*, 2001 for a review of some early literature) by various methods. More recent studies applied means-end-chain analysis (Hall and Lockshin, 2000). In those data there were few attribute differences across dining occasions, with only price possibly more important in a business related occasion. However, no inferential statistical analysis was reported. The focus was on differing consequences and associated values and some differences were identified. It seems that price is indeed a cue to perceptions of quality but it is also apparent that people are not buying what they perceive as being the best quality but rather an acceptable standard of wine for the purpose at hand. Future studies should further unpack the impact of context or appropriateness, perhaps using 'item by use' methodology (Schutz, 1999) on both purchase intention and quality perception and some of the psychological factors which may drive these decision-making processes.

Study Limitations

There are a number of variables not addressed in this study that may prove relevant. While this study addresses current consumption more thoroughly than many other studies and has introduced the use of a visual aid to more accurately develop measures of consumption, previous levels of wine consumption have not been assessed. Previous consumption may be predictive of current consumption, however, there are few tools available to adequately measure a consumer's wine drinking history or 'career'. There is an assumption within the industry of a linear progression from drinking light white wine and then progressing through to the heavier reds. However, there are no data to support this assumption. In an examination of a similar widely held industry assumption, that wine cooler consumption in America leads to wine drinking, the data did not support this assumption (Cuellar and Lucey, 2005).

In addition, we do not have any measure of the hedonic aspects of wine. The wine involvement scale assesses pleasurable aspects of 'purchasing' wine but we do not know how individuals differ in how pleasurable they view wine consumption. Such measures would need to include the enjoyment and perceived benefits of the sensory aspects of the wine, factors related to social context (allowing one to 'fit in') as well as the post-ingestive effects of alcohol itself (such as euphoric mood, decreased social

inhibition, self-medication of negative affect, etc.). If a robust measure of the enjoyment and pleasure gained from wine, including the more utilitarian aspects of stress/anxiety relief, could be developed this would likely prove highly predictive in determining people's consumption levels. The challenge would then be to differentiate those who predominantly drink wine from other alcohol consumers as well as unpack which factors of either the wine or the consumer are most predictive of enjoying the wine drinking experience, whether these are stable over time and how they may change by context. Indeed, there is a need to test other contexts, in a similar way to the current study, as differing predictors may be found.

In summary, the current study has provided some new and valuable insights into factors affecting the consumption and purchasing of wine, perceptions of wine quality and involvement with wine as a product. A key strength is the inclusion of more robust measures of consumption and the use of multi-level regression work to accommodate for multiple measures of the dependent variable of quality.

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Note

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References

- AURIFEILLE, J.M., QUESTER, P.G., LOCKSHIN, L. and SPAWTON, T. (2002) Global vs international involvement-based segmentation: a cross-national exploratory study, *International Marketing Review*, 19(4), 369–386.
- BARBER, N., ISMAIL, J. and TAYLOR, C.D. (2007) Label fluency and consumer self-confidence, *Journal of Wine Research*, 18(2), 73–85.
- BEARDEN, W.O., HARDESTY, D.M. and ROSE, R.L. (2001) Consumer self-confidence: refinements in conceptualization and measurement, *Journal of Consumer Research*, 28, 121–134.
- BECH, A., GRUNERT, K., BRED AHL, L., JUHL, H.J. and POULSEN, C. (2001) Consumers' quality perception, in: L.J. FREWER, E. RISVIK, H.N.J. SCHIFFERSTEIN and R. VAN ALVENSLEBEN (eds) *Food, People and Society: A European Perspective of Consumers' Food Choices*, London: Springer Verlag, 97–113.
- BICKEL, R. (2007) *Multilevel Analysis for Applied Research: It's Just Regression!* New York: The Guilford Press.
- BRAITHWAITE, V., DUNCAN-JONES, P., BOSLY-CRAFT, R. and GOODCHILD, M. (1984) A psychometric investigation of the usefulness of the EASI-III temperament survey in the Australian general population, *Australian Journal of Psychology*, 36(1), 85–95.
- BRUWER, J. and LI, E. (2007) Wine-Related Lifestyle (WRL) market segmentation: demographic and behavioural factors, *Journal of Wine Research*, 18(1), 19–34.
- BRUWER, J., LI, E. and REID, M. (2001) Wine-Related Lifestyle segmentation of the Australian domestic wine market, *Wine Industry Journal*, 16(2), 104–108.
- BRUWER, J., LI, E. and REID, M. (2002) Segmentation of the Australian wine market using a wine-related lifestyle approach, *Journal of Wine Research*, 13(3), 217–242.

