

Attitude-Behavior Gap in Green Consumption Behavior: A Review

Abstract

Although consumers are willing to purchase green products to prevent or alleviate environmental degradation, their positive attitude towards green products does not always translate into action. This phenomenon is called the attitude-behavior gap/consistency in the context of green consumption. In the era when sustainable development has become a critical social and economic trend, the research on this issue is of great significance. However, the existing research has not given an extensive explanation for how the phenomenon occurs, nor has a summary of the various factors that lead to the phenomenon and how they affect the purchase behavior of environmental protection. This article reviews the underlying mechanisms of attitude-behavior gap in green consumption behavior, and summarizes the empirical studies at individual level since 2010 from three aspects: 1) the formation and change of consumers' demand for green products, 2) the change of consumer behavior in the process of green demand being satisfied and 3) the influence of consumer's psychological cognition on attitude-behavior gap, and integrate them with the relevant researches in the fields of marketing and social norms. This paper also proposes some future research opportunities, such as attitudinal ambivalence, learning and trust mechanisms, the scope of behavior subject, cross-cultural issues, uncertainty factors, and measurement methods.

Keywords: attitude-behavior gap, attitude-behavior consistency, purchase intention, purchase behavior, green consumption, consumer.

1 Introduction

Green products are those products that provide environmental, social and economic benefits while protecting public health and environment over their whole life cycle, from the extraction of raw materials until the final disposal (Frank-Martin and Peattie, 2009). Existing research shows that consumers have a positive attitude towards environmental protection (Liu and Wang et al., 2012), and express the demand for green products (Schmeltz, 2012). However, there is not enough evidence to prove that the number of people buying green products has increased significantly in the past, and the market share of green products is still limited to 1% - 3% of the whole market (Bray and Johns et al., 2011). The Eurobarometer survey of consumers' behavior (2012) reported that even though a very high proportion of citizens buy green products (80%), more than half are classified as occasional maintenance (54%), and only a quarter are regular buyers of green products (26%). This phenomenon means that although consumers are willing to purchase green products to prevent or reduce environmental degradation, their positive attitude towards green products does not always translate into action.

In terms of the occurrence of the above phenomenon, the existing research has not yet given an extensive explanation, nor has an investigation been made on the various factors leading to the above phenomenon and how they affect the purchase behavior of environmental protection. Although the researchers have carried out empirical research on green consumption from many aspects, there is still a lack of review study on the gap between consumer attitudes and behaviors in the context of

green consumption. Some scholars have used qualitative and empirical research methods to make a preliminary summary of the influencing factors of attitude-behavior gap in green consumption (Chen and Peng, 2014; Joshi and Rahman, 2015), but in terms of the timeliness of literature and the extensiveness of the influencing factors, it has been unable to meet the current research and management needs. In view of the wide existence of attitude-behavior gap in green consumption but the lack of proper explanation, it is necessary to carry out a more **extensive** and in-depth theoretical review on this issue. In addition, environmental protection departments and enterprises pay increasing attention to sustainable product management and development, which also provides a driving force for this study at the practice level. **Therefore, the purpose of this article is to** have a review of the contributions and gaps of the extant research in the past decade and proposes future research directions.

2 Why do Individuals Generate Attitude-Behavior Gap in the Context of Green Consumption?

The attitude-behavior gap or consistency actually belongs to the research category of the relationship between attitude and behavior, which is a widely concerned topic in the field of social psychology. The main purpose is to examine the predictability of attitude to behavior. So far, researchers have realized that the relationship between attitude and behavior involves many other factors, and can not simply predict future behavior through attitude. With the deepening of the research, the understanding of the general relationship between attitude and behavior mainly focuses on three aspects. First, the factors of attitude itself, including the attitude strength (Brannon and Tagler et al., 2007; Petrocelli and Tormala et al., 2007), the accessibility of attitude (Glasman and Albarracín, 2006) and the attitudinal ambivalence (Jonas and Diehl et al., 1997; Armitage and Conner, 2000). Among them, the positive influence of high-intensity attitude and accessible attitude on the attitude-behavior relation has been confirmed, while the influence of attitudinal ambivalence on the attitude-behavior relation has not reached a consensus. Secondly, individual factors, such as positive emotion (Seitz and Lord et al., 2007), individual evaluation needs (Huskinson and Haddock, 2004), personality characteristics (Ziegler and von Schwichow et al., 2005), etc.. The third is the interaction between individual subjective experience and context (Hampson and Andrews et al., 2006).

Previous research show that under the influence of specific contexts and factors, there will be a gap between individual's attitudes and behaviors. With the passage of time, one of the characteristics of the follow-up research is that the focus is constantly refined and focused on specific types of groups and their behaviors, among which the consumers who buy green products and the relationship between their attitudes and behaviors is a typical representative. In the past research on the attitude and behavior intention of green consumption, researchers believe that the attitude, intention and actual purchase behavior of consumers towards green products follow the theory of reasoned action (TRA) (Smith and Paladino, 2010; Wang et al., 2021), that is, the behavior of consumers is the result of deliberate planning. This reflects the rational aspect of consumers' green consumption behavior. However, TRA can not effectively explain some consumption behaviors involving moral elements in specific contexts. Moreover, TRA will be helpless in explaining the behavior of consumers changing between different types of consumption habits. As some researchers have pointed out, TRA ignores the external effects of environmental and contextual factors on consumers' purchase behavior (Carrington and Neville et al., 2010). These external environmental and contextual factors actually act as the boundary conditions of the transformation of consumer attitude into actual purchase behavior, and the existence of these boundary conditions is often the important reason for the phenomenon of consumer attitude-behavior inconsistency in the context of green consumption.

