# Consumer Willingness-to-Pay a Price Premium for Eco-Friendly Children's Furniture in Shanghai and Shenzhen, China

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**Abstract**

The sustained and rapid growth of China's economy has led to the improvement of Chinese living standards. This, in turn, has led to the adoption of the lifestyles of health and sustainability (LOHAS) by many Chinese middle-class consumers. In pursuit of a higher quality of life, these consumers have shown a growing interest in eco-friendly products, including eco-friendly children's furniture. Using a structured questionnaire distributed to a sample of 320 consumers in two Chinese metropolitan cities (Shanghai and Shenzhen) in 2013, this study examined consumer stated willingness-to-pay (WTP) a price premium for eco-friendly children's furniture. Results indicate that 98 percent of respondents would be willing to pay a premium for such products. Of these respondents, 53 percent of them stated a WTP of no greater than 10 percent, while 45 percent of them stated a WTP of more than 10 percent. Results of an ordered probit model suggest significant correlations between respondent WTP and their marital status, education level, LOHAS orientation, and environmental perceptions. The findings of this study can serve as a useful reference for policy makers, furniture producers, and wood material suppliers that are currently planning to enter eco-friendly markets where price premiums might exist.

The sustained and rapid growth of China's economy and the continual improvement of Chinese living standards, coupled with increased global environmental consumerism, have led to several profound changes in consumer lifestyles in China. Over the past 10 years, there has been a trend toward the lifestyles of health and sustainability (LOHAS) among middle-class consumers in China (CRIENGLISH.com 2008, Wan et al. 2015). In pursuit of a higher quality of life, these consumers have started to embrace a new living concept termed ''eco-home,'' showing a strong preference for eco-friendly furniture, such as odor and formaldehyde-free furniture (HKTDC Research 2017). According to Wan et al. (2015), eco-friendly furniture contains five key attributes: it is scentless, nonpoisonous, uses natural material, has environmental certification, and the legal origin of wood is verified.

As the focus of the family, Chinese children are meticulously taken care of. Their healthy growth and development has drawn the attention of both Chinese parents and the Chinese government. In order to provide children with a safe and healthy environment, many Chinese families have increased their household expenditures on children. The most obvious manifestation of this is that an increasing number of children have their own rooms and furniture (Su et al. 2012, Guo et al. 2014, HKTDC Research 2014, Wan and Toppinen 2016). In parallel, in 2012, the Chinese government implemented its first mandatory national standard (*General Technical Requirements*) for children's furniture. It clarified limits on toxic and harmful substances contained in children's furniture and specified safety measures (in terms of both design and health; Wan et al. 2015). This has not only promoted the development of

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the Chinese children's furniture industry but has also increased Chinese consumers' environmental awareness toward children's furniture.

The past two decades have seen the rapid development of the Chinese children's furniture market, with a 9 percent share of the entire furniture market in China (Baidu Wenku [BW] 2012, Hangzhou Xianlue Investment Consulting Co. Ltd. 2016). With the current 230 million children aged 0 to 15 accounting for 16.7 percent of the total population (HKTDC Research 2017) and a potential increase in the number of children resulting from the implementation of China's universal ''two-child policy,'' the Chinese children's furniture market is expected to continue to grow. Concurrently, many middle- to high-income consumers are increasingly choosing eco-friendly furniture for their children (Daxue Consulting 2015).

In recent years, researchers have shown an increased interest in addressing this niche market from the consumer perspective. For example, Dai and Xu (2013) analyzed the correlations between the needs, purpose, behavior, and viewpoints of consumers of children's furniture; Wan et al. (2015) examined consumers' environmental perceptions of children's furniture; and Wan and Toppinen (2016) investigated the effects of perceived product quality and LOHAS on consumer price preferences for children's furniture. All of these studies were conducted in China.

With the growing role of eco-friendliness in children's furniture, there is a need to study consumer behavior in this specific field. In general, the price of eco-friendly children's furniture is expected to be higher than that of similar conventional products (i.e., non–eco-friendly products; Daxue Consulting 2015). From a managerial perspective, predicting consumer willingness-to-pay (WTP) for eco-friendly children's furniture and determining the factors influencing such a WTP may help companies make better pricing decisions; gauging the potential maximum WTP of a product can contribute to a company's market performance and financial results. Moreover, using the estimated level of WTP as a guide can support marketing managers in targeting various consumer groups with tailored products.

In the past decade, a large number of studies have explored consumer WTP and the factors influencing WTP across different product categories. However, consumers' intention to pay a premium for eco-friendly furniture, especially eco-friendly children's furniture, remains unexamined to a large extent in the context of China. Therefore, the present study aims to fill this gap, and the purpose of the study is twofold: first, to examine Chinese consumers' WTP a price premium for eco-friendly children's furniture; second, to identify the various factors that may influence consumer WTP. This study was designed as a part of a triptych together with two other studies (i.e., Wan et al. 2015, Wan and Toppinen 2016) dedicated to analyzing consumer perceptions and behavior in the children's furniture market from other perspectives, as mentioned above.

## Theoretical Background

### The concept and measurement of WTP

The concept of WTP originates from microeconomic theory (Lancaster 1991) and is defined as the maximum amount of money that an individual is willing to pay for a particular product (Wertenbroch and Skiera 2002). WTP is often associated with a price premium, which refers to the incremental amount of money an individual is willing to pay in order to secure a welfare improvement in a product (Aguilar and Vlosky 2007).

Over the past two decades, this concept has become increasingly incorporated in economic assessment studies in different fields, such as agriculture (e.g., Kimenju and Groote 2007), forestry (e.g., Aguilar and Vlosky 2007), health (e.g., Baji et al. 2012), transportation (e.g., Schniederjans and Starkey 2014), and electricity (e.g., Morita and Managi 2015). In environmental economics, WTP has been extensively used to assess a product's environmental value (Johansson 1987, Samples and Hollyer 1990, Nath et al. 2010).

