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Measuring psychographics to assess purchase intention and willingness to pay

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Abstract

Purpose – Marketing managers routinely use purchase intentions data to make strategic decisions concerning both new and existing products and the marketing programs that support them. Yet, the indication from empirical investigations regarding the link between respondents' stated intentions and their actual behavior is not as clear. Predicting which consumer will purchase an environmentally friendly product, the research remains split, particularly when it comes to perceived "trade-offs" between the environmental benefits, quality, and cost. In this regard, previous research has fallen short in examining consumers' actual purchase behavior versus self-reported purchase intentions. This paper seeks to address these issues.

Design/methodology/approach – This study measured consumer psychographics and expressed purchase intention to predict actual purchase behavior using an online survey and the Vickrey auction method.

Findings – The results show that respondents expressing a high intention to purchase environmentally friendly wines also reported strong attitudes and values toward the environment. However, the gap between stated willingness to pay and the actual price paid was wide.

Research limitations/implications – The study was restricted to the investigation of one type of product. The model should be tested with a number of products that are purchased on a regular basis.

Practical implications – Given the wide disparity between stated willingness to pay and actual price paid for those expressing high purchase intentions, marketing should use caution when assessing this targeted group for new product launches and potential price changes.

Originality/value – This study assessed the same cohort using a survey and auction experiment to relate consumer values and purchase intentions with actual behavior.

Keywords Purchase intention, Willingness to pay, Sustainable, Psychographics, Market segmentation, Consumer behaviour

Paper type Research paper

An executive summary for managers and executive readers can be found at the end of this article.

Introduction

Competition has been increasing over the past decades for varying consumer goods, as manufacturers look for ways to increase profits in markets with fixed size. Attention has shifted to more in-depth studies of markets and consumers so that manufacturers can effectively plan and evaluate their pricing, advertising, and promotional activities. Presently, environmental concerns of industry are being identified as critical issues companies must consider (Nomacorc, 2008; Dolinar and Leisch, 2008; Barber, 2010; Barber *et al.*, 2009). The growing awareness of individual and industrial impacts on the environment has led to behavior and practice modifications in production and the marketplace. One concern is how to manage and create appropriate marketing strategies related to the push-pull system of environmentally friendly products between two subjects: consumers that usually "pull" the goods or services they demand for their needs and wants and producers or service providers that "push" their products toward consumers. Consumers'

product and brand selections are further influenced by habits, convenience, value, personal health concerns, and individual responses to social and institutional norms. As a result of increasing environmental concerns, consumers now frequently make purchase decisions based on how products satisfy their needs, while minimizing the negative impact on the natural environment (GFK, 2007; Torgler *et al.*, 2008).

Sustainable consumption is based on a decision-making process in which consumers consider social responsibility in addition to their needs and wants (Vermeir and Verbeke, 2006). Today's environmentally-conscious consumers pay attention to the image marketers project and adjust their purchase behaviors in a way that favors those businesses that convey a positive and ethical image (Creyer, 1997). Additionally, "green" consumers are often willing to pay more for environmental characteristics and are thus a prime target market for environmentally friendly products. Although green consumers often exhibit sincere intentions toward living a greener lifestyle, they judge their environmental practices as ineffective and do not expect companies to be perfect in order to be considered "green" (Bazoche *et al.*, 2008).

Recent research has reported a majority of consumers either purchase or do not purchase a product based on environmental attributes (Barber, 2010; Barber *et al.*, 2009; Bazoche *et al.*, 2008; GFK, 2007). Furthermore, consumers have expressed a willingness to pay a premium to purchase environmentally friendly products (Barber, 2010; Bazoche *et al.*, 2008; GFK, 2007; Loureiro, 2003; Laroche *et al.*, 2001; Didier and Lucie, 2008). This suggests that consumers in general are a prime marketing target for products promising environmental benefits.

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Over the years, a number of models have been proposed to measure levels of consumer psychographics in various areas of environmentalism and the relationship with purchase intentions and behaviors (Bazoche *et al.*, 2008; Hines *et al.*, 1987; Krause, 1993; Loureiro, 2003; Martin and Simintiras, 1994; Follows and Jobber, 2000; Schultz, 2002). Psychographics encompass individuals' values, attitudes and lifestyles. Research suggests an inconsistency among individuals' expressed environmentally responsible attitudes and actual purchase behavior. Consumers might feel more strongly in some areas of concern than others (Samuelson and Biek, 1991; Roozen and De Pelsmacker, 1998) and, depending on the product, may be more or less willing to trade off certain elements of value and quality for a more environmentally sound product, despite what their expressed purchase intentions are (Bazoche *et al.*, 2008). This product-specific, individual attitude is measured through reported purchase intentions, and since purchase intention ultimately leads to purchase behavior, it has been suggested as a key predictive component (Follows and Jobber, 2000). However, the measurement of expressed purchase intentions and the comparison between expressed purchase intentions and actual purchase behavior have been difficult (Follows and Jobber, 2000; Lange *et al.*, 2002). Therefore, this study aims to understand the relationship between psychographic antecedents of expressed purchase intention and stated willingness to pay have with actual purchase behavior by comparing results from a self-administered survey with an experiment based on the Vickery auction method.

Theoretical background

Environmentalism

Environmentalism is a dominant issue in today's world. The level of concern, however, is not entirely unanimous. Nevertheless, an increasing percentage of the American public believes there are significant issues with the environment and desire to remedy these problems (Barber *et al.*, 2009). Earlier surveys reported that a majority of adults in the USA said the quality of the environment is getting worse, while 40 percent said it is getting better (Gallop, 2003, 2007). Six years later the polls show similar numbers with a slightly more positive outlook down to 48 percent reporting conditions are getting worse and 41 percent saying conditions are improving. In response to the question rating the degree to which they worry about environmental quality, Americans are split roughly into thirds. However, the "highly worried" group is down from 40 percent in 2008, and 43 percent in 2007 (Gallup, 2009).

