

Article

Exploring the Influence of Environmental Values on Green Consumption Behavior of Apparel: A Chain Multiple Mediation Model among Chinese Generation Z

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Abstract: There is a problem among Generation Z regarding the insufficient perception of green apparel consumption and the “perception–action paradox”, which presents a great challenge to China’s future sustainable development. To address this problem, we constructed a chain multiple mediation research framework that explored the transmission paths between the environmental value and green consumption behavior of apparel, as well as the associated influence mechanisms; this was performed by integrating environmental responsibility and green consumption intention. Data for this study were collected through a multistage sampling survey of 657 Chinese Gen Z members born between 1995 and 2002. Our results reveal that all three types (egoism, altruism, and biospheric values) of environmental values had different direct and indirect effects on the green apparel consumption behavior for Gen Z members, but the indirect effects of each aspect significantly outweighed their direct effects. In terms of the direct effects, egoistic values had no significant direct negative effect on green apparel consumption behavior, whereas the significant positive direct effect of the biospheric values was greater than that of altruistic values. The greatest mediating effect between the environmental values and green apparel consumption behavior was green consumption intention, followed by environmental responsibility, and ending with the chain mediation effect of environmental responsibility and green consumption intention. These findings suggest that it is imperative to stress the cultivation of green consumption intentions, environmental responsibility, and environmental values and bridge the seamless link among these variables for the promotion of green apparel consumption practices in Generation Z. This is the first study that explicitly identifies the significant chain mediating effect of environmental responsibility and green consumption intention between the environmental values and green apparel consumption behavior. Our findings broaden the theoretical research perspective of green apparel consumption behavior and provide a reference for the guiding of green consumption practices and policy formulation for the global population of Generation Z.

Keywords: environmental value (ENV); green consumption behavior of apparel (GCBA); environmental responsibility (ER); green consumption intention (GCI); chain multiple mediation



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1. Introduction

As the environment continues to deteriorate, environmental problems have attracted public attention worldwide, and green consumption has become the strongest voice of the times. More and more consumers are becoming more conscious about environment-related issues [1] and take sustainable consumption as their responsibility and behavioral intentions. A survey by Nielsen covering more than 30,000 consumers from 60 countries in 2015 demonstrated that nearly three-quarters of individuals aged 19–34 years (as of 2015) would like to pay more for sustainable products [2]. In China, over 90% of consumers are aware of sustainable consumption, and 70% of consumers are very conscientious

of it [3]. However, growing public concerns about environmental issues have not led to a parallel increase in the consumption of green products over the past few years [4]. The global market share of green products was less than 4% in 2013 [4], and sustainable products only contributed 20% to the total consumption of China in 2021 [3]. Taking the apparel industry as an example, the prevalence of consumerism has stimulated the idea of buying new apparel regularly [5] and led to the trend of “fast fashion”. “Fast fashion” is characterized by a shortened fashion cycle, presenting cheap manufacturing, more frequent consumption, and a short-lived use and disposal of apparel items [6]. This trend has promoted the formation of rapid response systems [7] and flexible supply chains in the apparel industry [8]. However, it has also resulted in a considerable waste of resources and serious environmental pollution problems in the apparel industry [9,10], accounting for approximately 8–10% of global carbon emissions [11].

As the largest developing economy, China has been playing a dominant role in the global apparel industry, and the Chinese apparel market has been projected to reach a value of USD 615 billion by 2025 [12]. In the context of “carbon peaking and carbon neutrality”, many Chinese consumers have expressed their intentions to reduce clothing consumption and purchase green clothing as much as possible [8]. However, the reality is that they still enjoy over-consumption and are facing the dilemma of green clothing consumption [13]. This is particularly evident among members of Generation Z (abbreviated to Gen Z) [14], who are a potent force for eco-friendly practices in the apparel industry [8]. Undoubtedly, the apparel industry in China is facing a huge challenge in terms of commitment and action towards sustainability.

Gen Z, whose members are born between the years of 1995 and 2012 [15], is a group of digital natives who are extensively engaged with technology [16]. They are full of confidence, loving self-expression, adventure, and more eager to achieve their values [17]; they are considered to be the most powerful driver of consumption [18], contributing approximately USD 323 billion alone to the US, and comprising 40% of US consumers in 2021 [8]. As they are well-educated and actively utilize social media [19], they are good at accepting new concepts (e.g., collaborative clothing consumption [20]). Compared with other generations, Gen Z is more knowledgeable about sustainable living and gives more priority to environmentally friendly (often referred to as green) products [21]. Hence, Gen Z is considered to be the most motivated potential and influential generation among all generations in terms of sustainable consumption, representing about 280 million people in China [17]. Meanwhile, Gen Z, characterized as fashion trendsetters, tends to use clothing as an impression management tool; the members prefer to reflect their social status, prestige, and success through material ownership and are inclined to instant gratification consumption [13] to satisfy their hedonic and fashion needs [22]. They are more likely to be involved in compulsive buying and the so-called “mianzi” consumption of luxury goods [23] rather than adopt an environmentally friendly lifestyle [24,25]. Hence, they face difficulties integrating green behavior into their daily lives [26], showing a “perception–action paradox”. On the one hand, they offer a strong vital concern for environmental issues and seem to hold well-grounded environmental values. On the other hand, they are deeply involved in over-consumption [27,28] and non-environmentally friendly consumption [1]. This implies that the positive environmental values of Gen Z do not inspire them to develop a higher sense of environmental responsibility and contribute to green consumption intentions and behaviors. Then, what causes the gap between the environmental values and green consumption behaviors in Gen Z? Are environmental responsibility and green consumption intentions important transmitting variables between environmental values and green consumption behavior? What is the influence mechanism between them?

Regarding the green consumption of Gen Z, researchers in many countries have made significant contributions. The existing studies available mainly include the following research focuses. One focus has been the current status of green consumption in specific categories of products, such as the green consumption of food and household appliances. Another focus has been the influencing factors of green consumption, such

as the consumers' personality, knowledge, socio-demographic characteristics, consumers' pro-environmental attitudes, etc. Previous research has examined the direct influence of consumers' environmental values on green consumption, but the "perception–action paradox" is still widely found among Gen Z worldwide, suggesting that there are likely other transmission paths between them; could it be the influence of environmental responsibility and green consumption intention? In addition, the green consumption behavior of clothing is more complex than other types of environmentally friendly products [1], involving the influence of multidimensional variables such as personal, psychological, social, cultural, and apparel-related attributes, such as style, trend, and fit. To the best of our knowledge, the relationship between environmental values and green consumption behavior of apparel, as well as the influence mechanism of the presence of environmental responsibility and green consumption intention have rarely been addressed in the literature. This study takes Chinese Gen Z as its research subject and explores the internal psychological mechanisms present by testing the respective and chain-mediating roles of the studied variables, aiming to provide a corresponding decision basis and policy suggestions for the promotion of sustainable consumption around the world.

The main research questions of this study were as follows:

- (1) How do environmental values influence the green clothing consumption behavior of Gen Z?
- (2) How do environmental responsibility and green consumption intention impact green clothing consumption behavior?
- (3) Does the relationship between the environmental values and green consumption behavior of apparel depend on the presence of environmental responsibility and green consumption intention? If so, in what way?

The remainder of the paper is structured as follows: Section 2 provides a comprehensive literature review and the hypothesis development; Section 3 introduces the research methodology; Section 4 presents the results of the empirical investigation in detail; and Section 5 provides a discussion of all findings. Section 6 puts forward the study's theoretical contributions and managerial insights, which is then closed with the conclusions and study limitations being listed in Section 7.

2. Literature Review and Hypotheses Development

2.1. Green Consumption Behavior of Apparel (GCBA)

Green consumption, often related to environmentally sustainable consumption [29], is an effective measurement that reduces the negative impacts of consumption on the environment and eco-systems [30]. It details the consumers' responsibility of adopting environmentally friendly behaviors to attain compatibility with safeguarding the environment between the present and future generations [31]. In this regard, green consumption behavior of apparel, characterized by resource conservation and environmental protection, is mainly manifested by a clothing consumption reduction, the usage and recycling of second-hand clothing, and the purchase of green apparel products; thus, it reduces the negative impacts of apparel consumption to the environment during the manufacturing, usage, and recycling processes [32,33]. Among them, the purchase of green apparel is considered the best approach over the others [34]. This is because green apparel is characterized by its use of organically grown fibers, recycled materials, having no dyeing process, having environmentally friendly labeling or packaging techniques, and having a long life [32]; these aspects are beneficial to the environment and ecology in more than one stage of their respective life cycles [35,36].

