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A Human-Centered Approach to Green Apparel Advertising: Decision Tree Predictive Modeling of Consumer Choice

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Abstract: This study uses a human-centered approach to environmental ethics to examine which perceived factors in advertising predict consumers' intention to purchase "green", or sustainably and ethically produced, apparel. We use eight different types of green apparel advertisements to build a decision tree model to determine the most influential factors that lead to future purchases of green apparel. We classify consumers' perceptions of green advertising as either humanistic, environmental, or product-related responses and propose a conceptual framework to outline the essential elements of an effective green advertising strategy. We use a sample of 829 US consumers from the period January 2015 to December 2017 in our empirical research. Our results show that four factors, namely, perception of the apparel's quality, its uniqueness, caring, and nature connectedness, predict consumers' intention to purchase green apparel. Notably, the largest segment of consumers (36%), those who perceive high levels of apparel quality and caring in the advertising, are identified as the high-purchase group. Our findings could improve strategies in green apparel advertising by providing a new analytical approach to model consumers' behavioral intention to purchase green apparel.

Keywords: decision tree; green advertising; green apparel; green marketing; segmentation; sustainable fashion; sustainability

1. Introduction

Advertising plays a major role in raising public awareness about sustainability issues and strengthening socially responsible brand images that eventually influence consumers' choices of green apparel products [1]. Recent advertising research has specifically emphasized the importance of developing the right blend of messaging in generating positive evaluations of green products and brands by consumers [2,3]. For most consumers, the decision to buy green products reflects not only environmental and social concerns, but also preferences on product attributes such as quality, price, style, and design [2,4,5]. Hence, a consumer's choice of green products involves a complex process of cognitive and ethical deliberation in which purchase decisions depend on three human-centered responses to green advertising: humanistic, environmental, and product-related [6–8].

In keeping with this human-centered approach, this study aims to determine which consumer responses to advertising predict their intention to purchase green apparel. In this study, "consumer responses to green advertising" refers to cognitive and affective impressions of, awareness of, or reaction to green advertisements and the products in the ads [9,10]. By building a decision tree predictive model, this study identifies the most influential factors in consumers' perceptions of

green advertising to help generate effective advertising guidelines to encourage the purchase of green apparel.

In the 1960s, the pressure of global population growth, the growing use of technology, and industry expansion began to create environmental degradation. With increasing awareness of the environment, moral philosophers questioned humans' relationship with nature, and by the late 1960s, the concept of environmental ethics had become prevalent [11]. In the early 1970s, environmental ethics emerged as a new subdiscipline of philosophy that was concerned with the ethical relations between humans and the environment [11]. While classical environmental ethics emphasizes the environment, human-centered environmental ethics takes a holistic approach to understanding the goals, motivations, and consumer values that define how sustainable behavior benefits the individual and all of humanity [12,13]. In this study, we take this holistic view to seek a deeper understanding of human nature by recognizing consumers' needs and values.

The goal of this study was to identify a set of critical factors for consumers' responses to green apparel advertising. To do so, we created a decision tree model that can forecast consumers' intention to buy green apparel. Through the literature review, we argue that six important perceptions influence consumers' intentions to purchase green apparel in response to advertising. We classify these factors as humanistic, environmental, or product-related and propose a conceptual framework to outline the essential elements of an effective green advertising strategy. The humanistic responses consist of perceived caring and ethicality; the environmental responses are related to perceived environmental benefits and nature connectedness; and the product-related responses include the perceived quality and uniqueness of green apparel. To this end, we raised the following research questions: (1) Do the identified perceptions of green advertising predict consumers' intention to purchase green apparel? (2) Which perceptions forecast the consumer groups with high versus low purchasing intentions? We then built a decision tree predictive model for green apparel advertising to identify the perceptions that most effectively predict consumers' purchasing intentions.