It is generally accepted that increasing awareness of environmental issues is due largely to mass media exposure and to a lesser extent, marketing (Maibach, 1993; Lefebvre and Flora, 1988). An individual's level of concern about the issues can be influenced by a variety of factors including current political leadership (and perceived public policy), level of personal comfort, marketing efforts to push environmentally friendly products, and a shift in economic concern. Whatever the case, there is an increasing awareness of the impact individuals' purchasing behavior has on many ecological problems (Bazoche *et al.*, 2008; GFK, 2007), and is substantiated in shopping behaviors with an increase in sales of products wrapped in recycled material (such as boxed wine) and other ecologically compatible products (such as

CFC-free hairspray or unbleached coffee filters). Research has shown that eco-conscious individuals are frequently willing to pay more for environmentally friendly products (Bazoche *et al.*, 2008; GFK, 2007; Loureiro, 2003; Laroche *et al.*, 2001) which is good news for companies seeking to integrate green practices and attract environmentally-friendly buyers.

However, the key to long-term success in environmental purchase behavior market research will be to put out a direct message that targets a widespread audience. Increasing dissemination of information will lead to increasing environmental knowledge, changing attitudes and, thus, buying behaviors. Bazoche *et al.* (2008) support this idea and suggest that an increase in awareness and attitude is important for changing human actions toward the environment.

Proposed research hypotheses

Purchase decision-making can be complex, involving a combination of needs and desires influenced by factors such as the decision maker's societal role, value system, and cultural and environmental norms. Purchase behavior can be influenced by internal (knowledge, attitude, personality) and marketing (product, promotion, price) factors. To help understand the antecedents to purchase intention for environmentally friendly products, Follows and Jobber (2000) constructed a hierarchy model of personal values – attitude – purchase intention – behavior [based on the Theory of Reasoned Action by Ajzen and Fishbein (1980)] to demonstrate product-specific relationships between individual values and attitudes on intent to purchase environmentally responsible products. The model was based on a system of values based on work by Homer and Kahle (1988), Schwartz (1992), Thogerson and Grunert-Beckmann (1997), and McCarty and Shrum (1994). These values were considered as forecasting measures since they are considered to be stable and act as standards on which attitudes are based (Follows and Jobber, 2000). Follows and Jobber (2000) identified three value systems of interest: self-transcendence (an active concern for others), conservation (conscious conforming to social expectations), and self-enhancement (a self-serving/self gratification value). Each has a relationship with the perceived consequences of individual purchase behavior and the resulting purchase intention and behavior.

Regarding these perceived consequences, Follows and Jobber (2000) viewed the two influential consequences as environmental consequences (perceived effects of the behavior on the natural environment) and individual consequences (perceived effort or benefit of the behavior on the individual). Depending on the perceived consequence, purchase intention is found to hinge on a balance of the two with the ultimate goal to maximize environmental benefits while minimizing individual effort. The following sections will discuss each of the study constructs and the corresponding hypotheses.

Environmental attitude

Attitudes strongly influence behavior and thus are essential to consumer behavior research (Ajzen and Fishbein, 1980; Arcury, 1990; Bejou and Thorne, 1991; Samuelson and Biek, 1991; Follows and Jobber, 2000). Environmental attitude is the multifaceted mental state involving beliefs, feelings, values, and character associated with the propensity to act

in an environmentally friendly manner or take part in environmentally friendly behaviors. The typical marketing approach is to identify attitudes about products, brands, and services in order to adapt marketing strategies to reflect the product accordingly. Ajzen and Fishbein (1980) suggested that marketers can influence consumers' attitudes and intentions by targeting normative beliefs and modifying them with new concepts consequently changing their evaluations.

Concentrating on attitudinal measures in environmentally friendly behavior, research has focused on values as the predominant guide (Corraliza and Berenguer, 2000; Follows and Jobber, 2000; Laroche *et al.*, 2001; Schwartz, 1994; Schwartz and Bilsky, 1987). Values are the most abstract types of social cognitions that can be used in determining human behavior by providing a glimpse into an individual's interpersonal world (Follows and Jobber, 2000; Grunert and Juhl, 1995). Follows and Jobber (2000) considered self-transcendence, conservation, and self-enhancement to specifically reflect value systems that comprise an individual's attitudes toward the environment, which in turn drive environmentally responsible purchase behavior.

Self-transcendence values

Self-transcendence values consist of an active concern for others and the desire to work for the good of society. Self-transcendence is a personal journey of self-discovery, where one strives for greater perfection, higher perspective, and moves beyond prior concepts of behavioral limitations, which goes beyond ego (Follows and Jobber, 2000). Individuals with high self-transcendence values view others as an extension of the self and, therefore, equate concerns of self with concerns for society. Thus, individuals with high self-transcendence values place a greater importance on pro-environmental behavior, particularly if it proves to provide an overall benefit to society.

H1. The self-transcendence values of those who express a high level of purchase intention are significantly higher than those of the other intention levels.

Conservation values

Conservation values consider the restraint of actions that could upset or harm others and violate social norms (Grunert and Juhl, 1995). These considerations serve to secure relationships and traditions by preserving the status quo. Follows and Jobber (2000) argued that individuals who place a high level of importance on conservation values avoid complicating their lives by not wanting to be involved with something that is not considered a social norm and suggested that subjects who report high levels of conservation values will be consistently less likely to pay more for environmental characteristics.

