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Why is green consumption easier said than done? Exploring the green consumption attitude-intention gap in China with behavioral reasoning theory



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ABSTRACT

Many consumers have shown positive attitudes towards green consumption; however, these attitudes do not necessarily translate into intentions or behaviors. To analyze this attitude-intention and hence behavior gap, this paper employs behavioral reasoning theory which extends the traditional theory of planned behavior by including context-specific reasons, in addition to values and global motives as possible determinants of intentions and behaviors. This study collected first-hand data by conducting a face-to-face survey with 839 Chinese consumers from four cities in Jiangsu Province and eight cities in Anhui Province, and applies structural equation modeling for data analysis. The results indicate that reasons for green consumption affect intentions only indirectly through attitudes, while reasons against green consumption impact intentions in a direct way, bypassing attitudes. In other words, reasons against green consumption impede intentions, despite positive attitudes. At the same time, both types of reasons are influenced by environmental values. To bridge the attitude-intention gap, we propose measures that the governments and businesses can take to raise the environmental values of consumers, and reduce their “reasons against” and increase their “reasons for” green consumption.

1. Introduction

Rapid industrialization leads to economic growth and social changes by transforming the economy from a primarily agricultural one to that based on massive manufacturing. In the meanwhile, the environment suffers in the industrialization process from various problems such as pollution, resource depletion, environmental degradation, eutrophication, and climate change which all hinder sustainable development. In recent years, people are becoming more aware of the impacts of their purchase behavior on global warming and the importance of sustainable consumption. Green consumption, as an alternative to the traditional way of consumption, refers to an ecological consumption model that seeks to minimize the negative impacts of individual behaviors on the ecological environment while meeting human needs (Pieters, 1991; Carlson et al., 1993). Green consumption covers three stages: Product purchase, product use, and product disposal (Wu et al., 2016).

This study aims to examine factors that determine consumers' intention and hence behavior to shift to green consumption. Practices of green consumption covered in the study range from the purchase of green

food to green clothing, green products, green living, and green traveling. Despite consumers' positive attitude toward green consumption, consumers do not necessarily possess purchase intention and hence perform actual purchase behavior. Indeed, previous studies have identified the attitude-intention gap in green consumption; examples include the rare engagement in green consumption of those who claimed to be willing to protect the environment (Maloney and Ward, 1973). In the United States, for example, Nolan et al. (2008) found that while residents claimed to save energy, first and foremost, to protect the environment, the correlation between the positive attitude of environmental protection and actual energy-saving behavior was only as low as 6%. In other words, green consumption behavior still stays in the commitment stage (Teng and Chang, 2014). This attitude-intention gap has confused both policy-makers who formulate greening policies and manufacturers who invest in green product production. The gap also offsets the benefits of technological progress and ultimately affects the development of the green market (Wang et al., 2012). Therefore, we need to explore factors inducing the gap between consumers' green consumption attitudes and green consumption intention.

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In [Chen and Zhao's \(2015\)](#) study, two stages were identified in analyzing the attitude-behavior gap in green consumption: The attitude-intention gap and the intention-behavior gap. In this study, we aim to employ behavioral reasoning theory to examine the first stage of the attitude-intention gap in green consumption and find out the reasons inducing such gap. Put another way, this paper addresses a major research question: "What are the determinants of consumers' intention to shift to green consumption?" To answer the question, behavioral reasoning theory which expands the traditional theory of planned behavior by introducing the concepts of "reasons" and "beliefs", is used as the theoretical framework for analysis. First-hand empirical data was collected by conducting a face-to-face survey in Jiangsu Province and Anhui Province in China. The study contributes to the theoretical debate on behavioral theories. In practice, identification of such reasons could help design policy measures and business strategies that promote actual green consumption.

2. Literature review and hypotheses

One widely used theory to account for purchase intention and behavior is the theory of planned behavior (TPB). The theory was first proposed by [Ajzen \(1991\)](#) and was then widely applied in numerous empirical studies. TPB suggests that three constructs, namely attitudes, subjective norms, and perceived behavioral control affect an individual's intention. This intention, in turn, influences behavior. Based on TPB, several studies have examined the green consumption behaviors of Chinese consumers. The results show that an individual who (i) has a positive attitude towards green consumption ([Wang and Wang, 2013](#)), (ii) aligns with social norms that support green consumerism ([Sheng et al., 2019](#)), and (iii) has consciousness toward positive factors ([Zhang and Li, 2017](#)), are more likely to have a positive intention toward green consumption and hence are more likely to practice green consumption.

Despite TPB has been widely used in empirical work, these studies have also suggested the need for a review of the theory. In particular, they have pointed out the weak and often non-existent link between attitudes and behaviors under this framework ([Claudy et al., 2013](#)). Concerning sustainability issues, [Vermeir and Verbeke \(2006\)](#) argued that although the public has an increasing concern and a positive attitude towards sustainable food consumption practices, their behavioral patterns are not necessarily univocally consistent with their attitudes. In particular, the low perceived availability of sustainable products explains why the purchase intention remains low for consumers. Similarly, according to a survey by Deloitte Global, while 93% of consumers showed a positive attitude towards new energy vehicles, China's new energy vehicles did not sell well. The new energy market is seen as an "embarrassing situation" too where the concept is well received but not supported with actual spending ([Ye and Zhou, 2012](#)). Globally, studies of [Eurobarometer \(2005\)](#) and [Claudy et al. \(2011\)](#) also found that while consumers showed strong interest in renewable energy, the renewable energy market of many countries grew slowly. In summary, various studies consistently conclude that attitude alone is an insufficient predictor of behavioral intention or behavior ([Vermeir and Verbeke, 2006](#)).