2. Literature Review and Conceptual Framework

We argue that to be effective, green advertising should use a human-centric strategy that communicates added values such as environmental, social, and product-related factors [4,14,15]. The difference in this strategy is that the product's functional value and human well-being become important factors. The human-centric view of green marketing simultaneously focuses on the goal of meeting consumers' product needs and how green communication maximizes the goal of protecting the environment and people [16]. Such human-centric strategies not only drive more purchases of green products, but also guide consumers to implement more sustainable practices [14,15].

2.1. Human-Centered Environmental Ethics

Environmental ethics concerns human beings' ethical relationship with nature and how they deal with environmental problems [17]. Moral philosophers have debated the precise relationship between humans and the environment for over two millennia. Human-centered environmental ethics assigns a greater intrinsic value to humans than it does to the environment [12]. It argues that the moral relationship between humans and nature is primarily framed by human values, the needs of humans, and the welfare of human beings [13,18]. For example, individuals who value health and safety might select organic garments over garments made of synthetic materials for their children, or they might switch to a brand of underwear that is manufactured through a less toxic chemical process. Indeed, many consumers value a natural and healthy living environment for their health and safety and thus make green purchases [2,7,8,13]. Therefore, consumer perception of product functionality can certainly be a legitimate part of developing green advertising and marketing principles.

Sheth, et al. [19] define "customer-centric sustainability" as "a metric of performance based on sustainability outcomes that are personally consequential for customers and result from customer directed business actions" (p. 24). As a key to understanding the intrinsic motivations for sustainable

actions, an examination of consumers' core perceptions of green advertising is vital, because these factors are the driving force behind their purchases [20]. When green advertising convinces consumers of a product's reputation for good quality and uniqueness and helps them perceive social responsibility toward the environment and people, it can maximize their sustainable purchases [21].

2.2. Humanistic Response

In his essay on humanistic marketing, Jafari [22] describes humanism as "the belief in the welfare of society at large based on self-examination, conscience, honesty, respect, ethics, responsibility and action" (p. 115). As stated earlier, we advocate for the human-centered approach to green advertising because it inspires benevolent responses, increases the well-being of humans, and meets consumers' product needs. To encourage participation in green apparel purchases, we first emphasize the use of consumers' perceptions of philanthropy in advertising and classify this social and ethical dimension as humanistic responses. The recent trend in green advertising combines two key humanistic responses: perceived caring and perceived ethicality [23].

2.2.1. Perceived Caring

Many consumer researchers have noted that when green advertisements highlight social elements, such as child labor, workplace health and safety, labor rights, and human rights, consumers are more likely to respond by feeling a type of altruism and kindness—namely, caring [24,25]. In the context of sustainable consumption, the feeling of caring relates to "an extensive beneficence and compassion for other people that benefits the welfare of others" [26]. This feeling of caring is primarily known to affect a person's ethical decisions and helps to explain why some people have ethical preferences regarding green products and brands [25,27]. Indeed, when an individual senses a feeling of caring in an advertisement, he or she is likely to view the advertisement as important and meaningful and thus might try to find authentic meaning in purchasing the product [28,29]. In this study, perceived caring is operationalized as a participant's response to a green advertising message that conveys a sense of caring and benevolence.

The social value of green initiatives influences consumers' preference for brands and products [30]. Perceived caring and compassion for others often inspire consumers to purchase ethical (e.g., fair trade) products and be socially responsible in their product decisions [31]. In this sense, a feeling of caring induced by green advertising can be a vital factor that predicts the intention to purchase green apparel.

2.2.2. Perceived Ethicality

Perceived ethicality refers to the degree to which a consumer positively perceives fairness, morality, and justice in a green advertisement [32]. The research finds that the perceived ethicality of green initiatives is highly associated with an individual's attitude toward a brand and a company [25,32]. Thus, when consumers perceive the ethical dimension of a green advertisement as positive, then they will evaluate dimensions of the product (e.g., brand, functionality, and design) more favorably as well [33]. Overall, the research shows that perceived ethicality is a key factor in consumers' sustainable purchasing decisions in response to socially responsible advertising [2,25].