H2. The conservation values of those who express a low level of purchase intention is significantly less than the other intention levels.

Self-enhancement values

Self-enhancement values reflect the extent to which individuals are motivated to enhance their own personal interests and often are seen as a sort of self-serving bias as individuals wish to see themselves. These self-concepts are believed to develop in response to social experiences with the

goal to adapt behavior in order to achieve a positive reaction from their close significant references (Grubb and Grathwohl, 1967). An individual's evaluation of self will greatly influence behavior. Thus, the more valued the self, the more organized and consistent becomes the behavior. This is exemplified through consumers' propensity to purchase items that reflect a positive self-image (Dunning, 2007; Banister and Hogg, 2004; Sedikides *et al.*, 2007). Consumers with high self-enhancement values place a greater importance on the satisfaction a product provides and product image associated with its ownership. Therefore, individuals who place a high importance on self-enhancement values will be more concerned about how a product will directly affect them regardless of environmental consequences.

H3. The self-enhancement values of those who express a high level of purchase intention are significantly higher than those of the other intention levels.

Consequences of purchase behavior

The purchase of environmentally friendly products is influenced by the attributes of perceived individual consequences and the environmental consequences of the purchase decision (Follows and Jobber, 2000). Amyx *et al.* (1994) and Laroche *et al.* (2001) defined these attributes as importance and convenience. Importance is the level of ecological concern and its importance to the individual or society; whereas convenience is the perceived convenience of the ecologically favorable behavior for the good of the society. Follows and Jobber (2000) were able to show there was a positive relationship from attitude towards the environmental consequences (of the purchase of a specific environmentally responsible product) to environmentally responsible purchase intention.

Environmental consequences. It is generally accepted that consumers incorporate social issues into their purchasing practices by evaluating the consequences of their consumption on society (Follows and Jobber, 2000). Therefore, as long as environmental issues remain a concern and individuals report the desire to improve environmental conditions, the marketplace can expect to see an increase in the purchase of environmentally friendly products (Follows and Jobber, 2000).

H4. The perceived environmental consequences of those who express a high level of purchase intention are significantly higher than those of the other intention levels.

Individual consequence. Another explanation for inconsistent environmentally friendly consumer activity is the perceived consequences of the behavior on the individual (Follows and Jobber, 2000). This refers to how the environmental responsible behavior is perceived to affect an individual's personal satisfaction and includes the inconvenience of recycling, returning for refilling, and any other perceived increase of effort required that would influence intention or behavior negatively. Low levels of individual consequence can override environmental concerns and alter consistent behavior.

H5. The perceived individual consequences of those who express a high level of purchase intention are significantly lower than those of the other intention levels.

Purchase intention

Notwithstanding the enveloping view that stated intentions are possibly the best predictors of actual behavior (Ajzen and Fishbein, 1980), it has long been recognized that answers to stated intention questions are not perfectly correlated with actual purchases (Morwitz, 1997, 2001). Purchase intention has been measured in several ways, such as measuring the expressed intention to purchase using a scale composed of several positively worded statements of environmentally responsible behaviors (Backhaus *et al.*, 2005; Sun and Morwitz, 2005; Young *et al.*, 1998). This can produce a halo-effect that encourages respondents to over-report behaviors even though they may not actually follow through (Barber *et al.*, 2009; Schlosser, 2005). Measurement of environmentally friendly purchase behavior, thus far, has been challenging because often measures have been normative in nature leading to an inflated level of reported environmental responsible behavior not consistent with market data (Follows and Jobber, 2000; Roozen and De Pelsmacker, 1998).

Willingness to pay

Another way to examine consumers' behavioral intentions is to assess their willingness to pay. Consumers' willingness to pay (WTP) is defined as "the maximum price a buyer is willing to pay" (Didier and Lucie, 2008; Franke and Schreier, 2008; Voelckner, 2006; Wertenbroch and Skiera, 2002). Much like purchase intention, measuring consumers' willingness to pay using a self-administered survey (contingent valuation) can be challenging (Franke and Piller, 2004; Sichtmann and Stingel, 2007). With the contingent valuation method (Mitchell and Carson, 1989), respondents are asked to directly state their WTP for the product or service. Although the contingent valuation method is a relatively easy method, the external validity of this method could be limited and researchers suggest that this method is subject to the risk of overestimating actual WTP (Wertenbroch and Skiera, 2002; Franke and Piller, 2004).

Another method to measure WTP is to use actual market transaction data or auctions, such as the Vickrey method (Lange *et al.*, 2002; Wertenbroch and Skiera, 2002). Assessing actual purchase behavior using the Vickrey auction method has been found to better elicit consumers' truthful WTP, because consumers must buy the good in a real transaction if their bid wins the auction (Lange *et al.*, 2002; Wertenbroch and Skiera, 2002). With the Vickrey auction method, the highest bidder is awarded the object at the price of the second-highest bid (Vickrey, 1961).

To truly understand consumers purchase intentions and willingness to pay would be to use the same participants in both the survey and auction processes. However, the researchers could not locate any study that assessed the same group of consumers using the survey method and the auction method. Follows and Jobber (2000) study assessed consumers' values-attitudes-intentions using two self-report measures: a survey with a follow-up phone call three months later asking the research participants whether they purchased the environmentally friendly product. Although their study did assess the same cohort, it should not be deemed a reliable assessment of intention behavior. Thus, the goals of this experimental study were to first measure if a significant difference exist between levels of expressed purchase intention and the expressed willingness to pay reported during the survey. Second is to determine if a significant difference exists

between the expressed willingness to pay segmented by purchase intention and the actual purchase behavior resulting from the auction.