As the originator of TPB, [Ajzen \(2020\)](#) agreed that TPB is, in principle, open to the inclusion of additional predictors as long as the following criteria are met: (i) The proposed variable is behavior-specific and conforms to the principle of compatibility; (ii) it is possible to conceive the proposed variable as a causal factor determining intention or action; (iii) the proposed additions are conceptually independent of the theory's existing predictors; (iv) the factor considered is potentially applicable to a wide range of behaviors.

One of the approaches which incorporates additional predictors in TPB is [Westaby's \(2005\)](#) behavioral reasoning theory (BRT). The inclusion of the concept of "reasons" in BRT is thought to "provide a more complete understanding of human decision-making and behavior" ([Westaby et al., 2010](#)). "Reasons" in this context refer to reasons that lead an individual to practice or reject a particular behavior. These reasons are

considered to connect an individual's values/beliefs, intention and behavior, and global motives, a term that refers to the three elements of attitudes, subjective norms, and perceived behavioral control in TPB ([Westaby, 2005](#)).

Reasons influence global motives and intentions because individuals use them to "justify and defend their actions, which promotes and protects their self-worth" ([Westaby, 2005](#), p.98). Individuals, therefore, find their behavior justifiable and reasonable and can "avoid psychological discomfort and cognitive dissonance" ([Claudy and Peterson, 2014](#), p.175). Since its introduction, BRT has been applied to identify factors affecting behaviors that are not fully explained by global motives that are at the center of TPB. For instance, the theory has helped explain volunteering for nonprofit organizations ([Briggs et al., 2010](#)), decision-making in leadership ([Westaby et al., 2010](#)), the underuse of urban bicycle commuting ([Claudy and Peterson, 2014](#)), consumers' views on innovation ([Claudy et al., 2015](#)), entrepreneurial behavior ([Miralles et al., 2017](#)), generosity decisions ([Nicholls and Schimmel, 2016](#)), adoption of m-banking ([Gupta and Arora, 2017](#)), adoption of educational technology ([Karapanos et al., 2017](#)), the impact of brand reputation on the consumption of organic food ([Ryan and Casidy, 2018](#)), and consumers' sustainable clothing consumption ([Diddi et al., 2019](#)).

In the field of green consumption, a higher cost in terms of money, energy, and time is involved in the behavior, compared with ordinary consumption. Therefore, before making the final action, consumers will reasonably evaluate their reasons for and against green consumption. For example, despite strong attitudes towards environmentalism, high costs may hinder such an intention from being formed, and therefore the behavior does not follow.

With the BRT as the framework, this paper seeks to clarify the reasons for the attitude-intention gap of green consumption and its influential factors.

2.1. Role of intention towards behavior

Similar to other behavioral intention theories such as TPB ([Ajzen, 1991](#)) and the theory of reasoned action ([Fishbein and Ajzen, 1975](#)), BRT assumes that intention is closely linked to behavior ([Westaby, 2005](#)). Both theoretical frameworks and empirical work have also suggested such an association ([Ajzen, 2001](#); [Wanberg et al., 2005](#); [Westaby et al., 2010](#)). This paper also makes use of this assumption.

2.2. Role of reasons

Reasons refer to the "specific subjective factors people use to explain their anticipated behavior" ([Westaby, 2005](#), p.100). Reasons in BRT are classified into two broad sub-dimensions, namely "reasons for" and "reasons against" ([Westaby, 2005](#), p.100). These two types of reasons are not "just opposites of each other"; they are "qualitatively distinct constructs" that have different impacts ([Claudy et al., 2015](#), p. 539).

Reasons are different from global motives in the sense that reasons are context-specific and refer to the particular issue in question, while global motives relate to "broad substantive factors that consistently influence intentions across diverse behavioral domains" ([Westaby, 2005](#), p.98). Reasons are also distinguished from beliefs by the "temporal orientation they may take in memory" ([Westaby, 2005](#), p. 100). [Westaby \(2005\)](#) explains that beliefs are widely "construed and can represent many forms of thoughts", while the focus of reasons is on "the cognitions people use to explain their behavior" ([Westaby, 2005](#), p. 100). Three schools of thoughts – sense-making proposed by [Thomas et al. \(1993\)](#), psychological coherence by [Nowak et al. \(2000\)](#), and functional theorizing by [Snyder \(1992\)](#) – all agree that individuals deduce information to evaluate the acceptability of different options. After evaluation, individuals justify their behaviors with reasons for and against such actions. These reasons, in addition, can act independently of their impacts on global motives and act directly on intentions. Therefore, in BRT, reasons are theorized to affect intention both indirectly and directly.

Indirectly, reasons may be antecedents to each of the three components of global motives (Westaby, 2005; Westaby et al., 2010). In this paper, we will discuss attitude only because our research focus is on the attitude-intention gap. Attitude reflects an individual's positive or negative evaluation of a specific behavior and the formation of consumers' attitude is based on their reasoning (Myry et al., 2009). Once an individual has strong rationality to support a certain type of behavior, he will produce a positive and supportive evaluation of this behavior, thereby forming the necessary behavioral motivation (Pennington and Hastie, 1988). For example, positive reasons to support green consumption arising from personal interests or environmental benefits can prompt consumers to have a positive attitude. On the contrary, reasons that do not support green consumption due to considerations such as costs, risks, and value barriers may harm consumers' green consumption attitudes (Dhir and Goyal, 2020). Therefore, this study proposes the following hypotheses:

H1a. Consumers' reasons for green consumption have a positive impact on their green consumption attitudes.