Although green clothing reduces their environmental impact and offers other similar benefits such as functional benefits [37], the consumption of green clothing has not met expectations due to the inadequate awareness of consumers [21], general premium of conventional clothing [38], and certain sacrifices in personal interests [39]. Only a small proportion of consumers regard sustainability as a primary criterion when evaluating alternatives in the process of buying apparel [40]. At the same time, most customers are still

influenced by the hedonism of sensory experiences and the beauty of apparel in their consumption [41]. A few studies focusing on green apparel have explored several factors, such as consumer perception [42], values (fashion involvement) [1], budget constraints [33,36], reference groups [25], etc.; the question, however, remains why consumers do not adopt green consumption practices [43]. Therefore, exploring the determinants of the green consumption of apparel for the young generation is an important and urgent task.

2.2. *The Influence of Environmental Values (ENV) on Green Consumption Behavior of Apparel*

Values, the guiding principles in people's lives [44,45], determine what people want to engage in, what knowledge and perceptions they want to acquire most, how people evaluate various aspects of situations, and how they consider and choose behavioral alternatives, which in turn affects their actual behavior [46]. The existing studies revealed that values had a predominant influence on individual environment-friendly behaviors [47]; however, values differ between different individuals and contexts. This implies that people tend to make choices and act according to the values they consider most important, especially when facing conflicting values. Different people make different choices based on the priority of various values [46].

As a special category of values, environmental values provide individuals with criteria and standards for viewing environmental issues and are regarded as an important cornerstone for interpreting various pro-environmental behaviors in-depth. Currently, the three types of values proposed by Stern et al. [48] are widely recognized: egoistic, altruistic, and biospheric values. These values have been clearly distinguished by De Groot et al. [49,50]. Egoistic values especially emphasize costs and benefits from an individual's environmental actions for personal gain. Only when the perceived benefits exceed the perceived costs will the individuals generate an environmentally friendly intention and vice versa. Altruistic values focus on the outcomes of actions for other people, while biospheric values highlight the perceived costs and benefits of an individual's environmentally friendly behavior for the ecosystem and biosphere as a whole [50]. Several studies have examined environmental values as predictors of green consumption behavior, which revealed that individuals who endorsed altruistic and particularly biospheric values were more likely to engage in pro-environmental behavior compared with those who strongly endorsed egoistic values [50,51]. In the apparel field, Bielawska and Grebosz-Krawczyk found that environmental values had a significantly positive impact on consumers' choice of behavior regarding green clothing products [33]. Hong et al. [52] addressed that altruistic values significantly affected the post-purchase satisfaction of green apparel products and influenced the willingness to repurchase green apparel products. However, it is still unsolved how all three values influence the green consumption of apparel for Chinese Gen Z members, and which is most important for understanding the green consumption of apparel. Based on the discussion above, the following hypotheses were proposed.

Hypothesis 1 (H1). *Environmental values significantly influence green consumption behavior of apparel.*

Hypothesis 1a (H1a). *Egoistic values significantly influence green consumption behavior of apparel.*

Hypothesis 1b (H1b). *Altruistic values significantly influence green consumption behavior of apparel.*

Hypothesis 1c (H1c). *Ecological values significantly influence green consumption behavior of apparel.*

2.3. Mediating Effect of Environmental Responsibility (ER)

Regarding environmental responsibility, most of the literature refers to the corporate environmental responsibility [53] rather than consumer environmental responsibility [54], which we shall discuss in this study. Stone et al. [55] defined environmental responsibility (ER) as, “a state in which a person expresses an intention to take action directed toward remediation of environmental problems—acting not as an individual consumer with his or her own economic interests, but through a citizen-consumer concept of societal-environmental well-being”. This implies that environmental responsibility enables people to confront the negative impact of their behavior on the environment and resources, internalize their perception and responsibility toward the environment, and then change their decision-making tendencies and behavioral habits, resulting to an active practice of pro-environmental behavior. The importance of environmental responsibility to green consumption behavior is evident.

Slavoljub et al. have confirmed the positive linear dependence between environmental values and personal environmental responsibility among young people in Serbia [56]. Barr and Gilg [57] found that committed environmentalists developed a high level of concern and value for environmental issues and demonstrated a willingness to accept a personal responsibility and moral obligation for improving the environment. Thus, we proposed the following hypotheses.

Hypothesis 2 (H2). *Environmental values exert a significant effect on environmental responsibility.*

Hypothesis 2a (H2a). *Egoistic values exert a significant effect on environmental responsibility.*

Hypothesis 2b (H2b). *Altruistic values exert a significant effect on environmental responsibility.*

Hypothesis 2c (H2c). *Ecological values exert a significant effect on environmental responsibility.*

Meanwhile, it has been confirmed that an individual’s environmental responsibility is the most fundamental antecedent variable of their pro-environmental behavior [48], which influences all types of environmental behaviors [58,59]. Kaiser and Scheuthle [60] found a positive relationship between consumer environmental responsibility and environmentally friendly behavior in Swiss citizens. A few research studies have demonstrated that environmental responsibility has been considered a mediating variable to explain consumers’ pro-environmental behaviors. Shahrin et al. [61] examined the mediating role of environmental responsibility between “compensatory health beliefs and pro-environmental behavior” and “environmental self-identity and pro-environmental behavior” in nutraceuticals consumption.

Although past studies have examined the direct and indirect effects of environmental values on green purchasing behavior, current research is not available on the mediating role of environmental responsibility in the relationship between environmental values and the green consumption behavior of clothing. With the awakening of environmental awareness in recent years, Gen Z has been encouraged to establish better environmental values; they tend to exhibit higher responsibility and commitment in solving environmental problems, in turn enhancing the individual green consumption behavior of clothing. Based on the discussion above, we inferred the following hypotheses.

Hypothesis 3 (H3). *In the presence of environmental responsibility, environmental values have an influence on the green consumption behavior of apparel.*

Hypothesis 3a (H3a). *In the presence of environmental responsibility, egoistic values have an influence on the green consumption behavior of apparel.*

Hypothesis 3b (H3b). *In the presence of environmental responsibility, altruistic values have an influence on the green consumption behavior of apparel.*

Hypothesis 3c (H3c). *In the presence of environmental responsibility, biospheric values have an influence on the green consumption behavior of apparel.*

2.4. The Mediating Effect of Green Consumption Intention (GCI)

Green consumption intention is defined as the willingness of individuals to purchase eco-friendly products (rather than conventional products) and their related services [62]. Many empirical studies [63] and theories (such as TPB and TRA) [64] on green consumption have shown that green consumption intention and green consumption behavior are highly correlated. Therefore, green consumption intention is an essential key indicator in the study of the green consumption behavior of apparel. Green consumption intention is a manifestation of voluntary behavior, and it is influenced by the two important drivers of willingness and intensity of effort to perform [65]. It has been demonstrated that the more consumers are willing to understand eco-friendly products, the higher their intention to use green products [66]. Environmental values are one of the factors influencing green consumption intentions and have a positive effect on these intentions [43,67]. Varshneya et al. [26] reported that green consumption values positively influence the behavioral intention for organic clothing. Thus, we developed the following hypotheses.

Hypothesis 4 (H4). *Environmental values significantly influence green consumption intention.*

Hypothesis 4a (H4a). *Egoistic values significantly influence green consumption intention.*

Hypothesis 4b (H4b). *Altruistic values significantly influence green consumption intention.*

Hypothesis 4c (H4c). *Biospheric values significantly influence green consumption intention.*

In fact, many studies have confirmed that behavioral intention is an important factor that influences an individual's actual consumption behavior, and it acts in various roles as an antecedent, mediator, and outcome variable. Behavioral intention has been demonstrated as a direct antecedent variable of environmental behavior [68,69] and is widely used in studies of organic food, electric vehicles, energy-efficient appliances, and green clothing [70]. The theory of reasoned action (TRA) demonstrates that behavioral intention is deemed to be an immediate antecedent of behavior [64], and some researches have verified that purchase intention exerts a positive effect on the purchase behavior of organic products [71,72]. Based on the TPB model, green product consumption intention completely mediates between green product purchase behavior and its antecedent predictor variables (i.e., attitudes toward green products, subjective norms, and perceived behavioral control) [13]. The positive effect of green consumption intention on green consumption behavior has also been validated [73,74].

In this study, we deduced that Chinese Gen Z members, who value self-expression, identity, and group affiliation, should demonstrate a positive value orientation toward environmental and ecological issues, show a high intention of green consumption [75], and should be more inclined to implement green clothing consumption behaviors. Therefore, the following hypotheses were developed.

