What's in it for you? Examining the roles of consumption values and Thaler's acquisition–transaction utility theory in Chinese consumers' green purchase intentions

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Abstract

Purpose—This study examines the impact of five consumption values (i.e., ecological, functional, symbolic, experiential, and epistemic) on consumers' intentions to adopt green products. Utilizing Thaler's utility theory, we investigate the indirect effect of values on purchase intention through acquisition utility and transaction utility. Two moderators (materialism orientation and value consciousness) further influence the strength of the effect of consumption values on transaction utility.

Design/methodology/approach—We used a survey design (N=437 Chinese customers recruited through a Chinese online panel provider) and structural equation modeling to test six hypothesized relationships in the proposed model. Moderated structural equation modeling was used for moderation analysis.

Findings—Most hypothesized relationships in the model were confirmed, with the exception of the functional value–transaction utility link, and the moderating effect of materialism on the experiential value–transaction utility relationship.

Research limitations/implications—Larger-scale research may help to determine whether there are more significant differences in consumer evaluations of different types of green products.

Practical implications—As the concept of green marketing in China evolves, firms should continue to stress the importance and value of green products regarding individuals' care for the environment, status, and self-image. Further, firms should conduct systematic utility analyses and address acquisition and price equity in a strategic process.

Originality—This study is the first to adapt utility theory to green consumption, and proposes a clearly defined and well-substantiated set of utility types by merging economic and green consumption literature.

Keywords: green products; consumption values; acquisition utility; transaction utility; moderators; value consciousness; materialism

Article Classification: *Original article*

1. Introduction

Over the past three decades, usage of the term "green consumption" has gradually increased in academic research and practice (Perera *et al*., 2018; White *et al*., 2019; Yan *et al*., 2020; Zou and Chan, 2019). The green movement is defined by its membership, a group of individuals who have a personal ethical orientation, or who hold a set of pro−environmental values and attitudes that inform a particular form of socially conscious or socially responsible decision-making (Moisander and Pesonen, 2002; Prothero *et al.*, 2011). The 2020 Global Buying Green report shows that 74% of consumers claim that they would pay more for green packaging, with nearly 25% willing to pay an extra 10% or more (Global Buying Green Report, 2020). Drawing from a large sample of more than 266 million customers in China, the Trends in Green Consumption Development report found that Millennials (aged 26-35) were responsible for 51.8% (more than half) of the total volume of green purchases in 2017 (FreshFruitPortal, 2018). However, only 48% of consumers in the U.S. confirmed they definitely or probably would change their purchase habits according to pro-environmental patterns (Gelski, 2019). Thus, despite the significant concern expressed by consumers, green consumerism has been met with challenges, resulting in the attitude–intention–behavior gap that is increasingly evident nowadays.

Prior research has investigated varying expressions of green behaviors, ranging from recycling to buying behavior. Green consumption behavior has recently been defined as "voluntarily engaging in environmentally friendly consumer practices" (Perera *et al*., 2018, p. 844). Compared with non-green products, green products are often perceived to be of lower quality yet more expensive, while being ethical in nature (White *et al*., 2019; Yan *et al*., 2020). It is important to examine the factors needed to clearly reflect the benefit–cost attributes of customers' purchase behaviors with regard to green products (Papista and Krystallis, 2013; Zhao *et al*., 2014) because they are largely driven by a trade-off between

their additional benefits (e.g., protecting the environment and reducing pollution) and their monetary costs. Yan *et al*. (2020) further point out that green consumption choices are an act of perception and often convey information about the consumer, such as their beliefs, social standing, and financial concerns. Unfortunately, consumers' major focus on higher price as a barrier to green consumption does little to assist marketers in identifying how to develop green marketing strategies. Thus, the first objective of this research is to clarify how consumers construct their green product purchase intentions by examining the impacts of consumption values and the mediating effects of utility evaluations. The second objective of this research is to determine whether the value–transaction utility relationship is the same or different among levels of materialism orientation and value consciousness.

This research contributes to the existing literature in several ways. Firstly, as opposed to prior studies, which have predominately examined consumers' green purchase behaviors from ethical and sociological perspectives (e.g., Perera *et al*., 2018; Yan *et al*., 2020), this study draws on Sheth *et al*.'s (1991) consumption–value theory and utility theory (Thaler, 1985) to examine consumers' green purchase intention. The utility framework appears promising because it postulates the buyer's mental trade-off between benefits and price, thus it enhances the overall evaluation of a purchase (Grewal *et al*., 1998). Secondly, this study shows the indirect effects of consumption values on purchase intention through both acquisition utility (i.e., a function comparing the utility obtained from buying the product to the cost of the product) and transaction utility (i.e., the difference between the actual purchase price and an individual's internal reference price). What is missing from prior studies is the process through which customers perceive green attributes as important, as well as how this affects customers' buying intention in practice. In the present study, we turn to utility theory to examine the process by which Chinese customers construct the meanings of green products and implement these perceptions in their consumption practices. Thirdly, prior utility literature suggests that customers' transaction utility evaluations differ in their perceptions of

money (Urbany *et al*., 1997). We extend this body of literature by further proposing that the extent to which the value–transaction utility link is effective is dependent on individual characteristics in price-related judgments. Research has demonstrated that price-related judgments informed consumers' tendencies to maximize utility in a transaction (Dutta and Biswas, 2005; Lichtenstein *et al*., 1990). Therefore, by examining the related customers' price concerns (here, materialism and value consciousness), this research advances the existing understanding of utility theory's boundary conditions that would promote or hinder the translation of a consumer's value perception into green decision-making.

2. Research on Green Consumption

Research on green consumption has centered on two streams. The first stream examines factors that exert an influence on the green purchase behaviors of individuals, with a focus on the following dimensions: personal beliefs (Kilbourne and Pickett, 2008), environmental knowledge (Chan, 2001), consumer innovativeness (Englis and Philips, 2013), environmental values (Koller *et al*., 2011), social influence and government policies (Garvey and Bolton, 2017; Ozaki, 2011), pure altruism (Costa Pinto *et al*., 2019), and situational contexts (Carrete *et al*., 2012). The second stream of literature investigates factors impeding green consumption. The key barriers identified in the literature are customer skepticism (Carrete *et al*., 2012), high product price and customers' price sensitivity (Bray *et al*., 2011), lower quality and/or reduced performance (Olson, 2013), limited availability (Bray *et al*., 2011), and physical surroundings (Carrington *et al*., 2010). These studies indicate that customers sometimes do not choose green products because they perceive them to be low value or because they suspect that these products do not really deliver on their environmental promises (Chen and Chang, 2012). In this case, customers are unlikely to compromise on conventional product attributes, such as quality, price, and performance.

From a theoretical perspective, the literature proposes and develops a number of

decision-making models within the broad area of green consumption (Nicholls and Lee, 2006). For example, the theory of reasoned action (Fishbein and Ajzen, 1975) and the theory of planned behavior (e.g., Carrington *et al.* 2010; Han *et al.*, 2011), have been widely applied to explain green consumption behaviors based on individual attitudes and subjective norms, with perceived behavioral controls included in the theoretical frame. Other models, such as the diffusion of innovation model (Jansson, 2011), social identity theory (Griskevicius *et al.*, 2010), and personality theory (Lu *et al.*, 2015) also provide a theoretical base for conducting empirical research on the individual mechanisms that influence green consumption. More recently, Cheung and To (2019) extended the value–attitude–behavior model by adding that the cognitive factor of green product knowledge exerts influence on green purchase behavior. Perera *et al.* (2018) applied Practice Theory to evaluate the green consumption process as learning, acquiring, and interacting based on socially constructed meanings. Taking a social identity perspective, Yan *et al.* (2020) examined the effects of social class, measured by the need for assimilation or differentiation, on green consumption. White *et al.* (2019) propose a SHIFT (social influence, habit formation, individual self, feelings and cognition, and tangibility) model to illustrate pro-environmental behaviors from a psychological perspective. They show that consumers are increasingly changing their attitudes, perceptions, behaviors, and understandings of environmental concerns and green issues. However, these models have not directly addressed these consumption practices from the point of view of the values that guide consumer behavior (Hassan *et al.*, 2016; Kaiser *et al.*, 2005; Perera *et al.*, 2018). Therefore, the present research investigates which consumption values influence purchase intention for green products. We further propose that green purchase intention does not only depend on individual values but is also indirectly influenced by utility evaluation. For this purpose, Thaler's utility theory is applied to examine the mediating roles of acquisition utility (a judgment of overall satisfaction with the deal) and transaction utility (a judgment about the fairness of the price) in the value–intention relationship. We discuss Thaler's utility theory in

more detail later in this manuscript.

Furthermore, previous green consumption literature is mostly derived from Western empirical studies and is based on Western psychological and sociological theory (Nair and Little, 2016). Therefore, it is unclear to what extent the value in these studies is generalizable to Eastern contexts. To address this issue, we focus on China in our study and argue that Chinese customers are somewhat different in terms of their values and norms from people in other countries (Chen and Moosmayer, 2020; Javed *et al*., 2019; Jung *et al*., 2016). For instance, Chen and Moosmayer (2020) suggest that appealing to the emotion that manifests as guilt in the Chinese context may be more effective when promoting ethical consumption relevant to one's own surroundings or for the benefit of their locality. Compared with Korean customers, Chinese customers have been found to be more actively motivated by pro-environmental beliefs that stimulate their positive attitude towards ethical consumption (Jung *et al*., 2016). For example, considering the positive effects of cultural values, Qian and Yin (2017) demonstrated that the product's human-nature relationship, long-term orientation, and face consciousness impact Chinese consumers' intentions to adopt electric vehicles.