- H6. Those who express a higher level of purchase intention would express a higher willingness to pay for an environmentally friendly product than the other levels of expressed purchase intention.
- H7. Those who express a higher level of purchase intention will actually pay more during the auction for an environmentally friendly product than the other levels of expressed purchase intention.

Research design**Product selected for study**

To assess the hypotheses outlined in this study, we chose wine as a product because the consumption is personal, allowing for the testing of distinct levels of environmental knowledge and attitudes. The wine industry as a global giant is growing more competitive. Producers and marketers are seeking ways to differentiate their brands to consumers. How consumers perceive wine is an essential factor in the decision process and to a brand's success (Barber *et al.*, 2009). Wine attributes are numerous and can vary greatly depending on an assortment of influences. These characteristics, in conjunction with variations in individual preferences, make it extremely difficult to determine which characteristics win out over others, and at which point in the decision process the product selection takes place. Furthermore, there is a range in consumer attitude and behavior that further individualize preferences. Since this affects the final purchase decision, it is critical for companies to gain a more solid understanding of these characteristics.

Design of study and sample selection

This study measured consumer purchase intention and willingness to pay using an on-line survey and a controlled experiment (auction). Potential participants, customers of a local winery, retail store, and a restaurant, were recruited in western Connecticut and were asked whether they would be willing to take part in the two phases of the study. The individuals selected had to meet the following criteria, they:

- must be 21 years of age or older;
- must be a wine drinker (drinking wine at least once a week);
- must be involved in their household wine purchases;
- must not have taken part in a marketing or consumer study in the previous three months; and
- must not be allergic to sulfides.

The first phase (one) used an on-line survey to assess their attitudes-values-behaviors (see Table I). The URL link was emailed to the participants who agreed to take part in both phases of the study along with instructions on when and where to meet for phase two of the study. A follow-up email was sent one week after the survey was opened for participants to complete and then again two weeks later. A reminder email was sent to the participants at the end of week four to remind them about phase two.

The second phase, which started four weeks later, used the Vickrey auction process and three information situations. A total of 120 individuals agreed to participate in both phases of

Table I Measurement scales ($n = 120$)

	No. items	Scale examples	Response scale *	Reliability (α)	CFA	
					FL	CR
Self-transcendence value	6	Benevolence – Helpful (working for the welfare of others)	Totally important to totally unimportant	0.86	0.80-0.88	0.88
Conservation value	4	"Conformity – Obedient (dutiful, respectful)"	Totally important to totally unimportant	0.85	0.78-0.81	0.85
Self-enhancement value	8	"Power – social recognition (respect, admiration)"	Totally important to totally unimportant	0.74	0.81-0.88	0.83
Environmental consequences	7	"How wine production may affect the environment is important to me."	Agree to disagree	0.79	0.79-0.85	0.82
Individual consequences	6	"It is important to me to find ways to avoid waste."	Agree to disagree	0.76	0.75-0.84	0.83
Purchase intention	5	"I would consider purchasing this product", "I intend to try this product", "I plan on buying this product", and "I am interested in tasting this product".	Agree to disagree	0.87	0.80-0.91	0.88

Notes: CR = Composite Reliabilities; FL = Factor Loadings; R= reverse coded; *=Seven-point bi-polar scale

this study. Each participant was told a \$25 participation fee would be paid at the start of phase two of the study.

Phase One-online survey

Measures

There was an introductory paragraph that explained the study and a normal statement of consent. The final section collected respondents' demographics (age, gender, education, and level of income) and personal experience with the product (years consuming wine, average price paid for a bottle of wine). Each construct was measured using a bi-polar seven-point scale to record the responses. CFA was performed to test the measurement constructs.

The attitudinal assessment followed the work by Follows and Jobber (2000). In their study, self-transcendence was measured using statements dealing with universalism – the belief in equal opportunity for all – and benevolence – helpful, forgiving, and loving values. Conservation was measured using conformity (self-controlled, obedient, and polite) and security (neat, tidy) statements. Finally, the three domains of self-enhancement measured were achievement (ambition), hedonism (pleasure), and power (social recognition). Purchase intention followed work by Bower and Landreth (2001), Barber *et al.* (2009), and Loureiro (2003), where they tested three statements on purchase intentions for environmental wine products.

Expressed willingness to pay used the contingent valuation method during the online survey to measure the price participants would pay for an environmentally friendly produced wine. Participants were given a benchmark reference price of \$15.00, and were asked to specify how much more in dollars they would be willing to pay. This benchmark was developed using the average price consumers actually paid as reported in wine studies by Barber (2008), Dodd *et al.* (2005), and according to the local retail wine store.

To gain information about the data collection process and the questionnaire, a pilot study was conducted (Churchill, 2004). The primary purpose was to determine whether the instrument could be clearly understood by respondents and

ensure reliability of the instrument. For the pilot test, a web link to the instrument was e-mailed to 25 customers, randomly selected at a wine shop in Western Connecticut. Cronbach's alpha coefficients were used for the item scales and ranged from a low of 0.71 for product experience to a high of 0.89 for individual consequences. The full factor analysis accounted for 81% of the total variance, with only one factor loading less than 0.72. Based on the high reliability of this pilot study, it was decided not to perform a second pilot test. An analysis of the pilot respondents' demographics did not reveal any unusual characteristics that would require modification of the survey.

Data analysis

Simple descriptive statistics, analysis of variances, reliability, and confirmatory factor analysis were performed. Following the work of Yuan *et al.* (2005) and Barber (2008), a new variable was established for the purchase intention construct. This variable categorized the respondents as "high," "moderate" or "low," and used the overall mean and distribution derived from data collected. The "high" category was those that scored equal to or higher than the mean plus one standard deviation. The "moderate" was the mean and the "low" category was the mean less one standard deviation.