The researchers began to include situational factors in their studies because of the low explanatory power of predicting green consumption behavior only through attitude (Guagnano and Stern et al., 1995). Recently, some scholars have introduced the social cognitive theory (SCT) to explain sustainable consumer behavior, hoping to predict the occurrence of future sustainable behavior based on the value of past behavior (Phipps and Ozanne et al., 2013). This model shows that individual factors such as attitude, past sustainable behavior and socio-cultural environment will affect future sustainable behavior. The inclusion of situational factors means that there are many internal and external factors that can change the nature of attitude-behavior relation or strengthen / weaken the strength of the relation. However, it is often difficult for researchers to find the relationship between various situational factors.

After realizing the problems existing in analyzing the attitude-behavior gap based on situational factors, some researchers have refocused on the inner level of individuals. Some researchers believe that it is because of the cognitive conflict between consumer orientations and knowledge that consumers generate an inconsistency between their positive attitudes and their purchase behaviors towards organic products (Hidalgo-Baz and Martos-Partal et al., 2017). This explanation based on the cognitive dissonance theory (CDT) only reflects the conflict between different views in individual consciousness, but does not explain the process of conflict. In order to answer this question, the dual action model (DAM) in behavioral economics theory has become a new theoretical basis, that is, the formation of attitude-behavior gap is caused by the influence of two different types of psychological systems in individual consciousness on consumers' decision-making (Terlau and Hirsch, 2015). Among them, psychological system 1 takes the marginal route, which is mainly used for quick, spontaneous and subconscious decision-making. Most of these consumption decisions are individual's daily decisions with low involvement. On the contrary, psychological system 2 aims at slow, logical and conscious decision-making, and its involvement is significantly higher than the former. According to the model, in the context of sustainable consumption, the attitude or views expressed or held by consumers towards such consumption reflect the conscious views and desires from psychological system 2, while their actual purchase behavior is strongly influenced by psychological system 1. This kind of cognitive bias is the internal reason that leads to the gap between attitude and behavior of consumers. According to the above theoretical model, the generation of consumers' strong green consciousness needs to overcome their existing (unsustainable) consumption habits to drive their behavior to change, so as to prepare for green consumption behavior. To some extent, the views of Terlau and Hirsch (2015) make up for the defects of views from the perspective of cognitive dissonance. The combination of the two interpretations can better explain the formation of attitude-behavior gap from the perspective of psychological conflict. To sum up, the occurrence of consumer attitude-behavior gap in green consumption context is the external manifestation of internal contradictions and conflicts when the consumer attitude is disturbed by situational factors.

3 Review of Empirical Studies on Attitude-Behavior Gap in the Context of Green Consumption

Since the attitude-behavior gap in the context of green consumption has attracted the research attention in various fields, the research perspective has covered different levels from micro to macro. In terms of research focus, the research on the internal factors such as individual needs and psychological cognition is the most abundant, followed by the research on marketing activities and social norms. This section will review the empirical studies (see table 1) on attitude-behavior gap in the context of green consumption from the perspective of individuals, and on this basis, integrate

them with the relevant research on the external conditions (e.g., marketing and social norms) that cause the gap.

Table 1 Summary of empirical studies on attitude-behavior gap in the context of green consumption

| The behavioral decision-making process / Factors | Literatures^a |
|---|--|
| The formation and change of consumers' demand | |
| Internal factors | |
| Psychological and symbolic needs | Young and Hwang et al., 2010; Chen and Lobo, 2012; Do Paço and Alves et al., 2013; Kanchanapibul and Lacka et al., 2014; Redondo and Puelles, 2017; Li et al., 2021; Mazhar et al., 2022 |
| External factors | |
| Limited availability | Young and Hwang et al., 2010; Nguyen and Nguyen et al., 2019 |
| Product functional attributes | Cerjak and Mesić et al., 2010; Smith and Paladino, 2010; Young and Hwang et al., 2010; Aertsens, 2011; Chan and Wong, 2012; Chen and Lobo, 2012 |
| Brand attributes | Rahbar and Abdul, 2011; Zubair Tariq, 2014; Doszhanov and Ahmad, 2015; Ranjan and Kushwaha, 2017 |
| Marketing communication | Young and Hwang et al., 2010; Tung and Shih et al., 2012; Nittala, 2014 |
| The change of consumer behavior in the process of green demand being satisfied | |
| Internal factors | |
| Learning | Francis and Davis, 2015; Grauerholz and Bubriski-McKenzie et al., 2015 |
| Knowledge and perception | Prothero and Dobscha et al., 2011; Eze and Ndubisi, 2013; Hori and Kondo et al., 2013; Frederiks and Stenner et al., 2015; Johnstone and Tan, 2015; Hidalgo-Baz and Martos-Partal et al., 2017; Belaïd and Joumni, 2020 |
| External factors | |
| Status quo bias and reference point effect | Allcott, 2011; Schwartz and Fischhoff et al., 2013; Murtagh and Gatersleben et al., 2014 |
| Social norms and reference groups | Connell, 2010; Lee, 2010; Liu and Wang et al., 2012; Eze and Ndubisi, 2013; Salazar and Oerlemans et al., 2013; Tsarenko and Ferraro et al., 2013; Moser, 2015 |
| Consumer's psychological cognition | |
| Internal factors | |
| Perceived consumer effectiveness (PCE) | Connell, 2010; Jin and Littrell et al., 2012; Gleim and Smith et al., 2013; Kang and Liu et al., 2013 |
| Age and gender | Aschemann-Witzel and Niebuhr Aagaard, 2014; Wang and Shen et al., 2021 |
| Perceived behavior control (PBC) | Jin and Littrell et al., 2012; Wang and Liu et al., 2014 |
| Personal values and ethic norms | Cerjak and Mesić et al., 2010; Young and Hwang et al., 2010; Chen and Lobo, 2012; Eze and Ndubisi, 2013; Gleim and Smith et al., 2013; Wang and Liu et al., 2014; Antonetti and Maklan, 2015; Hidalgo-Baz and Martos-Partal et al., 2017; Wang and Shen et al., 2021 |
| Personality traits | Duong, 2022 |
| External factors | |
| Price of green product | Connell, 2010; Jin and Littrell et al., 2012; Gleim and Smith et al., 2013; Aschemann-Witzel and Niebuhr Aagaard, 2014 |
| Retail environment | Connell, 2010 |