The stated preference (SP) approach has been extensively used to measure consumer WTP a price premium for environmentally certified forest products (hereafter referred to as certified wood products; e.g., Ozanne and Vlosky 1997, 2003; Veisten 2007; Shukri and Awang Noor 2012). This technique uses direct methods to survey consumers about their WTP price premiums. One advantage of the SP technique is that it allows researchers, policy makers, and practitioners to understand how consumers respond to novel products and to predict the demand for those products when data from actual markets are not available (Sriwaranun et al. 2015). This advantage is achieved by considering the value that consumers place on products (Lee and Hatcher 2001).

### Previous studies on WTP estimates in the wood products sector

In recent years, the study of WTP a premium has received wide attention from the research community because it is key to understanding how consumer attitudes toward differentiated products can transform into monetary values (Aguilar and Vlosky 2007). In the forest sector, a number of studies have examined consumer WTP a premium for certified wood products and have produced different findings. For example, Winterhalter and Cassens (1993) found that a large majority of higher-income consumers (81%) in the United States were willing to pay a premium for certified wood furniture; Ozanne and Vlosky (1997) found that 63 percent of higher-income consumers in the United States were willing to pay a premium for certified wood products. Later, Jensen et al. (2004) reported that only 35 percent of Pennsylvania and Tennessee residents in the United States were willing to pay a premium for certified wood products. In addition to the United States, such WTP studies have also been conducted in Asian countries. For example, in Malaysia, Mohamed and Ibrahim (2007) reported that 38 percent of respondents were willing to pay a premium for certified wood products; in South Korea, Lee et al. (2007) and Cha et al. (2009) found, respectively, that more than 60 percent and more than 77 percent of respondents were willing to pay a premium for certified wood products.

Previous studies have also reported a wide range of premium amounts that consumers would be willing to pay for certified wood products, from the lowest premium of 1 percent (Veisten 2002) to the highest premium of 39.3 percent (Aguilar and Cai 2010). For instance, Veitsen (2002) reported the stated premiums of 1 and 1.6 percent for wooden furniture among Norwegian and British consumers, respectively; Ozanne and Vlosky (1997) found that a new home priced at US$100,000 would capture a 4.4 percent

premium from US consumers if building materials were certified; Liu et al. (2006) stated that consumers in Beijing were willing to pay a 10 percent premium for a certified night table; and Aguilar and Vlosky (2007) found that US consumers were willing to pay a 10 percent premium on average for certified wood products. In contrast, some studies have reported rather high premiums consumers were willing to pay for such products. For example, Ladenburg and Martinsen (2004) indicated that Danish consumers were willing to pay a 35 percent premium for certified cutting boards with a base price (i.e., the price for a noncertified cutting boards) of 100 Danish Krone (ca. US$39.81); Aguilar and Cai (2010) reported that UK consumers would be willing to pay a 39.3 percent premium for a certified wooden night table with a base price of £100 (ca. US$132).

Based on a comprehensive review of the previous 59 studies conducted by Cai and Aguilar (2013), there is a negative relationship between WTP a premium and wood product base price, meaning that consumers would be willing to pay a higher premium for a certified wood product with a lower base price, and vice versa. Of those 59 studies, Ozanne and Vlosky (1997) found that US consumers were willing to pay a premium of 18.7 percent for a certified wood stud with a base price of US$1, a premium of 14.4 percent for a certified ready-to-assemble chair with a base price of US$100, and a premium of 14.2 percent for a certified dining room set with a base price of US$1,000, respectively. Likewise, Jensen et al. (2004) indicated that Pennsylvania and Tennessee consumers in the United States were willing to pay a premium of 12.9 percent for a certified wood shelf with a base price of US$29, a premium of 8.5 percent for a certified wood chair with a base price of US$200, and a premium of 2.8 percent for a certified wood table with a base price of US$800, respectively.

## Previous findings of correlations between sociodemographic characteristics and WTP

Over the past years, a number of studies have examined the relationships mainly between consumers' sociodemographic characteristics and their WTP premiums for certified wood products in different countries. In the United States, both Ozanne and Vlosky (1997) and Ozanne and Smith (1998) found that females would be mostly likely to buy certified wood products; in the same time period, both Mainieri et al. (1997) and Ozanne et al. (1999) indicated that females were more environmentally oriented and were more willing to pay higher premiums for eco-friendly wood products than males. In Canada, Spinazze and Kant (1999) and Laroche et al. (2001) also found a statistically significant relationship between gender and WTP, with females more willing to pay higher premiums for certified wood products than males. Similarly, in Asian markets, such as Malaysia, Mohamed and Ibrahim (2007) produced the same result. Apart from gender, the study of Aguilar and Vlosky (2007) in the United States and the study of Cha et al. (2009) in South Korea discovered a strong relationship between income and premiums, reporting that consumers with higher incomes were willing to pay higher premiums for certified wood products.

In addition to sociodemographic factors, other factors, such as consumers' lifestyle and environmental perceptions, have been found to positively affect their green behavior intention (Joshi and Rahman 2015). According to Gil et al. (2001), lifestyle and attitudes toward environmental issues are key factors explaining green food consumption and thus have to be considered when designing appropriate strategies by producers and/or marketers.