Conversely, there is evidence that perceived ethicality might not always work positively in green advertising. Consumers have different opinions about sustainability and weigh the ethical aspects of green advertising based on their own hierarchy of values [34]. Moreover, the perceived value of ethicality might be different according to the product category. Although the market share of green apparel has historically been only a small proportion of overall fashion sales, other household merchandise and personal care products have been relatively more successful in sustainability marketing [8,35]. Conceivably, the degree to which the perceived ethicality in an advertising message enhances green purchases might depend on the type of product being advertised [8].

2.3. Environmental Response

Including environmental issues in green advertising encourages sustainable behavior and fosters positive social change [3,8,36]. This study classifies consumers' impressions about the environmental aspects of advertising in two specific dimensions: the perceived environmental benefit and the perceived connectedness to nature. In a nutshell, these two subfactors reflect how consumers perceive environmental issues in ads [37,38].

2.3.1. Perceived Environmental Benefit

Since the sustainable fashion movement began in the late 1990s, consumers' awareness of the ecological damage from clothing manufacturing has steadily grown [39]. This awareness has led to more purchases of sustainable apparel [3,36]. One of the ultimate goals of green advertising is to meet the expectations of consumers to preserve the environment and to promote positive awareness of ecological issues [40]. The extent to which consumers understand the importance of the environment depends on how companies develop green advertising and how viewers perceive this communication [41]. When consumers perceive environmental value in a marketing message, they tend to positively evaluate the business as socially responsible, which elicits favorable behavioral responses [42]. In this study, perceived environmental benefit refers to the degree to which consumers perceive an ecological benefit in a green advertising message.

The literature has long considered the influence of ecological values as an important factor in the purchasing of green products [7,43]. Scholars frequently predict that, in response to green advertising, positive perceptions of environmental benefits increase the likelihood of green consumption [4,41]. Hence, we assume that when consumers positively perceive an environmental value in a green advertising message, they will be more likely to be optimistic about buying the green product.

2.3.2. Perceived Nature Connectedness

Nature connectedness was formerly referred to as the extent to which individuals extend their sense of self to include the natural world [43]. Now the concept of nature connectedness reflects an individual's sense of harmonious living that connects nature, quality of life, and well-being [44]. In this study, perceived nature connectedness is operationalized as "The message in this ad would help me to live in harmony with nature" and "it would help my relationship to nature as an important part of who I am."

Mayer and Frantz [45] argue that when consumers feel a sense of well-being through a connection with nature, they tend to experience a greater level of satisfaction with their lives. Furthermore, the literature finds that such a feeling of connection might help consumers feel personally fulfilled and worthy [43], which leads to sustainable activities such as purchasing green apparel [45]. Evidently, that feeling and other environmentally related motivations might also lead them to purchase less in general (i.e., have a frugal lifestyle) or to purchase secondhand goods [38]. In the green advertising context, consumers tend to be more susceptible to nature imagery and experience a high level of connection when they see an environmental message [46]. Furthermore, connectedness to nature is positively correlated with environmental behaviors [47]. Based on these findings, we expect that consumers are more likely to buy green apparel when they feel connected to nature in response to green advertisements.

2.4. Product-Related Response

In recent years, many retailers have developed new product lines of ethical and eco-friendly clothing and have made substantial investments in promoting them [48]. Even with the recent trend of companies adopting green products, very few consumers actually purchase green apparel, in part because of their preconceptions about its low quality, limited designs, and outdated styles [13,49].

The research on green advertising shows that the perceived practicality or functionality of green products could effectively persuade consumers that companies are delivering superior value in a sustainable way, which is the key to staying competitive in the marketplace [50]. In this study, we propose that one way to effectively promote green apparel is to create positive perceptions about its quality and uniqueness in the advertisements.