a. Literatures from the perspective of individuals since 2010 were retrieved from the Web of Science.

3.1 The Formation and Change of Consumers' Demand for Green Products

The benefits of green products are related to different life goals of consumers, which may lead to conflicts in demand, and then cause inconsistency and conflicts between attitude and behavior.

Previous studies have suggested that consumers' affections on the ecological environment will positively affect green purchase intention (Kanchanapibul and Lacka et al., 2014). It is further found that environmental concern and responsibility have a positive and direct impact on ecological knowledge, purchase intention and actual purchase behavior (Li et al., 2021; Mazhar et al., 2022). In addition to positive feelings, negative feelings also have an impact on green consumption behavior. For example, guilt (Young and Hwang et al., 2010) and intergenerational care (Do Paço and Alves et al., 2013) have a significant positive impact on promoting green purchase behavior. Therefore, consumers' emotional needs, especially their awe of the environment, have a positive and direct impact on their green purchase intention and behavior. However, previous studies only focus on the analysis of a single emotional element, there is no relevant research on whether attitudes-behavior gap will emerge when consumers have different or even contradictory feelings towards the environment and green products.

In addition, the study also found that diversity seeking and self-indulgence can also affect the purchase of organic food (Chen and Lobo, 2012). Corresponding to Chen and Lobo's (2012) views on individual self-indulgence, some scholars believe that the attitude-behavior gap towards the environment in some individuals is a manifestation of their lack of self-control to maintain consistency in their life (Redondo and Puelles, 2017). It is believed that the environmental attitude-behavior gap does not emerge in isolation, but is related to other individual related inconsistencies, including four individual inconsistencies (involving fast food, alcoholic beverages, cooked food and weight loss products). This view has an important contribution to the interpretation of environmental attitude-behavior gap, revealing the significant relationship between individuals, environment and health. Thus, green consumption is not only to meet the functional needs of consumers, but also to meet the psychological and symbolic needs. However, for different consumers, the difference in the importance of these needs can be manifested through attitude-behavior gap.

However, the external expression of consumers' demand for green products in attitude and behavior may be affected by external factors. This is because consumers' demand for green products cannot be separated from enterprises' marketing activities. When enterprises use marketing activities to show the limited availability of products, it may have a negative impact on consumers' green purchase intention and behavior (Young and Hwang et al., 2010). In this case, a certain degree of inconsistency will emerge between consumers' positive attitude towards green products and their behaviors (Nguyen and Nguyen et al., 2019). Some studies have found that limited availability and difficulty in acquiring green products will become the major barrier to purchase environmental protection products (Young and Hwang et al., 2010). This kind of limited availability is partly due to the limited production conditions, but also a considerable part of it is created by enterprises' marketing activities in order to pursue high profits. Consumers generally don't like to spend a lot of time searching for green products; they prefer products that are easy to obtain (Young and Hwang et al., 2010). Because the availability and convenience of products involve the transaction cost, which may constitute a barrier for consumers to purchase green products, thus expanding the gap between consumers' positive attitude and actual purchase behavior towards green products.

In contrast to the negative effects of limited availability, the attributes and benefits of green products are objectively conducive to the formation of positive evaluation of green products by consumers, thus narrowing the attitude-behavior gap. Most researchers believe that the attributes of green products have a positive impact on the purchase behavior towards them (Young and Hwang et al., 2010; Chen and Lobo, 2012). Meantime, consumers' preference for product functional attributes (to meet individual needs and desires) exceeds the importance of their ethical attributes (Chen and Lobo, 2012). The taste, quality and health of products are important attributes in the process of consumers'

purchase of green food (Cerjak and Mesić et al., 2010). Among these factors, quality attracts more attention, whether it is objective quality or consumers' subjective quality perception. For example, product quality significantly affects consumers' green purchase intention and behavior (Smith and Paladino, 2010). High quality perception of green products will have a positive impact (Aertsens, 2011), while low quality perception of green products will have a negative impact on consumers' green purchase intention and behavior (Smith and Paladino, 2010). So far, only one study has reported that product attributes have nothing to do with green purchase behavior (Chan and Wong, 2012). When consumers' demand and purchase desire are stimulated by the attributes and benefits of green products, they may retreat due to the availability manipulation strategy of enterprises. This may have a negative impact on the welfare of consumers and the growth of corporate profits, but so far, this negative impact has not attracted enough research attention.