## The LOHAS lifestyle

As stated by Wan et al. (2015), understanding the role of consumers' lifestyle provides a way to understand their needs and wants. The lifestyle concept is one of the most widely used concepts in modern marketing activities. It can reflect and inform a consumer's self-concept or identity through a package of related practices (Axsen et al. 2012). Drawing from Dagevos et al. (2011), lifestyle lies at the heart of consumerism. Desired lifestyle determines consumer choice, while consumer choice is a reflection of lifestyle. Hence, lifestyle is assumed to be an important variable for studying consumer behavior.

As a market-research acronym, LOHAS was first proposed by Ray and Anderson (2001) in the United States in the mid-1990s. Placing the two attributes of health and sustainability in the center of people's lives, LOHAS stands for an integrated, rapidly growing market segment that is focused on health and fitness, the environment, sustainable living, and social justice (Belz and Peattie 2012). LOHAS consumers aim to pursue the conscientious consumption of products with health benefits that align with the pursuit of ecology, sustainability, and social justice. This group of consumers has recognized the importance of their contribution and responsibility to the environment and society, and in turn have shown their support for business practices and products that apply these ethical principles (Ernst and Young 2008). Therefore, LOHAS consumers act as advocates of green products and push environmentally friendly products into the mainstream market (Belz and Peattie 2012). They are considered forerunners of the green movement.

As an environmental sustainability–oriented lifestyle (Axsen et al. 2012), LOHAS follows a megatrend that has been growing over the past 20 years, mainly in developed countries such as Australia, Germany, France, Italy, Japan, and the United States (Rácz and Horváth 2011). According to Belz and Peattie (2012), about 20 percent of the population in these countries is willing to pay a price premium for sustainable products, such as organic food, green buildings, and eco-friendly furniture. As LOHAS becomes the mainstream global lifestyle, this concept has been gradually entering Chinese consumers' lives, and there is a fledgling LOHAS movement growing in popularity among the upper-middle class in China's major cities (Wan et al. 2015). This trend has been shown in research conducted in recent years by Paull (2008) and Dagevos et al. (2011). In 2010, Asia-Pacific LOHAS Pte. Ltd. partnered with the Natural Marketing Institute in pioneering LOHAS Consumer Research in the Asia-Pacific region, conducting an online survey of LOHAS consumers across 10 countries in that region. More than 18,000 consumers were surveyed. Results show that there is a high demand for eco-friendly products among the biggest consumer markets of China, India, and Indonesia (Saunders et al. 2013).

Despite some studies on the role of the LOHAS lifestyle in the fields of body mass (e.g., Dagevos et al. 2011) and high-involvement products (referring to the products for which the buyer is willing to spend considerable time and effort in evaluating and purchasing; see Dahlen et al. 2009, Rajasekhar and Makesh 2013), such as organic food (e.g.,

Sirieix et al. 2011), there is a lack of research on the analysis of the role of LOHAS on consumer behavioral intentions for other high-involvement products, such as children's furniture, in China. Therefore, it is of interest to analyze whether the LOHAS lifestyle affects Chinese consumers' WTP for eco-friendly children's furniture.

## Environmental perceptions

In considering purchasing a product, consumers generally pass through a five-step decision-making process, including need recognition, information search, evaluation of alternatives, purchase decision, and postpurchase behavior (Kotler and Armstrong 2010). First, consumers will usually recognize a need when they sense a difference between their actual state and their desired state. Then they will search for information related to their desired products, and the interpretation of the information gathered will be influenced by their perceptions (Wee et al. 2014). According to Sheth et al. (2004), perception is one of the psychological factors that can influence consumer purchase behavior, and it is the process by which consumers select, organize, and interpret the information they receive from the environment. How consumers perceive the information of products will influence their evaluation of alternatives and purchase decisions (Wee et al. 2014). For instance, before purchasing eco-friendly children's furniture, consumers may look for the key attributes of such products and use the identified attributes as the criteria to evaluate different alternatives. Their perceptions of specific attributes of eco-friendly children's furniture compared with non–eco-friendly children's furniture may influence them to make a purchase decision. Hence, consumer perceptions have strategic implications for marketers (Schiffman and Kanuk 2010).

In addition, consumer research also recognizes that consumer perceptions, attitude, and knowledge about a product play a dominant role in their decision-making process (Biswas and Roy 2015), while consumer WTP holds a decisive leverage over their choice behavior (Li and Meshkova 2013). As defined by Kollmuss and Agyeman (2002), environmental perceptions are an individual's environmental concepts and subsequent action strategies to solve environmental problems. In the current study, environmental perceptions are referred to as the subjective ways in which an individual perceives and evaluates the attributes of eco-friendly children's furniture. Several authors correlated environmental perceptions to green purchase behavior. For instance, Boztepe (2012) noted environmental awareness and perceptions toward green marketing mix (including green product, green price, and green promotion) likely to influence consumer green purchasing behavior. In this regard, Larashati et al. (2012) further posited the influence of consumer perceptions of the extended version of green marketing mix with the 7Ps (product, price, place, promotion, people, process, and physical evidence) and green knowledge on green purchase behavior.

Other studies have examined the relationships between consumer perceptions, expectations, and purchasing behavior for green products (Tseng and Hung 2013, Cowan and Kinley 2014, Han and Chung 2014, Wee et al. 2014, Diddi and Niehm 2016) and highlighted that consumer perceptions of green products affected their purchase intention and behavior. However, no attention has been given to understanding the relationship between consumer perception and behavioral intention in the case of children's furniture in China. Thus, it is also of interest to analyze whether consumers' perceptions of eco-friendly children's furniture (hereafter referred to as consumers' environmental perceptions) affect their WTP for eco-friendly children's furniture.