This study aims to fill the gap in the dearth of studies that extend the value-utility model to explain Chinese consumers' concerns that are associated with their intention to purchase green products. For instance, Minkov and Hofstede (2012) claim that Chinese people tend towards high levels of collectivism; as a result, they are more likely to be proactive in environmental protection. Cheung and To (2019) emphasize that Chinese consumers who are knowledgeable about screening for green products tend to promote more green purchase behavior. Su *et al*. (2017) sampled Chinese hotel visitors and found that perceived corporate social responsibility led to positive or negative emotions, which subsequently resulted in customer–company identification in a hospitality-lodging context. In Javed *et al*.'s (2019) study, Chinese consumers showed that they consider social identity to be most relevant for ethical intentions, and that female consumers are more aware than male

consumers in terms of their trust in green brands. Overall, the current studies on green consumption focus on Chinese consumers' attitudes and behaviors, but rarely on the process that takes value through to intention. It is worthwhile to incorporate different types of consumption values to best express the attitudinal factor of Chinese consumers in responding to green consumption.

2.1 Consumption Values of Green Products

In consumer research, the concept of consumption value has been widely studied as a key determinant of consumers' decision-making processes (Sheth, 1991; Zeithaml, 1988). Sheth *et al.* (1991) developed consumption-value theory to capture the various value-oriented elements that influence customers' behavioral choices. Consumption value is a multi-dimensional construct that consists of several attributes that form a holistic representation of a complex phenomenon (Confente *et al.*, 2020; Sheth *et al.*, 1991). Similarly, Cronin *et al.* (2000) found that value is largely defined by the perception of product attributes. In their research, value concerns service quality for service consumers. In the green consumption context, Koller *et al.* (2011) defined the ecological value of green products as individuals' perceptions of their benefits in the consumption process. Gordon *et al.* (2018) also used consumption-value theory to explore consumers' motivations for saving electricity and related benefits, not only regarding saving money but also saving the environment. Accordingly, consumer and environmental researchers focused not only on ecological value, such as making gasoline-powered cars more environmentally friendly (Koller *et al.*, 2011), and functional value, such as the quality of the car (Hur *et al.*, 2013), but also on other consumption values, such as symbolic, experiential, and epistemic values (Papista and Krystallis, 2013). Thus, in line with Sheth *et al.*'s (1991) consumption-value theory, we argue that customers perceive five categories of consumption values offered by green products: ecological, functional, symbolic, experiential, and epistemic.

Ecological value refers to consumption-related issues regarding protection of the

environment (Koller *et al.*, 2011). This is the most significant underlying attribute for green products and includes common inherent benefits, such as potential energy and resource efficiency. *Functional value* consists of the intrinsic advantages of product consumption, and it is usually related to product utility for utilitarian or physical performance, such as the product's reliability, durability, and quality (Kirmani and Baumgartner, 2000). *Symbolic value* consists of the extrinsic advantages of product consumption, depending on non-product-related attributes and an underlying need for social approval, personal expression, status-seeking, identity signaling, and self-esteem (Brough *et al.*, 2016; Shukla *et al.*, 2015). *Experiential value* reflects sensory feelings related to product attributes, such as the consumer's pleasure and cognitive stimulation during consumption experiences (Corral-Verdugo *et al.*, 2010; Orth and De Marchi, 2007). *Epistemic value* can be defined as a product's capacity to arouse curiosity, offer novelty, or satisfy a desire for knowledge, such as when consumers gain knowledge from buying green products (Sweeney and Soutar, 2001). Consumers with a high level of interest in green products are more likely to view new green products positively and to enjoy the stimulation of trying something new.

2.2 Utility Theory

In Thaler's (1985) utility theory, the perceived utility of product consumption can be obtained from two cognitive processes: acquisition utility and transaction utility. Firstly, acquisition utility is a function comparing the value obtained from buying the product to the amount spent purchasing it (Lichtenstein *et al.*, 1990). Researchers have found that acquisition utility is the primary determinant of a customer's willingness to pay (Urbany *et al.*, 1997), satisfaction, and loyalty (Audrain-Pontevia, N' Goala, and Poncin, 2013). Theoretical explanations of perceived acquisition utility show that consumers' perceived product quality has a great impact on the product's acquisition value (Urbany *et al.*, 1997). Other scholars (e.g., Audrain-Pontevia *et al.*, 2013) suggest that consumers not only value products for their functional characteristics (i.e., quality), but also for other emotional and

symbolic characteristics the products carry (i.e., emotional value). However, previous studies have only used cognitive product quality as a predictor of acquisition utility, neglecting the affective and psychological antecedents. Audrain-Pontevia *et al.* (2013) also found that the product type is critical for moderating the effect of acquisition utility because the intensity of the influence of acquisition utility on purchase behavior might depend on the extent to which a product is functional or symbolic in nature.

Consumers' perceived transaction utility is defined as the difference between a product's actual purchase price and an individual's internal reference price for it (Lichtenstein *et al.*, 1990), which is also known as the perceived merits of the deal (Audrain-Pontevia *et al.*, 2013; Gupta and Kim, 2010; Oh, 2003). Transaction utility also includes consumers' pleasure in taking advantage of a good deal (Grewal *et al.*, 1998). Previous research highlights the importance of the transaction utility effect in purchase settings (e.g., Lichtenstein *et al.*, 1990). For example, a positive price discrepancy (when the actual price is lower than expected) contributes significantly to behavioral intentions (Grewal *et al.*, 1998) and brand choice prediction (Kalwani *et al.*, 1990). Psychological and marketing explanations for transaction utility are key focal cues in advertisements, perceived product quality (Grewal *et al.*, 1998), prior purchase experience, store environment, and product category (Mazumdar *et al.*, 2005).

The unique contribution of Thaler's model is its effort to conceptualize the utility associated with the merits of a deal and identify its impact on consumers' behavioral intentions. The mediating effects of utilities in purchase decisions have been supported by empirical evidence. For instance, in Kim *et al.*'s (2007) study, both acquisition and transaction utility fully mediate the relationships between the four antecedents (usefulness, enjoyment, technicality, and perceived fee) and adoption intention. They argue that utility is regarded as a higher-order construct that reflects the overall comparison between cost and benefit in the use of the product. Further, Kim *et al.* (2012) found that the influence of

perceived price and perceived trust on purchase intention is significant in determining overall utility. Additionally, Kwon and Jang (2011) claim that people feel additional psychological pleasure associated with the merits of a product, and that this psychological pleasure is related to consumers' consequent behavior intentions. They postulate that this psychological pleasure results from two types of utility: acquisition and transaction utilities. The key premise underlying these studies is that utility is the key link between perceived value, perceived monetary sacrifice, and behavioral intentions. In purchase-making decisions, customers maximize the total utility of the product being purchased (Gupta and Kim, 2010). We propose that different consumption values are considered part of the utility construct that drives the purchase intention construct.

In summary, utility theory suggests that acquisition and transaction utility perceptions would be increased by enhancing individuals' perceptions of product quality or benefits relative to the price paid (Grewal *et al.*, 1998). This study advances utility theory by stressing the different categories of consumption values to which the buyer is exposed when making the transaction, and that this can effectively promote the buyers' deal perceptions (acquisition and transaction utilities). The conceptual framework argues that the perceived acquisition utility of the green product will be influenced by the benefits individuals believe they are getting from acquiring and using the product, while transaction utility will be influenced by the money given up to buy the product (Grewal *et al.*, 1998; Urbany *et al.*, 1997).

3. Current Chinese Consumers' Green Move

Since the country's reform and opening up era of 1978, China has boasted high annual economic growth that has made it a major global producer and consumer of goods. However, the increasing rate of growth gave rise to severe environmental contamination in China. In light of this economic development and environmental deterioration, the language of environmentalism has become more popular in China. Although the term "green" was poorly

understood in the Chinese domestic market in earlier years, the idea of sustainable development has changed people's mind and behaviors in China due to increasing awareness of and concern over widespread global environmental degradation in the last two decades. Recently, China has been paying a higher ecological price for its rapid economic growth due to worsening pollution, and it has become the most ecologically unsound place in the world (Chan, 2000). According to the 2014 Greendex Survey, China ranked second out of 18 countries with a Greendex score of 57.5 (GlobeScan, 2014). Specifically, 81% of participants reported being willing to pay more for energy-saving products, while 69% reported that they try to reduce their environmental impact.

With a growing number of sustainable projects emerging in China in recent years, the adoption of "green" behavior is now closer to becoming a reality for Chinese consumers. In January 2018, China enacted its "National Sword" policy, which aims to ban the import of most plastics and other materials used for the nation's recycling processors (Karz, 2019). By 2030, China could displace as much as 111 million metric tons of plastic waste. In addition, the financing of green products in China, such as the use of green credits and green bonds, is one of the significant environmental measures introduced by the "13th Five-Year Plan" period (from 2016-2020). Furthermore, Chinese firms have been developing various green product practices in order to satisfy emerging demands from consumers for green products. For instance, Chinese domestic sales of organic food have increased from 24 billion RMB in 1997 to 360 billion RMB in 2013 (Du *et al*., 2014). According to a report released by the China Chain Store and Franchise Association, consumer awareness of green labels increased to 89%, up from 78%, between 2015-2017, and more than 70% of participants stated that they had spent more on green products in the past year than in previous years (China Daily, 2017). Reasons given for the purchase of green products, in order of preference, were safety and health, environmental friendliness, and good quality. Certainly, the public is exerting growing pressure on the government for greener policies and on business for greener

practices.

4. Development of Research Hypotheses

Our model suggests that the categories of consumption values (ecological, functional, symbolic, experiential, and epistemic) lead to a more abstract assessment of green products. In our study, this abstract assessment is utility. Thus, consumption values and utility display a hierarchical relationship. Customers aggregate their evaluations of consumption values of green products at multiple levels to form their perceptions of a product's utility (Ramirez *et al*., 2015). In other words, we theorize an indirect effect of values on behavioral intention through utility; that is, specific consumption values influence more abstract utilities, which in turn influence particular behavioral patterns.