Now the brand management of green products is a popular phenomenon, so not only the product attributes but also the brand attributes needs to be considered while studying the attitude-behavior gap. After all, brand attribute is a concept related to but different from product attribute. Whether it has different influence with product attribute on the formation and change of consumers' attitude-behavior gap has not been confirmed by research. Nevertheless, some indirect support can be obtained through literatures. For instance, researchers found that consumers' trust in green brands positively affects their behavior in purchasing green products (Rahbar and Abdul, 2011; Ranjan and Kushwaha, 2017). Besides, brand awareness and brand perceived value also have a significant positive impact on consumers' intention to buy green products (Doszhanov and Ahmad, 2015). Similarly, researchers have confirmed the same relationship between green brand awareness and consumers' behavior of purchasing green products and their corresponding satisfaction (Zubair Tariq, 2014). In short, the success of eco branded products in business mainly depends on the positive public image they establish in the minds of consumers (Ranjan and Kushwaha, 2017). From the above research, it can be inferred that high-quality brand attributes are conducive to narrow or even eliminate the attitude-behavior gap of consumers by improving their purchase enthusiasm. Because the essence of brand is the commitment and guarantee made by enterprises to consumers about the benefits of products / services they provide, in the case of information asymmetry between enterprises and consumers, it is necessary for brands to play a role in commitment and guarantee, so as to eliminate consumers' hesitation in action. In this case, the degree of consumer's trust in brand commitment will determine the level of attitude-behavior gap to some extent. It can be further inferred that consumers are less likely to have attitude-behavior gap on green products with stronger brand. However, these views still need to be confirmed through follow-up research.

As mentioned above, the information asymmetry between consumers and enterprises will lead consumers to have different degrees of doubt about the reliability of products provided by enterprises, thus hindering the satisfaction of their needs. Hence in addition to the influence of brand, the effectiveness of marketing communication has a direct impact on the change of consumers' attitude-behavior gap. Compared with other marketing communication means, the packaging and labeling of green products are usually more important objects for consumers to pay attention to. This is because ecological labels or ecological certification provide consumers with information about the green characteristics of products and urge them to buy green products (Young and Hwang et al., 2010). However, from the perspective of communication effectiveness, if the information about the product is not designed properly in terms of content, form, communication channel, etc., it will lead to the failure of the persuasion effect of communication activities on the target consumers, or even the opposite results. It is generally acknowledged that consumers' lack of trust and confidence in green claims and green product characteristics is an important barrier to purchase green products (Tung and Shih et al., 2012). For those consumers who have a certain knowledge of green products,

they will be skeptical of the environmental claims put forward by enterprises, especially the manufacturing, labeling and certification procedures of various products, which need to be evaluated based on more information about green products before they put into purchase action (Nittala, 2014). Therefore, only by providing clear, objective and detailed information about the green characteristics of enterprises in a friendly way, can marketing communication activities such as product ecological labels and environmental advertisements narrow the attitude-behavior gap by enhancing the trust of consumers.

3.2 The Change of Consumer Behavior in the Process of Green Demand being Satisfied

The use of green products means that consumers gradually shape a new consumption attitude and behavior pattern by learning green product knowledge, green consumption pattern and concept. However, influenced by internal and external factors and learning methods, changes in consumer attitudes and behaviors are often not consistent or synchronized, especially the conversion costs and conceptual conflicts between the old and new behavior patterns often hinder the transformation of consumption patterns. For instance, adolescence is an important stage for individuals to form consumption habits and preferences, which will have an important impact on the sustainability of consumption behavior in adulthood. At present, the research on children's environmental education and awareness has a considerable scale in North America, Europe, Australia and South America (Larsson and Andersson et al., 2010). The research also shows that adolescents will pay attention to these topics by learning about environment, personal welfare and social sustainability (Francis and Davis, 2015). This means that learning how to bear the responsibility of a consumer is an important socialization content for children. Learning can help them establish a positive focus on sustainability issues, but for adolescents, factors such as cost, convenience, peer pressure, hedonic preference are the determinants that lead them not to have sustainable consumption (Francis and Davis, 2015), The phenomenon of attitude-behavior gap also happens to them.

Grauerholz et al. (2015) asked students to participate in an experiential exercise project of "no purchase". They hope that through experiential learning, college students can change their consumption habits, inhibit their tendency to buy unnecessary goods, thus enhancing their social responsibility and improving the sustainability of consumption (Grauerholz and Bubriski-McKenzie et al., 2015). They found that students' consumption habits had changed as expected, and this exercise stimulated students' motivation to reduce consumption. More importantly, compared with the traditional learning methods of environmental protection knowledge, experiential learning embodies the characteristics of active expansion and close to reality in terms of education concept, which is more conducive to college students to connect their life with social responsibility. Currently, some non-profit ads have the characteristics of single appeal and obvious preaching tendency (Searles, 2010), which leads to the low degree of learning participation and lack of experience in the process of public green consumption education, thus providing conditions for the formation of attitude-behavior gap. The research of Francis and Davis (2015) and Grauerholz et al. (2015) shows that the learning and the scientificity of learning style is of great significance in the development of individual good consumption habits, which provides an important way to bridge the attitude-behavior gap.