To test the hypotheses, analysis of variance ("ANOVA") was performed with the psychographic antecedents and consequences as dependent variables, with expressed purchase intention (categorical variable) as the independent variable. Post hoc pairwise comparison testing was performed if any of the ANOVAs were significant using the Scheffé method. This method tends to give narrower confidence limits and is, therefore, the preferred method and the most conservative with respect to type I errors (Hair *et al.*, 1998).

Results of Phase One

Descriptive statistics

All of the 120 participants completed the on-line questionnaire. Of the respondents 46 percent were male and 54 percent were female. The average age of respondents was 43 years. Respondents had high levels of education with 90

percent of the sample having earned a college degree. The average income of respondents was \$54,000, with 49 percent reporting annual household income between \$25,000 and \$50,000, while 50 percent reported incomes between \$50,000 and \$75,000. The average number of years respondents reported consuming wine was 22. The average number of bottles (750 ml) purchased per respondent was 13 per month, with \$14.90 per bottle the average amount spent during this same period. Compared to other consumer studies that have measured years of wine consumption and average price per bottle, the results of this study, given the sample selected, is not considered unusual. For example, in the study by Barber (2008) respondents consumed wine on average 22 years and spent on average \$18 per bottle. Those with high expressed purchase intentions had consumed wine for 22 years and spent on average \$15.23 per bottle. Those respondents with low expressed purchase intentions consumed wine for 26 years on average and spent \$14.26 per bottle.

Hypothesis testing

An analysis of variance (see Table II) showed the results of the analysis on the dependent variables to assess which contributed to the overall differences. Significant differences were found among all but one of the independent variables (*H5* – individual consequences). Post hoc analyses for significant criterion are shown in Table III.

Self-transcendence – Respondents had moderate self-transcendence values ($M = 4.3, SD = 1.3$). Interestingly, those with low purchase intentions did not find self-transcendence values as important ($M = 3.9, SD = 1.4$), suggesting that they are not as motivated to transcend selfish concerns and promote the welfare of others.

Conservation values – Respondents reported moderate rankings ($M = 4.0, SD = 1.4$) suggesting that overall, subjects who report high levels of conservation values will be less likely to purchase environmental products. This is

evidenced by the low purchase intention respondents reporting high conservation value importance ($M = 5.0, SD = 1.2$).

Self-enhancement values – which are concerned with how a product will directly affect an individual, was moderately high overall ($M = 4.5, SD = 0.9$). Those reporting high purchase intentions for environmentally friendly products interestingly reported high self-enhancement values suggesting that purchasing environmental products will advance their own personal interests. Conversely, those with low purchase intentions scored moderately on self-enhancement values ($M = 4.0, SD = 0.7$), suggesting that they are less concerned about how the product will affect them and their image.

Environmental consequences – Respondents reported moderate levels of environmental consequences ($M = 4.3, SD = 0.6$). Those reporting high levels of purchase intention were more willing to evaluate the consequences of their consumption on society than the other two groups.

Phase two-experiment

The second phase of this study took place four weeks later in two small banquet rooms of a Connecticut winery. The protocol used in this experiment was developed by Lange *et al.* (2002), adopted by Bougherara (2003) and Bazoche *et al.* (2009). Participants were asked to evaluate wines and specify their willingness to pay in three information conditions: blind tasting, bottle (labels), and full (seeing the bottle while tasting). Their study findings suggest significant differences in willingness to pay among these three information conditions. They found that the impact of external information was greater than the impact of sensory characteristics in the case of purchasing wines.

Six separate secessions were conducted with 20 persons in each. The secessions lasted two hours with an hour break in-between. Each participant was given the \$25 participation fee

Table II Results of ANOVA testing

Dependent variable	Mean square		F-statistic	p-value	Hypotheses
	Between	Within			
Self-transcendence values	10.37	1.67	6.24	0.00*	H1 – YES
Conservation values	8.17	1.91	4.28	0.02**	H2 – YES
Self-enhancement values	3.76	0.397	9.45	0.00*	H3 – YES
Environmental consequences	3.51	0.333	10.56	0.00*	H4 – YES
Individual consequences	0.057	0.779	0.073	0.93	H5 – NO

Notes: * $p < 0.00$, ** $p < 0.05$; $n = 120$

Table III Post hoc results the psychographic and consequence measures

Variable	Overall		High purchase intention ($n = 23$)		Moderate purchase intention ($n = 77$)		Low purchase intention ($n = 20$)	
	Mean	Std	Mean	Std	Mean	Std	Mean	Std
Self-transcendence values	4.3	1.3	4.7a	1.4	4.1b	1.2	3.9b	1.4
Conservation values	4.0	1.4	3.3b	1.4	4.8a	1.3	5.0a	1.2
Self-enhancement values	4.5	0.9	5.3a	0.9	4.2b	0.8	4.0b	0.7
Environmental consequences	4.3	0.6	5.0a	0.6	4.1b	0.6	3.9b	0.5

Notes: Means with difference letters significant at $p < 0.05$; $n = 120$

as agreed to in Phase one. The four selected products were California merlot wines. The first one was a conventional product (not produced in an environmentally friendly manner), the second wine was labeled by an independent certifying body [Certified California Sustainable Winegrowing (CCSW) program], the third was produced by a vintner with an environmental approach (not advertised), and the fourth product was a wine whose environmental approach is well advertised. The four wines were assessed in three different informational situations (blind tasting, valuation with the label alone, valuation with tasting and the corresponding label). The experiment was conducted in four stages.

The session began by explaining the procedure verbally to everyone. To ensure the auction process was fully understood, a test-run auction was held with an alternative product (see the Appendix).