Hypothesis 5 (H5). *In the presence of green consumption intention, environmental values have an influence on the green consumption behavior of apparel.*

Hypothesis 5a (H5a). *In the presence of green consumption intention, egoistic values have an influence on the green consumption behavior of apparel.*

Hypothesis 5b (H5b). *In the presence of green consumption intention, altruistic values have an influence on the green consumption behavior of apparel.*

Hypothesis 5c (H5c). *In the presence of green consumption intention, biospheric values have an influence on the green consumption behavior of apparel.*

2.5. Chain Mediating Effect of Environmental Responsibility and Green Consumption Intention

Environmental responsibility originates from the normative activation model in social psychology and has been widely used in consumer behavior research [56]. As mentioned above, the positive contribution of the consumer's environmental responsibility to green consumption behavior has been proven in other countries [60]. Only a few studies that have been conducted on the relationship between environmental responsibility and green consumption intentions suggest that environmental responsibility is an important factor influencing green consumption intentions. For example, Attaran and Celik [76] revealed that individuals with a high level of environmental responsibility were more likely to exhibit favorable attitudes and purchase intentions toward green buildings in the United States. Yue et al. concluded in their study that consumers' environmental responsibility significantly affects their green consumption intention in the Chinese context [77]. Therefore, the environmental responsibility is not only an important factor influencing green consumer behavior, but also an important factor that drives green consumption intentions. When consumers intentionally try to solve environmental issues, environmental responsibility will become an obligation of that individual, which tends to be an important predictor of green consumption behavior. That is, with an increase in the environmental responsibility of the consumer, individuals are more likely to generate green consumption intentions and buy environmentally friendly clothing. Hence, we assumed the following hypothesis.

Hypothesis 6 (H6). *Environmental responsibility has a significant effect on green consumption intention.*

Considering the close relationship between environmental responsibility and green consumption intention, a chain mediating effect may exist between the environmental values and green consumption of apparel, where environmental values can indirectly influence green consumption intention via environmental responsibility, thus influencing the green consumption of apparel. To the best of our knowledge, the chain of environmental values–environmental responsibility–green consumption intention–green consumption of apparel has not been explored in previous studies.

In the hypotheses stated above for this study, we have argued the role of environmental responsibility in mediating between environmental values and green consumption of apparel, i.e., the transmission path of “environmental values–environmental responsibility–green consumption of clothing”. Therefore, can green consumption intention further mediate the influence of the path from environmental responsibility to green apparel consumption? It has been demonstrated that there is a mediating path (environmental concern) between environmental responsibility and green consumption behavior [77]. Wang et al. [78] revealed the significant and positive mediating effect of behavioral intention on environmental responsibility and sustainable consumption behaviors when studying the sustainable consumption behaviors of rural residents in China. Therefore, we inferred that the transmission path exists, i.e., “environmental responsibility–green consumption intention–green consumption of clothing”. Based on the above analysis, the following hypotheses were proposed.

Hypothesis 7 (H7). *Environmental responsibility and green consumption intention play a chain mediating role between environmental values and the green consumption behavior of apparel.*

Hypothesis 7a (H7a). *Environmental responsibility and green consumption intention play a chain mediating role between egoistic values and the green consumption behavior of apparel.*

Hypothesis 7b (H7b). *Environmental responsibility and green consumption intention play a chain mediating role between altruistic values and the green consumption behavior of apparel.*

Hypothesis 7c (H7c). *Environmental responsibility and green consumption intention play a chain mediating role between ecological values and the green consumption behavior of apparel.*

Based on the above discussion, the green consumption behavior of the apparel chain mediating model was constructed as shown in Figure 1.

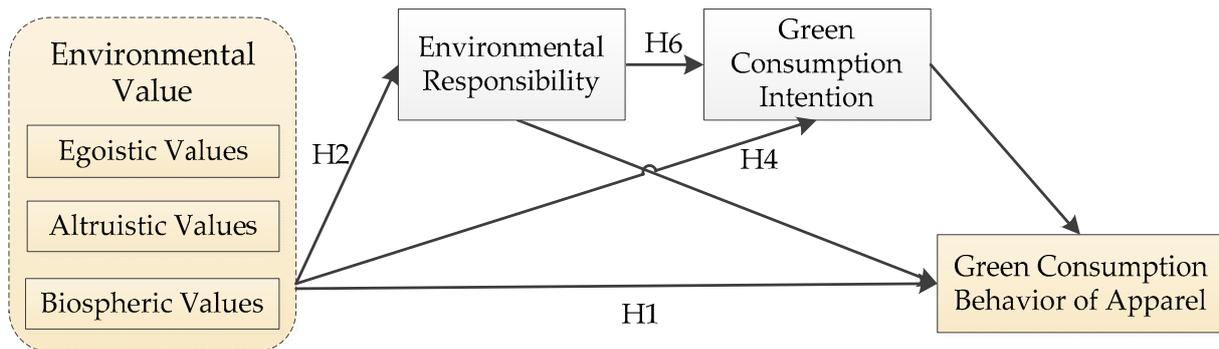


Figure 1. The proposed theoretical model (Note: The unlabeled H3, H5, and H7 in this figure represent the mediating effect and chain mediating effect of environmental responsibility and green consumption intention).

The relevant models of green apparel consumption behaviors related to environmental values, environmental responsibility, and green consumption intentions are summarized in Table 1. Obviously, there is no systematic and in-depth study on the transmission paths between environmental values and green apparel consumption behavior, especially the chain mediation path containing environmental responsibility and green consumption intention. The theoretical model proposed in this study contributes to a fulfillment of the research gap in the literature on environmental values and green consumption behavior of apparel.

Table 1. Summary of previous major studies and their models.

Authors	Independent Variable	Dependent Variable	Mediating Variable	Moderate Variable	Research Subjects
[1]	Value (fashion involvement)	Willingness to pay more for eco-apparel	Environmental knowledge, environmental concern, environmental behaviors	-	Undergraduate students in the USA
[25]	Past environmental behavior, green peer influence, green apparel knowledge	Green apparel purchase behavior	Perceived benefit of green apparel	-	Indian consumers
[33]	Environmental value, epistemic value, functional value, conditional value, social value, emotional value	Consumer behavior regarding green products	-	-	Polish consumers

Table 1. Cont.

Authors	Independent Variable	Dependent Variable	Mediating Variable	Moderate Variable	Research Subjects
[36]	Environmental knowledge, general environmental attitudes, perceived money availability, perceived store accessibility	Actual buying behavior of sustainable apparel	Apparel environmental attitudes, subjective norms, perceived behavioral control, behavioral intentions	-	College students in USA
[72]	Knowledge, environmental concern, attitudes of environmentally sustainable apparel	Purchasing behavior of environmentally sustainable apparel	-	-	Kuwaiti women
[79]	CSII(Consumer susceptibility to interpersonal influence)-normative, CSII-informative, environmental apparel knowledge	Green apparel consumption behavior	General environmentally responsible behavior	-	Students (age 18-30) of Midwestern University, United States
[52]	Environmental value	Purchase satisfaction, repurchase intention of Eco-friendly fashion products	-	-	Consumers in Korea
[56]	Environmental value	Environmental responsibility	-	-	Young people in Serbia
[80]	Environmental apparel knowledge	Environmentally responsible apparel consumption behavior	Environmentalism (internal, substantive, external), materialism (success, centrality/acquisition, happiness)	-	Students at Midwestern University, United States
[22]	Convenience, information availability, selection, customized offerings, trend, social, adventure, authority, and status	Green apparel purchase intention	Shopping motivation (utilitarian and hedonic motivation)	Sex, family income	India consumers aged from 15 to 65 years old
[43]	Green communication, altruism, and openness to change	Purchase intention towards green apparel	Attitude	-	Young consumers in India
[61]	Compensatory health beliefs, environmental self-identity, and perceived environmental responsibility	Pro-environmental behavior	Perceived environmental responsibility	-	Nutricosmetics consumers in Malaysia
[26]	Green consumption values and social influence	Purchase intention for organic clothing	Attitude	-	Young consumers in India
[73]	Chinese cultural values (specifically, the Doctrine of the Mean)	Green purchasing intention	Lifestyles of consumers (fashion consciousness, leadership, cost consciousness, and development consciousness)	Environmental knowledge	Chinese consumers
[77]	Environmental responsibility	Green consumption intention	Environmental concern	Price sensitivity	Chinese consumers

Table 1. Cont.

Authors	Independent Variable	Dependent Variable	Mediating Variable	Moderate Variable	Research Subjects
[78]	Environmental value, environmental knowledge, environmental responsibility, environmental sensitivity, response efficacy, perceived behavioral control, perception of consequence	Sustainable consumption behavior	Behavioral intention	-	Rural residents in China
[70]	Brand experience, attitude towards green purchasing, perceived behavioral control, social influence, supportive behavior towards environmental organization	Purchase intention toward green apparel products	Customer engagement	-	Young consumers in India
[81]	Ecological consumer awareness (perceived consumer effectiveness, environmental concern, clothing environmental attitude), product consumption value (emotional, social, epistemic, price, functional)	Bamboo product purchase intention	-	-	College students in USA

3. Research Methodology

To address the “perception–action paradox” of green apparel consumption among the Chinese Gen Z, this study aimed to construct a chain multiple mediation research framework and to explore the transmission path between environmental values and green apparel consumption behavior, as well as the associated influence mechanisms. This was performed by integrating environmental responsibility and green consumption intention into the analysis.