- CACIOPPO, J.T., PETTY, R.E. and KAO, C.F. (1984) The efficient assessment of need for cognition, *Journal of Personality Assessment*, 48(3), 306–307.
- CARVER, C.S. and WHITE, T.L. (1994) Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS Scales, *Journal of Personality and Social Psychology*, 67(2), 319–333.
- CHARTERS, S. and PETTIGREW, S. (2007) The dimensions of wine quality, *Food Quality and Preference*, 18, 997–1007.
- CHREA, C., DELAHUNTY, C.M., FORDE, C.G., SMYTH, S., REVERSEAU, S. and COX, D.N. (2008) Perception of wine quality: a study using a binary hierarchical sorting task to elicit non-sensory properties of Australian wines, in: *A Sense of Innovation, The Third European Conference on Sensory and Consumer Research*. Hamburg: Germany.
- CHRISTOPHER, A.N., MAREK, P. and CARROLL, S.M. (2004) Materialism and attitudes toward money: an exploratory investigation, *Individual Differences Research*, 2(2), 109–117.
- COLLINS, R.L., PARKS, G.A. and MARLATT, G.A. (1985) Social determinants of alcohol consumption: the effects of social interaction and model status on the self-administration of alcohol, *Journal of Consulting and Clinical Psychology*, 53(2), 189–200.
- CONNER, M. and ARMITAGE, C.J. (2006) Social psychological models of food choice, in: R. SHEPHERD and M. RAATS (eds) *The Psychology of Food Choice*. Wallingford: CAB International, 41–57.
- CONNER, M., SPARKS, P. and NORMAN, P. (2005) *Theory of Planned Behaviour and Health Behaviour in Predicting Health Behaviour*. Maidenhead: Open University Press.
- CROWNE, D.P. and MARLOWE, D. (1960) A new scale of social desirability independent of psychopathology, *Journal of Consulting Psychology*, 24(4), 349–354.
- CUELLAR, S.S. and LUCEY, A. (2005) Attracting entry level drinkers: are wine coolers a gateway to wine consumption? *International Journal of Wine Marketing*, 17(1), 28–43.
- DACOSTA, M.C., DELIZA, R., ROSENTHAL, A., HEDDERLEY, D. and FREWER, C. (2000) Non conventional technologies and impact on consumer behaviour, *Trends in Food Science & Technology*, 11(4–5), 188–193.
- DAHLSTRÖM, T. and ÅSBERG, E. (2009) Determinants of Demand for Wine—Price Sensitivity and Perceived Quality in a Monopoly Setting, CESIS Electronic Working Paper Series Paper No. 182 The Royal Institute of Technology Centre of Excellence for Science and Innovation Studies (CESIS), available online at: <http://www.cesis.se> (accessed 1 August 2009).
- DICKMAN, S.J. (1990) Functional and dysfunctional impulsivity: personality and cognitive correlates, *Journal of Personality and Social Psychology*, 58(1), 95–102.
- DODD, T.H., LAVERIE, D.A., WILCOX, J.F. and DUHAN, D.F. (2005) Differential effects of experience, subjective knowledge, and objective knowledge on sources of information used in consumer wine purchasing, *Journal of Hospitality and Tourism Research*, 29(1), 3–19.
- EYSENCK, S.B.G., PEARSON, P.R., EASTING, G. and ALLSOPP, J.F. (1985) Age norms for impulsiveness, venturesomeness and empathy in adults, *Personality and Individual Differences*, 6(5), 613–619.
- FISCHER, D.G. and FICK, C. (1993) Measuring social desirability: short forms of the Marlowe-Crowne social desirability scale, *Educational and Psychological Measurement*, 53, 417–424.
- FLYNN, L.R. and GOLDSMITH, R.E. (1999) A short, reliable measure of subjective knowledge, *Journal of Business Research*, 46, 57–66.
- FORSTERLEE, R. and HO, R. (1999) An examination of the short form of the need for cognition scale applied in an Australian sample, *Educational and Psychological Measurement*, 59(3), 471–480.
- FRANKEN, I.H.A. and MURIS, P. (2005) Individual differences in decision-making, *Personality and Individual Differences*, 39, 991–998.
- FROBISHER, C. and MAXWELL, S.M. (2003) The estimation of food portion sizes: a comparison between using descriptions of portion sizes and a photographic food atlas by children and adults, *Journal of Human Nutrition and Dietetics*, 16(3), 181–188.
- GANGESTAD, S. and SNYDER, M. (2000) Self-monitoring: appraisal and reappraisal, *Psychological Bulletin*, 126(4), 530–555.