H1b. Consumers' reasons against green consumption have a negative impact on green consumption attitudes.

Directly, reasons may explain intentions over and above that predicted by global motives (Westaby, 2005; Westaby et al., 2010). In some cases, these reasons are strong enough to affect intentions in a way that overrides the influence of global motives. In the context of green consumption, consumers would seek the reason that has the most explanatory power to coordinate their cognitive dissonance and enhance their confidence in making the behavioral decisions on performing green consumption behavior at last. Such factors, according to Wei et al. (2019), are utility value, environmental value, and psychological value of green goods. Unlike the traditional behavioral intention models, BRT considers behavioral reasons as a predictor of individual behavioral decisions. In other words, the reasons for and against green consumption can directly affect consumers' green consumption intentions (Claudy et al., 2013). For example, when the reasons against green consumption such as high costs dominate the thinking, even if consumers have a positive attitude, they will eventually refuse to make the purchase. Therefore, this study proposes the following hypotheses:

H2a. Consumers' reasons for green consumption have a positive impact on green consumption intentions.

H2b. Consumers' reasons against green consumption have a negative impact on green consumption intentions.

In BRT, beliefs and values are expected to influence reasons (Westaby, 2005). Beliefs and values are deeply rooted in human beings – they are a set of cognitive and value judgment systems that form an individual's subjective view and evaluation of the objective world, and are enduring and stable (Schwartz, 1994). That is to say, the derivation of reasons is not generated independently of beliefs and values. Individuals' defense of their own behavior involves the cognitive process that includes beliefs and values (Westaby, 2005); therefore, beliefs and values can affect an individual's judgment on expected behavior.

Three types of beliefs are posited by TPB and they correspond to the three global motives – behavioral beliefs for attitudes, normative beliefs for subjective norms, and control beliefs for perceptions over control (Ajzen, 2006). As this study focuses on the attitude-intention gap only, behavioral beliefs over environmental values are of relevance. Stern et al.'s (1999) value-belief-norm theory incorporates environmental values into the value system for the first time. One way in which these values are formed is when individuals include nature into their self-concepts and generate their sense of ecological responsibility (Wang and Zhou, 2019).

Environmental belief refers to the individual's judgment that a certain act will cause beneficial or harmful consequences to the natural environment and the belief that he should hold responsibility for the

environmental consequences of his behavior (Mi and Lu, 2018). The biophilia hypothesis posits that human beings have a psychological tendency to attach to the environment. Destroying the environment is considered self-harm when individuals feel they have a close connection with nature. An example is organic products. Since the production of organic food is consistent with consumers' environmental values, consumers with positive environmental beliefs are, therefore, more willing to accept organic food (Ricci et al., 2018). Meanwhile, consumers' trust towards environmentally-friendly products is often undermined by scandals, unsubstantiated "green" claims, inconsistent standards, monitoring, and assessment practices; therefore, consumers tend to have a reservation in purchasing green products, especially when a premium is charged (Nuttavuthisit and Thøgersen, 2017; Yadav and Pathak, 2017). In this sense, consumers' environmental values may affect both the "reasons for" and "reasons against" green consumption. Therefore, the study proposes the following hypotheses:

H3a. Environmental values that are in support of environmental protection have a positive impact on consumers' reasons for green consumption.

H3b. Environmental values that are in support of environmental protection have a negative impact on consumers' reasons against green consumption.

2.3. Role of global motives

The role of global motives in BRT is similar to that of TPB, covering attitude, subjective norm, and perceived behavioral control. In other words, as an individual possesses a positive attitude towards a behavior, experiences social pressure for that behavior, and finds such behavior easy to conduct, the intention and hence behavior become more possible (Westaby et al., 2010, p.482).

In the current setting which focuses on attitudes, the more positive the consumers' attitude toward green consumption, the higher the possibility of forming green consumption intention. Attitude is a tendency of individuals to support or loathe a particular idea, object, or behavior. For example, Yang and Xing's (2009) qualitative study found that attitude is the most important factor influencing sustainable consumption behavior. Li and Chen (2017), through grounded theory, found that attitude is an internal factor that influences the intention of green purchasing behavior. In an experiment on the purchase intention of American consumers of green energy, Wisner (2007) pointed out that adding factors relating to attitude can greatly improve the prediction of purchase intention. Similarly, in a survey of Swiss households, Hansla et al. (2008) found that positive attitudes are the main predictors of consumers toward green electricity. A study in India also showed that attitude toward sustainable purchasing predicts sustainable purchase behavior (Joshi and Rahman, 2017). Accordingly, we propose the following hypothesis:

H4. Consumers' attitude toward green consumption has a positive impact on their intention of green consumption behavior.

BRT also suggests that attitudes are influenced by values (Westaby, 2005). For instance, Tversky and Kahneman (1974) argue that there is a direct path of influence between values and attitudes. This path is a result of individuals' simplification of information processing and desire to seek psychological shortcuts. This process can therefore bypass the reasoning and justification stages and be based on heuristics motives (Kahneman et al., 1982). Values influence the entire internal system of an individual and affect their specific attitudes and behavior. Dembkowski and Hamner (1994) put forward the "environmental value-attitude-system model" and suggested that environmental values are the in-depth factors that affect green consumption behaviors by affecting individuals' positive attitudes toward green consumption. Wang and Zhou (2019) also showed that environmental values can indirectly affect ecological consumption behavior through environmental attitudes. Similarly, Thompson and

Barton (1994) studied environmental issues from the ecocentric and anthropocentric angles and concluded that ecological values have a direct impact on the individual’s environmental attitude. Sogari et al. (2015) examined how environmental values and beliefs about sustainable labeling shape consumers’ attitudes towards sustainable-labeled wine. They suggested that for consumers to form a more positive attitude towards sustainable-labeled wine, it is essential for them to truly believe that the production method could benefit the environment. Nguyen et al.’s (2016) study on environmentally friendly purchasing behavior also found that consumers with stronger environmental values show higher enthusiasm and attitude toward environmentally friendly products. Therefore, this study proposes the following hypothesis:

H5. Environmental values that are in support of environmental protection have a positive impact on consumers’ green consumption attitudes.