The participants were seated in a room in such a way that they could not communicate with each other. They had a glass of water and tasting crackers to refresh the palate between tastings.

The participants had to evaluate the wines in three informational situations; blind tasting (sensory), label only (no brand provided), and tasting with label (no brand provided) (Lange *et al.*, 2002). The participants tasted or visually assessed and appraised each wine in a pre-established order to control for the impact of the order of presentation of the products on the assessment. After each evaluation, the wine and/or label were taken away and their valuation recorded. In this way participants could not revise their valuations with hindsight after experiencing the other wines or situations. After evaluation of each wine, participants wrote down the maximum bid for the wine tasted, assuming that the wine would be auctioned at the end of the experiment.

Participants were informed that only one situation (blind, information only, or full information/sensory and a selected wine in that situation) would be used. The situation was randomly selected by one participant, who in turn was randomly selected. This procedure was selected to avoid strategic behavior leading participants to submit a high reservation price only in situations they preferred. The participants only knew that the price distribution reflected the actual retail price of wines on the market. The participant who submitted the highest price became the winner and had to pay for the product, but at the second highest submitted bid. This procedure allows participants to purchase a product at a price lower than, or equal to the price he would normally accept to pay. Finally, if the highest price suggested in the randomly selected situation was lower than the current retail price, there would be no winner. If there was a tie in high price, then each got to purchase the wine.

Results of Phase Two

Each participant made 12 bids and 120 subjects took part in the sessions, yielding a database of 1,440 observations (reservation price bids). The goal was to determine whether the environmentally friendly wines were valued more highly and compare the price participants stated they were willing to pay in Phase one. The mean prices of wine and situation are provided in Table IV.

The results shows that the mean bids were higher in label only situation (\$17.15) than in the other situations, with the full tasting and information situation between the other two.

Table IV Mean WTP according to wine and situation (n = 120)

	All Respondents			Over all
	B	L	FI	
Concannon Vineyards	\$13.40	\$15.00	\$14.10	\$14.17
Frey Vineyards	\$17.10	\$17.90	\$17.60	\$17.53
Rodney Strong	\$17.20	\$18.30	\$17.60	\$17.70
Lolony Winery	\$16.50	\$17.40	\$16.80	\$16.90
Overall average price	\$16.05	\$17.15	\$16.53	\$16.58
Environmental wines	\$16.93	\$17.87	\$17.33	\$17.38

Notes: B= Blind; L= Label; FI = Full information

This is a classic result highlighting that full sensory exposure (tasting and full information) is a compromise between sensory (blind tasting) and visual (label only). The valuation with the Label alone revealed the belief associated with the product (and, therefore, the expected quality). The situation with complete information revealed the trade-off between perceived quality and expected quality.

Table V reflects the results of *H6* and *H7* testing. Overall respondents reported a lower price they were willing to pay during the auction than they expressed during the online survey. Both *H6* and *H7* were supported. For *H6*, high purchase intention respondents reported significant differences in expressed willingness to pay during the survey stating they would pay on average 62 percent more for an environmentally friendly product. Moderate purchase intention respondents stated they would pay 25 percent more, while Low purchase intention respondents stated they would only pay 11 percent. *H7* was supported, with High purchase intention respondents actually paying more than the other two intention segments.

Discussion

Consumer demand is growing for environmentally friendly products and the need to remain competitive has prompted marketing professionals to seek information concerning environmentally responsible purchase behavior. With this growth in the breadth and depth of environmentally friendly products there is a positive change in consumers' concern for the environment. It is also important to understand consumers' values and attitudes to aid in the prediction of their purchase behavior. The first phase of this study used a self-report survey to assess values, attitudes, and expressed purchase intentions. The hypotheses generally support the differences between levels of expressed purchase intentions (high, moderate, and low) and the attitudinal values and consequences of behavior. The decision to purchase an environmentally responsible product or an alternative product requires a deliberate conscious evaluation of environmental consequences and the overall concerns for society. For example, those respondents with high expressed purchase intentions (see Table III) felt strongly about the importance of environmental consequences and had strong self-transcendence values, indicating a greater importance placed on pro-environmental behavior (and environmental consequence concerns) for the overall benefit to society. On the other hand, intention to purchase can be influenced by how individuals perceive the purchase activity against their

Table V Comparing Phase One and Phase Two willingness to pay ($n = 120$)

	All respondents	High intention to purchase ($n = 23$)	Moderate intention to purchase ($n = 77$)	Low intention to purchase ($n = 20$)
Phase one (Survey) expressed price willing to pay for environmentally friendly wine ^a	\$21.49	\$24.32 ^b	\$20.84 ^b	\$16.61 ^b
Phase two (Auction) actual price willing to pay for environmentally friendly wine	\$17.38	\$17.43 ^c	\$16.82 ^c	\$16.64 ^c
Average price currently paying for a 750 ml bottle of wine	\$14.90	\$15.23	\$14.65	\$14.26

Notes: ^a=in the online survey respondents were asked how much more they would be willing to pay for an environmentally produced wine over a base price of \$15. The amount in this table represents that value plus the \$15 base price. ^b= H_6 was supported, $p < 0.05$. ^c= H_7 was supported, $p < 0.05$

own personal satisfaction, whether it is an inconvenience, or impacts their self-image. If the purchase activity negatively impacts their self-image or the effort to comply is too great, then expressed purchase intention will be low.