## Conceptual framework

Based on the literature review, we developed the conceptual framework of the study, which serves as the basis for the present research. As shown in Figure 1, the middle hexagon represents the consumer WTP decision-

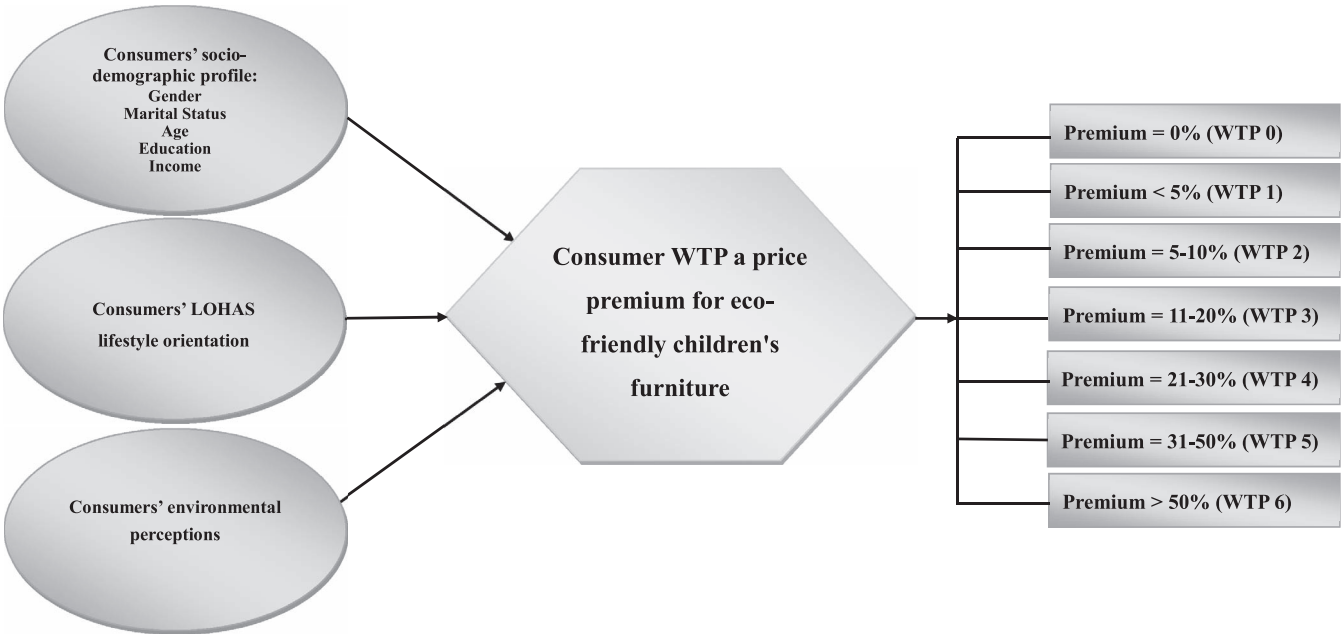


*Figure 1.—Conceptual model for consumer willingness-to-pay (WTP) for eco-friendly children's furniture in China.*

making process, the three ovals on the left side represent the three hypothesized underlying factors that may influence consumer WTP, namely, consumers' sociodemographic profile (including gender, marital status, age, education, and income), LOHAS lifestyle orientation, and environmental perceptions. The seven rectangles on the right side respectively represent different levels of WTP premiums. In total, there are seven WTP options: WTP 0 (0%), WTP 1 (<5%), WTP 2 (5% to 10%), WTP 3 (11% to 20%), WTP 4 (21% to 30%), WTP 5 (31% to 50%), and WTP 6 (>50%). The current study first used the SP method to estimate Chinese consumers' WTP a price premium for eco-friendly children's furniture and then used an ordered probit regression model to explore the factors affecting WTP.

## Data and Methods

### Data collection

A survey using a structured questionnaire was developed to examine consumer WTP for eco-friendly children's furniture. In addition to the background information of respondents, the questionnaire also contains questions to measure consumers' perceptions and environmental awareness of children's furniture as well as their WTP a price premium for eco-friendly children's furniture (see Wan et al. 2015). Quantitative, nonrandom convenience sampling was used for data collection, and some major furniture retail stores (e.g., IKEA, Red Star Macalline, and Shenzhen Xiangjiang Home Furnishing European City) and child-relevant places (e.g., kindergartens, primary schools, amusement parks, and children's art schools) were chosen as survey sites to meet our target consumers. For furniture retail stores, exit surveys were carried out face-to-face with participants when they were leaving stores; for child-relevant places, participants were intercepted when they were playing with or waiting for their children. Convenience sampling was used because this sampling method is fast, easy, and cost effective (Wan et al. 2015), and researchers are able to efficiently access survey sites and respondents (Fraenkel and Wallen 2006, Tansey 2007).

Questionnaires were distributed to 320 consumers from 20 to 60 years of age in two Chinese metropolitan cities (Shanghai and Shenzhen) in 2013. These two cities were chosen because (1) Shanghai is the center for furniture manufacturing and distribution in East China (Cao et al. 2004) and Shenzhen is one of the special economic zones located in Guangdong Province—the largest furniture manufacturing base in South China (Wan et al. 2015); (2) being ranked among the top three richest cities in China (SINA Corporation 2016), Shanghai and Shenzhen are regarded as the top target markets for high-end products. The consumers in these two cities can not only afford high-end products but also provide valuable insights into this niche market.

In the survey, respondents were first asked about their WTP a premium for eco-friendly children's furniture. To measure the level of WTP, the respondents who stated a WTP were further asked how much more they were willing to pay for such products, contingent on a specific hypothetical scenario wherein if they chose to buy more expensive eco-friendly children's furniture, they had to give up some other products due to a limited budget. The purpose of reminding respondents of their budget constraint was to obtain more realistic estimates of premiums paid for such specific products (Cummings and Taylor 1999, Kotchen and Reiling 1999). To investigate factors that may affect consumer WTP, respondents' sociodemographic characteristics, LOHAS orientation, and environmental perceptions were explored.