3.1. Research Design

Based on the above research objectives, the research framework comprised four procedures (see Figure 2). First, a comprehensive literature review was conducted to address the research questions, followed by the development of hypotheses, a research model, and taking of measurements. Second, a multistage sampling technique was used to ensure that the questionnaire was targeted to the nationwide population of Gen Z, who were born between 1995 and 2002 and had engaged in green clothing consumption behaviors. Third, data processing and analysis were conducted, including data cleaning, descriptive statistical analysis, common method bias test, reliability and validity analyses, correlation analysis, and chain mediation effect test. The conclusions and management insights will be presented.

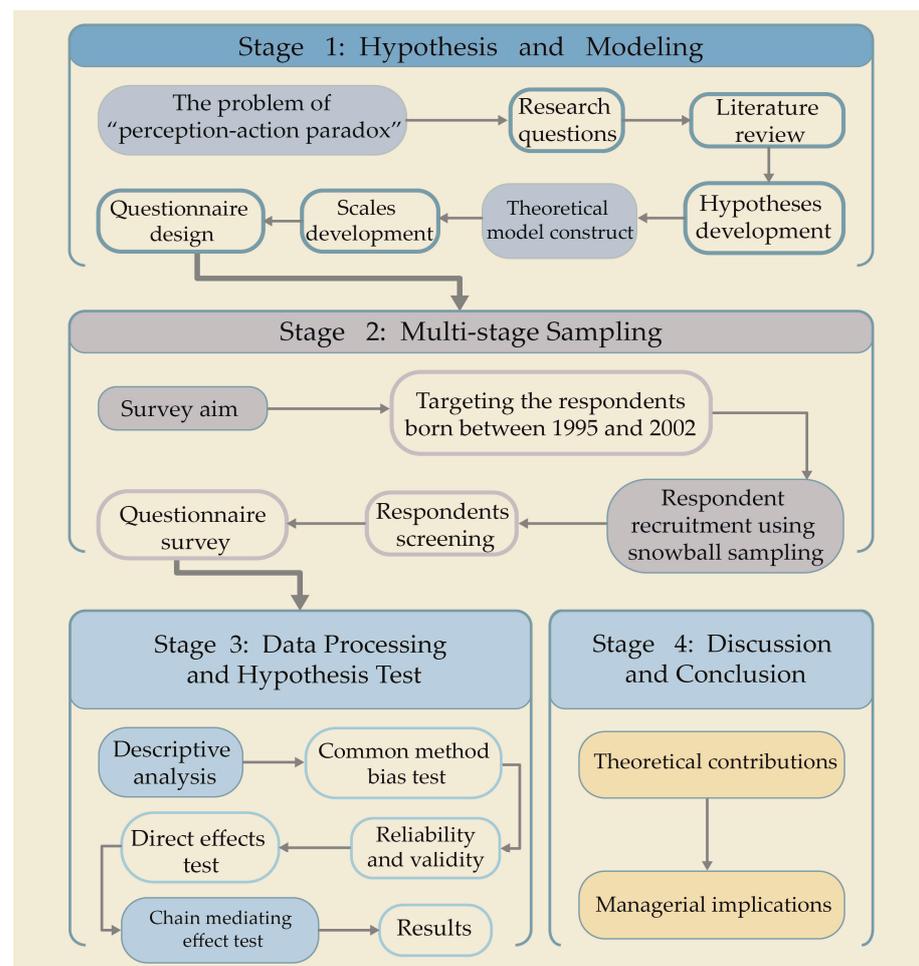


Figure 2. The research roadmap.

3.2. Questionnaire and Instrument Development

The theoretical model proposed in this study contains six instruments in total, all of which are latent variables that cannot be directly measured. Therefore, a structured self-administered questionnaire with multiple items was developed using each instrument. The questionnaire comprises two main sections. The first section measures the respondents' demographic information, such as sex, education, monthly consumption, etc. The second section demonstrates the consumers' environmental values and green consumption behavior of apparel, as well as their environmental responsibility and green consumption intention.

To measure Gen Z's environmental value, we adopted the measurement scale developed by De Groot et al. [50]. The scale comprises three dimensions, including the egoistic, altruistic, and biospheric values, in a total of 12 items measuring the consumers' overall environmental value. Environmental responsibility was assessed using 3 items adopted from Stone et al. [55]; green consumption intention was measured by 3 items adopted from Ajzen [13]. Three items evaluated the green consumption behavior of apparel, which was developed on our own based on the research results found in [32,36]. All items (see Table 2) were anchored on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), with 3 indicating neither agree nor disagree.

Table 2. The measurement scale and resource.

Variable	Items	Resource
Egoistic Values (EV)	EV1	Social power: control over others, dominance
	EV2	Wealth: material possessions, money
	EV3	Authority: the right to lead or command
	EV4	Influential: having an impact on people and events
Altruistic Values (AV)	AV1	Social justice: correcting injustice, care for the weak
	AV2	A world at peace: free of war and conflict
	AV3	Equality: equal opportunity for all
	AV4	Helpful: working for the welfare of others
Biospheric Values (BV)	BV1	Protecting the environment: preserving nature
	BV2	Preventing pollution: protecting natural resources
	BV3	Respecting the earth: harmony with other species
	BV4	Unity with nature: fitting into nature
Environmental Responsibility (ER)	ER1	Everyone has an obligation to take responsibility for the environment.
	ER2	I would rather sacrifice my personal interests to protect the environment.
	ER3	I have an obligation to discourage un-environmentally friendly consumption behavior.
Green Consumption Intention (GCI)	GCI1	I would like to collect and pay more attention to information concerning green products.
	GCI2	I would like to buy and use green products to protect the environment.
	GCI3	I would like to introduce and recommend green products to my family members and friends.
Green Consumption Behavior of Apparel (GCBA)	GCBA1	It is well worth investing more money in green clothing.
	GCBA2	I often buy green clothing products at an affordable price.
	GCBA3	I often give priority to green clothing over conventional products.

Meanwhile, previous studies have shown that demographic variables of respondents such as sex, age, education, and expenditure have impacts on their consumption behavior [33,82]. Thus, we introduced sex, education, and monthly expenditure as control variables in this study to avoid differences between clusters caused by these variables.

3.3. Sampling Technique and Data Collection

Regarding the reliability and validity of the survey, all items measured in the six constructs of the questionnaire were developed on scales that have been proven in previous relevant studies and have been revised by consulting experts in the apparel field. Respondents were also invited to review and test the items repeatedly until the items in the questionnaire were logical and rigorous.

The formal questionnaire was carried out from April to August 2021. All questionnaires were anonymous, and our collected data included no personally identifiable information. To ensure a smoothly conducted survey process, the target population in this study focused on Chinese Gen Z members aged 18 years old and above, i.e., those born between 1995 and 2002, who are among the leading consumers with established values and independent apparel consumption and decision-making capabilities. Given the impact of the COVID-19 pandemic in China during this period, there were many difficulties for the field surveys. We adopted the snowball sampling method through the app WeChat, the most popular mobile social networking platform in China [83] that was reported to be used by more than three billion active users daily by the end of 2019 [84]. On the one hand, with the help of the WeChat links shared by friends, it was easy to find qualified interviewees in a quick, precise, and cost-effective manner to achieve a higher response rate [85]. On the

other hand, breaking through the geographical restrictions was possible to ensure that the interviewees involved came from the entire region of the country.

Eventually, a total of 803 questionnaires were collected, of which 146 questionnaires were deleted due to incomplete or illogical answers to questions; we retained 657 valid questionnaires and used them for the subsequent data analysis. The effective recovery rate was 81.8%. The survey respondents covered the eastern, central, and western regions of China. The survey sample is shown in Table 3, which shows that the male-to-female ratio was 47.8:52.2. The education level was mainly college or bachelor's degree, and the monthly consumption was concentrated below CNY 3000. This is mainly because the respondents of this study focus on Gen Z, who are independent consumers and are basically at the stage of studying in colleges or are simply working; therefore, the survey respondents' group characteristics such as age, education level, and monthly consumption amount are relatively concentrated. Regardless, they were eligible for this survey and have a certain level of representativeness.

Table 3. Summary of the demographic characteristics of respondents ($n = 657$).

Variable	Category	Frequency	Percent
Sex	Male	314	47.8%
	Female	343	52.2%
Education	Elementary school and below	3	0.5%
	Senior high school	24	3.7%
	Junior college and Bachelor's degree	564	85.8%
	Masters and above	66	10.0%
Monthly Consumption	Less than CNY 1500	406	61.8%
	CNY 1501–3000	226	34.4%
	CNY 3001–6000	16	2.4%
	More than CNY 6000	9	1.4%

4. Empirical Analysis

4.1. Common Method Biases Test

The green apparel consumption model constructed in this study serves as a multi-variate analysis model involving six variables, such as egoistic values, altruistic values, biospheric values, environmental responsibility, green consumption intention, and green apparel consumption behavior. The single questionnaire self-assessment approach that was used in this study is prone to problems of common method bias (CMB) [86]; therefore, the questionnaire was anonymously administered and with reduced semantic ambiguity. Additionally, Harman's single-factor test was used to test the common method's deviation before data analysis to ensure the study's rigor.