To summarize, using the framework of behavioral reasoning theory proposed by Westaby (2005), this study assumes that environmental values are the influential factors of green consumption intention, and values also indirectly affect green consumption intention through green consumption attitude and reasons. Reasons can have an indirect effect on the intention of green consumption behavior through attitudes, and it can also bypass attitudes and directly influence intentions. The specific paths and hypotheses that we propose are summarized Fig. 1.

3. Research design

3.1. Sample selection

This study collected first-hand empirical data by conducting a survey, which has been approved by the Survey and Behavioral Research Ethics Committee at the Chinese University of Hong Kong (ref. no. SBRE-18-100). To ensure the representativeness of the data, stratified sampling was adopted. Two provinces were chosen in China, with four cities in Jiangsu Province (i.e. Southern Jiangsu: Wuxi; Central Jiangsu: Yangzhou; Northern Jiangsu: Huai’an, Lianyungang) and eight cities in Anhui Province (i.e. Southern Anhui: Xuancheng, Tongling, Ma’anshan; Central Anhui: Anqing, Hefei; Northern Anhui: Huainan, Huaibei, Fuyang). In this sense, different places across geography were selected to ensure representative sampling. Before the study began, we conducted a pilot study to improve the accuracy of the survey questions. In the formal survey, consumers aged 18 years old or above from urban areas, rural areas, counties, and villages were randomly selected to complete a face-to-face interview. Each interview took 20–30 min to finish. In total, 917 questionnaires were distributed; 839 of them were deemed valid, including 519 from Jiangsu Province and 320 from Anhui Province. The validity rate is 91.49%.

3.2. Descriptive statistics

The statistical data of the questionnaire are presented in Table 1. In

terms of gender structure, females accounted for 53.56% in Jiangsu Province and 58.13% in Anhui Province, slightly higher than males. Concerning age distribution, the two provinces were dominated by young people aged from 18 to 45, accounting for 79.19% and 80.63% respectively. Among them, the sample of 18–25 years old in Anhui Province reached 49.06%, which also partly explains why Anhui Province accounted for 60.31% of college or undergraduate education. The regional distribution of sample consumers in the two provinces was relatively even, with urban area and town samples slightly more than that in suburban and rural areas. The family of the respondents in the two provinces was dominated by small families of 4–6 or 2–3 people, which is similar to China’s average family size of 3.35 in the “Family Development Tracking Survey” released by the National Health and Family Planning Commission in 2015. In terms of family composition, families with the elderly and the young had the highest proportions, with 52.22% and 43.75% in Jiangsu and Anhui Provinces respectively. Also, nearly 70% of the respondents in Jiangsu Province had an annual household income of more than 80,000 yuan, while Anhui Province had relatively few. This is also consistent with the fact that the economic development level of Jiangsu Province is slightly higher than that of Anhui Province.

3.3. Variables and measurement

Based on the BRT hypothetical model in Fig. 1, this study incorporates five latent variables: Environmental values, green consumption attitudes, green consumption intention, reasons for and reasons against green consumption, as shown in Table 2. Concerning environmental values, we refer to the scales proposed by Chan (2001), Schwepker and Cornwell (1991), and Fransson and G orling (1999), and modify them to suit the Chinese context. As to consumers’ attitudes toward green consumption, we mainly base our measurements on the green consumption perception scale suggested by Lien et al. (2010). For consumers’ green consumption intention, we adapt the corresponding items in the green agricultural product consumption intention vector in Lao and Wu’s (2013) and Gao et al.’s (2016) studies. Reasons for and against green consumption are measured and adapted with reference to the risk perception scales proposed by Jacoby and Kaplan (1972) and Mitchell and Groatorex (1993). The scale of reasons follows the language system of Lao and Wu’s (2013) and Gao et al.’s (2016) work to approximate the actual green consumption of Chinese consumers. Each item is measured using the Likert scale and is assigned a value from 1 to 5 points, which correspond to the five levels of “strongly disagree” to “strongly agree”.

4. Results

4.1. Exploratory factor analysis

First, we perform an exploratory factor analysis using the 420 samples of odd-numbered items. The results show that the Cronbach’s alpha coefficient of the overall scale is 0.903, the KMO value reaches 0.901, and

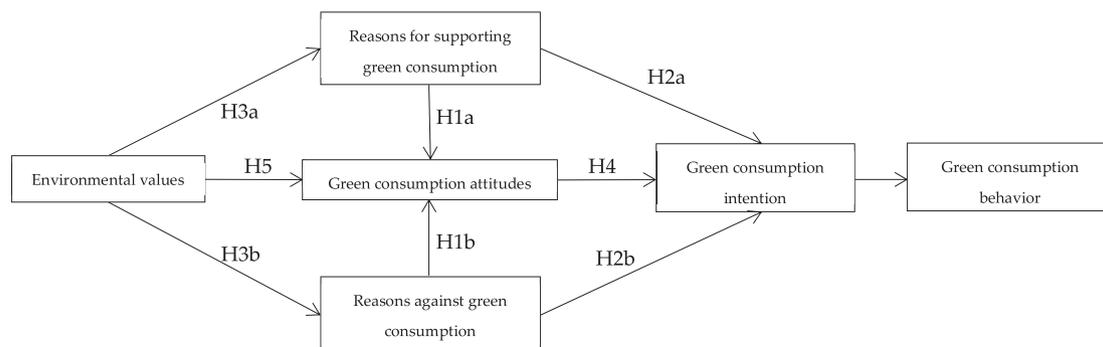


Fig. 1. Hypothetical model of the study.