From the perspective of behavioral decision theory, in the process of consumers' decision-making on whether to change their original habits or not, factors such as status quo bias and reference point effect often affect the final behavior of consumers (Schweitzer, 1995), and determine the formation of attitude-behavior gap. For example, when investigating the energy-saving behavior of households, some researchers found that even though they had some knowledge of the energy-saving

characteristics of intelligent electrical equipment, a considerable proportion of households did not use or continue to use the equipment at all, but chose to maintain the status quo (Murtagh and Gatersleben et al., 2014). The reason for this phenomenon is inseparable from the fact that consumers choose the current situation as the reference basis (i.e. the reference point) when evaluating the decision-making scheme, because the status quo bias usually reflects consumers' psychology of avoiding the inconvenience of life caused by replacing the equipment through the current situation reference, and ignores the potential cost savings caused by using the equipment.

Therefore, theoretically, by changing the reference point of consumers, enterprises can narrow or even eliminate consumers' attitude-behavior gap caused by status quo bias. This has been confirmed to some extent by research, for example, enterprises can effectively reduce the energy consumption of users by informing them of both their own and their neighbors' power consumption through e-mail (Allcott, 2011). Similarly, household electricity consumption can also be effectively reduced by timely informing participating households of both their own and other households' electricity consumption (Schwartz and Fischhoff et al., 2013). Obviously, the change of consumer's household electricity consumption is related to the transfer of reference points from their current situation to other households. Therefore, the reasonable choice of reference point helps consumers make favorable adjustment in behavior, thus narrowing the attitude-behavior gap.

Consumers need to acquire relevant knowledge and information in the learning process of adapting their attitude and behavior patterns to new things. Many studies on consumers' knowledge about environmental protection acknowledge that knowledge has a positive impact on consumers' purchase intention and actual purchase behavior of green products (Eze and Ndubisi, 2013). In terms of how knowledge affects attitude-behavior gap, some scholars believe that knowledge can moderate the relation between consumer orientation and attitude-behavior gap in the context of green consumption (Hidalgo-Baz and Martos-Partal et al., 2017). In addition, from the perspective of perception, green perception (such as the sensory contact with green products and green behaviors) also has a certain impact on attitude-behavior gap. Some unfavorable green perceptions held by consumers will lead to their unwillingness to participate in green consumption activities (Johnstone and Tan, 2015). Perception is an important process of obtaining relevant information closely related to consumer learning activities. The content and form of individual perception will directly affect the subsequent learning effect. Nowadays most of the mass media's propaganda of green consumption belongs to traditional general information, rather than tailored or customized information (Iwata and Katayama et al., 2015). Although the policies on energy-saving consumption publicized by the government will affect the audience's knowledge, attitude, consciousness and values to some extent, it is often unable to significantly and substantially change the behavior pattern of household energy consumption (Hori and Kondo et al., 2013; Belaïd and Joumni, 2020). The research also proves that the demand side response of traditional information presentation is not fully effective (Prothero and Dobscha et al., 2011; Frederiks and Stenner et al., 2015). The above research shows that the marketing communication activities of green consumption are not only affected by the information content, but also may lead to consumers' attitude-behavior gap due to the framing effect of information presentation. Thus, in the marketing communication activities related to green consumption, the coordination among the characteristics of information such as authority, accuracy, intuitiveness and experience determines the quality of information persuasion effect and affects the learning, evaluation and impression formation of consumers on the knowledge related to green products.

In addition to understanding green products through their own cognitive activities, consumers will also observe the surrounding green consumption behavior through social learning, which also have an impact on their attitude and behavior. In this process, relevant social norms and reference groups

usually play an important exemplary role. Many studies have proved that subjective or social norms and reference groups have a positive impact on the purchase intention and actual purchase behavior of green products (Liu and Wang et al., 2012; Eze and Ndubisi, 2013), but there are also studies that show a negative correlation between social norms and purchase intention and actual purchase behavior (Connell, 2010; Lee, 2010). The results further indicate that social reference groups, especially peers and other people close to consumers, have stronger influence on the decision-making process of green purchase behavior (Lee, 2010; Salazar and Oerlemans et al., 2013; Tsarenko and Ferraro et al., 2013). In terms of influence, Moser, based on the theory of planned behavior, found in the study of German consumers' green purchase behavior that personal norms have a significant positive impact on the actual occurrence of consumers' green product purchase behavior, besides, the willingness to pay closely related to price has a similar effect, while the impact of attitude is not significant (Moser, 2015). Moser's (2015) research shows that in the context of green consumption, attitude can only indicate an individual's preference for green products. As for whether this preference can be realized, it is also subject to various factors such as price and external norms, which cause the individual's attitude-behavior gap in purchasing green products. In a word, no matter whether the influence of subjective / social norms and reference groups on consumers' green purchase behavior is positive or negative, as one of the sources of consumer learning, they will enhance or weaken the individual attitude, resulting in the separation or convergence of the relationship between consumers' attitude and behavior.

In summary, the change of consumers' green purchase behavior cannot be separated from the learning of relevant knowledge about green products and consumption. Factors such as individual difference, types of learning, traditional consumption habits and learning contexts will moderate the effect of learning behavior on the transformation of consumption habits to a certain extent, resulting in attitude-behavior gap towards green products. However, researchers have not reached a consensus on how the formation of attitude-behavior gap is affected by the above factors in this process, and further research is needed.