Utilizing the SPSS 22.0 statistical analysis software, the results of the Harman's single-factor test showed that six factors abstracted in a total explained variance of 79.689%. The explained variance of the first factor accounted for 20.665% of the total variance, far less than 50% [87]; there is no single factor or common factor that plays a major role in explaining the variance. In addition, the results of the common method bias test for the typical multifactor model fit are shown in Table 4. The single-factor model fit was very poor ($\chi^2 / df = 23.883$, CFI = 0.618, NFI = 0.609, NNFI = 0.576, and RMSEA = 0.187), which presented no serious common method bias in this study.

Meanwhile, the fit results of the six-factor model were significantly better than that of the others, indicating that the six-factor model was superior, with good data matching and a better discriminant validity for the measurement of each variable scale (see Table 4). In the six-factor model, $\chi^2 / df = 3.916 < 5$, CFI = 0.955, NFI = 0.941, and NNFI = 0.946, all of which were greater than 0.9; the model also had RMSEA = 0.067 < 0.08, indicating that the model constructed in this study has a good fit and is acceptable.

Table 4. Results of common method bias test ($n = 657$).

No.	Models	χ^2	df	χ^2/df	RMSEA	CFI	NFI	NNFI
1	Single-factor model (EV + AV + BV + ER + GCI + GCBA)	4513.941	189	23.883	0.187	0.618	0.609	0.576
2	Three-factor model (EV + AV + BV, ER + GCI, GCBA)	2789.464	186	14.997	0.146	0.77	0.758	0.740
3	Three-factor model (EV + AV + BV, ER, GCI + GCBA)	2419.065	186	13.006	0.135	0.803	0.790	0.777
4	Four-factor model (EV + AV + BV, ER, GCI, GCBA)	2040.544	183	11.151	0.124	0.836	0.823	0.812
5	Five-factor model (EV, AV + BV, ER, GCI, GCBA)	1300.608	179	7.266	0.098	0.901	0.887	0.884
6	Five-factor model (EV, AV, BV, ER, GCI + GCBA)	1433.755	179	8.01	0.103	0.889	0.876	0.87
7	Six-factor model (EV, AV, BV, ER, GCI, GCBA)	681.436	174	3.916	0.067	0.955	0.941	0.946

Notes: df: degree of freedom; RMSEA: root mean square error of approximation; CFI: comparative fit index; NFI: normed fit index; NNFI: non-normed fit index; EV: egoistic values; AV: altruistic values; BV: biospheric values; ER: environmental responsibility; GCI: green consumption intention; GCBA: green consumption behavior of apparel.

4.2. Reliability and Validity Test

In this study, a Cronbach's alpha value was used to measure the reliability of each construct. The results of the reliability analysis (see Table 5) showed that the Cronbach's α values of egoistic values, altruistic values, biospheric values, environmental responsibility, green consumption intention, and green consumption behavior of clothing were 0.839, 0.867, 0.968, 0.826, 0.862, and 0.928, respectively, which were higher than the critical value of 0.7 [88], indicating that all scales passed the reliability test.

Table 5. Reliability and validity test.

Constructs	Items	Unstd.	S.E.	Z	p-Value	Std.	Cronbach's Alpha (α)	CR	AVE
Egoistic Values (EV)	EV1	1	-	-	-	0.754	0.839	0.846	0.581
	EV2	0.831	0.050	16.697	0.000	0.674			
	EV3	1.103	0.052	21.174	0.000	0.873			
	EV4	0.965	0.053	18.330	0.000	0.736			
Altruistic Values (AV)	AV1	1	-	-	-	0.849	0.867	0.872	0.633
	AV2	0.82	0.046	17.887	0.000	0.640			
	AV3	1.019	0.037	27.399	0.000	0.863			
	AV4	1.033	0.042	24.845	0.000	0.809			
Biospheric Values (BV)	BV1	1	-	-	-	0.95	0.968	0.968	0.885
	BV2	1.015	0.019	53.677	0.000	0.951			
	BV3	1.022	0.021	48.801	0.000	0.932			
	BV4	0.958	0.02	48.283	0.000	0.929			
Environmental Responsibility (ER)	ER1	1	-	-	-	0.753	0.826	0.831	0.621
	ER2	1.248	0.063	19.879	0.000	0.841			
	ER3	1.148	0.062	18.614	0.000	0.768			
Green Consumption Intention (GCI)	GCI1	1	-	-	-	0.719	0.862	0.870	0.692
	GCI2	1.229	0.057	21.712	0.000	0.908			
	GCI3	1.184	0.057	20.930	0.000	0.858			
Green Consumption Behavior of Apparel (GCBA)	GCBA1	1	-	-	-	0.859	0.928	0.929	0.815
	GCBA2	1.059	0.032	33.023	0.000	0.925			
	GCBA3	1.062	0.032	32.832	0.000	0.922			

Notes: CR: composite value; AVE: average variance extracted.

The constructs were tested for convergent and discriminant validity based on the reliability test. The CR values of all constructs (see Table 5) were higher than the critical

value of 0.7, and the AVE values of all constructs were greater than the critical value of 0.5. The square root of the AVE values of all constructs (see Table 6) was more significant than the Pearson correlation coefficients between each construct and other constructs in the conceptual model, indicating that each construct was statistically different from the others [88]. Thus, the results showed good reliability and convergent validity.

Table 6. Discriminatory validity test of the potential variables ($n = 657$).

Variables	Mean	S.E.	EV	AV	BV	ER	GCI	GCBA
Egoistic Values (EV)	3.879	0.665	0.762					
Altruistic Values (AV)	4.201	0.661	0.587 **	0.795				
Biospheric Values (BV)	4.628	0.664	0.451 **	0.703 **	0.941			
Environmental Responsibility (ER)	4.145	0.780	0.288 **	0.521 **	0.510 **	0.788		
Green Consumption Intention (GCI)	4.061	0.698	0.436 **	0.551 **	0.580 **	0.549 **	0.832	
Green Consumption Behavior of Apparel (GCBA)	3.839	0.788	0.303 **	0.463 **	0.462 **	0.485 **	0.551 **	0.903

Note: ** represents $p < 0.01$ (two-tailed). Diagonals (in bold) represent the square roots of the average variance extracted (AVE); the non-diagonal values represent the Pearson correlation coefficients.

4.3. Test of Correlation analysis

Results of the correlation analysis among the variables are also shown in Table 6, indicating a significant positive correlation between two of the constructs. Among them, egoistic values were significantly related to environmental responsibility ($r = 0.288$, $p < 0.01$), green consumption intention ($r = 0.436$, $p < 0.001$), and green consumption behavior of clothing ($r = 0.303$, $p < 0.01$); altruistic values had a significant relationship with environmental responsibility ($r = 0.521$, $p < 0.01$), green consumption intention ($r = 0.551$, $p < 0.01$), and green consumption behavior of clothing ($r = 0.463$, $p < 0.01$); biospheric values related to environmental responsibility ($r = 0.510$, $p < 0.01$), green consumption intention ($r = 0.580$, $p < 0.01$), and green consumption behavior of clothing ($r = 0.462$, $p < 0.01$). There was a significant positive relationship between environmental responsibility and green consumption intention ($r = 0.549$, $p < 0.01$) and green consumption behavior of clothing ($r = 0.485$, $p < 0.01$), and a significant positive relationship between green consumption intention and green consumption behavior of clothing ($r = 0.551$, $p < 0.01$). It is noteworthy that, compared with the altruistic and biospheric values, the correlation coefficients were lower between egoistic values and environmental responsibility, green consumption intention, and green consumption behavior of clothing.

4.4. The Direct Effects Test

The direct effects between the variables in this study's proposed model were verified using SPSS 22.0 software; the results of the multiple regression analysis of the model are shown in Table 7. Firstly, we tested the direct relationship between environmental values and green responsibility, green consumption intention, and green consumption behavior of apparel, i.e., whether H1, H2, and H4 were valid. As shown in Table 7, there was no significant direct effect of egoistic values on green consumption behavior of apparel ($\beta_{EV} = 0.034$, $p = 0.420$). There was a significant positive effect of altruistic values and biospheric values on green consumption intention ($\beta_{AV} = 0.253$, $\beta_{BV} = 0.269$, $p = 0.000$), i.e., H1a is not valid, while H1b and H1c are confirmed; There was no significant effect of egoistic values on environmental responsibility ($\beta_{EV} = -0.043$, $p = 0.286$), while altruistic values and biospheric values had a significant positive effect on environmental responsibility ($\beta_{AV} = 0.344$, $\beta_{BV} = 0.287$, $p = 0.000 < 0.001$), i.e., H2a was not valid, while H2b and H2c are supported; All three of the egoistic values, altruistic values, and biospheric values had a significant positive effect on green consumption intention ($\beta_{EV} = 0.150$, $p = 0.000 < 0.001$; $\beta_{AV} = 0.203$, $p = 0.000 < 0.001$; $\beta_{BV} = 0.374$, $p = 0.000 < 0.001$), i.e., H4a, H4b, and H4c were confirmed.