- GERGAUD, O. and LIVAT, F. (2007) How Do Consumers Use Signals to Assess Quality? American Association of Wine Economists, Working Paper No. 3.
- GIL, J.M. and SANCHEZ, M. (1997) Consumer preferences for wine attributes: a conjoint approach, *British Food Journal*, 99(1), 3–11.
- GOLDSMITH, R.E., D'HAUTEVILLE, F. and FLYNN, L.R. (1997) Theory and measurement of consumer innovativeness, *European Journal of Marketing*, 32(3/4), 340–353.
- GOODMAN, S., LOCKSHIN, L. and COHEN, E. (2006) The on-premise environment—What's influencing consumer choices? A look at initial South Australian data gathered as part of an international research project, *Wine Industry Journal*, 21(6), 87–90.
- GOODMAN, S., LOCKSHIN, L. and COHEN, E. (2007a) Influencers of consumer choice—Comparing international markets, *Wine Industry Journal*, 22(3), 91–95.
- GOODMAN, S., LOCKSHIN, L. and COHEN, E. (2007b) Influencers of consumer choice in a retail setting—More international comparisons, *Wine Industry Journal*, 22(6), 42–48.
- GRUENEWALD, P.J. and JOHNSON, F.W. (2006) The stability and reliability of self-reported drinking measures, *Journal of Studies on Alcohol*, 67, 738–745.
- HALL, J., BINNEY, W. and O'MAHONY, G.B. (2004) Age related motivational segmentation of wine consumption in a hospitality setting, *International Journal of Wine Marketing*, 16(3), 29–43.
- HALL, J. and LOCKSHIN, L. (2000) Using means-end chains for analysing occasions – not buyers, *Australasian Marketing Journal*, 8(1), 45–54.
- HALL, J., LOCKSHIN, L. and O'MAHONEY, G.B. (2001) Exploring the links between wine choice and dining occasions: factors of influence, *International Journal of Wine Marketing*, 13(1), 36–53.
- HOLLEBEEK, L.D., JAEGER, S.R., BRODIE, R.J. and BALEMI, A. (2007) The influence of involvement on purchase intention for new world wine, *Food Quality and Preference*, 18(8), 1033–1049.
- HOLM, L. and KILDEVANG, H. (1996) Consumers' views on food quality. A qualitative interview study, *Appetite*, 27, 1–14.
- HOUSTON, J.M., MCINTIRE, S.A., KINNIE, J. and TERRY, C. (2002) A factorial analysis of scales measuring competitiveness, *Educational and Psychological Measurement*, 62(2), 284–298.
- HUSSAIN, M., CHOLETTE, S. and CASTALDI, R. (2007) Determinants of wine consumption of US consumers: an econometric analysis, *International Journal of Wine Business Research*, 19(1), 49–62.
- JAIN, K. and SRINIVASAN, N. (1990) An empirical assessment of multiple operationalizations of involvement, *Advances in Consumer Research*, 17, 594–602.
- JOHNSON, R. and BRUWER, J. (2007) Regional brand image and perceived wine quality: the consumer perspective, *International Journal of Wine Business Research*, 19(4), 276–297.
- JOVER, A.J.V., MONTES, F.J.L. and FUENTES, M.D.F. (2004) Measuring perceptions of quality in food products: the case of red wine, *Food Quality and Preference*, 15, 453–469.
- KAPFERER, J.N. and LAURENT, G. (1985) Consumer involvement profiles: a new practical approach to consumer involvement, *Journal of Advertising Research*, 25(6), 48–56.
- KAPFERER, J.N. and LAURENT, G. (1993) Further evidence on the consumer involvement profile: five antecedents of involvement, *Psychology and Marketing*, 10(4), 347–355.
- KEOWN, C. and CASEY, M. (1995) Purchasing behaviour in the Northern Ireland wine market, *British Food Journal*, 97(1), 17–20.
- LENNOX, R.D. and WOLFE, R.N. (1984) Revision of the self-monitoring scale, *Journal of Personality and Social Psychology*, 46(6), 1349–1364.
- LEVINE, M. and POWNALL, S. (2004) Wine Industry Outlook: Consumption Demographics, Market Segmentation, Trends and Opportunities. 2004 Wine Industry Outlook Conference Darling Harbour, Sydney, Australia, 25 November. Roy Morgan Research Pty Ltd, Melbourne, Australia.
- LOCKSHIN, L.S. and RHODUS, W.T. (1993) The effect of price and oak flavor on the quality perceptions of consumers and wholesalers, *The International Journal of Wine Marketing*, 5(2), 13–25.
- LOCKSHIN, L., QUESTER, P. and SPAWTON, T. (2001) Segmentation by involvement or nationality for global retailing: a cross-national comparative study of wine shopping behaviours, *Journal of Wine Research*, 12(3), 223–236.