3.3 The Influence of Consumer's Psychological Cognition on the Attitude-Behavior Gap

As mentioned above, there are various factors that will affect the effectiveness of consumers' green consumption learning. The existence of these factors will cause consumers to have contradictory psychology such as entanglement and doubt, which results in inconsistency between their attitudes and behaviors. For example, perceived consumer effectiveness (PCE) reflects an individual's evaluation of the impact of their own consumption on the whole problem, which to some extent represents a kind of confidence and affirmation of consumers' ability to solve problems by themselves and affect the environment (Nguyen and Nguyen et al., 2019). The researchers found that there was a positive correlation between PCE and the purchase intention / adoption behavior of green products (Gleim and Smith et al., 2013), and that PCE also indirectly affected consumers' purchase intention, because it significantly affected consumers' attitude, subjective norms and perceived behavior control, thus determining consumers' purchase intention (Kang and Liu et al., 2013). But in a specific situation, this kind of self-confidence will decline because of the influence of external factors. Because the ability of consumers to change the environment is directly related to their income level and wealth ownership for green product expenditure, the high price of green product will affect consumers' perception of their ability to change the environment due to the increase of consumers' expenditure. As a result, consumers pay more attention to the value of products than to ethical factors, thus expanding the gap between attitude and behavior in the context of green product purchase (Connell, 2010; Gleim and Smith et al., 2013). When consumers lack economic resources, this negative effect of price will further expand, thus forming the main barrier of green product

purchase behavior (Connell, 2010). For consumers with higher price sensitivity, high prices are more likely to have a negative impact on green purchasing behavior (Jin and Littrell et al., 2012). However, some studies have found that the impact of price is different in different stages of individual life cycle. Young consumers think that the impact of price is temporary, and they will delay the purchase of organic food to a later stage in the life cycle (Aschemann-Witzel and Niebuhr Aagaard, 2014), which should be directly related to the amount of individual economic resources in different stages. Similar to the fact that price can weaken the ability of consumers to change the environment, the unfavorable retail environment could also become a constraint factor for sustainable green purchase behavior (Connell, 2010), which should be related to the convenience of consumers' access to products and the level of transaction costs determined by channels.

Like PCE, perceived behavior control (PBC), as a subjective perception of actual control, has a significant positive impact on the purchase intention and actual purchase behavior of green products (Jin and Littrell et al., 2012; Wang and Liu et al., 2014). Although there is some evidence that PBC has a positive impact on green purchase behavior, due to the limited research in this field, it is necessary to conduct further empirical research. In addition to the above cognitive factors, the researchers also found that the perception and response effectiveness of the consequences of green purchase behavior can also affect the occurrence of green purchase behavior (Wang and Liu et al., 2014), thus forming an attitude-behavior gap.

Although consumers may have psychological conflicts when facing the choice of green products, previous literatures have showed that there is a positive correlation between consumers' environmental, social and ethical values and their purchase behavior of green products (Young and Hwang et al., 2010; Chen and Lobo, 2012; Eze and Ndubisi, 2013; Wang and Liu et al., 2014). Specifically, individualistic values such as health and safety, and hedonic values such as the pursuit of delicacy will positively affect the purchase behavior of green products, especially the purchase of green food (Cerjak and Mesić et al., 2010). Therefore, the value orientation of consumers (e.g. environmental protection, health, hedonism) can alleviate the cognitive dissonance in the consumption process, thus driving the transformation of positive attitude into actual purchase behavior (Hidalgo-Baz and Martos-Partal et al., 2017; Wang and Shen et al., 2021). Consumers in developed countries are more active in and keen on green consumption than those in developing countries, which is directly related to their stronger environmental values.

However, this does not mean that values and ethics can help consumers to completely resolve such psychological conflicts. Ethical consumption (EC) is a kind of behavior like green consumption. It also emphasizes the impact of consumers' personal behavior on society, environment or animals when they acquire, use or dispose of products, and requires consumers to minimize negative impact and maximize social benefits (Bray and Johns et al., 2011; Govind and Singh et al., 2019). In ethical consumption, although people express their care to specific objects, the research results show that the expression of people's care does not necessarily lead to the giving of care (Shaw and McMaster et al., 2016). This phenomenon could be embodied in specific relationship contexts, for example, in the relationship between mother and child, the caring of mother will have a significant impact on the ethical dilemma in consumption decision-making, which appears as the attitude-behavior gap (Heath and O Malley et al., 2016). This shows that sometimes individuals' values and moral norms cannot effectively help them to deal with the contradiction between personal interests and social interests, resulting in the phenomena of attitude-behavior gap such as in the context of green consumption.

In general, personal values and ethic norms do have a significant impact on purchase intention and actual purchase behavior (Gleim and Smith et al., 2013), which can to some extent strengthen

consumers' determination to purchase green products. However, this kind of promoting effect is often affected by a variety of situational factors. For instance, consumers' perception of altruism versus egotism and public versus private occasions will affect their motivation of responsible consumption and generate different types of attitude-behavior gap (Antonetti and Maklan, 2015). Big Five personality traits have significantly different effects on green consumption attitudes and intention to carry out pro-behavioral consumption (Duong, 2022). Thus, in order to better explain the formation mechanism of this phenomenon, researchers need to combine other situational factors when studying the attitude-behavior gap from the perspective of morality and ethics.

3.4 Summary

Through the above literature review, we can see that consumers' demand for quality and quality of life is the internal driving force of their purchase of green products, while their values of health and environmental protection further strengthen this preference. In the process of consumers' understanding and being attracted by green products, the high price and low availability of products and the lack of consumers' trust in green products hinder the transformation from demand to behavior and reduce the initiative of consumers to protect the environment. These factors interact with each other, and the imbalance of their effect cause the attitude-behavior gap.