Table 7. Regression analysis of variables ($n = 657$).

Variable	ER	GCI	GCBA	Results
Sex	0.014	0.019	0.014	
Education	−0.014	−0.048	−0.016	
Monthly Consumption	0.005	0.024	−0.020	
Egoistic Values (EV)	−0.043	0.150 ***	0.034	
Altruistic Values (AV)	0.344 ***	0.203 ***	0.253 ***	
Biospheric Values (BV)	0.287 ***	0.374 ***	0.269 ***	
F	49.419 ***	70.617 ***	37.471 ***	
R ²	0.313	0.395	0.257	
Adjusted R ²	0.307	0.389	0.250	

Note: *** represents $p < 0.001$; ER: environmental responsibility; GCI: green consumption intention; GCBA: green consumption behavior of apparel.

Secondly, we tested the direct effect between environmental values and green consumption intention (see Table 8), which showed that the environmental values significantly and positively affected green consumption intention ($\beta_{ER} = 0.489$, $p = 0.000$); thus, H6 is supported.

Table 8. Direct effect test of environmental responsibility (ER) on green consumption intention (GCI) ($n = 657$).

Variable	β	T	p -Value	Results
Constant	2.121 ***	9.301	0.000	
Sex	0.040	0.879	0.380	
Education	−0.041	−0.706	0.480	
Monthly Consumption	0.016	−0.438	0.662	
Environmental Responsibility (ER)	0.489 ***	16.683	0.000	H6 is confirmed.
F		70.991 ***		
R ²		0.303		
Adjusted R ²		0.299		

Note: *** represents $p < 0.001$.

4.5. Chain Mediating Effect Test

In this study, two sequential mediating variables were included in the model, which formed three mediating paths: environmental values–environmental responsibility–green consumption behavior of apparel, environmental values–green consumption intention–green consumption behavior of apparel, and environmental values–environmental responsibility–green consumption intention–green consumption behavior of apparel. According to the test method and research results of the multistep mediating variables proposed by Hayes [89], the test of the mediating effect can be conducted regardless of the existence of main effects, and the key to the multistep mediating effect test is whether the mediating path with two sequential mediating variables is significant. Therefore, a bootstrap confidence interval test (5000 samples were selected at the 95% confidence level) was used in the SPSS 22.0 software to test the chain mediating effects of egoistic values, altruistic values, and biospheric values on green consumption behavior of apparel, respectively; each contained three paths, making a total of nine mediating paths. If the confidence interval of the mediated paths does not contain zero, it indicates that a mediating effect exists; if vice versa, there is no mediating effect.

The chain mediation effect test results of egoistic values on green consumption behavior of apparel are shown in Table 9. It can be seen that the 95% confidence interval of egoistic values \rightarrow environmental responsibility \rightarrow clothing green consumption behavior was [0.0504, 0.1297], which did not include zero, indicating a significant indirect effect; The 95% confidence interval of egoistic values \rightarrow green consumption intention \rightarrow clothing green consumption behavior was [0.0928, 0.1864], illustrating a significant indirect effect; The 95%

confidence interval of egoistic values \rightarrow environmental responsibility \rightarrow green consumption intention \rightarrow clothing green consumption behavior was [0.0373, 0.0851], showing that the chain mediating effect was significant; thus, hypothesis H3a, H5a, and H7a are verified. Since the direct effect of egoistic values on green consumption behavior of apparel was not significant ($\beta = 0.0748$, $[-0.0068, 0.1564]$ including zero); hence, environmental responsibility and green consumption intention completely mediate the relationship between egoistic values on green consumption behavior of apparel. The ratios of indirect effects to total effects for each mediating variable were 24.2% for the path of EV \rightarrow ER \rightarrow GCBA, 38.29% for the path of EV \rightarrow GCI \rightarrow GCBA, and 16.59% for the path of EV \rightarrow ER \rightarrow GCI \rightarrow GCBA, yielding a total indirect-to-total effect ratio of 79.08%. In comparison, the mediating effect of green consumption intention was the maximum, followed by environmental responsibility, and the minimum chain mediating effect of both variables.

Table 9. The chain mediation effect of EV on GCBA.

Paths	Effect	BootSE	BootLLCI	BootULCI	RTT/%	p-Value
Total effect	0.3575	0.0441	0.2710	0.4441	100	0.0000
Direct effect	0.0748	0.0415	-0.0068	0.1564	20.92	0.0722
Total indirect effect	0.2827	0.0337	0.2173	0.3503	79.08	
EV \rightarrow ER \rightarrow GCBA	0.0865	0.0202	0.0504	0.1297	24.20	
EV \rightarrow GCI \rightarrow GCBA	0.1369	0.0241	0.0928	0.1864	38.29	
EV \rightarrow ER \rightarrow GCI \rightarrow GCBA	0.0593	0.0123	0.0373	0.0851	16.59	

Note: RTT presents the ratio to total effect.

The results of the chain mediation effect test of altruistic values on green consumption behavior of apparel (see Table 10). It can be seen that the 95% confidence intervals for altruistic values \rightarrow environmental responsibility \rightarrow green consumption behavior of apparel, altruistic values \rightarrow green consumption intention \rightarrow green consumption behavior of apparel, and altruistic values \rightarrow environmental responsibility \rightarrow green consumption intention \rightarrow green consumption behavior of apparel were [0.0698, 0.1954], [0.0996, 0.2062], and [0.0506, 0.1077], respectively; all of the intervals do not contain zero, indicating significant indirect effects. Thus, hypothesis H3b, H5b, and H7b are verified. The ratio of indirect effects to total effects for each mediating variable was 19.54% for the path of AV \rightarrow ER \rightarrow GCBA, 20.62% for the path of AV \rightarrow GCI \rightarrow GCBA, and 13.92% for the path of AV \rightarrow ER \rightarrow GCI \rightarrow GCBA, with a total indirect effect to total effect ratio of 64.87%. The mediating effect magnitudes, in descending order, were green consumption intention, environmental responsibility, and the chain mediation of both. The direct effect of altruistic values on green consumption behavior of apparel ($\beta = 0.1933$, $p = 0.000$) was significant and accounted for 35.13% of the total effect. Therefore, environmental responsibility and green consumption intentions partially mediate the relationship between altruistic values and green consumption behavior of apparel.

Table 10. The chain mediation effect of AV on GCBA.

Paths	Effect	BootSE	BootLLCI	BootULCI	RTT/%	p-Value
Total effect	0.5497	0.0416	0.4680	0.6314	100.00	0.0000
Direct effect	0.1931	0.0471	0.1007	0.2855	35.13	0.0000
Total indirect effect	0.3566	0.0354	0.2879	0.4283	64.87	
AV \rightarrow ER \rightarrow GCBA	0.1300	0.0315	0.0698	0.1954	23.69	
AV \rightarrow GCI \rightarrow GCBA	0.1500	0.0274	0.0996	0.2062	27.12	
AV \rightarrow ER \rightarrow GCI \rightarrow GCBA	0.0766	0.0143	0.0506	0.1077	13.92	

Note: RTT presents the ratio to total effect.

The chain mediation effect test results of biospheric values and green consumption behavior of apparel are shown in Table 11. It can be seen that the 95% confidence intervals for biospheric values \rightarrow environmental responsibility \rightarrow green consumption behavior of

apparel, biospheric values → green consumption intention → green consumption behavior of apparel, and biospheric values → environmental responsibility → green consumption intention → green consumption behavior of apparel were [0.0748, 0.1980], [0.1168, 0.2214], and [0.0462, 0.0994], respectively; all intervals do not contain zero, indicating that they have significant indirect effects. Thus, hypothesis H3c, H5c, and H7c are verified. The ratio of indirect effects to total effects for each mediating variable was 24.15% for the path of BV→ER→GCBA, 30.21% for the path of BV→GCI→GCBA, and 12.82% for the path of BV→ER→GCI→GCBA, with a total indirect effect to total effect ratio of 67.18%. The mediating effect magnitudes, in descending order, were green consumption intention, environmental responsibility, and the chain mediation of both. The direct effect of biospheric values on green consumption behavior of apparel ($\beta = 0.1803$, $p = 0.0002$) was significant and accounted for 32.82% of the total effect. Therefore, environmental responsibility and green consumption intentions partially mediated the relationship between biospheric values and green consumption behavior of apparel.

Table 11. The chain mediation effect of BV on GCBA.

Paths	Effect	BootSE	BootLLCI	BootULCI	RTT/%	<i>p</i> -Value
Total effect	0.5494	0.0416	0.4676	0.6311	100.00	0.0000
Direct effect	0.1803	0.0416	0.4676	0.6311	32.82	0.0002
Total indirect effect	0.3691	0.0359	0.2989	0.4416	67.18	
BV→ER→GCBA	0.1327	0.0314	0.0748	0.1980	24.15	
BV→GCI→GCBA	0.1660	0.0268	0.1168	0.2214	30.21	
BV→ER→GCI→GCBA	0.0704	0.0135	0.0462	0.0994	12.82	

Note: RTT presents the ratio to total effect.