Table 1
Demographic information of respondents.

Statistics characteristics	Classification indicator	Jiangsu Province (519)		Anhui Province (320)	
		Number of samples (person)	Percentage (%)	Number of samples (person)	Percentage (%)
Gender	Male	241	46.44	134	41.88
	Female	278	53.56	186	58.13
Age	18–25	124	23.89	157	49.06
	26–35	155	29.87	45	14.06
	36–45	132	25.43	56	17.50
	46–55	81	15.61	50	15.63
	56 or above	27	5.20	12	3.75
Education level	Junior high school and below	151	29.09	51	15.94
	High school or vocational training school	142	27.36	71	22.19
Place of residence	College or Undergraduate	195	37.57	193	60.31
	Graduate or above	31	5.97	5	1.56
	Urban areas	164	31.60	115	35.94
Family size	Suburbs	95	18.30	52	16.25
	Towns	146	28.13	80	25.00
	Rural areas	114	21.97	73	22.81
Are there elderly or children in the family?	1	8	1.54	4	1.25
	2–3	185	35.65	111	34.69
	4–6	296	57.03	198	61.88
	7 or above	30	5.78	7	2.19
Annual family income (Yuan)	Have children but no elderly	95	18.30	70	21.88
	Have elderly but no children	108	20.81	63	19.69
	Have elderly and children	271	52.22	140	43.75
Annual family income (Yuan)	No elderly and no children	45	8.67	47	14.69
	50,000 yuan or less	55	10.60	49	15.31
	50,001–80,000 yuan	102	19.65	79	24.69
	80,001–100,000 yuan	187	36.03	87	27.19
	100,001–200,000 yuan	133	25.63	79	24.69
	200,001 yuan or above	42	8.09	26	8.13

Table 2
Rotated factor matrix.

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
EV1	0.057	0.031	0.812	0.088	0.028
EV2	0.143	0.066	0.794	0.017	0.289
EV3	0.131	0.172	0.644	0.119	0.266
EV4	0.339	0.199	0.646	0.090	0.106
GCA1	0.164	0.403	0.184	−0.020	0.555
GCA2	0.233	0.365	0.363	0.068	0.586
GCA3	0.133	0.420	0.343	0.101	0.559
GCI1	−0.148	0.543	−0.005	0.222	0.476
GCI2	0.021	0.774	0.070	0.150	0.250
GCI3	0.082	0.726	0.211	0.096	0.351
GCI4	0.123	0.823	0.117	0.106	0.052
RF1	0.136	0.153	0.044	0.696	−0.154
RF2	0.070	0.078	−0.032	0.723	−0.003
RF3	0.156	0.094	0.204	0.645	0.469
RF4	0.068	0.094	0.178	0.649	0.435
RF5	0.305	0.066	0.142	0.515	0.287
RA1	0.748	−0.086	0.116	0.068	0.331
RA2	0.772	−0.050	0.186	0.053	0.337
RA3	0.786	0.062	0.209	0.154	0.143
RA4	0.667	0.166	0.210	0.226	0.007
RA5	0.716	0.138	0.222	0.245	0.096
RA6	0.636	0.354	0.073	0.246	−0.128

the significance level of the Bartlett spherical test is 0.000, passing the thresholds. This indicates that the questionnaire has high reliability and stability, and there are correlations among the extracted variables. In other words, the sample data are suitable for factor analysis.

Next, the study uses principal component analysis to extract common factors. The study excludes items with factor loading on two or three factors or with a common factor loading less than 0.5, and then uses the equimax method for orthogonal rotation to determine the number of variables contained in each factor. Finally, the study obtains five main factors and 22 variables. The output of the factor rotation matrix is shown in Table 2. The descriptive statistics of the latent variables and manifest

variables are presented in Table 3.

4.2. Reliability and validity tests

Then, the study uses the software SPSS24.0 to analyze the internal reliability of the five latent variables: Environmental values, green consumption attitudes, green consumption intentions, reasons for green consumption, and reasons against green consumption. The results are shown in Appendix 1. Except for the Cronbach's α coefficients of environmental values and the reason for green consumption which are slightly lower but still above the standard of 0.7, the Cronbach's α coefficients of other variables are all above 0.8. This indicates that the scale has considerable reliability and the variables have good internal consistency. To test the structural validity of the scale, the study further selects three indicators for testing: Construct reliability (CR), Kaiser-Meyer-Olkin (KMO), and Bartlett's spherical test. The results indicate that the CR values of most items are above the standard value of 0.8, and the KMO value is near the acceptable level of 0.7, while the significance levels of all items are less than 0.001, passing Bartlett's spherical test and implying good structural validity. Besides, the average variance extracted (AVE) of each variable is greater than 0.5 and the variance contribution rate is greater than 50%, indicating that the structure of each dimension in the model is assumed to be reasonable, and the corresponding indicator variables are also confirmed.

Finally, the study tests the correlation between variables with Pearson correlation coefficients. The results are shown in Appendix 2. The absolute value of the correlation coefficient between the variables is smaller than the square root of variables' AVE on the diagonal, suggesting that the variables have good discriminant validity.