In Thaler's (1985) utility theory, there are two cognitive processes associated with obtaining utility from a transaction: acquisition utility and transaction utility. In economic terms, acquisition utility is the "consumer surplus" from an acquired item subtracted from the cost which was required to obtain the item (Lim, 2017). It refers to the intrinsic net utility of a product compared with the actual price paid. We argue that green conscious consumers (who perceive green products to have different benefits) care about the intrinsic value of a green product. The value creation framework suggests that if an individual perceives a higher value in a product or service to satisfy his or her needs, the overall evaluation of and feeling derived from the product or service would be increased accordingly (Sweeney and Soutar, 2001). In the context of green consumption, for example, a product's symbolic value refers to customers' perceptions of the product's ability to fulfil social and relational status requirements. If buying a green product, such as a hybrid car, can provide customers with what they perceive to be an outstanding identity and worthwhile social membership, customers' perceptions of positive evaluations towards the purchase will be enhanced accordingly. Moreover, experiential value refers to the level of pleasure and enjoyment

perceived by customers when using the green product. When using a pair of headphones made from recycled material, for example, the headphones' "greenness" creates greater accompanying feelings of enjoyment compared with the use of conventional headphones. In summary, we predict a positive main effect of consumption values of green products at the purchase intention stage, although previous studies have demonstrated negative effects at the purchase stage (Brough *et al.*, 2016; Luchs *et al.*, 2010; Newman *et al.*, 2014). Thus,

H1: There are positive relationships between ecological (H1a), functional (H1b), symbolic (H1c), experiential (H1d), and epistemic (H1e) values and acquisition utility.

On the other hand, transaction utility refers to the difference between the price actually paid by the individual and the reference price the individual had in mind (Lichtenstein *et al.*, 1990). The green product is perceived as a "bargain" if it is priced lower than consumers' reference price, while it is perceived as a "rip-off" if purchased for more than the reference price. The "greenness" (i.e., ecological value) of a product is perceived to be an additional environmental attribute with a higher price and enhances the perceived economic benefits of the purchase. Moreover, quality is a significant predictor of the product's internal reference price. When consumers perceive a product to be of higher quality, their internal reference price expectation is higher, reducing the price difference between the internal reference price and actual price (higher transaction utility). As a result, by taking advantage of a good deal, consumers are more likely to increase perceived transaction utility. Hence, as indicators of product quality, functional values in this research are proposed to positively influence transaction utility because of the internal reference price change.

Furthermore, according to Gonçalves *et al.* (2016), epistemic value stimulates the desire for knowledge or novelty. When an individual encounters a new product (here, a green product), the individual evaluates it via a combination of familiarity with the known product

category and new incoming information (Lin and Huang, 2012). Novelty seeking also serves as a means of self-preservation and knowledge acquisition. Therefore, consumers who perceive green products to be higher in epistemic value accumulate a higher level of the known product category. This knowledge database decreases perceived transaction utility due to a higher internal reference price. Similar studies by Lowe *et al.* (2014) indicate that less knowledgeable consumers' internal expected price will always be lower because they do not have knowledge of a firm's actual profit margins, thus they assume the firm is making a reasonable profit. Hence, consumers who possess lower epistemic value perceive the transaction utility of green products as higher than their expectations.

H2:   There are positive relationships between perceived ecological (H2a) and functional (H2b) values and transaction utility, while there is a negative relationship between epistemic (H2c) value and transaction utility.

Previous research has paid little attention to the direct relationship between acquisition and transaction utilities. Consumers' purchase decisions regarding green products are different from decisions about conventional products because consumers might perceive green products as having a higher price because of additional green product attributes (Papista and Krystallis, 2013). Perceived acquisition utility leads consumers to feel they are obtaining superior product benefits, resulting in a higher internal reference price for the product. Internal reference price refers to the price stored in the consumer's memory. Internal reference price serves as a key determinant of the "merit of the deal" and may change based on the consumer's evaluation of the product (Biswas and Blair, 1991). Therefore, the individual's assessment of the benefits they will obtain from purchasing the product (acquisition utility) will influence their sense of the product price, which in turn affects their perception of getting a good deal (transaction utility). Specifically, when consumers believe they are getting superior value from a product (positive acquisition utility), they feel pleasure

about getting a good deal (positive transaction utility).

H3:   There is a positive relationship between acquisition utility and transaction utility.

Acquisition utility is a function which compares the value obtained from buying a product to the cost of obtaining it (Lichtenstein *et al*., 1990). Research has shown that acquisition utility is the primary determinant of willingness to pay (Urbany *et al*., 1997), customer satisfaction, and loyalty (Audrain-Pontevia *et al.,* 2013). However, research also highlights the importance of the transaction utility effect in purchase settings (e.g., Lichtenstein *et al*., 1990). For example, a positive price discrepancy (actual price is lower than expected) contributes significantly to behavioral intentions (Grewal *et al.,* 1998) and brand choice prediction (Kalwani *et al.*, 1990). Positive transaction utility may make consumers feel "smart" because they have obtained the product at a lower cost. Consumers who think that what they receive is worth what they will give up have been found to be more likely to buy a product. This also suggests that a perceived higher level of transaction utility leads consumers to be more likely to buy a product to take advantage of a good deal (Audrain-Pontevia *et al.*, 2013). Negative transaction utility, because of an actual price being above the reference price, is perceived as a loss (Muehlbacher *et al.*, 2011). This perceived loss will lessen consumers' tendency to buy green products. Thus, a direct effect of acquisition utility and transaction utility on consumer purchase intention is expected.

H4:   There is a positive relationship between both acquisition utility (H4a) and
       transaction utility (H4b) and consumers' purchase intention.

Previous studies have revealed a general consumer tendency to purchase green products because the consumer appreciates the benefits received from those products (Papista and Krystallis, 2013); however, in practice, customers who are more sensitive to "higher prices" are often found to impede the tendency to buy green products (Carrington *et al.*, 2010; De

Pelsmacker *et al.*, 2005; Peattie 2001). The interaction of consumption values and price-related variables is neglected in the literature (Chu and Liao, 2010; Muehlbacher *et al.*, 2011). In this study, we specifically evaluated the impact on transaction utility of the interactions between values and two moderators: materialism and value consciousness. This combination appears to be a win-win situation. This is because the difference between internal reference price and actual price paid alone can be a major concern for customers due to the reduced economic utility for them (Lemon and Nowlis, 2002). Customers with high materialism or value consciousness are less likely to purchase green products due to perceived higher prices. In addition, as we have discussed, consumption values alone enable consumers to increase their willingness to pay for green products since this can result in additional transaction utility. When the possible moderating roles of materialism and value consciousness are considered, the impact of consumption values on purchase intention may be buffered since those customers care more about prices. In other words, when customers' price concerns (here, materialism and value consciousness) are considered, additional product benefits, such as experiential value, are less likely to affect perceived transaction utility because price becomes more salient in the utility judgment.

Therefore, we theorize that the connection between consumption values and transaction utility can be stronger or weaker depending on materialism and value consciousness, discussion of which is limited in the current literature. First, materialism in economic psychology and consumer research has been defined as the importance a consumer attaches to worldly possessions (Belk, 1985). Richins and Dawson (1992, p. 308) conceptualize materialism as "a set of centrally held beliefs about the importance of possessions in one's life." Thus, it is an economic consumer value (Richins and Dawson, 1992) that emphasizes the type of goods consumed and quality of life. Materialism is believed to influence the type, quality, and quantity of goods purchased by individuals because these indicators are demonstrations of success (Polonsky *et al.*, 2014) and of who the individual is (Siahtiri and

Lee, 2019). Hultman *et al*. (2015) showed that materialism value, as the primary lower-order need, is concomitant with a greater tendency to act out of self-interest and to evaluate offerings on the basis of their financial worth and other appearance-related reasons (Richins, 2004). Researchers further find that highly materialist individuals rely heavily on external cues (O'Cass and McEwen, 2004; Shukla, 2012). As suggested by the elaboration–likelihood model (Petty and Cacioppo, 1990), individuals who are motivated to process external product information place greater importance on product quality when they make financial decisions. Siahtiri and Lee (2019) found that materialists are oriented towards buying higher quality products and services to intrinsically satisfy themselves (Eastman and Eastman, 2011) and to explicitly communicate their wealth and success in life, since quality products are associated with higher price. Thus, consumers who exhibit high materialism are more likely to appreciate functional deals (Perera and Klein, 2011; Tang and Hinsch, 2018). In contrast, less materialist consumers who rely on heuristic cues to form their opinions, such as personal experiences or feelings, may appreciate the value of experience, which for them adds to the product's perceived price. Therefore, we propose that functional value has a stronger effect on transaction utility when customers are high in materialism orientation. In contrast, when customers are less materialistic, the experience of consuming green products may provide pleasurable outcomes. The perception of getting a good deal may result more from fun and playfulness than from task completion. Thus, experiential value has a stronger effect on transaction utility when customers are low in materialism.

H5: While the influence of <u>functional value</u> (H5a) on consumers' perceived transaction utility is stronger for consumers with a <u>high</u> materialism orientation, the effect of <u>experiential value</u> (H5b) on consumers' perceived transaction utility is stronger for consumers with <u>low</u> materialism orientation.