In summary, we obtained a chain mediation model in which environmental responsibility and green consumption intention sequentially affect the relationship between environmental responsibility and green consumption behavior of apparel, and the relationship between the variables and the influence coefficients are shown in Figure 3.

Table 12 summarizes all the proposed hypotheses in this study, their implications for the theory of green apparel consumption and the practice of these findings will be discussed in the following section.

Table 12. Results of the proposed hypotheses tests.

Hypothesis	Hypothesized Path	β	<i>p</i> -Value	<i>ab</i> (95% BootCI)	Results
H1	ENV→GCBA	-	-	-	Partially supported
H1a	EV→GCBA	0.034	0.420	-	Rejected
H1b	AV→GCBA	0.253	0.000	-	Supported
H1c	BV→GCBA	0.269	0.000	-	Supported
H2	ENV→ER	-	-	-	Partially supported
H2a	EV→ER	-0.043	0.286	-	Rejected
H2b	AV→ER	0.344	0.000	-	Supported
H2c	BV→ER	0.287	0.000	-	Supported
H3	ENV→ER→GCBA	-	-	-	Supported
H3a	EV→ER→GCBA	-	-	0.0504–0.1297	Supported
H3b	AV→ER→GCBA	-	-	0.0698–0.1954	Supported
H3c	BV→ER→GCBA	-	-	0.0748–0.1980	Supported
H4	ENV→GCI	-	-	-	Supported
H4a	EV→GCI	0.150	0.000	-	Supported
H4b	AV→GCI	0.203	0.000	-	Supported
H4c	BV→GCI	0.374	0.000	-	Supported

Table 12. Cont.

Hypothesis	Hypothesized Path	β	p -Value	ab (95% BootCI)	Results
H5	ENV→GCI→GCBA	-	-	-	Supported
H5a	EV→GCI→GCBA	-	-	0.0928–0.1864	Supported
H5b	AV→GCI→GCBA	-	-	0.0996–0.2062	Supported
H5c	BV→GCI→GCBA	-	-	0.1168–0.2214	Supported
H6	ER→GCI	0.489	0.000	-	Supported
H7	ENV→ER→GCI→GCBA	-	-	-	Supported
H7a	EV→ER→GCI→GCBA	-	-	0.0373–0.0851	Supported
H7b	AV→ER→GCI→GCBA	-	-	0.0506–0.1077	Supported
H7c	BV→ER→GCI→GCBA	-	-	0.0462–0.0994	Supported

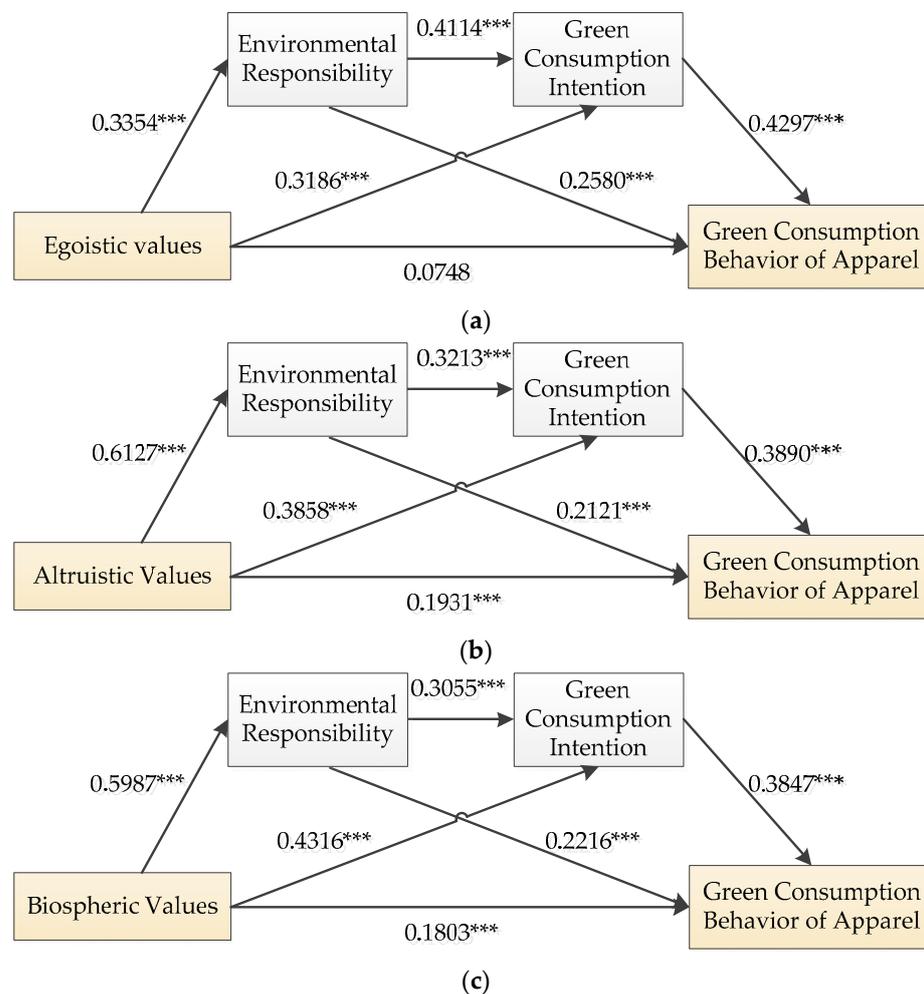


Figure 3. The influence coefficients of the chain mediated model between environmental value and green consumption behavior of apparel. (a) Egoistic values, (b) Altruistic values, (c) Biospheric values. Note: *** represents $p < 0.001$.

5. Discussion

Over the past few years, greater apparel consumption and generation of waste have contributed to a growing negative impact on the environment. China urges all citizens to actively practice green consumption and as a result the people’s environmental awareness has significantly grown. However, the “perception–action paradox” [34] still exists for the Chinese Gen Z, which presents a great challenge to China’s sustainable development in the future. This study took Chinese Gen Z as its research subject, proposing a chain mediation model for the first time; this model aimed to find the relationship between environmental

values and green consumption behavior of apparel, as well as the transmission paths and their deep-seated influence mechanism. Based on the above study, the following findings were obtained.

Firstly, the results of this study confirm that the three types of environmental values, egoism, altruism, and biospheric values, have different direct effects on the green consumption behavior of clothing, which is in line with Bielawska and Grebosz-Krawczyk's research outcome [33]. However, we found that egoistic values do not have a direct significant influence on green consumption behavior of apparel for Gen Z in the Chinese context, which is inconsistent with the findings of previous scholars [50,51], namely, that environmental values significantly and negatively affect pro-environmental behavior. It implies that individuals with egoistic values are able to implement green consumption behaviors in members of Gen Z. This may be because Gen Z's environmental values are gradually changing with the increasing concern of society surrounding environmental issues. They have realized that their own lives are closely related to environmental protection, and they should develop their responsibility and green consumption intentions from their own interests. In other words, they do not perceive the conflict between implementing green consumption behavior of clothing and their own interests. On the contrary, they may gain "mianzi", social status, or their own influence in social groups because of green consumption behavior of clothing. In particular, when they perceive that the above benefits outweigh the investment cost of green clothing, they are very likely to implement green consumption behavior of clothing. This case is still grounded in the egoistic value orientation of individual self-interest, but it presents the possibility of actively engaging in the green consumption of clothing. Certainly, a large-scale empirical study in China is needed to further verify the above relationship.

Similarly, we conclude that both altruistic and biospheric values have a significant positive effect on the green consumption behavior of apparel, which further confirm the research findings of young consumers in India [43]. The direct effect of biospheric values on green consumption behavior of apparel is greater than that of altruistic values, which is consistent with previous research results [50,51]. This indicates that with the Chinese government's advocacy of sustainable consumption, Gen Z is more actively conscious of environmental issues than other generations. Whether individuals with altruistic values begin from others' interests or those with biospheric values start from ecological interests, they eventually actively participate in the green consumption of clothing and contribute to environmental protection as much as possible. In short, Gen Z members with the above three values will all be concerned about environmental issues and thus practice green consumption of clothing.

Secondly, the mediating effect of environmental responsibility and green consumption intention between environmental values and green consumption behavior of apparel was verified. The mediating effects of environmental responsibility and green consumption intention on the three types of environmental values are different, i.e., both play a fully mediating role between egoistic values and green consumption behavior of apparel, and a partially mediating role between altruistic values, biospheric values, and green consumption behavior of apparel. To the best of our knowledge, this finding is not available from previous studies. This means that there exists a transmission path of environmental values–environmental responsibility–green consumption behavior of apparel, and environmental values–green consumption intention–green consumption behavior of apparel in the relationship between environmental values and green consumption behavior of apparel. In contrast, the mediating effect of green consumption intention is greater than that of environmental responsibility, which suggests that we should pay more attention to green consumption intention; this finding is consistent with the results of previous studies which note intention as an essential mediating variable of behavior [13,74].