For the interview data, part of the data were used in two other studies (i.e., Wan et al. 2015, Wan and Toppinen 2016), as mentioned earlier in this article, while the rest of the data were used in the present study.

### Data analysis

The empirical data were analyzed using the Statistical Package for the Social Sciences (SPSS) software and STATA software. First, descriptive statistics were applied to describe respondents' sociodemographic characteristics and to examine their LOHAS orientation and environmental perceptions of children's furniture. Features of LOHAS were mapped using five statements that focus on the cost of eco-friendly products, health and sustainability goal setting of the family, importance of using eco-friendly products for children's healthy growth, and perceived consumer effectiveness (Wan et al. 2015). These five statements are: (1) buying eco-friendly products means paying higher prices; (2) healthy lifestyle is our family's goal; (3) sustainable lifestyle is our family's goal; (4) using eco-friendly products is important for children's healthy growth; and (5) choosing eco-friendly products will not limit my lifestyle. Consumer environmental perceptions were examined based on the nine given attributes of eco-friendly furniture, namely, scentless, nonpoisonous, durable, recyclable, use of natural material, adoption of environmental certification, verification of legal origin of wood, well-known producer, and prohibition of the use of child labor. The original variables representing both consumers' LOHAS orientation and environmental perceptions were measured using a five-point scale (5 = totally agree, 4 = partly agree, 3 = neutral, 2 = partly disagree, 1 = totally disagree).

In order to have a comprehensive evaluation of consumers' LOHAS orientation and environmental perceptions, we calculated the average score of LOHAS and an aggregate score of environmental perceptions, with the latter using the principal component analysis (PCA) method. The formula to calculate the aggregate score of environmental perceptions is as follows:

$$\begin{aligned}\text{Aggregate score} &= (\text{Factor}_1 \times \text{VCR of factor}_1 \\ &\quad + \text{Factor}_2 \times \text{VCR of factor}_2 + \ldots \\ &\quad + \text{Factor}_m \times \text{VCR of factor}_m) \div \text{Accumulated VCR}\end{aligned} \tag{1}$$

where VCR stands for variance contribution rate.

An ordered probit regression model adapted from Daykin and Maffatt (2002) was applied to analyze the correlations between a dependent variable (i.e., consumer WTP a price premium for eco-friendly children's furniture) and three independent variables (including respondents' sociodemographic variables, LOHAS orientation, and environmental perceptions). In the model, the dependent variable $y$ can take on values 0, 1, 2, 3 . . . $J$. Let $y_i$ ($-\infty < y_i < \infty$) be the observed variable of $y^*$; let $y_i^*$ be an observed outcome that represents consumer $i$'s response to the WTP options; let $x_i$ be the vector of independent variables that explains the

individual characteristics of respondents; and let μ be a normally distributed error term. The ordered probit model is based on the assumption that $y_i$ is determined by:

$$y_i^* = x_i\beta + \mu_i$$

$$\mu_i \sim \text{Normal}(0, 1)$$

$$i = 1, 2, 3...n \quad (2)$$

where β is the vector of an unknown parameter, which is estimated by means of maximum likelihood estimation (MLE).

## Validity and reliability

To ensure the validity and reliability of the results of the study, several aspects were taken into account during different phases. First, the questionnaire used in the study was based on some prior quantitative research and literature review. Second, to assess the feasibility, reliability, and validity of the questionnaire, prior to conducting the survey, a pretest of the questionnaire was performed. The original questionnaire was sent to some consumers who bought or intended to buy children's furniture and was then revised where considered necessary. The people participating in the pretest of the questionnaire should meet our selection criteria, that is, they should (1) be located in Shanghai or Shenzhen; (2) be middle-class consumers; (3) be married and have children; and (4) have already bought children's furniture or have the intention to buy children's furniture. Third, to overcome language barriers and to ensure the acquisition of accurate information during the survey, the entire data collection was conducted in Chinese, which is the native language of both the researcher and participants. Fourth, to avoid response bias due to the lack of knowledge or misunderstanding of the concept of eco-friendly products and LOHAS, a definition was provided in an introductory paragraph of each survey. Fifth, to help participants fully understand the questions, the researcher tried to create an open atmosphere by providing needed assistance with clear explanations. Each interview lasted between 20 and 25 minutes, and the participants were assured anonymity.

# Results

## Sociodemographic profile of respondents

Of the total 320 returned questionnaires, 21 questionnaires were rejected due to incomplete responses, resulting in 299 valid questionnaires. Of the 299 respondents analyzed, 146 were from Shanghai and 153 were from Shenzhen, with females (67%) outnumbering males (33%). A vast majority of respondents (95%) were married. Since 86 percent of respondents were aged 20 to 40 years and 71 percent of respondents had received college or university degrees, our sample represented a relatively young and well-educated urban population. Respondents' occupations were distributed unevenly, with 60 percent of respondents being corporate employees, 11 percent being entrepreneurs, 7 percent being government employees, and the remaining 22 percent being teachers, blue-collar workers, housewives, and unemployed individuals. The data also revealed that a large majority of respondents (82%) earned a monthly income in the range of CNY5,000 to 40,000 (ca. US$792 to $6,336), with 25 percent earning CNY5,000 to 10,000 (ca. US$792 to $1,584), 35 percent earning CNY10,000 to 20,000 (ca. US$1,584 to $3,168), and 22 percent earning CNY20,000 to 40,000 (ca. US$3,168 to $6,336). Because the average monthly income in China in 2013 was CNY4,290 (ca. US$680; China Statistical Yearbook 2014), our sample represented middle- to high-income consumers in China.