In addition, value consciousness is defined as a concern for low prices, and it is subject

to quality constraints (Ailawadi *et al.*, 2001). Value-conscious customers tend to be equally concerned with low prices and product quality. They are also more likely to check prices and compare the prices of different brands to get the best value for their money (Sharma, 2011). In contrast, consumers with lower value consciousness are less motivated to secure the best value for the product quality. Previous studies have found that value consciousness negatively moderates the positive relationship between loyalty intentions and buyback behaviors (Zheng *et al.*, 2017). Itani *et al.*, (2019) also found that the more value-conscious a customer is, the weaker the effect of consumption values in driving his or her positive attitudes. Researchers also believe that value-conscious customers are likely to be perfectionists who emphasize searching for the best quality products. They often have very high personal standards and seem to shop more carefully and search for the best quality products (Siahtiri and Lee, 2019). Building on these studies, we can conclude that value-conscious individuals are more likely to consider "value in use", and thus are more likely to seek "value for money" information (Lichtenstein *et al.*, 1990). We suggest that the direct and principal effect of functional value on transaction utility is stronger on highly value-conscious consumers because their underlying motive is to be a "smart shopper" by maximizing the value for money of their purchases. In contrast, the symbolic identity and emotional meanings (such as compatibility, pleasure, fun, and innovativeness) of green products may exert greater impacts on internal reference prices among less value-conscious consumers because they rely more on heuristic information-processing to make their judgments (Delgado-Ballester *et al*., 2014). In other words, when customers are less value-conscious, self-expressive, sensorial, and affective, their experience adds cost to green products. Thus, symbolic and experiential values have stronger effects on transaction utility when customers are low in value consciousness.

H6: While the influence of <u>functional value</u> (H6a) on consumers' perceived transaction utility is stronger for consumers <u>high</u> in value consciousness, the effects of <u>symbolic (H6b) and experiential (H6c) values</u> on consumers' perceived transaction utility are

stronger for consumers <u>low </u>in value consciousness.

5. Methodology

5.1 Sampling Design and Setting

The target population of the study are consumers who live in mainland China, are over 18 years old, and have already bought green products. The study was conducted via the most popular online Chinese professional survey website, Wenjuanxing (问卷星, also called Sojump, www.wjx.cn), and the sample was recruited from Wenjuanxing members. The website has nearly 152 million members, who are from all regions of China and engaged in various occupations. The targeted members received an introductory email which also enclosed our survey. Participants who were interested in taking part could complete the survey via the website. The questionnaire was tested by 30 participants (see Web Appendix 2 pre-test analysis) during the testing phase via the online consumer panel. The pre-test allowed us to test the quota setting, and to confirm the validity of the questionnaire items used to capture consumers' responses. Each participant was given a financial incentive as a reward for participation. A total of 437 valid questionnaires were achieved. Table 1 summarizes the respondents' profiles. The first question of the questionnaire asked each randomly selected consumer to confirm that they had purchased the following products: low energy light bulbs, green cleaning products, organic food or clothing made from organic materials, or alternative fuel vehicles. If not, the questionnaire was not continued. The questionnaire was developed in English but adapted and translated into Chinese, with back-translation used to ensure accuracy, with consideration that "both verbal and nonverbal instruments need to be translated so that they can be used in different linguistic and cultural contexts" (Craig and Douglas, 2005, p. 254).

In an attempt to increase functional and conceptual equivalence, the questionnaire was

presented to a group of 18 Chinese bilingual university students to assess the appropriateness of the translation. It was then back-translated and further assessed by an alternative professional translator to eliminate any remaining inconsistencies. Following the recommended amendments, the final Chinese version of the questionnaire and screening questionnaire were considered ready for implementation in the study.

The self-completion questionnaire was divided into three sections. In Section A, respondents were asked whether they had purchased any green products or returned any type of product. Section B was used to collect respondents' perceptions regarding the constructs of the research framework. Section C asked about participants' socio-demographic background, including their gender, age, educational background, frequency of engagement in green product purchase, and email address in case they wished to receive a summary of the overall findings of the research.

5.2 Measurement

Participants rated purchase intention on a traditional scale measuring the likelihood that they would consider purchasing the green product: "I will consider buying green products in the future" (Chan, 2001). A review of the literature clarified the conceptualization for the five dimensions of consumption values of green products, which is based on Sheth *et al*.'s (1991) consumption value scale (see Table 2). The three statements, adapted from Chen and Chang (2012), that measure ecological value (e.g., the product I bought is environmentally friendly) draw on research into perceived green value, which reflects consumers' environmental desires and green needs. The original source is Patterson and Spreng (1997). With regard to the functional value construct, a three-item scale is adapted from Koller *et al*. (2011) on the performance/quality dimension of the PERVAL scale, which originates from other studies (Sweeney and Soutar, 2001; Zeithaml, 1988). The three items adapted from Hartmann and Apaolaza-Ibáñez's (2012) self-expressive benefits measure symbolic value, referring to the extent to which a green product evokes social self-concept. The three items of experiential

value derived from Mathwick *et al.*'s (2001) study reflect the benefits derived from perceptions of entertainment in the green consumption context (e.g., buying green products entertains me). Three more items represent epistemic value and are adapted from Xiao and Kim (2009). Utilities of consumption were measured using a list of items derived from the research on acquisition utility and transaction utility in the shopping context (Al-Sabbahy *et al.*, 2004; Grewal *et al.*, 1998). The items were refined and expanded as a result of pilot tests. In total, five items were used for acquisition utility and three for transaction utility. A sample item for acquisition utility is, "I feel that acquiring a green product meets both my high-quality and low-price requirements", while a sample item for transaction utility is, "reflecting on the price I may pay for the green product, I feel that I will get a good deal." Sample items for the moderators include materialism, such as "I like a lot of luxury in my life" (Watchravesringkan and Yurchisin, 2007), and value consciousness, such as "When I buy green products, I like to be sure that I am getting my money's worth" (Lichtenstein *et al.*, 1990). Modifications to the scales included the rewording of some statements in order to fit with the attributes of green product consumption. Each item was evaluated on a 7-point Likert-type scale, where 1 = strongly disagree and 7 = strongly agree.

5.3 Data Analysis

Harmon's one-factor test and marker variable technique were used to examine common method bias. The results showed that the first factor did not account for the majority of the variance (i.e., 26.72%), suggesting no common method bias in this study (Cheng, 2011). In addition to Hartman's one-factor test, a marker variable technique using a variable that theoretically did not relate to any variables in the model was adopted for assessing common method bias (Lindell and Whitney, 2001). The marker variable included in this study (see Table 3) was customer aggression, because it was not hypothesized to be theoretically related to any variables in our model, and the structural parameters of both models showed no significant differences. This confirmed that this study had no common method bias issue.

In this research, the structural equation modelling (SEM) technique employed a two-step approach. The first step was to assess the fit of a hypothesized measurement model. In this step, confirmatory factor analysis (CFA) was used to assess the reliability and validity of all the unidimensional constructs. The second step involved estimating the structural model. In this step, the path relationships among the theoretical constructs were analyzed. The three-step procedure outlined by Cortina *et al*. (2001) to carry out Ping's (1995) moderated structural equation modeling approach was used for moderation analysis. We then followed the procedures of Aiken and West (1991), Dawson (2014), and Dawson and Richter (2006) and used the spreadsheet developed by these researchers to plot interactions and calculate simple slope estimates and slope difference tests. Significant two-way interactions were graphed, and the simple slopes were analyzed. AMOS 22 and SPSS 21 software were used in the analysis.

6. Results

6.1 Reliability and Validity of Measurement

To test the model fit, reliability, and convergent validity of the proposed conceptual model, we applied CFA to analyze the data via SPSS and AMOS 22. CFA is a special form of factor analysis most commonly used in social research (Kline, 2010). Here, all Variance Inflation Factors (VIFs) for the indicators were less than 2.5, which strongly suggests a lack of multi-collinearity (i.e., VIF below 10). The CFA justifies that the model fit indices meet the acceptable criteria as shown, $\chi2/df = 2.53$, RMSEA = .079 < .08, GFI = .94 > .90 and CFI = .91 > .90 (Baumgartner and Homburg, 1996). In addition, in order to check the reliability and the convergent validity of the measurement model, we computed the average variance extracted (AVE) and composite reliability (CR) values (Hulland, 1999). Table 3 shows that these constructs had AVE values greater than the .50 cut-off (from .50 to .69), and a CR of over .70 (from .75 to .90). Thus, the measurement model was considered reliable. We

then checked the measurement model for discriminant validity using the procedure suggested by Fornell and Larcker (1981). Table 3 shows that the square root values of the AVE (bold diagonal) of the constructs (ranging between .71 and .84) were all higher than the absolute values of their correlations (between .20 and .69). This result shows an adequate level of discriminant validity. We also calculated the heterotrait–monotrait (HTMT) ratios to further confirm the discriminant validity and found that the results were as robust as the HTMT ratios, ranging from between .20 and .66, and were significantly lower than .85 (Sarstedt *et al.*, 2011).

6.2 Structural Analysis and Model Testing

The research hypotheses for this study were tested using structural equation analysis. In SEM, to evaluate the fit of a model, a set of indicators are considered. The model had adequate fit to the data (χ^2/df = 2.01, GFI = .96, NFI = .94, CFI = .96, RMSEA = .05, R^2 (PI) =.49). Based on these fit measures, we concluded that the model was acceptable. The standardized path coefficient and *p*-value are reported in Figure 1.

According to Figure 1, ecological value–acquisition utility (H1a: β = .17, *p*<.001), functional value–acquisition utility (H1b: β = .18, *p*<.001), symbolic value–acquisition utility (H1c: β = .05, *p*<.05), experiential value–acquisition utility (H1d: β = .33, *p*<.001), and epistemic value–acquisition utility (H1e: β = .26, *p*<.001) are significant. Hence, H1 is supported. H2a ecological value–transaction utility *(β = .26, p<.001)* and H2c epistemic value–transaction utility *(β = –.16, p<.001)* are also supported. However, H2b functional value–transaction utility *(β = .01, p>.05)* is not supported. H3 acquisition utility–transaction utility *(β = .54, p<.001)* is supported. In addition, the results of the analysis revealed that acquisition utility (H4a: β = .34, *p*<.001) and transaction utility (H4b: β = .54, *p*<.001) are significantly related to consumer purchase intention for green products. Consequently, H4 is supported.