Finally, we reveal for the first time the chain mediating effect of environmental responsibility and green consumption intention between environmental values and green consumption behavior of clothing. Among these variables, the chain fully mediates the

relationship between egoistic values and green consumption behavior of clothing, while partially mediating the relationship between altruistic values, biospheric values, and green consumption of clothing. This indicates that there is a transmission path of environmental values–environmental responsibility–green consumption intention–green consumption of apparel. Meanwhile, we confirmed that environmental responsibility significantly affects green consumption intention [77] and the significant and positive mediating effect of behavioral intention between environmental responsibility and sustainable consumption behaviors [78]. This means that when Chinese Gen Z is driven by environmental values, they are capable of thinking about the relationship between human and nature rights with respect to environmental issues, thus generating a stronger environmental responsibility and actively integrating it into their own behavior, allowing them to promote green consumption intentions and implement green clothing consumption behaviors. Therefore, the seamless connection between environmental values, environmental responsibility, green consumption intention, and green consumption behavior of clothing is extremely important. It can promote individuals' green clothing consumption habits and avoid the "inconsistency between words and actions". Consequently, the transformation efficiency of individuals' environmental values on green consumption behavior of clothing will be effectively enhanced.

6. Theoretical Contributions and Implications

6.1. Theoretical Contributions

This study first constructed a theoretical framework of environmental values and green apparel consumption behavior, exploring the determinants of green consumption of apparel and examining the influence mechanism of environmental responsibility and green consumption intention for Gen Z. The results of this study revealed the different direct effects of three environmental values (egoism, altruism, and biospheric value orientations) on the green consumption behavior of clothing of Gen Z in the Chinese context, which enriches the theoretical study of environmental values. In particular, the interpretation of egoistic values in the Chinese context further confirms the direct influence of cultural contextual factors on environmental values and the significant positive effects of altruistic and biospheric values on green consumption behavior. Meanwhile, the significant chain mediating effects of environmental responsibility and green consumption intention between environmental values and green apparel consumption behavior expand the transmission path and highlight new insights into the promotion of green consumption of apparel; the results provide theoretical support for the cultivation of environmental values in Chinese Gen Z as well as the sustainable development of Chinese society.

6.2. Managerial Implications

Based on the above discussion, the following insights are available for policy implications and sustainable consumption management in China, also providing some references for the promotion of sustainable consumption around the world.

First of all, it is indispensable to strengthen the publicity and education of environmental issues through the government-sanctioned environmental protection policies and education systems, and it is also important to cultivate good environmental values among Gen Z. Environmental values, similar to the standards and criteria of human perceptions and solutions to environmental problems, do not remain stable over the course of time, which gradually change with people's perceptions of the external environment. Values are more influential when activated in a particular situation, especially in the context of a severe environmental crisis. Therefore, the government should pay more attention to the dynamic changes of the environmental values of Gen Z and guide their behavior through comprehensive multilevel policies and through the education system, including school education, social education, corporate education, and family education. At the same time, we can make full use of the interactive and active characteristics of Gen Z on social media, specifying the importance of environmental values through the analysis of environmental

pollution cases and motivating them to be more knowledgeable about sustainable living; this gives more priority to sustainable products and eventually forms biospheric values based on social or ecological interests. For Gen Z, which holds egoistic values, education should focus on the benefits brought to individuals by green clothing (such as the benefits of organic materials for the skin, social self-esteem coming from using green clothing, and social identity coming from green consumption). Thus, fashion designers and green apparel manufacturers should use eco-friendly fibers and fabrics to build consumer awareness of altruistic, physical, and aesthetic product attributes and link them to green self-identity, self-enhancement, and ecological awareness. Only when humans live in harmony with nature can individuals be qualified to pursue their own survival and living quality.

Secondly, it is imperative to enhance the environmental responsibility and perceived effectiveness of Gen Z by empowering and motivating the atmosphere through green consumption education. Currently, the main reason for the “perception–action paradox” of the green consumption of clothing is that consumers have insufficient knowledge about the green consumption of clothing and an insufficient perception of the effectiveness of their behavior. Therefore, the carbon label of apparel should be clearly marked to help consumers understand the negative impact of their own behavior on the environment and the environmental benefits they can bring by changing their own behavior, i.e., raising consumers’ awareness of their responsibility by perceiving the harm and effectiveness of their own behavior, motivating them to connect their apparel consumption behavior with environmental issues, inspiring them to act in little ways, and changing their daily lifestyles by increasing their awareness of their environmental responsibility. Meanwhile, it is urgent to cultivate consumers’ awareness of rational and reasonable consumption. We must encourage Gen Z individuals to share their green consumption experience and information on social media, build a positive green consumption community within their circle of friends, and promote the concept of green development. It is essential to change the aspect of Gen Z showing their social status and prestige through material ownership (e.g., luxury consumption) and instead have them be proud of green consumption, realizing their self-worth through sustainable lifestyles and actively practicing sustainable clothing consumption.

Finally, it is critical to strengthen the enterprise technological innovations of green clothing products and strengthen the low-carbon system reform; it is also important to build an institutional guarantee of a closed-loop system for green product consumption to increase the apparel green consumption intentions of Gen Z. The government should regulate the product development of apparel companies through green product systems and policies. According to the international green textile and apparel product certification, apparel enterprises are urged to increase the development of green technology for apparel and realize an eco-friendly method to the entire life cycle of apparel, from raw material production to apparel design, apparel manufacturing, apparel consumption, and disposal. At the same time, clothing enterprises are urged to establish green apparel development concepts that are centered on environmental value, led by green fashion, and are linked by emotional value, which satisfy Gen Z’s needs for practicality, fashion, hedonism, and self-expression in apparel consumption. In addition, through technological innovation, it is necessary to reduce the price premium between green products and conventional products, which would inspire green consumption intention in the consumer and promote green consumption behavior in Gen Z consumers.

In brief, the greater the concerns for environmental issues, the stronger the moral obligation of consumers. The stronger the environmental responsibility of individuals, the more likely Gen Z consumers will activate their individual norms, thus enhancing their green consumption intentions and implementing altruistic and biospheric behaviors that correspond to their individual norms. That is, by strengthening the seamless linkage and transformation mechanism between environmental values, environmental responsibility, green consumption intention, and green consumption behavior of apparel among members of Gen Z, the green consumption of apparel will make significant progress in China.

7. Conclusions and Limitations

This study investigated the impact of Chinese Gen Z's environmental values on their green consumption of apparel. An important contribution of this research is its construction of a chain multiple mediation model between environmental values and green consumption of apparel that also integrates environmental responsibility and green consumption intention as mediators. We examined the direct and indirect effects of environmental values on green consumption of apparel in Chinese Gen Z members. The results revealed that all three types (egoism, altruism, and biospheric values) of environmental values have different direct and indirect effects on green apparel consumption behavior for Gen Z. In terms of the direct effects, egoistic values have no significant direct negative effect on green apparel consumption behavior, while the significant positive direct effect of biospheric values is greater than that of altruistic values. The total indirect effects of each (79.08%, 64.87%, and 67.18% of the overall effects, respectively) of the environmental values are much greater than their direct effects (20.92%, 35.13%, and 32.82% of the overall effects, respectively). Therefore, to address the "perception–action paradox" of Gen Z, it is important to concentrate on the mediating transmission path of environmental responsibility (24.20%, 23.69%, and 24.15% of the overall effects, respectively) and green consumption intention (38.29%, 27.12%, and 30.21% of the overall effects, respectively), as well as their chain mediating path (environmental values–environmental responsibility–green consumption intention–green clothing consumption behavior) (16.59%, 13.92%, and 12.82% of the overall effects, respectively); it is important to also concentrate on the mediating effect of green consumption intention. This is the first study to explicitly identify the significant chain mediating effect of environmental responsibility and green consumption intention between environmental values and green consumption behavior of clothing, which will broaden the theoretical perspective for the green consumption of apparel and guide green consumption practices and policy formulation for Gen Z worldwide.

Despite the contributions of this study, some limitations are worth mentioning for future research. Firstly, there are relatively more urban residents than rural residents in the survey sample, and our subsequent study expects to broaden the sample scope and size to enhance the representativeness of the sample. Secondly, social desirability bias may exist during the data collection, as green sustainability is widely advocated in China. Despite the anonymity used in the survey, individual respondents may be concerned that the expression of self-interested values may affect personal rights, social status, or influence, resulting in the over-reporting of socially desirable responses. Finally, this study only targeted Chinese Gen Z members, and it must be verified whether the proposed chain mediation path is applicable to consumers in other countries through international research. The main research directions in the future will aim to adopt diverse survey methods, increase the proportion of the survey sample for rural Gen Z, and conduct comparative studies of the urban–rural, intergenerational, and inter-country factors.

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