Interestingly, in this study, those that reported high purchase intention also reported strong individual consequences, suggesting that for them, there was a direct link between environmental consequences, their concern for society as a whole, and the self-image that consuming environmentally friendly products would project linking their strong values and beliefs to their self-image. However, those that reported low purchase intentions (see Table III) were not as concerned about environmental consequences (it was not important whether wine bottles or other packaging adds to landfills), suggesting they are more concerned for their personal satisfaction and convenience than the benefits to society as a whole. It appears that intention is formed as the end result of an evaluation or trade-off between the environmental and individual consequences. The results are consistent with the findings in studies investigating the relationship between inconveniences and recycling behavior (Follows and Jobber, 2000; Thøgerson and Grunert-Beckmann, 1997).

Finally, this study assessed participants stated willingness to pay more for an environmentally friendly product and their actual purchase behavior during an auction process. Interestingly, the High purchase intention respondents stated willingness to pay was 40 percent higher than what they actually paid, while for the Low purchase intention respondents, what they stated was nearly the same as what they paid. This result for the Low intention respondents aligns with their stated values and attitude, where they were less concerned about how the product will affect them or their image, had low concern from the impact on the environment of their personal consumption, and was not motivated towards the concerns or welfare of others.

Implications

There are several important implications from this study for marketing professionals. First, in order to increase purchase intentions of an environmentally responsible product, consumer promotion should address both environmental and individual product consequences. To change environmental attitudes, communications must explain the positive environmental consequences of the product and the

negative consequences of the product alternative. It is important that any communications focus on the product-specific consequences, not generalized environmental consequences. For example, a company marketing environmentally responsible wine should not discuss the problems of global warming or vineyard management (such as scarce water, herbicides, or pesticides) which are less personal, but should address the specific hazards and recycling issues associated with the glass bottle and use of cork. As discussed previously, it is not enough to just promote the positive consequences of an environmentally friendly product. Attempts must be made to reduce the negative individual consequences of an environmentally friendly product. Packaging and advertising should communicate the product is not as inconvenient or as difficult to use as the consumer believes. For example, advertising for wines could highlight the quality and benefits of non-traditional packaging material (box wines or screw caps) and thus the efficient procedures for use and recycling. Understanding the relevant negative individual consequences associated with wine purchasing and then modifying the product to reduce these consequences is a critical strategy to bring about attitudinal change. It is, therefore, important for marketing professionals to embrace a proactive “push” position that allows them to develop products that can satisfy a consumer’s personal satisfaction as well as the long-term welfare of society.

Another implication concerns the use of values to stimulate attitudinal change. As values are desired end states, environmentally responsible attitudes and intentions can be portrayed as a means to achieving the values. That is, communications can promote an environmental consequence as being consistent with a particular value orientation. For example, the reduction in landfill sites resulting from using non-traditional wine recyclable packaging could be depicted as beneficial to the welfare of others, which is a desired end state for those holding strong self-transcendence values. These consumers would then adopt positive environmental attitudes to support their value orientation.

Accordingly, focusing marketing efforts on whether or not customers will pay a premium for “green” products brings with it a number of constraining assumptions. First, green products do not have any tangible benefits for customers other than making them feel good about helping the planet. Second, green products are generally more expensive to produce than non-green products. While customers may not pay extra for the intangible benefit of helping the planet, they

will pay for the value of direct benefits they personally receive. The ploy is to align direct customer benefits with environmental benefits. Offering products at competitive prices while helping the environment may create an opportunity to add value for customers and to increase market share. Thus, marketers need to understand which aspects of “green” matter to which customer segments and how these attributes compare to other features, functions, and price. For example, some consumers that have demonstrated environmental sensitivity may place a high value on the convenience signaling of wine products that use screw top closures even if they will not pay for a “lower lifecycle carbon footprint”.

Limitations and future research

The study was restricted to the investigation of one type of product. Wine is a high-involvement product for most consumers, and usually represents a substantial investment of time and money. Thus, from a theory-testing perspective the product works well because it was possible to get very clean measurements of intention and behavior. However, a number of low-involvement products that are purchased on a regular basis, such as paper products and detergents should be tested. Because a person’s value orientation is relatively stable over time it would be interesting to determine if values affect attitudes toward some products more than others.

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Appendix

Today you will have the opportunity to evaluate several wine products in different information conditions. Each product you will evaluate will be made available for purchase according to an auction method. This method is the Vickrey Auction method. The principle of this auction method requires you to write on a paper, for each product evaluated, the maximum price you would pay for one 750 bottle of this product (the reservation price). Then the participant who submitted the highest price becomes the winner and has to pay for the product, not at the price he/she submitted, but the second highest submitted bid. This procedure allows participants to a product at a price lower than, or equal to the price he would normally accept to pay. For example, if there were four participants in this auction for a bottle of red wine with the following bids: Participant 1 = \$14, participant 2 = \$16, participant 3 = \$18 and participant 4 = \$15, then participant 3 wins the bottle and pays \$16 for the bottle. They were informed that if they submitted a successful bid on a wine, they were obligated to purchase the wine that they bid on at the auction market price.

We wish to know the value that the products have for you, not their commercial value. When you do not like a product, you can suggest a price as low as you wish, so long as this price represents the price you are willing to pay for purchasing the product.

The training phase will be performed with two bars of 70 percent dark chocolate. You will successively submit your reservation price for each of these bars, initially on the basis of brand and thereafter on the basis of observation of the packaging. At the end of this training phase, you will have submitted a price in four situations (two products × two

information conditions). Only one situation randomly selected will become effective at this stage. In this situation, the buyer will be a person who suggested the highest price and will pay for the chocolate at the second highest price.

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Executive summary and implications for managers and executives

This summary has been provided to allow managers and executives a rapid appreciation of the content of this article. Those with a particular interest in the topic covered may then read the article in toto to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefits of the material present.

Concern about the environment is growing among the American public who are becoming more knowledgeable about key issues and finding effective ways of addressing them.