## Respondents' stated WTP for eco-friendly children's furniture

When respondents were asked about their WTP for eco-friendly children's furniture, 290 out of the 299 respondents (97.7%) stated a WTP, and only nine respondents (2.3%) stated an unwillingness-to-pay (UTP). In order to measure the level of WTP, those 290 respondents were further asked to select a price premium range from a set of options. In total, six premium range options (excluding 0%) were provided: (1) <5 percent, (2) 5 to 10 percent, (3) 11 to 20 percent, (4) 21 to 30 percent, (5) 31 to 50 percent, and (6) >50 percent. The distribution of the 299 respondents' level of WTP is depicted in Figure 2.

As shown in Figure 2, about 17.7 percent of respondents stated a WTP of a less than 5 percent premium, and 35 percent stated a WTP of 5 to 10 percent. Therefore, slightly over half of respondents (approximately 53%) were willing to pay a maximum of 10 percent premium. For the rest of respondents (45%), 21.7 percent preferred to pay a 11 to 20 percent premium, 13 percent preferred to pay 21 to 30 percent, 4.3 percent preferred to pay 31 to 50 percent, and 6 percent preferred to pay a more than 50 percent premium.

## Factors influencing WTP estimates for eco-friendly children's furniture

As mentioned earlier in this article, an ordered probit regression model was used to investigate the factors influencing consumer WTP for eco-friendly children's furniture. Respondents' sociodemographic characteristics, LOHAS orientation, and environmental perceptions were selected as independent variables in this analysis. Table 1 shows the ordered probit estimation results of consumers' overall WTP for eco-friendly children's furniture.

According to the estimation results, there were statistically significant relationships between respondent WTP and their marital status, education level, LOHAS orientation,

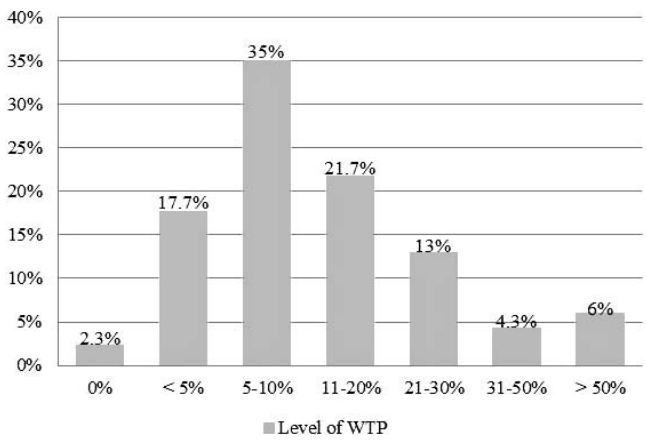


*Figure 2.—Respondents' stated willingness-to-pay (WTP) for eco-friendly children's furniture.*

*Table 1.—Ordered probit estimates for overall willingness-to-pay for eco-friendly children's furniture.*

| Variable | Coefficient[a] | Standard error | *P* |
|---|---|---|---|
| Gender (male = 0; female = 1) | 0.0059 | 0.1304 | 0.964 |
| Marital status (single = 0; married = 1) | −0.7466** | 0.3074 | 0.015 |
| Age | 0.0027 | 0.1002 | 0.978 |
| Education | 0.3713*** | 0.1002 | 0.000 |
| Income | 0.0715 | 0.0591 | 0.226 |
| LOHAS | 0.5170*** | 0.1470 | 0.000 |
| Environmental perceptions | −0.1174* | 0.0610 | 0.054 |
| Cut1 | 0.0218 | | |
| Cut2 | 1.2209 | | |
| Cut3 | 2.2568 | | |
| Cut4 | 2.8978 | | |
| Cut5 | 3.4639 | | |
| Cut6 | 3.7798 | | |
| Log likelihood | −480.25731 | | |
| Chi-square | 35.05*** | | |
| Pseudo $R^2$ | 0.0352 | | |

[a] Significance levels: * = $P < 0.10$; ** = $P < 0.05$; *** = $P < 0.01$.

and environmental perceptions. The negative coefficient of the marital status variable indicates that married consumers were less willing to pay a higher price premium for eco-friendly children's furniture than single consumers, while the positive coefficients of both the education and LOHAS variables indicate that the respondents with higher education levels and stronger LOHAS orientation were more willing to pay a higher premium than the respondents with lower education levels and weaker LOHAS orientation. Further, the negative coefficient of the environmental perceptions variable suggests that consumer WTP is negatively correlated with their environmental perceptions, indicating that the Chinese consumers with environmental perceptions were less willing to pay a higher price premium for eco-friendly children's furniture.

Table 2 presents estimates of the marginal effects of independent variables on different levels of WTP (i.e., the dependent variable). Regarding the marginal effect of the marital status variable, from single status to married status, the probability of consumer UTP (WTP 0), WTP a less than 5 percent premium (WTP 1), and WTP a 5 to 10 percent premium (WTP 2) would increase by 3.27, 16.55, and 9.7 percent, respectively; meanwhile, the probability of WTP a premium of 11 to 20 percent (WTP 3), 21 to 30 percent (WTP 4), 31 to 50 percent (WTP 5), and more than 50 percent (WTP 6) would decrease by 7.45, 9.94, 4.57, and 7.55 percent, respectively. To sum up, the probability of consumer WTP a premium of no greater than 10 percent (i.e., ≤10%, hereafter referred to as a lower premium) would increase by 29.52 percent, while the probability of WTP a premium of more than 10 percent (i.e., >10%, hereafter referred to as a higher premium) would decrease by the same amount.