The results show the indirect effects of ecological (.06, *p*<.001), functional (.06,

$p<.001$), symbolic (.03, $p<.05$), experiential (.11, $p<.001$) and epistemic (.09, $p<.01$) values on purchase intention by acquisition utility. Results also show indirect effects of ecological (.54, $p<.001$) and epistemic (-.09, $p<.001$) values on purchase intention by transaction utility (see Table 4). The interaction effect (see Table 5 and Figure 2) of functional value and materialism on transaction utility (H5a, $\beta_{MT \times FV \rightarrow TU} = .07$, $p<.01$) was significant. However, for H5b, the interaction effect of experiential value and materialism ($\beta_{MT \times ExV \rightarrow TU} = -.01$, n.s.) on transaction utility was not supported. Finally, the interaction effects of functional value and value consciousness ($\beta_{VC \times FV \rightarrow TU} = .11$, $p<.001$), as well as symbolic value and value consciousness, on transaction utility ($\beta_{VC \times SV \rightarrow TU} = -.24$, $p<.001$) were significant, as were the interaction effects of experiential value and value consciousness on transaction utility ($\beta_{VC \times ExV \rightarrow TU} = -.13$, $p<.001$). Thus, H6a, H6b, and H6c were supported[1]. Table 5 summarizes the results of the hypotheses tests.

6.3 Additional Analysis

We investigated the moderating role of six demographics (i.e., gender, age, education, marital status, income, and purchase frequency) on the hypothesized relationships. Interestingly, we found that epistemic value is more strongly associated with transaction utility among females ($\beta_{GD \times EpV \rightarrow TU} = -.09$, $p<.01$). The results also revealed that the path from epistemic value to transaction utility is stronger for younger participants compared with older participants ($\beta_{AG \times EpV \rightarrow TU} = -.06$, $p<.001$), and that the relationship between acquisition utility and transaction utility is stronger for younger customers ($\beta_{AG \times AU \rightarrow TU} = -.16$, $p<.001$). Moreover, we posit that the epistemic value is more strongly associated with transaction utility among higher levels of educational background ($\beta_{ED \times EpV \rightarrow TU} = .13$, $p<.01$). An overview of model estimation results is presented in Table 6.

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[1] We have conducted both SEM and PROCESS analysis to test all the indirect/mediation and moderation effects. All the results are comparable, except one indirect effect (from function value to purchase intention by transaction utility). The specific results of the PROCESS analysis are shown in the Web Appendix Table 3&4.

We also re-examined our results, distinguishing between different product categories (see Table 7). While most effects are in line with the overall model (52 of 64 effects; 81%), a couple of interesting differences can be observed. The results suggested that the effect of ecological value on acquisition utility is significantly positive in the case of buying organic food and alternative fuel vehicles, while the effect is not significant for individuals who buy low energy light bulbs and green cleaning products. The ecological value on transaction utility, on the other hand, is not significant for alternative fuel vehicle buyers. Moreover, the results indicate that for individuals who buy green cleaning products and alternative fuel vehicles, the product's symbolic value exerts a significant positive impact on its acquisition utility. Interestingly, the buyers of alternative fuel vehicles perceive the importance of functional value in driving transaction utility, while this effect is not significant for other product category buyers. Overall, the results indicate that for alternative fuel vehicle buyers, the ecological value is generating higher acquisition utility, but not transaction utility. However, the functional value is a strong predictor of transaction utility but not acquisition utility. Further, low energy light bulb buyers place functional performance ahead of the ecological and symbolic benefits associated with acquisition utility, while associating ecological performance with transaction utility. The overall control variable analysis is shown in Web Appendix 1.

7. Discussion

7.1 Theoretical Implications

The objective of this research was to identify the factors influencing Chinese customers' purchase behaviors regarding green products. The study used the theory of consumption values (ecological, functional, symbolic, experiential, and epistemic) and Thaler's utility theory as its conceptual framework. These two "qualifiers" in this theory-based investigation produced strong empirical evidence of green consumption in China,

which requires theoretical and empirical research.

Firstly, in line with previous research showing the importance of an ecological perspective within a multidimensional framework of consumption values (Koller *et al.*, 2011; Papista and Krystallis, 2013), our findings corroborated and further advanced the consumption-value theory in the green marketing literature. We disentangle five categories of consumption values—ecological, functional, symbolic, experiential, and epistemic—applied in the green product context. Although previous studies provide insights into how retailers may approach consumers with a focus on different value perceptions, traditional and green consumption behaviors differ greatly in several important aspects. As claimed by White *et al.* (2019), "unlike typical consumer decision making, which classically focuses on maximizing immediate benefits for the self, sustainable choices involve longer-term benefits to other people and the natural world" (p. 24). For instance, one of the major differences between traditional and green consumption decision-making processes is to address dematerialization (Csikszentmihalyi, 2000) and eliminate the emphasis on the possession of tangible green products (White *et al.*, 2019). This is consistent with the claim that green marketing should increasingly promote consumption experiences (Van Boven, 2005), social desirability (White and Argo, 2011), value cocreation (Donnelly *et al.*, 2017), etc. Therefore, decision-making for green consumption is a complex process which integrates several key factors, including social influence, habits, feelings, and price perceptions (White *et al.*, 2019). The findings of the current research indicate fundamental differences in how values in different categories influence purchase intention that have only been hinted at in the previous literature (MacCutcheon *et al.*, 2020; Pickett-Baker and Ozaki, 2008).

Secondly, previous utility studies realize the impacts of price promotions, coupon proneness, fear of spam, and product quality on both acquisition and transaction utilities in conventional consumption contexts (Im and Ha, 2015; Muehlbacher *et al.*, 2011; Sajeesh and Song, 2017). These studies posit that the monetary nature of the promotion or the purchase

would act on feelings of satisfaction (acquisition utility) and pleasure associated with the offered deal (transaction utility). Our framework highlights different drivers of green product purchase intention, and it can also be used to consider the comparative importance of values in utility perceptions of green products. For instance, messaging that reflects "greenness" in the nature of the product can have a greater impact on transaction utility than on acquisition utility. In another example, organic food, which is perceived as healthy, local, and fresh, may be linked to positive associations around a good deal on price, rather than satisfaction with eating the food. We expect that our framework conceptualizes different categories of consumption values for green products and examines their impact on utilities and, ultimately, purchase intention.

Additionally, this study further improves the understanding of the interactions between consumption values and materialism, as well as value consciousness. Previous studies indicate that higher-materialistic consumers prefer material consumption over experiential consumers, due to wealth expression (Duan and Dholakia, 2018). This study shows that as a result of the features of green products, functional value becomes more salient for higher-materialistic consumers and results in higher levels of transaction utility. This confirms the relationship between higher-materialism consumers and material perceptions, which indicates that an individual's happiness depends on material possessions. In addition, the results confirm the expectation of a strong association between functional value and transaction utility among individuals high in value consciousness, but a weaker association between symbolic and experiential values and transaction utility. This finding highlights the role of value consciousness as an important moderator of the relationship between consumption values and transaction utility. The current research complements that of Lichtenstein *et al*. (1990) on the conceptual difference in transaction utility among higher value-conscious and lower value-conscious consumers. Value-conscious consumers are more likely to perceive benefit from searching for quality information about a green product, while they are less

likely to consider symbolic and experiential values.

It is also worth noting that functional value did not significantly influence transaction utility (H2b). This finding is somewhat consistent with prior research, which suggests the impact of functional value can be situation-specific. For example, Previte *et al*. (2019) found that the functional value of altruistic services did not significantly affect positive product evaluations but did significantly reduce negative evaluations. Our results appear to demonstrate that when functional value is experienced through green products, the result may be a higher level of perception of acquisition utility rather than transaction utility, which leads to purchase intention. In other words, consumers with a high level of functional value do not necessarily feel that buying green products would be a good "price deal." This shows that consumers in this study would like to pay more for ecological attributes of the green product, but not for better quality. This finding is consistent with Gershoff and Frels (2015) and Lin and Chang (2012), who posit that consumers consider green products to be less effective than conventional products. The product's quality would not necessarily signal an additional price being charged.

Moreover, we did not find a relationship between experiential value and transaction utility for less materialistic consumers (H5b). This result has significant implications. Customers who perceive green products as having higher experiential benefits gave a consistent assessment of the price deal of green products without showing any differences between higher and lower levels of materialistic individuals. Consumers may not be able to perform different purchase behaviors. Thus, materialistic consumers may not intend to purchase a green product because it offers experiential benefits. This finding has important strategic segmentation implications because it illustrates that current product advertising might not explicitly state how the attributes of green products vary among different segments.

It is noteworthy that we found that the relationship between epistemic value and transaction utility varies across several demographic subgroups: epistemic value was more

strongly associated with transaction utility among females, younger customers, and those with a higher level of education. According to Stern and Axt (2020), epistemic value motivates individuals to deliberate about information and integrate it into a coherent and structured pattern. Therefore, individuals with lower epistemic value tend to make quick and efficient decisions, while higher epistemic value is related to structure-seeking. Gender identity theory suggests that women are generally more socially responsible than men because women are typically more sensitive and less goal-oriented (McCabe *et al*., 2006). We further discuss that female customers are more sensitive to the price of green products and tend to be more strongly influenced by epistemic value when making transactional decisions. Moreover, this study indicates that younger customers become more deliberate in their processing of green product information, resulting in higher levels of perceived transaction utility. This finding is consistent with Phillips' work, which outlines that Millennials are generally considered to be rationally-oriented, and that they perceive price and product attributes to be critical for product evaluations. In addition, contradictory to Dellaert and Lindberg's (2003) study, we found that people whose transaction utility is influenced by epistemic motivation are likely to be more highly educated. This group of people is more knowledgeable about green products and more likely to perform systematic evaluations that result in higher levels of transaction utility perception.

This study further compares the proposed model across different green product categories. Specifically, alternative fuel vehicle consumers are more likely to weigh ecological and symbolic values heavily in determining the product's acquisition utility, while weighing functional performance heavily in determining transaction utility. The desire to protect the environment and one's social identity motivates consumers to accept alternative fuel vehicles, while the product's specific functional performance is more related to consumers' price perceptions when buying these vehicles. Possessing this expensive and high-involvement product category that has a higher environmental impact reflects the

consumer's concern with the environment and social status, but the product's effectiveness is readily apparent from buying it. On the other hand, inexpensive and low-involvement product categories, such as low energy lights bulbs and organic food, are typically purchased for their superior quality performance despite having no association with social status. Scholars should build on these findings and further contextualize their models.