- LOCKSHIN, L.S., SPAWTON, A.L. and MACINTOSH, G. (1997) Using product, brand and purchasing involvement for retail segmentation, *Journal of Retailing and Consumer Services*, 4(3), 171–183.
- LOO, R. and LOEWEN, P. (2004) Confirmatory factor analyses of scores from full and short versions of the Marlowe-Crowne social desirability score, *Journal of Applied Social Psychology*, 34(11), 2343–2352.
- MAGID, V. and COLDER, C.R. (2007) The UPPS impulse behavior scale: factor structure and associations with college drinking, *Personality and Individual Differences*, 43, 1927–1937.
- MARTNEZ-CARRASCO MARTNEZ, L., BRUGAROLAS MOLLA-BAUZA, M., DEL CAMPO GOMIS, F.J. and MARTINEZ POVEDA, A. (2006) Influence of purchase place and consumption frequency over quality wine preferences, *Food Quality and Preference*, 17, 325–327.
- MASSON, J., AURIER, P. and D’HAUTVILLE, F. (2008) Effects of non-sensory cues on perceived quality: the case of low alcohol wine, *International Journal of Wine Business Research*, 20(3), 215–229.
- MELO, L., CHREA, C., EVANS, G., COX, D., HARRISON, A., DELAHUNTY, C.M. and FORDE, C.G. (submitted) The influence of extrinsic product attributes on consumer appreciation of Australian red wines: an investigation using three approaches, *International Journal of Wine Business Research*.
- MITTAL, B. and LEE, M.S. (1989) A causal model of consumer involvement, *Journal of Economic Psychology*, 10, 363–389.
- MOREY, R.C., SPARKS, B.A. and WILKINS, H.C. (2002) Purchase situation modelling in wine selection: an evaluation of factors in an Australian context, *International Journal of Wine Marketing*, 14(1), 41–64.
- O’GORMAN, J.G. (1974) Limits to the generality of the Marlowe-Crowne measure of social desirability, *Journal of Clinical Psychology*, 30(1), 81.
- OLSEN, J.E., THOMPSON, K.J. and CLARKE, T.K. (2003) Consumer self-confidence in wine purchases, *International Journal of Wine Marketing*, 15(3), 40–51.
- ORTH, U.R. (2005) Consumer personality and other factors in situational brand choice variation, *Journal of Brand Management*, 13(2), 115–133.
- PATTON, J.H., STANFORD, M.S. and BARRATT, E.S. (1995) Factor structure of the Barratt impulsiveness scale, *Journal of Clinical Psychology*, 51(6), 768–774.
- PAULHUS, D.L. (1984) Two-component models of socially desirable responding, *Journal of Personality and Social Psychology*, 46(3), 598–609.
- PERROUTY, J.P., D’HAUTEVILLE, F. and LOCKSHIN, L. (2006) The influence of wine attributes on region of origin equity: an analysis of the moderating effect of consumer’s perceived expertise, *Agribusiness*, 22(3), 323–341.
- PHILIPPE, A. and NGOBO, P.V. (1999) Assessment of consumer knowledge and its consequences: a multi-component approach, *Advances in Consumer Research*, 26, 569–575.
- PIENIAK, Z., VERBEKE, W., SCHOLDERER, J., BRUNS, K. and OLSEN, S.O. (2007) European consumers’ use of and trust in information sources about fish, *Food Quality and Preference*, 18(8), 1050–1063.
- QUESTER, P.G. and SMART, J. (1996) Product involvement in consumer wine purchases: its demographic determinants and influence on choice attributes, *International Journal of Wine Marketing*, 8(3/4), 37–56.
- QUESTER, P.G. and SMART, J. (1998) The influence of consumption situation and product involvement over consumers’ use of product attribute, *Journal of Consumer Marketing*, 15(3), 220–238.
- RICHINS, M.L. and DAWSON, S. (1992) A consumer values orientation for materialism and its measurement: scale development and validation, *The Journal of Consumer Research*, 19(3), 303–316.
- SCHOLZ, U., DOA, B.G., SUD, S. and SCHWARZER, R. (2002) Is general self-efficacy a universal construct, *European Journal of Psychological Assessment*, 18(3), 245–251.
- SCHUTZ, H.G. (1999) Appropriateness as a measure of the cognitive-contextual aspects of food acceptance, in: H.J.H. MACFIE and D.M.H. THOMSON (eds) *Measurement of Food Preferences*. Gaithersburg: Aspen, 25–50.