2.4.1. Perceived Apparel Quality

"Apparel quality" refers to the durability and workmanship of clothing [51]. In the present study, perceived apparel quality represents consumers' subjective perception of the overall excellence of the product in an advertisement and whether it meets their need for product longevity and functionality [52]. This perception of quality is likely to increase consumers' positive attitudes toward green brands. Particularly for consumers with a high commitment to sustainability, perceptions of apparel's longevity and other aspects of its quality (i.e., durability, comfort, and fit) engender a greater sense of satisfaction [5,53].

A good reputation for environmental protection and philanthropic support seems to be insufficient to establish credibility in green advertising and convince consumers to purchase green products [54,55]. To grab consumers' attention, an advertising campaign for a new green product requires strategic integration of all aspects of sustainability, and the message should be aligned with consumer-centered goals [56]. The key goal of many consumers' shopping is to buy products of decent quality and acceptable functionality. Further, consumers generally expect that their purchased products are manufactured to last [51]. Thus, when they do not perceive a reasonable level of product quality in a green advertisement, they are more likely to choose an alternative item [5,13,51]. From this standpoint, we investigated whether consumers' perception of quality can predict their intention to purchase green apparel in response to an advertisement.

2.4.2. Perceived Apparel Uniqueness

"Apparel uniqueness" refers to the extent to which consumers perceive that an item of apparel is distinct from other competing products and brands in response to green advertising [57]. In the green apparel context, this subjective perception involves not only the product's design and style, but also its symbolic value of sustainability that is conveyed in the advertisement [58].

Together with quality, perceived uniqueness is considered as the main determinant of apparel purchases [59]. For sustainable apparel advertising, great potential lies in conveying uniqueness in terms of a product's sustainability, materials, design, and packaging. Companies purposely market green apparel to foster ecological and ethical views of consumption and to carry a unique meaning for some consumers as a means of expressing themselves and their value [58]. When green apparel incorporates an image of authenticity, such as when it is part of a fair trade scheme related to environmental and ethical concerns, a unique selling proposition can be established that differentiates one product from others [59].

Therefore, when consumers perceive the uniqueness of the apparel in a green advertisement, they are more likely to connect sustainability to their own needs and positively respond to the advertisement [60]. As a result, not only will the concept of green consumption be promoted, but the advertisement will effectively motivate consumers to purchase green apparel by selling uniqueness [19].

2.5. Conceptual Framework and Research Questions

Our conceptual framework (Figure 1) proposes that three factors—humanistic, environmental, and product-related responses—are involved in determining the consumer perceptions of green apparel in advertisements that influence purchase intentions. The framework takes the form of a decision tree. The center circle of the framework displays the intention to purchase green apparel, which is determined by the six subfactors of perceptions. These subfactors are displayed as smaller

circles that denote the leaves of the tree. Research has found these factors to be key elements in consumers' responses to green advertising [2,27,45,49,58,61]. Table 1 presents a list of studies related to the factors in green advertising and sustainable consumption. Based on this framework, we generated the following two research questions:

- **RQ 1.** Do consumers' perceptions of caring (RQ1a), ethicality (RQ1b), environmental benefit (RQ1c), nature connectedness (RQ1d), apparel quality (RQ1e), and apparel uniqueness (RQ1f) in an advertisement for green apparel predict their intention to purchase the green apparel?
- **RQ 2.** What are the influential perceptions that predict high-purchase (RQ2a) versus low-purchase (RQ2b) groups of consumers?
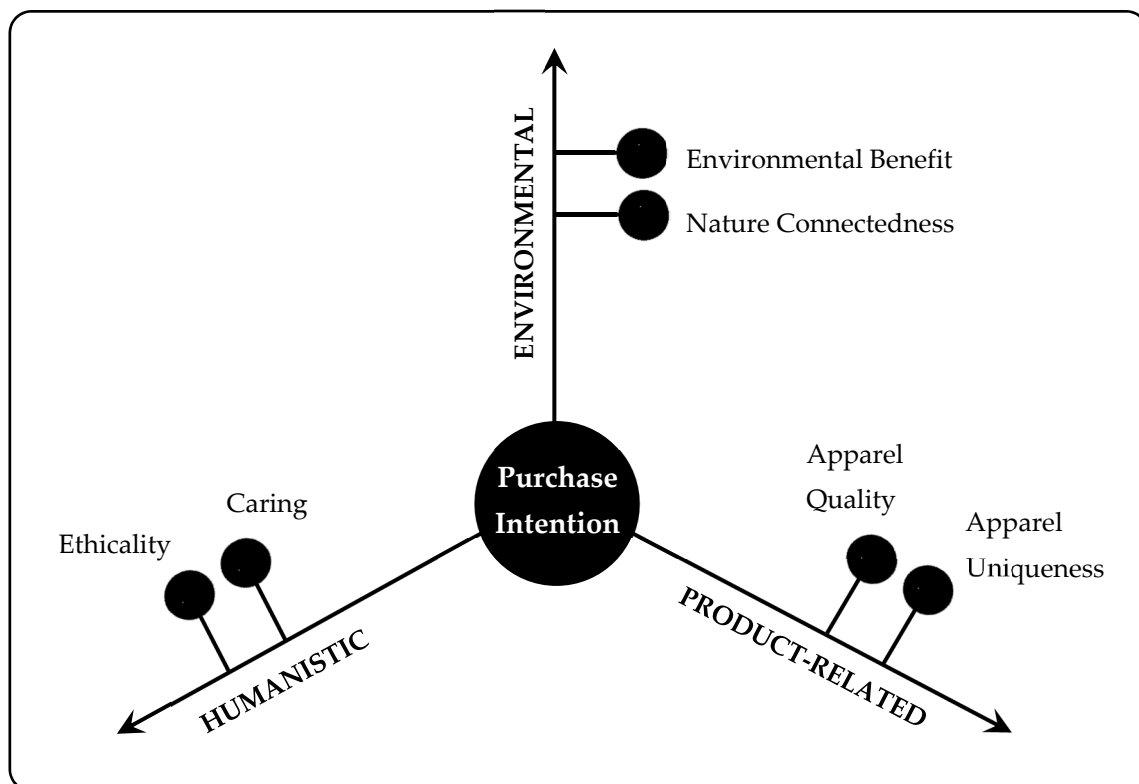

Figure 1. Conceptual framework for green apparel advertising.

Table 1. Previous literature related to consumer response to green advertising.

Category	Subfactors	Authors	Year	Related Constructs for Green Advertising Response Factors
Humanistic response	Perceived caring	Kareklas, Carlson, and Muehling [15]	2014	Altruistic considerations, predicting consumers' purchase intentions and attitudes toward organic products in an advertisement
		Romani, Grappi, and Bagozzi [62]	2013	Consumers' altruistic values positively moderating their feelings of gratitude for companies' Corporate Social Responsibility (CSR) initiatives
		Paek and Nelson [63]	2009	Altruism and beliefs in advertising ethics related to consumers' responses
	Perceived ethicality	Luchs et al. [35]	2010	High product ethicality associated with gentleness-related attributes of a sustainable product, enhancing consumers' preference
		Davis [64]	1994	Influence of ethical attributions in environmental advertising
Environmental response	Perceived environmental benefit	Dangelico and Pujari [65]	2010	Three critical environmental dimensions of green product innovation: energy minimization, material reduction, and pollution prevention
		Schuhwerk and Lefkoff-Hagius [66]	1995	Environmental attributes of a product in green advertising and the role of consumers' involvement with the environment
	Perceived nature connectedness	Schultz et al. [43]	2004	Implicit connections with nature and explicit environmental concerns
		Mayer and Frantz [45]	2004	Connection to nature, predicting ecological behavior and well-being
Product-related response	Perceived apparel quality	Hugo and van Aardt [52]	2012	Evaluative criteria for apparel quality: durability, comfort, and fit
		D'Souza et al. [53]	2007	Quality and price attributes as contributors to green purchase intentions
		Cason and Gangadharan [67]	2002	Consumer preference for product quality in environmental goods
		Woodside and Taylor [68]	1978	Relationship between perceived product quality and consumers' purchase intentions in response to national advertising
	Perceived apparel uniqueness	Halepete, Littrell, and Park [59]	2008	Consumers' need for uniqueness positively influencing attitudes toward personalization and intention to purchase fair trade apparel
		Knight and Kim [69]	2007	Consumers' need for uniqueness related to perceived quality
		Hansen [70]	2000	Uniqueness of clothing in the secondhand clothing market