7.2 Managerial Implications

Since nowadays, green marketing acts to differentiate, position, and enhance green product value, it is worthwhile to educate retailers in its use because they are an effective and respected information channel between consumers and manufacturers (Ozanne *et al.*, 2016). One valuable implication concerns the role of green claims in educating the public about consumption values of green products. In particular, firms should exploit entertainment signals to differentiate their products and position them to seize new green markets. For instance, firms should continue to stress the importance of environmental, status-seeking, and self-image concepts. Promotional messages should appeal to a consumer's sense of community because individuals pay close attention to their status, even if it is represented by seemingly trivial symbols in a community.

Further, if firms wish to enhance green purchase intention for their green products, they should incorporate the concepts of acquisition and transaction utilities of consumption into their long-term green strategies at the planning stage. Firms should carry out systematic utility analyses and address acquisition and price equity in a strategic process. A number of recent studies have demonstrated that people are increasingly willing to pay more for green products (e.g., Laroche, 2001; Papista and Krystallis, 2013; Zhao *et al*., 2014). Such willingness indicates that the attributes inherent in green products can outweigh the price factor. Moreover, firms may also derive financial benefits from increasing consumers' perceived transaction utility and price perception. Given the high prices of green products, many consumers are not willing to pay the extra cost. Price competitiveness or discounted

products are likely to be critical to promotional efforts in order to satisfy the "good price deal" expectations of customers. Overall, the highlighting of acquisition–price equity plays an important role in a firm's promotional, branding, and pricing strategies.

In addition, the results of this research show that materialism, value consciousness, and some demographics significantly moderate value–utility relationships. This implies that the consumer profile of those who support the environment and purchase green products is an indication of how green marketers should target and segment consumers. Earlier research suggests that market segments are identified through demographic variables such as gender, age, and income levels (e.g., Chan and Lau, 2000; Chekima *et al*., 2016; Han *et al*., 2011; Pagiaslis and Krontalis, 2014). Knowing the specific profile of the green consumer is crucial, since such demographic information helps marketers to construct specific marketing strategies to target relevant consumers. In the present study, for example, a substantial number of consumers with a higher level of education show preferences towards green products when certain values are emphasized in the green appeals. As far as gender and age are concerned, the results suggest that green marketers should develop epistemic messages to align with the female and younger consumer segment, thereby increasing the effectiveness and efficiency of green marketing activities.

The findings of this study have also enriched the existing green advertising literature, whose focus has been on the classifications of green product categories. For products with higher environmental impact, high involvement, and an expensive price, messages with green appeals are likely to have stronger effectiveness than messages with non-green appeals. Marketing campaigns can also enhance individuals' environmental self-image, including being proud of possessing the products. Such improvements have a knock-on effect on consumers' sense of worth and value, both of which contribute towards making them more willing to accept new green products. In contrast, quality is a key concern for low-involvement and inexpensive product categories. Consumers are more willing to accept the

green idea in cases of improved product function, especially for everyday products such as low energy lights bulbs and green cleaning products. However, consumers are willing to pay more if the environmental obligation is explicitly communicated.

7.3 Research Limitations

Some limitations of the study should be noted. The primary limitation concerns the limited number of types of green products referred to by customers. Although the findings of this study provide support for the current research's theorization on green product consumption, further research should address how other product categories might impact behaviors. Additionally, this research was undertaken using the case of green consumption in China. Further studies could focus on specific cultural factors (aside from materialism) that influence Chinese consumers' consumption behavior or on purchase experiences regarding green products in other countries for comparison with this study. The target population of the current study was limited to consumers who live in mainland China. Future research could alternately examine overseas Chinese consumers to assess the generalizability of our findings. Moreover, measures to assess the constructs used in the research, which were based on previous studies conducted among Western consumers, might not be appropriate for Chinese consumers. Thus, it may be necessary to build more sophisticated measures that might more successfully evaluate Chinese consumers' perceptions.

8. Conclusion

This research corroborates the literature on green consumption, consumption-value theory, and economic utility and incorporates it into a new consumer decision-making framework from a systematic and comprehensive perspective. It has taken a substantial first step towards a better understanding of consumer purchase decisions related to green products and the investigation of the extent to which consumption values regarding green products and economic utility influence those decisions. The current findings provide valuable insights into

consumers' green purchase intention for different kinds of consumption values when the decision process to use this information is based on both attribute importance and utility motivations. Moreover, we were specifically interested in the moderating effects of materialism and value consciousness on the effect of values on transaction utility. The systematic model proposed was tested to understand customers' green product purchase decision-making processes and provide insights for green marketing management.

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Table 1 Demographic information of the study

	Frequency	Percent
Gender of respondent		
Female	230	52.63
Male	207	47.37
Total	437	100
Age of respondent		
Up to 17	7	1.6
18–24	183	41.88
25–29	132	30.21
30–39	84	19.22
40–49	14	3.20
Over 49	17	3.89
Total	437	100
Educational level		
High school	31	7.09
Undergraduate	372	85.13
Postgraduate	22	5.03
Others	12	2.75
Total	437	100
Marital status		
Unmarried	286	65.45
Married	151	34.55
Total	437	100
Personal annual income (RMB)		
20,000 or below	43	9.84
20,001–40,000	53	12.13
40,001–70,000	23	5.26
70,001–100,000	100	22.88
100,001–200,000	187	42.79
200,001–300,000	25	5.72
300,000 or more	6	1.38
Total	437	100
Frequency of buying green products		
Everyday	24	5.49
Always	126	28.83
Sometimes	217	49.66
Seldom	70	16.02
Total	437	100

Table 2 Constructs, items, and factor loadings (n = 437)

Constructs and items	Standardized loading
Ecological value (adapted from Chen and Chang, 2012; original source from Patterson and Spreng, 1997)	
The environmental performance of green products meets my expectations	.76
I purchase green products because they have more environmental concern than others	.78
I purchase green products because they have more environmental benefits than others	.84
Functional value (adapted from Koller et al., 2011)	
Green products are very reliable	.93
Green products provide good performance	.90
Green products have an acceptable standard of quality	.77
Symbolic value (adapted from Hartman and Apaolaza-Ibanez, 2012)	
With green products, I can express my environmental concerns	.84
With green products, I can demonstrate to myself and my friends that I care about environmental conservation	.94
With green products, my friends perceive me to be concerned about the environment	.86
Experiential value (adapted from Mathwick et al., 2001)	
Buying green products totally absorbs me	.87
Others' enthusiasm for buying green products is catching and uplifting	.92
Buying green products entertains me	.89
Epistemic value (adapted from Xiao and Kim, 2009)	
I am bored with non-green products	.78
I am curious about green products	.91
I like to experience things that are new and different	.88
Acquisition utility (adapted from Grewal et al., 1998)	
If I were to buy a green product, I feel I would be getting my money's worth	.75
If I were to buy a green product, I think I would be getting good value for the money I would spend	.72
I think that given green products' features, they are good value for money	.71
I value green products as they meet my needs for a reasonable price	.81
Green products are a worthwhile buying because this helps me use them at a reasonable price	.81
Transaction utility (adapted from Al-Sabbahy et al., 2004)	
Reflecting on the price I may pay for green products, I feel that they represent a good deal	.75
It gives me pleasure knowing that I will get a good deal on the price of green products	.82
Beyond saving money, there is a good feeling attached to getting a good deal from buying green products	.71
Purchase intention (adapted from Chan, 2001)	
I will consider buying green products in the future	.86
I will consider switching to green products in the future	.85
I plan to switch to a green version of a product in the future	.71
Materialism orientation (adapted from Watchravesringkan and Yurchisin, 2007)	
It sometimes bothers me quite a bit that I can't afford to buy all the things I'd like	.73
I like a lot of luxury in my life	.81
Buying things gives me a lot of pleasure	.79
My life would be better if I owned certain things that I do not have	.87
Value consciousness (adapted from Lichtenstein et al., 1990)	
I am very concerned about low prices, but I am equally concerned with quality	.84
I generally compare the prices of different brands to be sure that I get the best value for money	.88
When purchasing green products, I always try to maximize the quality I get for the money I spend	.79
When I buy green products, I like to be sure that I am getting my money's worth	.86
When I shop, I usually compare the price information for green products I normally buy	.90

Table 3 Means, standard deviations, and correlations among constructs

	Mean	CR	α	AVE	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Acquisition utility	4.88	.90	.89	.50	.71									
2. Ecological value	5.21	.87	.87	.57	.50	.76								
					.57									
3. Epistemic value	4.22	.75	.74	.51	.51	.41	.71							
					.52	*.46*								
4. Experiential value	5.17	.90	.89	.69	.61	.59	.57	.84						
					.45	*.41*	*.56*							
5. Functional value	5.11	.83	.83	.55	.50	.61	.46	.57	.74					
					.43	*.23*	*.36*	*.42*						
6. Intention to buy	5.67	.87	.87	.68	.69	.61	.39	.63	.42	.83				
					.66	*.43*	*.42*	*.41*	*.35*					
7. Materialism	4.15	.75	.74	.52	.36	.20	.31	.33	.24	.27	.72			
					.39	*.41*	*.60*	*.33*	*.36*	*.45*				
8. Symbolic value	4.26	.85	.85	.65	.47	.49	.45	.59	.58	.45	.26	.81		
					.32	*.39*	*.50*	*.57*	*.41*	*.49*	*.51*			
9. Transaction utility	4.53	.81	.80	.58	.59	.46	.40	.48	.36	.57	.29	.32	.77	
					.58	*.45*	*.59*	*.41*	*.35*	*.37*	*.45*	*.55*		
10. Value consciousness	4.23	.88	.87	.52	.41	.35	.32	.34	.25	.46	.35	.32	.47	.72
					.41	*.32*	*.46*	*.48*	*.40*	*.26*	*.31*	*.47*	*.46*	
11. MV (customer aggression)	4.21	.85	.86	.53	-.01	-.02	-.05	-.04	.02	-.05	.08	-.03	.07	.02	-.01
					-.01	*-.02*	*-.06*	*-.03*	*.01*	*-.06*	*.05*	*-.03*	*.05*	*.02*	*-.01*

Notes: Results of discriminant validity. Diagonal values are the square root of each construct's AVE. Numbers in italics are heterotrait–monotrait ratios.
MV=marker variable, CR=Composite reliability, α=Cronbach's alpha, AVE=Average variance extracted.