- SEARLES, J.S., HELZER, J.E., ROSE, G.L. and BADGER, G.J. (2002) Concurrent and retrospective reports of alcohol consumption across 30, 90 and 366 days: interactive voice response compared with the timeline follow back, *Journal of Studies on Alcohol*, 63, 352–362.
- SMILLIE, L.D. and JACKSON, C.J. (2006) Functional impulsivity and reinforcement sensitivity theory, *Journal of Personality*, 74(1), 47–83.
- SNYDER, M. (1974) Self-monitoring of expressive behaviour, *Journal of Personality and Social Psychology*, 30(4), 526–537.
- SNYDER, M. and GANGESTAD, S. (1986) On the nature of self-monitoring: matters of assessment, matters of validity, *Journal of Personality and Social Psychology*, 51(1), 125–139.
- SPINELLA, M. (2007) Normative data and a short form of the Barratt impulsiveness scale, *International Journal of Neuroscience*, 117, 359–368.
- STEENKAMP, J.-B.E.M. (1989) *Product Quality*. Assen, The Netherlands: Van Gorcum.
- STÖBER, J. (2001) The Social Desirability Scale-17 (SDS-17): convergent validity, discriminant validity, and relationship with age, *European Journal of Psychological Assessment*, 17(3), 222–232.
- STÖBER, J., DETTE, D.E. and MUSCH, J. (2002) Comparing continuous and dichotomous scoring of the balanced inventory of desirable responding, *Journal of Personality Assessment*, 78(2), 370–389.
- TABACHNICK, B.G. and FIDELL, L.S. (2001) *Using Multivariate Statistics*. Sydney: Allyn and Bacon.
- THACH, E.C. and OLSEN, J.E. (2004) The search for new wine consumers: marketing focus on consumer lifestyle or lifecycle, *International Journal of Wine Marketing*, 16(3), 44–57.
- TUSTIN, M. and LOCKSHIN, L. (2001) Region of origin: does it really count, *Australian and New Zealand Wine Industry Journal*, 16, 149–153.
- VAN DER LINDEN, M., D'ACREMONT, M., ZERMATTEN, A., JERMANN, F., LARI, F., WILLEMS, S., JUILLELAT, A.C. and BECHARA, A. (2006) A French adaptation of the UPSS impulsive behavior scale: confirmatory factor analysis in a sample of undergraduate students, *European Journal of Psychological Assessment*, 22(1), 38–42.
- WHITE, A.M., KRAUS, C.L., FLOM, J.D., KESTENBAUM, L.A., MITCHELL, J.R., SHAH, K. and SWARTZWELDER, S.H. (2005) College students lack knowledge of standard drink volumes: implications for definitions of risky drinking based on survey data, *Alcoholism: Clinical and Experimental Research*, 29(4), 631–638.
- WHITESIDE, S.P. and LYNAM, D.R. (2001) The five factor model and impulsivity: using a structural model of personality to understand impulsivity, *Personality and Individual Differences*, 30, 669–689.
- WHITESIDE, S.P., LYNAM, D.R., MILLER, J.D. and REYNOLDS, S.K. (2005) Validation of the UPPS impulsive behaviour scale: a four-factor model of impulsivity, *European Journal of Personality*, 19, 559–574.
- ZAICHKOWSKY, J.L. (1985) Measuring the involvement construct, *Journal of Consumer Research*, 12, 341–352.