4.3. Testing the hypotheses

From the exploratory factor analysis, five latent variables derived from 22 manifest variables are obtained. Next, the study uses the remaining 419 even-numbered sample data for confirmatory factor

Table 3
Descriptive statistics of the latent variables and manifest variables.

Latent variables	Manifest variables	Jiangsu Province		Anhui Province	
		Mean	SD	Mean	SD
		Environmental values (EV)	Humans need to understand how nature works and adapt to nature. (EV1)	3.81	0.891
	We should live in harmony with nature. (EV2)	3.97	0.890	4.53	0.746
	Humans are only part of nature. (EV3)	3.77	0.955	4.17	0.982
	Unless each of us recognizes the need to protect the environment, our future generations will bear the consequences. (EV4)	3.88	0.951	4.20	0.973
Green consumption attitudes (GCA)	I think there is a big difference between green consumption and ordinary consumption. (GCA1)	3.60	0.827	4.03	0.913
	I think green consumption is a very meaningful thing for environmental protection. (GCA2)	3.74	0.905	4.37	0.769
	I think green consumption is closely related to my life. (GCA3)	3.61	1.011	4.21	0.883
Green consumption intentions (GCI)	Regardless of price, I select environmentally friendly products. (GCI1)	3.15	1.026	3.36	1.163
	Before buying a product, I will pay attention to the degree of the product's impact on the environment. (GCI2)	3.34	1.010	3.59	1.067
	I will prefer to buy environmentally friendly detergents, recycled paper products, etc. (GCI3)	3.47	1.003	3.84	1.057
	I tend to buy organic fruits and vegetables. (GCI4)	3.27	1.019	3.66	1.082
Reasons for green consumption (RF)	I think most of the food I eat is contaminated with pesticides, which scares me. (RF1)	3.32	0.898	3.38	1.105
	The government did not take more measures to control environmental pollution, which made me angry. (RF2)	3.04	0.894	3.33	1.084
	Environmental pollution poses a great threat to the survival of animals and plants, which makes me angry. (RF3)	3.27	0.923	3.78	0.940
	The development of industry has caused serious pollution to the environment, which makes me frustrated. (RF4)	3.34	0.889	3.79	0.954
	I am frustrated about the smog. (RF5)	3.31	0.968	3.89	0.965
Reasons against green consumption (RA)	I would worry about buying fake green products. (RA1)	3.90	0.926	4.28	0.820
		3.91	0.947	4.36	0.771

Table 3 (continued)

Latent variables	Manifest variables	Jiangsu Province		Anhui Province	
		Mean	SD	Mean	SD
			I would worry about the quality of green products. (RA2)	3.81	1.032
	I would worry that the value of a green product is not worth its price. (RA3)	3.68	0.977	4.03	0.940
	I'm worried that if buying green products this time is an unpleasant experience, it will bring me an unhappy mood. (RA4)	3.90	0.959	4.37	0.722
	I'm worried that unqualified green products will harm my health. (RA5)	3.67	1.001	4.03	0.961
	I'm worried that if the purchase of green products is unsuccessful this time, it will waste my time if I make another purchase again. (RA6)				

analysis (CFA). Since the regression model assumes that all the independent variables have an effect on the dependent variable, structural equation modeling which allows the testing of dependencies between multiple interrelated variables is used. The results of CFA are as follows: $\chi^2 = 472.474$, $df = 198$, $p < 0.001$; CFI = 0.938; TLI = 0.927; RMSEA = 0.058; SRMR = 0.058. All the test values are at an acceptable level, indicating that the overall model has a good degree of data fit in both the theoretical and statistical senses and possesses an appropriate structure.

Table 4 summarizes the results of the structural equation model. Among the eight hypothetical paths constructed in this study, five paths are statistically significant at the level of 0.1%, and one path is significant at the level of 5%.

Specifically, reasons against green consumption do not significantly affect green consumption attitude, while reasons for green consumption positively affect green consumption attitude at the statistically significant level of 0.1%, with the standardized path coefficient as 0.241. Therefore, H1a is confirmed but H1b is rejected. On the contrary, reasons for green consumption do not have significant impacts on green consumption intention, but reasons against green consumption negatively affect green consumption intention at the significant level of 5% with the standardized path coefficient as -0.107. In other words, H2b is confirmed while H2a is rejected. In addition, environmental values affect both the reasons for and against green consumption. The respective standardized coefficients are 0.468 and -0.613, both of which are statistically significant at 0.1%. Therefore, both H3a and H3b are confirmed. Furthermore, the standardized coefficient of green consumption attitude on intention is 0.762, which is statistically significant at the level of 0.1%. The results confirm H4 and show attitude affects green consumption intention. Finally, environmental values significantly affect attitudes at the level of 0.1%, with the standardized path coefficient as 0.569. Therefore, H5 is confirmed.

The results of the structural equation model are summarized in Fig. 2.

Table 5 further shows the overall impact of reasons on green consumption intentions. The total values are calculated by summing up the path coefficients of direct effects of reasons on intentions and indirect effects of reasons on intention through attitude. The total effect of reasons for green consumption is 0.184, which is slightly higher in absolute terms than that of reasons against green consumption at -0.107. However, reasons for green consumption can only indirectly impact intentions through attitudes. On the contrary, reasons against green

Table 4
Path analysis results.