In terms of the marginal effect of the education level, given an increase in the education level, the probability of WTP a premium of 11 to 20 percent, 21 to 30 percent, 31 to 50 percent, and more than 50 percent would increase by 3.71, 4.94, 2.27, and 3.76 percent, respectively. To sum up, the probability of WTP a higher premium (>10%) would increase by 14.68 percent. Meanwhile, the probability of WTP a lower premium (≤10%) would decrease by the same amount.

Similarly, given an increase in the LOHAS orientation, the probability of WTP a premium of 11 to 20 percent, 21 to 30 percent, 31 to 50 percent, and more than 50 percent would increase by 5.16, 6.88, 3.17, and 5.23 percent, respectively. To sum up, the probability of WTP a higher premium would increase by 20.44 percent. Meanwhile, the probability of consumer WTP a lower premium would decrease by the same amount.

In contrast, given an increase in environmental perceptions, the probability of consumer UTP, WTP a less than 5 percent premium, and WTP a 5 to 10 percent premium would increase by 0.51, 2.60, and 1.53 percent, respectively. To sum up, the probability of consumer WTP a lower premium would increase by 4.64 percent. Meanwhile, the probability of WTP a higher premium would decrease by the same amount.

## Discussion and Conclusions

By applying a quantitative survey approach, this study examined Chinese consumers' WTP a price premium for eco-friendly children's furniture and the factors influencing it. Based on the descriptive analysis results, an overwhelming majority of respondents (nearly 98%) would be willing to pay a premium for eco-friendly children's furniture. Compared with WTP estimates for other similar products (i.e., certified wood products) conducted in other countries, this percentage is much higher than those reported in previous studies, with the highest being 81 percent (Winterhalter and Cassens 1993). However, our result is consistent with that of a recent survey conducted by HKTDC (HKTDC Research 2017), which stated that over

*Table 2.—Estimated marginal effects of independent variables on different levels of willingness-to-pay (WTP) for eco-friendly children's furniture.*

| Variable | WTP 0 (0%) *dy/dx* | WTP 1 (<5%) *dy/dx* | WTP 2 (5–10%) *dy/dx* | WTP 3 (11–20%) *dy/dx* | WTP 4 (21–30%) *dy/dx* | WTP 5 (31–50%) *dy/dx* | WTP 6 (>50%) *dy/dx* |
|---|---|---|---|---|---|---|---|
| Gender (male = 0; female = 1) | −0.0003 | −0.0013 | −0.0008 | 0.0006 | 0.0008 | 0.0004 | 0.0006 |
| Marital status (single = 0; married = 1)[a] | 0.0327* | 0.1655** | 0.0970** | −0.0745** | −0.0994** | −0.0457** | −0.0755** |
| Age | −0.0001 | −0.0006 | −0.0004 | 0.0003 | 0.0004 | 0.0002 | 0.0003 |
| Education[a] | −0.0163** | −0.0823*** | −0.0482*** | 0.0371*** | 0.0494*** | 0.0227*** | 0.0376*** |
| Income[a] | −0.0031 | −0.0159 | −0.0093 | 0.0071 | 0.0095 | 0.0044 | 0.0072 |
| LOHAS[a] | −0.0227** | −0.1146*** | −0.0672*** | 0.0516*** | 0.0688*** | 0.0317*** | 0.0523*** |
| Environmental perceptions[a] | 0.0051 | 0.0260** | 0.01525* | −0.0117* | −0.0156* | −0.0072** | −0.0119* |

[a] Significance levels: * = $P < 0.10$; ** = $P < 0.05$; *** = $P < 0.01$.

90 percent of the interviewed Chinese consumers would be willing to pay a premium for eco-friendly furniture.

Of those respondents with WTP a price premium, 53 percent of them stated a WTP of no greater than 10 percent, while 45 percent stated a WTP of more than 10 percent, with 6 percent even being willing to pay a more than 50 percent premium for eco-friendly children's furniture. These figures are also much higher than those found in previous studies, with the highest premium of 39.3 percent reported by Aguilar and Cai (2010). The large differences in WTP estimates between the present study and previous studies may be due to different products studied (i.e., eco-friendly children's furniture vs. eco-certified wood products) and different locations where the survey was administered (China vs. other countries). According to Ozanne and Vlosky (1997), consumer WTP a price premium for certified wood products varies depending on the item studied. Following Cai and Aguilar (2013), consumers in different countries may have different WTP estimates, although the same survey format and eliciting method are used. High WTP estimates found in the current study may reflect an increasingly important position of children in the family resulting from China's ''one-child policy'' and Chinese parents' willingness to provide good living conditions for their children. Another possible explanation for our high WTP estimates may be due to the presence of acquiescence bias or social desirability bias. When survey respondents give responses to questions, they may have a tendency to give a positive answer to all the questions regardless of a ''true'' answer (Watson 1992) or to answer the questions in a manner viewed favorably by others (Bellizzi and Bristol 2005). Since China is a country with a high-context culture, respondents may not be willing to give negative answers or may intentionally avoid potentially embarrassing answers, which would lead to overstated WTP estimates.

Based on the results of the ordered probit model, four factors were identified to influence consumer WTP a premium for eco-friendly children's furniture, namely, marital status, education level, LOHAS orientation, and environmental perceptions. Overall, the probability of WTP a higher premium for eco-friendly children's furniture was associated with single consumers and the consumers with higher education levels and stronger LOHAS orientation, whereas the probability of WTP a lower premium for eco-friendly children's furniture was associated with environmental perceptions.