Table 4 SEM results of indirect effect of values on purchase intention

	Direct (on PI)	Indirect (via AU)	Total (via AU) (Direct + Indirect)	Direct (on PI)	Indirect (via TU)	Total (via TU) (Direct + Indirect)
EcV	.28***	.06***	.34***	.28***	.54***	.82***
FV	.03	.06***	.09***	.03	.01	.04
SV	.06	.03*	.09***	.06	.01	.07
ExV	.26***	.11***	.37***	.26***	-.02	.24***
EpV	-.06	.09**	.03	-.06	-.09***	-.15***
AU	.34***			.34***		
TU	.54***			.54***		
R²	.49			.49		

Notes: EcV=ecological value, FV=functional value, SV=symbolic value, ExV=experiential value, EpV=epistemic value, AU=acquisition utility, TU=transaction utility, PI=purchase intention. *$p<.05$, **$p< .01$. ***$p< .001$.

Table 5 Structural model and hypotheses results

Relationships	Prediction	Finding	Support	New finding
H1a: EcV→AU	+	+	Yes	Yes
H1b: FV→AU	+	+	Yes	Yes
H1c: SV→AU	+	+	Yes	Yes
H1d: ExV→AU	+	+	Yes	Yes
H1e: EpV→AU	+	+	Yes	Yes
H2a: EcV→TU	+	+	Yes	Yes
H2b: FV→ TU	+	n.s.	No	-
H2c: EpV→TU	-	-	Yes	Yes
H3: AU→ TU	+	+	Yes	-
H4a: AU→PI	+	+	Yes	-
H4b: TU→ PI	+	+	Yes	Yes
H5a: MT x FV → TU	+	+	Yes	Yes
H5b: MT x ExV → TU	-	n.s.	No	-
H6a: VC x FV → TU	+	+	Yes	Yes
H6b: VC x SV → TU	-	-	Yes	Yes
H6c: VC x ExV → TU	-	-	Yes	Yes

Notes: EcV=ecological value, FV=functional value, SV=symbolic value, ExV=experiential value, EpV=epistemic value, MT=materialism, VC=value consciousness, AU=acquisition utility, TU=transaction utility, PI=purchase intention. n.s.=non-significant.

Table 6 Model estimation results

	Dependent variable		
Predictors	**Acquisition utility (AU)**	**Transaction utility (TU)**	**Purchase intention (PI)**
Main model			
EcV	.17 (.04) ***		
FV	.18 (.04) ***		
SV	.05 (.04) *		
ExV	.33 (.05) ***		
EpV	.26 (.03) ***		
EcV		.26 (.04) ***	
FV		.01 (.04) n.s.	
EpV		-.16 (.08) ***	
AU		.54 (.05) ***	.34 (.05) ***
TU			.54 (.05) ***
MT x FV		.07 (.04) **	
MT x ExV		-.01 (.05) n.s.	
VC x FV		.11 (.06) ***	
VC x SV		-.24 (.03) ***	
VC x ExV		-.13 (.03) ***	
Demographics (selected significant paths)			
GD x EpV		-.09 (.04) **	
AG x EpV		-.06 (.03) ***	
AG x AU		-.16 (.05) ***	
ED x EpV		.13 (.04) **	

Notes: Column entries refer to unstandardized regression coefficients (standard errors in parentheses).
EcV=ecological value, FV=functional value, SV=symbolic value, ExV=experiential value, EpV=epistemic value,
MT=materialism, VC=value consciousness, AU=acquisition utility, TU=transaction utility, PI=purchase intention,
GD=gender, AG=age, ED=education. *p<.05, **p<.01, ***p<.001, n.s.=non-significant.

Table 7 Model comparison across different product categories

Relationships	Overall model		Low energy lights bulbs		Green cleaning product		Organic food		Alternative fuel vehicle	
	Path coefficient	p-Value	Path coefficient	p-Value	Path coefficient	p-Value	Path coefficient	p-Value	Path coefficient	p-Value
H1a: EcV→AU	.17 (.04)	***	.09 (.05)	n.s.	.06 (.05)	n.s.	.16 (.05)	**	.16 (.07)	**
H1b: FV→AU	.18 (.04)	***	.16 (.06)	**	.15 (.06)	**	.19 (.06)	**	.12 (.09)	n.s.
H1c: SV→AU	.05 (.04)	*	.09 (.05)	n.s.	.11 (.05)	*	.06 (.05)	n.s.	.11 (.06)	*
H1d: ExV→AU	.33 (.05)	***	.33 (.05)	***	.30 (.05)	***	.31 (.05)	***	.28 (.07)	***
H1e: EpV→AU	.26 (.03)	***	.16 (.04)	***	.17 (.04)	***	.15 (.05)	**	.14 (.06)	**
H2a: EcV→TU	.26 (.04)	***	.19 (.04)	***	.20 (.04)	***	.15 (.05)	**	.08 (.06)	n.s.
H2b: FV→ TU	.01 (.04)	n.s.	.05 (.05)	n.s.	.05 (.05)	n.s.	.01 (.05)	n.s.	.14 (.07)	*
H2c: EpV→TU	-.16 (.08)	***	-.10 (.05)	*	-.10 (.05)	*	-.09 (.04)	*	-.12 (.07)	*
H3: AU→ TU	.54 (.05)	***	.42 (.05)	***	.43 (.05)	***	.49 (.05)	***	.47 (.07)	***
H4a: AU→PI	.34 (.05)	***	.50 (.06)	***	.44 (.07)	***	.46 (.06)	***	.43 (.07)	***
H4b: TU→ PI	.54 (.05)	***	.19 (.05)	***	.19 (.06)	**	.20 (.05)	***	.19 (.07)	**
H5a: MT x FV → TU	.07 (.04)	**	.09 (.05)	*	.10 (.05)	*	.09 (.05)	*	-.01 (.08)	n.s.
H5b: MT x ExV → TU	-.01 (.05)	n.s.	-.05 (.06)	n.s.	-.06 (.06)	n.s.	-.03 (.05)	n.s.	-.02 (.09)	n.s.
H6a: VC x FV → TU	.11 (.06)	***	.14 (.05)	**	.15 (.05)	**	.06 (.05)	n.s.	.14 (.08)	*
H6b: VC x SV → TU	-.24 (.03)	***	-.16 (.06)	**	-.18 (.06)	**	-.18 (.06)	**	-.08 (.09)	n.s.
H6c: VC x ExV → TU	-.13 (.03)	***	-.13 (.05)	**	-.17 (.06)	***	-.01 (.06)	n.s.	-.11 (.10)	n.s.