	Standardized path coefficient	Est./S.E.	Sig.	Summary
Hypothesis 1a: RF→GCA	0.241	4.977	0.000	Confirmed
Hypothesis 1 b: RA→GCA	0.092	1.640	0.101	Rejected
Hypothesis 2a: RF→GCI	0.020	0.370	0.711	Rejected
Hypothesis 2 b: RA→GCI	-0.107	-2.044	0.041	Confirmed
Hypothesis 3a: EV→RF	0.468	10.368	0.000	Confirmed
Hypothesis 3 b: EV→RA	-0.613	-16.609	0.000	Confirmed
Hypothesis 4: GCA→GCI	0.762	14.887	0.000	Confirmed
Hypothesis 5: EV→GCA	0.569	10.359	0.000	Confirmed

consumption can act directly on intentions. This pathway explains to a certain extent why consumers with positive attitudes do not necessarily perform the ultimate green consumption behavior. The difference appears to account for the green consumption attitude-intention gap and hence the attitude-behavior gap.

5. Discussion

This paper analyzes the gap between attitude and intention and hence behavior in green consumption. To answer the question of what are the determinants of consumers’ intention to shift to green consumption, this paper employs behavioral reasoning theory (BRT) as the theoretical framework and collects empirical evidence in China for analysis. Extending the traditional theory of planned behavior (TPB) by including the concepts of reasons and values, BRT allows us to explore the relationships and effects on intentions of not just attitudes, but also environmental values, and reasons for and against green consumption. The theory posits that environmental values impact consumers’ reasons for and against green consumption, and green consumption attitudes serve as a deep-seated factor in intention and consumption behavior.

Our research findings suggest that attitude remains a key prerequisite of green consumption intention and behavior. While reasons impact intentions, the pathway of such impacts of different dimensions of reasons differ. Reasons for green consumption impose impacts indirectly through attitudes, while reasons against green consumption act on intention directly. This finding aligns with the consistency theory, which argues that people will adjust their original attitudes to maintain internal consistency after receiving new information (Osgood and Tannenbaum, 1955). In the model of BRT, the final intention of individuals is theoretically influenced through different psychological paths. While green

consumption attitudes represent the degree to which consumers like or dislike the idea, reasons provide contextual factors of whether the consumers would engage in such behavior. When circumstances are conducive to green consumption behavior and reasons for green consumption dominate the cognition, individuals may weaken or ignore reasons against green consumption to avoid cognitive dissonance. Reasons for green consumerism, in addition, strengthen consumers’ attitudes and make them more likely to perform the behavior.

On the contrary, when the circumstances are unfavorable, reasons against green consumption dominate the decision-making process. In this context, reasons do not influence attitudes but impact intention directly. In other words, even if individuals have strong positive attitudes, they may pursue psychological shortcuts and enter a single-reason decision-making mode, even if they hold a positive attitude. For example, when consumers face problems such as high prices or difficulties in obtaining green products, the positive effect of green consumption attitudes on the triggering of green consumption intention could become negligible.

The findings of this study have several implications for the literature on behavioral theories and the field of green consumption. In the research on green consumption in China, most of the studies used the traditional TPB for analysis. This paper uses BRT to study the green consumption behavior of Chinese consumers, which provides a new theoretical angle for subsequent research on green consumption behavior. BRT, which extends the traditional TPB with the inclusion of reasons, sheds light on the possible roles of reasons for and against behaviors in impacting attitudes and intentions. Inconsistent with the propositions of the proposed theory, this study suggests that reasons for behavior affect intentions only indirectly through attitudes, while reasons against behaviors directly impact intentions, bypassing attitudes.

There are several limitations for this study and further research may work on the following directions to improve the model. First, this paper proves the role of reason in green consumption of Chinese consumers, but the items in the reasons group mainly refer to the literature of other countries. Since Chinese consumers’ reasons for or against green consumption may be different from consumers in other countries, to improve the reliability and validity of the findings of the study, more in-depth qualitative research can be conducted to explore the reasons why Chinese consumers accept or reject green consumption. Also, further quantitative research can be conducted to compare the uniqueness and commonality of reasons among countries to improve the generalizability

Table 5
Direct effects, indirect effects, and total effects of reasons.

	Direct effects	Indirect effects	Total effects
Reasons for green consumption	0.000	0.241*0.762 = 0.184	0.184
Reasons against green consumption	-0.107	0.000	-0.107

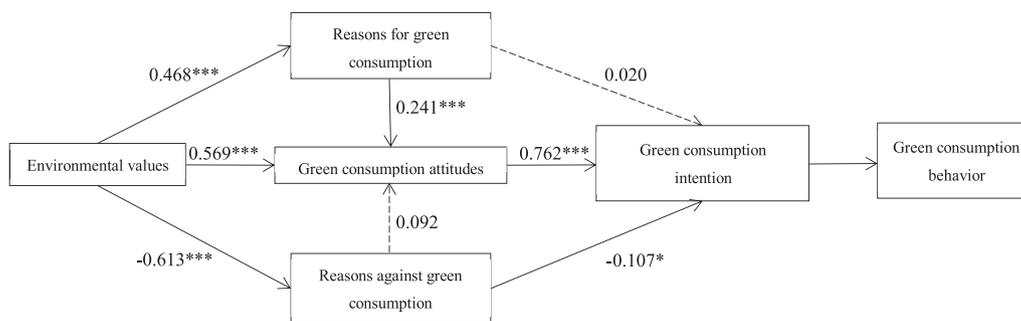


Fig. 2. Results of hypotheses testing. Solid lines denote statistically significant paths, while dotted lines refer to statistically insignificant paths. *P < 0.05; **P < 0.01; ***P < 0.001.

of the research findings. Second, in examining green consumption, this study remains general which covers a wide range of practices including the purchase of green food, green clothing, green products, green living, and green traveling. To create a deeper analysis, future research can compare the uniqueness and commonality of reasons among generalized green consumption and specific green consumption. Third, this study only focuses on the attitude-intention gap and assumes that intentions predict behaviors. However, people do not always behave accordingly to their intentions and the intention-behavior gap could be huge. For example, Sheeran and Webb's (2016) study suggested that intentions only translate into action approximately one-half of the time. To improve our understandings of green consumption behavior, future studies could examine the scale of the intention-behavior gap and the conditions of translating intentions into actions such as the quality of intention in green consumption.