2.6. Decision Tree Analytics

The decision tree sequentially represents the process of how a consumer's decision can be predicted and then reached [71,72]. Providing ease of use, accuracy, robustness, and graphical representation, consumer behavior studies have widely found the decision tree to be one of the most effective predictive models for solving various discrimination and identification problems [72,73]. Decision tree predictive models enable marketers to identify valuable consumer segments and predict their future behavior, and thus empower them to make proactive and knowledge-based decisions [72,74].

3. Methods

3.1. Research Design and Stimulus Pretest

We tested a conceptual model (Figure 1) with 8 types of green apparel advertising messages. As part of a larger project on green advertising research, we reviewed typical types of green advertising messages by conducting a keywords-in-context (KWIC) content analysis with NVivo software. A total of 137 articles on green advertising were analyzed for keyword frequency. These articles were published in 6 leading advertising and marketing journals within the time frame of 1996 to 2016: the *Journal of Marketing*, the *Journal of Marketing Research*, the *Journal of Business Ethics*, the *Journal of Advertising*, the *Journal of Advertising Research*, and the *International Journal of Advertising*. As we could not come to a clear conclusion based on word frequency, we further reviewed the typical message tendency in the green advertising literature. Based on our review of the literature, we developed 8 advertisements that use 3 criteria: self-oriented versus other-oriented, human versus earth beneficiary, and promotion- versus prevention-regulatory focus [7,8,75–78]. These types of green advertising messages have been frequently discussed in the literature and thus represent the mainstream of green advertising construction. To find the general effects of consumers' perceptions on their purchasing intentions, the survey results of these 8 advertisements were then combined as a study condition.

The self-oriented versus other-oriented type of advertising was textually primed by using either "I" or "My" (self-oriented) or "We" or "Our" (other-oriented). The human versus earth beneficiary type was developed by using either earth/environment visuals or human graphics. In addition, the textual messages describe either environmental or human benefits (e.g., "to preserve our earth" or "to care for children and improve workers' health"). Lastly, the promotion- versus prevention-regulatory focused type was developed by contextually priming the advertising messages. The promotion-focused type emphasizes the benefits of purchasing green apparel (e.g., "clean and beautiful," "great way," or "improving"). The prevention-focused type emphasizes avoiding the harm or negative outcomes caused by environmental destruction or unethical production (e.g., "suffering," "abuse," or "harm by toxic pollutants"). A fictitious denim jeans brand, "Sunshineblue," was created and used for all advertising messages, avoiding potential bias from brand familiarity [79]. The 8 types were generated by including all possible combinations of the 3 criteria ($2^3 = 8$) in the advertising construction. Table 2 lists all types of green advertising stimuli used in this study.

Table 2. Types of green advertising stimuli.