In the research field of attitude-behavior gap under the context of green consumption, factors such as brand attributes, specific emotions (e.g. guilt, intergenerational care), shop related attributes and the influence of advertising are still less concerned in the current study, so we should strengthen the research on these factors in the future. In addition, most empirical articles on green consumption rely on consumers' self-reported attitude and behavior; few studies are based on the observation of consumer real-life behavior. In the future research, we should observe the real-life behavior of consumers or adopt the data mining methods to capture the relevant data to more objectively understand the behavior of consumers.

4 Future Research Opportunities

The literature review shows that abundant academic resources have been accumulated on consumer attitude-behavior gap in the context of green consumption. Although there are still some conflicts among many research viewpoints, it does not hinder the formation of a certain scale of research system around this issue. Under the circumstance that the government, enterprises and consumers attach great importance to sustainable development, especially for developing countries like China, which has brought a lot of environmental problems due to its rapid economic development, there is no doubt about the economic and social significance and academic value of the research on attitude-behavior gap. Because the factors that affect attitude-behavior gap can be attributed to the categories of individual, situational and methodological, researchers can further explore under this basic framework in the future.

4.1 Expanding the Scope of Behavior Subject

Most of the behavioral subjects concerned in the previous researches on attitude-behavior gap are individuals, few of which are from the perspective of group / organization. As far as the individual subject is concerned, although the current research has accumulated relatively rich results, there is still a certain research space. For example, most of the attitudes involved in the previous researches on attitude-behavior gap are unitary, but green consumption involves multiple motives and is influenced by various individual and situational factors, so consumers probably form ambivalent attitudes towards green products. Although some researchers believe that attitudinal ambivalence

have an impact on individual attitude-behavior gap (Jiang and Liang et al., 2016), there are also views that attitudinal ambivalence can lead to behavioral uncertainty, thus weakening the relationship between attitudes and behaviors (Povey and Wellens et al., 2001; Conner and Sparks et al., 2002). So far, it is not clear how attitudinal ambivalence will affect the attitude-behavior gap of consumers in the context of green consumption, and no relevant literature has been found, which needs to be verified by future research.

As mentioned above, consumers' trust in green products depends on appropriate learning behavior, which accelerates the transformation of consumption habits from old to new. However, the existing literature has not made an investigation on the process of this learning behavior and the factors that affect the learning effect. As such, when the level of institutional trust is difficult to change qualitatively, the effective means that enterprises can resort to include: understanding the learning behavior and trust mechanism of consumers, and the relationship between consumers' attitude / behavior changes and marketing activities, guiding consumers' learning behavior, and improving the level of consumers' trust in their products.

Most of the previous researches on green product trust are based on the mature market economy system, whose social trust mechanism is generally stable and effective. However, due to the information asymmetry, consumers may still have doubts about the information related to green products. Based on this, it is still an important research topic on how to enhance consumers' trust in green products in the future. For economies with low level of social trust mechanism, the significance of this study is more prominent. From the perspective of social trust, although government agencies and enterprises belong to different types of organizations, both of them can play an important role in the development of social trust. The former urges the formation and improvement of universal social trust mechanism from the level of transaction system by establishing and promoting trust system and norms, while the latter, under the constraint of trust mechanism, combines the specific characteristics of trading process and trading partners to make consumers have a direct sense of trust, and the two are complementary. Therefore, how do the micro and macro level trust mechanism interact with each other? and what impact will they have on the consumer's attitude-behavior gap? The research on these questions is of great significance not only to build the green brand image of enterprises, but also to urge the development of social trust mechanism.

The existing research pays little attention to the group / organizational subjects, but it does not prevent them from being included in the research scope. A few studies have confirmed the phenomenon of attitude-behavior gap on food safety issues at the organizational level (Moreaux and Adongo et al., 2018). In the context of green consumption, enterprises are the main body to provide green products. The relationship between the attitude and behavior of enterprises to the development of green products largely determines the confidence of consumers in related industries. As such, it is of great significance to understand the phenomenon and mechanism of enterprises' attitude-behavior gap towards green products and green consumption, and its impact on the business strategy of enterprises in terms of improving the standardization of green product management, enhancing brand value, urging the healthy development of the industry and the establishment of social trust mechanism. However, in view of the diversity of group / organization types, especially the complexity of organizational behavior and the difficulty of data acquisition, it is still a challenge to understand the attitude-behavior gap of such subjects.

4.2 Highlighting the Social-Cultural Meanings of Situational Factors

The current research on the relationship between situational factors and attitude-behavior gap focuses on the rational aspects in consumer behavior, while the formation of attitude-behavior gap is not necessarily the result of individual rational judgment, and the research has also proved that mood has a situational moderator effect on attitude-behavior consistency (Elen and D'Heer et al., 2013). This means that there is some theoretical support for the study of attitude-behavior gap from the perspective of irrationality. More importantly, too much emphasis on the rational factors causing the phenomenon of attitude-behavior gap will lead to the separation between social-cultural factors and this phenomenon, thus weakening the function of transmission with specific concept / meaning inherent in consumer behavior. Therefore, we need to pay more attention to the relationship between this phenomenon and specific social-cultural context, and highlight the functions such as symbolic expression and signal transmission behind the phenomenon. in the future research.