Notes: EcV=ecological value, FV=functional value, SV=symbolic value, ExV=experiential value, EpV=epistemic value, MT=materialism, VC=value consciousness, AU=acquisition utility, TU=transaction utility, PI=purchase intention. *$p<.05$, **$p<.01$, ***$p<.001$, n.s.=non-significant.
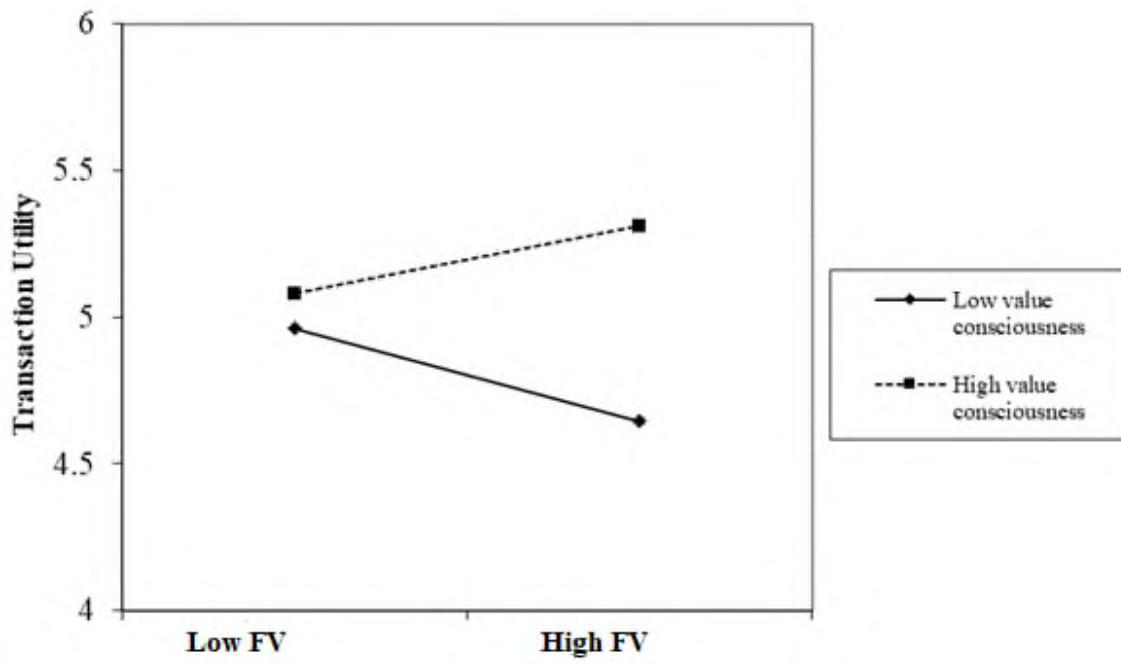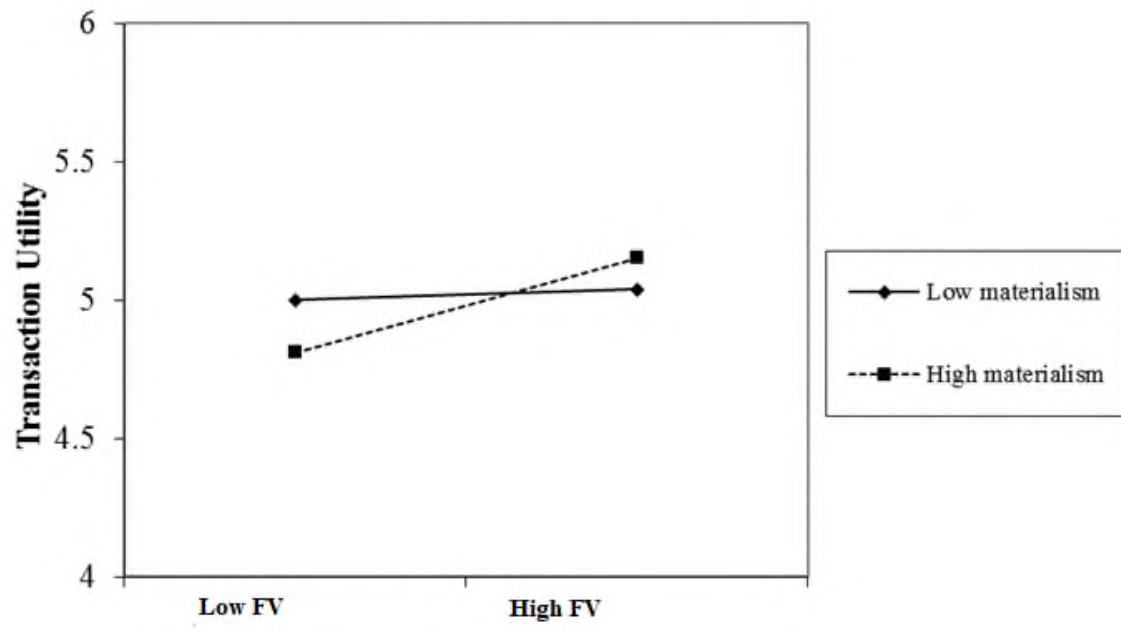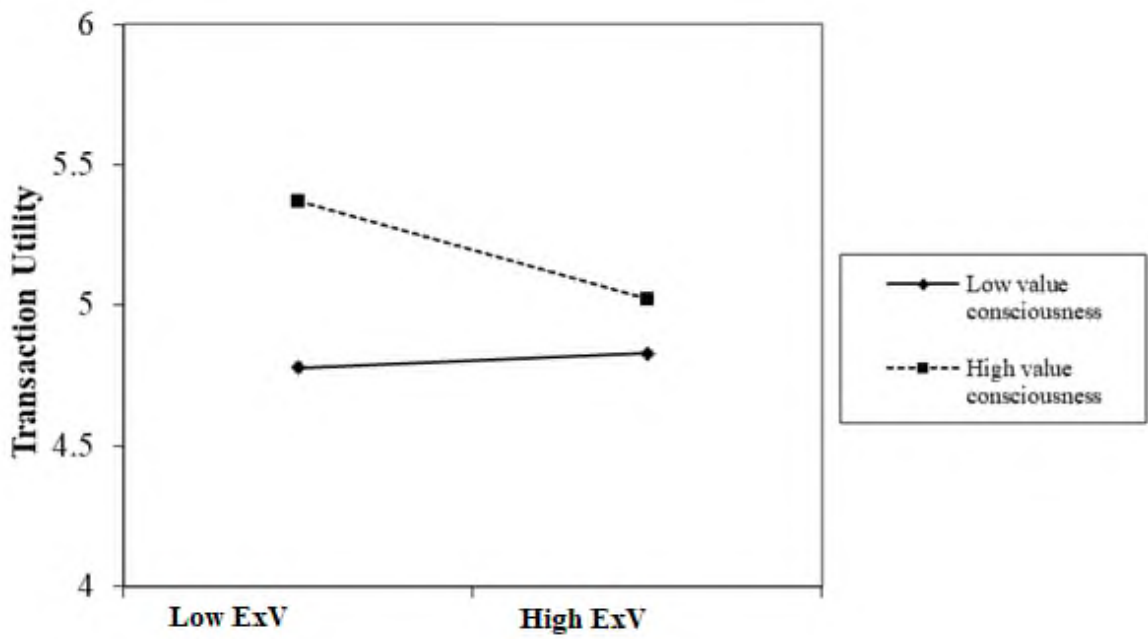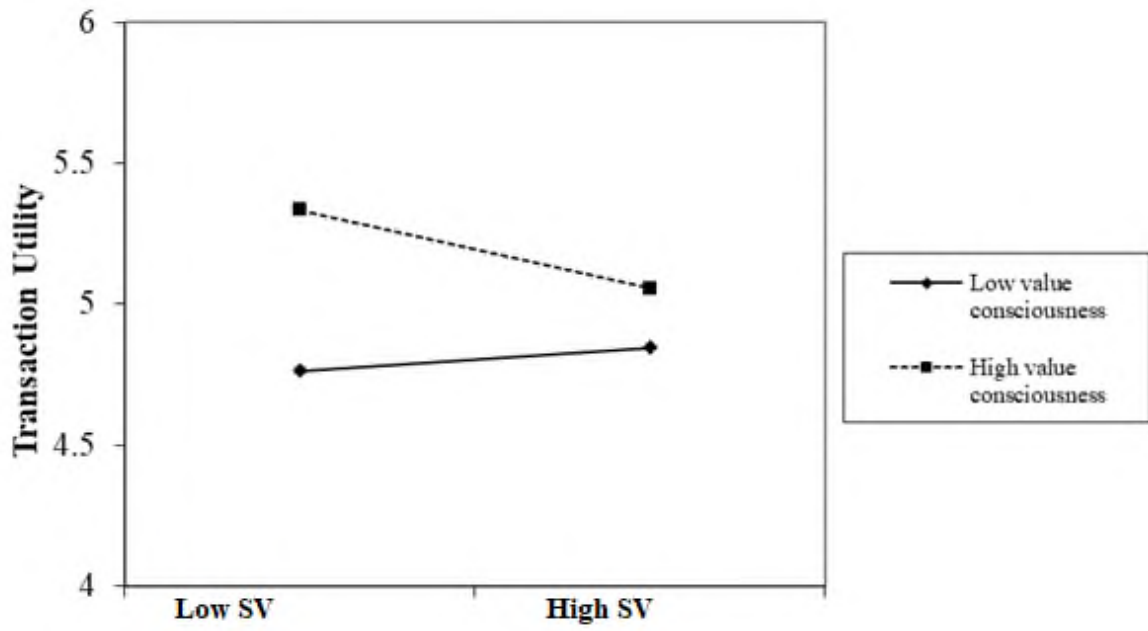
Figure 1 Causal model with standardized coefficients
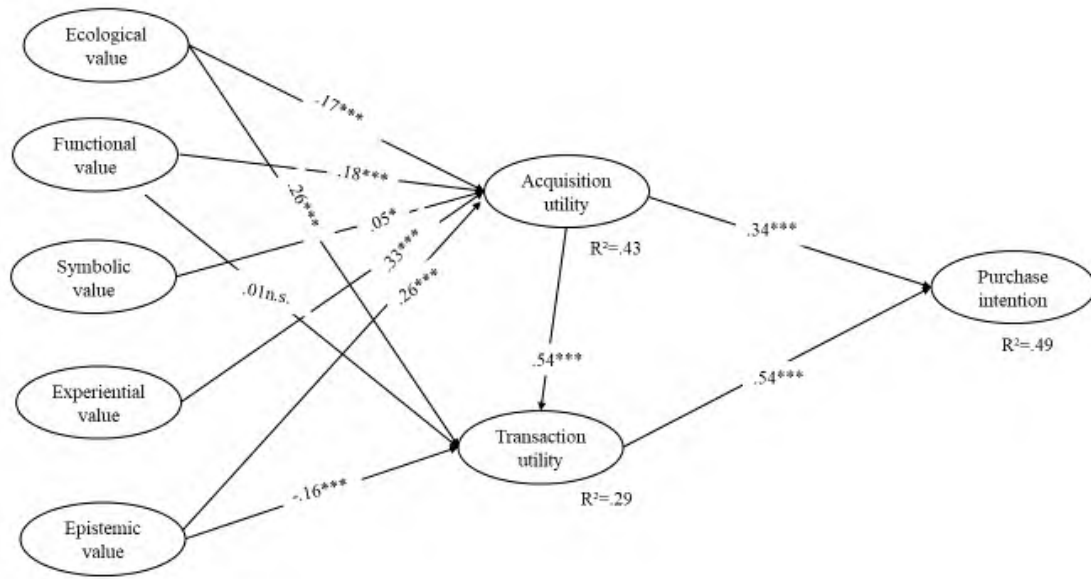
Notes: *p<.05, **p<.01, ***p<.001; n.s.= non-significant[2]

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[2] We considered and tested environmental knowledge ($\beta = .01$, $p>.05$), consumer innovativeness ($\beta = .02$, $p>.05$), and face ($\beta = -.02$, $p>.05$) as control variables in the model. We also considered and tested consumer skepticism ($\beta = -.04$, $p>.05$), price sensitivity ($\beta = -.02$, $p>.05$), and perceived monetary barriers ($\beta = -.05$, $p>.05$) as control variables in the model.

Figure 2 Interaction plots

Notes: FV=functional value, SV=symbolic value, ExV=experiential value.