The findings in this study have several implications for governments and businesses. In particular, three approaches to green consumption promotion are worth considering – fostering reasons for green consumption, reducing reasons against green consumption, and raising the environmental values of consumers.

First, the government and businesses could adopt multi-pronged strategies in convincing consumers of their positive reasons for green consumption. The manifest variables that constitute this latent variable can involve three aspects. The first one is concern about food safety. In this sense, the government may consider improving its food safety regulatory framework and diversifying the regulatory strategies. For example, Wang et al. (2017) showed that government support measures are more effective than mere regulation in promoting safe pesticide use. The second aspect of manifest variables concerned relates to respondents' sentiment against the government's inadequate actions to reduce pollution. In China, the enforcement of environmental and food safety regulations is mainly decentralized and depends on the necessary regulatory resources and political commitment of local officials (Chu, 2020b). In recent years, as environmental protection efforts have become one of the performance indicators for cadre promotion, strengthening the performance evaluation system may boost consumer confidence and hence promote their reasons for green consumption. The third aspect of manifest variables relates to the frustration of respondents over environmental pollution. Businesses could reframe their marketing strategies to convince consumers of green products' positive impacts on the environment. Product certification could also be of value and sustainable certification could help producers become more competitive to differentiate their products from ordinary products in the market (Sogari et al., 2015). Consumers were shown to be willing to pay more for certified products (Wang and Gao, 2020; Wang et al., 2020), while consumer trust remains a key prerequisite (Nuttavuthisit and Thøgersen, 2017). Another measure is to set up a consumption sustainability index that allows consumers to easily understand the environmental impacts of the products they intend to buy (Nikolaou and Kazantzidis, 2016). Enterprises may also publish scientific reports of the impact of their products on the environment.

Second, reasons against green consumption need to be demoted. The key manifest variable that constitutes this latent variable is related to the quality of the products. In this regard, the government may consider setting up national standards and industry regulations over "green-claimed" products, either by mimicking international standards or developing their own ones (Chu, 2020a). Enterprises can also set up a traceability system. These measures could instill consumers' confidence

on green product quality. Finally, the government can also consider subsidizing the green market by methods like tax exemptions, fiscal subsidies, and green credits to promote its development.

At last, to bridge the attitude-intention gap, environmental values of consumers should be further promoted. The manifest variables that constitutes this latent variable involves two dimensions: The first one is the normative view on the relationship between human beings and nature. In this regard, possible governmental measures include advertisement and education which help consumers realize their interconnectedness with nature. Manufacturers may consider reporting the carbon footprints of their products so that consumers can quantify the difference they will make when choosing between ordinary and green products. The second dimension relates to the prediction about the future if environment protection is not realized. Educators could portray a possible picture of the future if environmental issues are left unaddressed, emphasizing the estimation of the economic and social impacts of such inaction. This way, consumers' environmental values are hoped to be elevated.

6. Conclusion

Inconsistent with the propositions of BRT, this paper suggests that reasons for green consumption affect intentions only indirectly through attitudes, while reasons against green consumption impact intentions in a direct way, bypassing attitudes. At the same time, both types of reasons are influenced by environmental values. With different findings, policy recommendations of this study deviate from that of previous studies which propose that changing consumers' attitudes towards the environment can increase consumers' purchase intention of green products (Ji, 2019; Yadav and Pathak, 2017; Chen and Deng, 2017). The study shows that people do not necessarily decide whether to engage in green consumption behavior based on their attitudes. Some reasons inhibit consumers' green consumption intentions, such as expensive price, inaccessibility, lack of trust in the products' quality, and lack of green consumption experience. Based on the results, this paper recommends policies and business strategies that focus on reducing consumers' reasons against green consumption. In other words, addressing consumers' concerns about green consumption seems to be better able to close the attitude-intention and hence behavior gap.

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Declaration of competing interest

The authors have no interest to declare.

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Appendix 1. Reliability and validity test results

Variables	Environmental values (EV)	Green consumption attitudes (GCA)	Green consumption intentions (GCI)	Reasons for green consumption (RF)	Reasons against green consumption (RA)
Number of variable items	4	3	4	5	6
Variance contribution rate	61.390	71.568	66.111	51.202	61.126
Cronbach's α coefficient	0.787	0.800	0.827	0.756	0.870
AVE	0.614	0.716	0.661	0.512	0.611
CR	0.864	0.883	0.886	0.838	0.904
KMO	0.766	0.689	0.783	0.762	0.847
Bartlett's χ^2	484.122	412.820	632.917	518.700	1242.736
spherical test df	6	3	6	10	15
Significance level	0.000	0.000	0.000	0.000	0.000

Appendix 2. Discriminant validity test results

	Environmental values (EA)	Green consumption attitudes (GCA)	Green consumption intentions (GCI)	Reasons for green consumption (RF)	Reasons against green consumption (RA)
Environmental values	0.784				
Green consumption attitudes	0.566***	0.846			
Green consumption intentions	0.359***	0.620***	0.813		
Reasons for green consumption	0.368***	0.430***	0.409***	0.716	
Reasons against green consumption	-0.477***	-0.439***	-0.262***	-0.474***	0.782

Note: *** indicates significance at the level of 0.001, and the diagonal value is \sqrt{AVE} .

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