Mass media is mainly responsible for informing consumers about the subject, although marketing plays a role too. The outcome is greater awareness of how the attitudes and behaviors of individuals and business organizations can significantly impact on the welfare of the environment. Consumer purchase decisions have always been influenced by a range of different factors such as habit, convenience, perceived value and reaction to prevailing social conventions. These and other factors still have a bearing on choice, although the final verdict for many people will also factor ecological needs into the equation.

With this issue in mind, environmentally-concerned individuals seek out companies who convey an image which reflects ethical business practices. For their part, such firms will frequently discover willingness among sustainable consumers to pay a price premium for products that are beneficial to the environment. Marketers are naturally disposed to heavily promote such products and sales are growing accordingly. The next step is to find a way of reaching a larger audience with information that will further raise knowledge and awareness of the environment and influence consumer attitudes and behaviors.

Previous studies have explored how the values, attitudes and lifestyles of individuals impact on their purchase intentions and behaviors with regard to green issues. Many have found some contradiction between these consumer psychographics and actual buying behavior. Attitude appears prone to variation depending on the product. Also important is the ability to determine whether or not an individual might sacrifice certain aspects of perceived value and quality in order to secure a purchase that is more environmentally-friendly. These studies have measured attitude against purchase intention, which habitually serves as an antecedent to purchase behavior.

The complexity of purchase decision making arises because it is subject to influence from various internal and external factors respectively associated with the individual and marketing. Attempts to identify what influences environmentally-friendly buying behavior have given rise to different models. One view holds that personal values determine attitude which in turn determines purchase intention. Three value systems are mooted as particularly influential and are labeled:

(1) *Self-transcendence*. This reflects a desire to act in ways that profit others and society as a whole. Individuals rating high on this value are thus likely to engage in pro-environmental behavior where a benefit to society is ascertained.

- (2) *Conservation*. Maintaining the status quo is a driving force for those passionate about this value. There is reluctance to engage in activities which ‘violate social norms’ and could disadvantage others. Evidence suggests a reluctance to pay extra for ecologically-friendly products.
- (3) *Self-enhancement*. The focus for those scoring high on this value is to enhance their own self-image while exhibiting behaviors that win the approval of significant others. When selecting products, any environment effects are secondary to the direct impact on themselves.

According to several studies, anticipated consequences to the individual and the environment can determine whether or not green products are purchased. The likelihood increases when the consumer regards the activity as important and convenient. Importance is evident where concern about environmental issues persists, while individual consequences could include the obligation to recycle or reuse products purchased. Since effort is required, a negative impact on behavioral intention can result.

Purchase intention and willingness to pay (WTP) have also been examined in some detail. A frequent conclusion is that discrepancy sometimes exists between intention and subsequent buying behavior where environmentally-friendly products are concerned. It is therefore mooted that actual purchase is more probably where evidence of WTP exists.

An online survey formed the first stage of the current study into these issues. Barber et al. recruited wine purchasers aged 21 or over from a winery, retail store and restaurant in western Connecticut, USA. Wine was selected for the study because consumption and preference are personal. The industry is competitive and brand differentiation is important. Product choice can be determined by a wealth of attributes that impact on consumer perception. Also, the personal nature of wine consumption assumes a variation of environmental knowledge and attitudes.

A sample of 120 was obtained, with 54 percent being female. Participants reported a mean age of 43 years-old and 90 percent had at least a college degree. The reported behavior in terms of amount of years spent consuming wine, number of bottles purchased each month and price paid per bottle indicated mirrored earlier surveys.

Findings revealed that:

- Most respondents rated moderate in self-transcendence. However, these values were not important among those revealing low purchase intentions. This might indicate a willingness to favor the self over others.
- Subjects with low purchase intention towards environmental products regarded conservation values highly. Ratings of these values were again largely moderate though.
- High purchase intention was accompanied by high self-enhancement values, indicating a belief that buying green products serves personal interest too. Respondents low in purchase intentions reported only moderate in self-enhancement values. This shows lower concern about how the product impacts on them.
- Moderate levels of environmental consequences were signified. But where purchase intention was significant, there was greater concern about the societal impact of their purchase behavior.

The same subjects participated in the second study phase involving a mock auction exploring purchase intention, WTP

and actual purchase behavior. Respondents evaluated four Californian wines in three tasting conditions: sensory (blind tasting), visual (exposure to the label only) and both together. One wine was not produced in an ecologically-friendly way but the other three were. However, this information was only revealed for two of them. After tasting each wine, subjects recorded their maximum bid for the ensuing auction.

Twelve bids were made by each respondent and analysis showed:

- Average bids were higher in the label only scenario. This suggests anticipation of product quality based on the information provided.
- The price consumers were willing to pay was generally lower than reported in the online survey.
- Positive correlation exists between levels of purchase intention and the amount participants were willing to pay for an environmentally-friendly wine.
- Those reporting high purchase intention actually paid more than subjects whose intention to buy was moderate or low.

In order to inspire attitude change, marketers should communicate positive environmental consequences of a

product and the negative impact of choosing an alternative. It is also important to minimize any negative individual consequences of a green product. One way is to promote the product as more convenient than users might assume. With wines, emphasizing the advantages of non-traditional packaging is recommended. Modifying a product to meet personal requirements while helping society can also help transform attitudes.

The authors additionally urge marketers to identify which green factors are most important to each consumer segment and in comparison with product attributes, functions or price. Overall, the possibility that consumers will pay more for a green product increases significantly when it also affords direct personal benefits.

Future study might explore different products where involvement is lower than with wine. Investigating if the impact of values on attitudes could be product-dependent is another option.

(A précis of the article “Measuring psychographics to assess purchase intention and willingness to pay”. Supplied by Marketing Consultants for Emerald.)