The reason why single consumers were more willing to pay a higher premium than married consumers may be that single consumers have more disposable income, since they do not bear the financial burden of supporting a family, especially since single consumers in China normally do not have children; therefore, they take fewer factors into consideration than married consumers when making purchase decisions. Moreover, the result regarding higher-educated consumers and the consumers with stronger LOHAS orientation being more willing to pay a higher premium is a rather logical outcome. In general, with the increase of education level and LOHAS orientation, consumers would gain more environmental knowledge and receive more benefits from eco-friendly products, which would in turn motivate them to have a higher premium acceptance for such products. Following NMI (2008), LOHAS consumers generally have higher salaries and higher education levels.

According to Liu et al. (2006), Chinese consumers have relatively low environmental awareness and are inclined to be skeptical about eco-labels; however, they would still be willing to pay a certain premium for certified forest products. That may be the reason why the Chinese consumers with some degree of environmental perception were only willing to pay a lower premium for eco-friendly children's furniture.

On the other hand, in contrast with the findings of previous studies (e.g., Mainieri et al. 1997, Ozanne et al. 1999, Spinazze and Kant 1999, Aguilar and Vlosky 2007, Cha et al. 2009), no statistically significant income or gender effects on WTP estimates were found, which was unanticipated. We suggest several explanations for the insignificant income effect. First, a possible explanation is that Chinese consumers may tend to spend a relatively small proportion of their income on children's furniture, although their household expenditures on children have increased. Hence, the income effect on WTP may be small and insignificant (Seller et al. 1985). Second, our sample represented middle- to high-income consumers in China, which narrowed the income range and might cause the statistical insignificance of the income variable. Third, compared with other influencing factors, income may have a limited influence on their purchase decisions of higher-priced eco-friendly products because middle to high-income consumers are generally wealthy. Fourth, since parents always wish to provide their children with the best living environment, income may not be a crucial factor influencing their purchase decisions on eco-friendly children's furniture. Both the third and fourth possibilities also explain the reason why gender did not significantly influence consumer WTP in the present study.

In conclusion, the present study not only addresses a very timely and relevant research topic on green consumer behavior in China, but also fills a critical research gap in the promising Chinese children's furniture market. It provides a comprehensive review of extant literature on consumer WTP for environmentally friendly wood products based on the outcomes of various studies conducted previously. Further, in addition to examining differences in WTP for eco-friendly children's furniture across sociodemographic characteristics, the study incorporates an analysis of effects of factors from an environmental and lifestyle perspective, which can be considered as key factors to be investigated for their influence on consumer green purchase intention and/or behavior in future studies.

In addition to the theoretical contributions described above, the findings of the study have significant managerial implications. First, the higher premiums that consumers were willing to pay for eco-friendly children's furniture found in our study may indicate the development potential in this niche market and Chinese consumers' increasing support for such products, which motivate furniture producers to implement sustainable business practices. To meet the growing demand for eco-friendly children's furniture and to enhance company competitiveness, the Chinese furniture producers should develop value-creation strategies by adding eco-friendly attributes to the product, for instance, adoption of environmental certification and verification of legal origin of wood (Wan et al. 2015). Second, the research provides valuable insights for furniture producers by indicating that environmental perceptions and the LOHAS lifestyle were good predictors of consumer

WTP for eco-friendly children's furniture. For example, the findings reveal that environmental perceptions were one of the prime factors motivating consumers to pay a premium. However, due to Chinese consumers' lower environmental awareness and doubt about environmental claims made by manufacturers, they would only be willing to pay a lower premium. To raise the public's environmental awareness and to improve consumers' green consumption consciousness, the Chinese government should strengthen environmental publicity and popularize environmental education to both enterprises and consumers. To increase public recognition and acceptance for eco-labels, the government should monitor the credibility and trustworthiness of messages carried by eco-labels. For producers and marketers, they should not only introduce products with eco-labels, but also make efforts to develop consumer trust in eco-labels. To this end, marketers can run campaigns to promote public awareness of eco-labels and inform citizens about the meaning and availability of eco-labels as well as the benefits of using eco-labeled products (Joshi and Rahman 2015). As a whole, the findings of this study can serve as a useful reference for policy makers, furniture producers, and wood material suppliers that are currently planning to enter eco-friendly markets where price premiums might exist.

The present study has several limitations. First, due to the relatively small sample size and the nonrandom convenience sampling conducted in the first-tier cities of Shanghai and Shenzhen, results of the study are primarily indicative and are not generalized beyond this study sample. Second, since single respondents only accounted for 5 percent of the sample size, it may lead to a risk of sampling bias. Third, as mentioned earlier in the paper, there may exist some degree of acquiescence bias or social desirability bias. Fourth, because this research is based solely on respondents' SP rather than their actual purchase behavior, there may be a discrepancy between them. However, the method used to inquire about consumers' WTP in the current study is considered better than the purely SP method because it was contingent on a specific hypothetical scenario and could thus, to some extent, control ''cheap talk'' (Lusk 2003).

Nevertheless, as a preliminary step in examining Chinese consumers' WTP for eco-friendly children's furniture, this study lays the groundwork and opens up interesting avenues for future research. To reach more robust results and to explore product or regional differences in consumer WTP, the research design used in the present study could be applied to other similar products (e.g., adult furniture) or cities (e.g., second-tier cities) in China by applying more proper sampling techniques. Furthermore, when implementing WTP studies in the future, measures should be taken to minimize bias caused by the survey method. To prevent sampling bias, equal numbers of single and married consumers may be chosen to participate in the interview to improve convenience sampling. In addition, survey participants should be presented a situation that mimics an actual purchase situation as closely as possible, including the use of detailed scenario descriptions and product profiles that bundle various characteristics (e.g., price, eco-friendly labels, and origin; Cai and Aguilar 2013). Methodologically, using revealed preference instead of SP elicitation is recommended for future research.

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