If we focus on the value of social-cultural factors in the phenomenon of attitude-behavior gap, cross-cultural research will be an unavoidable topic. The phenomenon of attitude-behavior gap in the context of green consumption has been confirmed in many countries (Eckhardt and Belk et al., 2010). On the one hand, it shows the universality of this kind of phenomenon, but on the other hand, it raises a question whether the causes and mechanisms of this phenomenon in different countries are exactly the same. For example, in developed countries, the functionality of products has received relatively more attention, reflecting the maturity of consumption choice. While the so-called conspicuous green consumption in some emerging countries reflects the irrationality of consumers in the purchase and consumption of green products (Isenhour, 2012), which also means a kind of immaturity. The research also confirms that symbolic needs play an important role in the green consumption behavior of China's consumers (Hasimu and Marchesini et al., 2017). Moreover, there are also significant differences in the environmental values and thinking modes of consumers between different cultural regions (Park and Kim, 2010; Han, 2018). For example, under the guidance of the self-centered thinking mode, Western consumers have an obvious value orientation of dominating and controlling the environment. In contrast, the contingency thinking and values of individuals in East Asia, including China's consumers, may be more likely to lead to the change of attitudes, resulting in attitude-behavior gap, which is also a concern in the future.

In addition, uncertainty has received relatively less attention in the previous studies of situational factors, especially for the developing countries, the acceleration of economic and social development and environmental change has led to a sharp decline in the predictability of consumers for the future, and the level of uncertainty awareness has been significantly improved. Although some researchers have studied the relationship between uncertainty and attitude-behavior gap (Smith and Hogg et al., 2007), the connotation of uncertainty in the research focuses on the consistency of views between individual self and others, its representativeness is relatively limited, and individual decision-making behavior does not involve consumer context. Some researchers think that when the time perspective of the long-term future is more prominent, the individual's attitude-behavior / intention consistency towards future-oriented behavior will increase (Rabinovich and Morton et al., 2010). In the context of green consumption, individuals will make a trade-off between their current pay and long-term future return. The existence of time span between the two will lead to a certain degree of uncertainty for consumers (Miniero et al., 2014). Individual differences and other situational factors will further affect this uncertainty, which is reflected in the change of attitude-behavior gap. As such, the uncertainty factors caused by time, interpersonal and etc. can also become another important direction in the future research.

4.3 Using Comprehensive Measurement Methods

From the perspective of methodology, the current controversy on the measurement of attitude-behavior gap affects the likelihood of using the research conclusions by researchers in other fields to a certain extent. The current research has difficulties in obtaining the real-life data of consumers' purchase of green products. Researchers have to use various research tools to obtain the data of consumers' attitudes and behavioral intentions about green products. So some scholars believe that the composition of attitude-behavior gap may be partly due to the instruments used in the research (Auger and Devinney et al., 2007). This view is reasonable to some extent, reflecting the importance of more objective and accurate measurement of consumers' attitude-behavior gap in this field.

Many of the attitude-behavior gap scales used in previous green consumption studies actually measure the future intention of consumers and do not ask questions related to actual behaviors (Andorfer and Liebe, 2012). As a result, respondents may conceal, exaggerate or mistakenly recall their actual behaviors, while those who focus on intention and attitude tend to overestimate their purchase possibilities due to social expectations (Salonen, 2021). For this reason, researchers believe that when designing relevant scales, the importance of context creation should be emphasized, that is, specific questions in the scales should be closely related to the context when consumers make decisions. The advantage of doing so is to alleviate some of the inherent problems in previous surveys (Auger and Devinney et al., 2007).

On the other hand, attitude measurement is still indispensable in the research of attitude-behavior gap in the future. How to reduce the negative impact of the shortcomings of self-reported data collection methods on the research is the problem that future research needs to face. The attitude of an individual toward an object is usually divided into explicit and implicit. When there is a conflict between implicit attitude and explicit attitude, many behaviors are caused by implicit attitude (Govind and Singh et al., 2019). Some researchers tested the attitude-behavior relationship towards stigmatised behavior (i.e. smoking) between smokers and vegetarians / omnivores with explicit and implicit attitude measurements (Swanson and Swanson et al., 2001). The results show that compared with implicit attitude, smokers show a stronger attitude-behavior consistency to smoking behavior in explicit attitude, whereas they are more inclined to accept smoking behavior in their heart. On the contrary, vegetarians / omnivores show attitude-behavior consistency in both explicit and implicit attitudes. It can be further inferred that the effectiveness of implicit attitude test largely depends on the ability to grasp the deep-rooted ideas or views about the test object held by the individual, such as the stereotype and prejudice of specific things. Therefore, if the implicit attitude test is combined in the study of attitude-behavior gap in the context of green consumption, it will help to produce more ideal test results to choose those attitude objects that consumers have certain stereotypes or prejudices towards them as the research objects in the test design.

Conclusion

This article reviewed the contributions and gaps of the extant research in the past decade and proposes future research directions. The external expression of consumers' demand for green products in attitude and behavior may be affected by external factors. The phenomenon of attitude-behavior gap in the context of green consumption has been confirmed in many countries. To sum up, a more comprehensive measurement method can be considered in the future research to solve the problem of measurement scientificity, including the combination of attitude measurement and behavior measurement, explicit attitude and implicit attitude measurement. Through the comprehensive use of different methods, we can make up for the defects of other methods with their own advantages, so as to obtain more scientific and real measurement results.

5 Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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