Ad Stimulus	Orientation	Beneficiary	Regulatory Focus	Pretest (*n* = 134)		Main Test (*n* = 829)		Ad Rating Example Statements
				n	Ad Rating Mean	*n*	Ad Rating Mean	
Ad 1	Other-oriented	Earth	Promotion	16	6.0	103	5.6	(1) Other-Oriented: The ad message is related to the environment for all of us and others. (2) Earth/Promotion: The ad message is related to maintaining the environment clean and beautiful.
Ad 2	Other-oriented	Earth	Prevention	16	5.6	108	5.7	(1) Other-Oriented: as Ad 1. (2) Earth/Prevention: The ad message is related to preventing the environment from pollution.
Ad 3	Other-oriented	Human	Promotion	16	5.0	106	5.4	(1) Other-Oriented: The ad message is related to human welfare for all of us and others. (2) Human/Promotion: The ad message is related to caring about people and promoting human well-being.
Ad 4	Other-oriented	Human	Prevention	18	4.7	99	5.5	(1) Other-Oriented: as Ad 3. (2) Human/Prevention: The ad message is related to protecting other people from abuse.
Ad 5	Self-oriented	Earth	Promotion	16	5.5	102	5.6	(1) Self-Oriented: The ad message is related to the environmental issue that is of concern to me. (2) Earth/Promotion: The ad message is related to maintaining the environment clean and beautiful.
Ad 6	Self-oriented	Earth	Prevention	17	5.2	104	5.3	(1) Self-Oriented: as Ad 5. (2) Earth/Prevention: The ad message is related to preventing the environment from pollution.
Ad 7	Self-oriented	Human	Promotion	17	4.8	102	5.4	(1) Self-Oriented: The ad message is related to human welfare and ethical issues that are of concern to me. (2) Human/Promotion: The ad message is related to fostering ethical purchasing.
Ad 8	Self-oriented	Human	Prevention	18	4.4	105	5.3	(1) Self-Oriented: as Ad 7. (2) Human/Prevention: The ad message is related to avoiding selfish and unethical purchasing.
			Total	134		829		

We then had several researchers conduct a content analysis of the textual and visual elements in the 8 advertisements. Subsequently, a pretest was conducted to check survey items and the preliminary versions of the advertisements. A total of 202 pretest surveys were collected from undergraduate students in a consumer behavior course via the snowballing sampling method. After 68 incomplete cases were excluded, we retained 134 samples (16 to 18 respondents per ad). To check whether the preliminary versions of the advertisements represented the intended types of advertising messages, the pretest respondents were asked to rate their agreement with the following example statements using a 7-point Likert scale: (1) "The ad message is related to maintaining the environment clean and beautiful," "The ad message is related to promoting the earth or environment" (Ad 1: other-oriented, earth, promotion); (2) "The ad message is related to preventing the environment from pollution," "The ad message is related to protecting the earth or environment" (Ad 2: other-oriented, earth, prevention); (3) "The ad message is related to promoting human health," "The ad message is related to all human beings" (Ad 3: other-oriented, human, promotion); and (4) "The ad message is related to human welfare and ethical issues that are of concern to me," "The ad message is related to fostering ethical purchasing" (Ad 7: self-oriented, human, promotion). The mean scores of the 7-point Likert scale ranged from 4.4 to 6.0 out of 7, which was greater than a 4-point level (4 = neither agree nor disagree) for all types of green advertising (Table 2).

Based on recommendations from the pretest respondents, the visual elements in the earth beneficiary advertisements were simplified, and the background picture for the human beneficiary advertisement was changed from a nature image to include child labor graphics to emphasize human benefits. Next, we conducted a second content analysis of the advertisements; based on that, we made changes to better represent each advertising message type and sharpen the clarity of the messages.

3.2. Participants and Main Data Collection

The data were collected through an online survey of US consumer panelists from a commercial marketing firm. The marketing firm recruited participants via an email invitation to complete a survey hosted by a major university in the southeast region of the United States. The participants had to be 18 years or older and had to have purchased a green product during the prior 6 months. For survey compensation, the marketing firm paid each participant $3 in credits to the earning account after completion of the online survey. A questionnaire containing one of the 8 advertisements was randomly assigned to each participant. At the end of the 4-day period of data collection, 829 completed responses were collected. The analysis of the respondents' demographic information revealed that gender was evenly distributed (52.35% female) and the participants were widely distributed along the income spectrum, with a median annual income of $60,000–$79,999. Participants ranged from 18 to 84 years of age, with an average age of 40.93. Approximately 66.95% were employed, either full-time or part-time; 13.51% were retired. In terms of ethnicity, the majority were Caucasian (55.13%), followed by African-American (18.70%) and Hispanic/Latino-American (17.13%). Table 3 presents the demographic characteristics of the respondents.

Table 3. Demographic characteristics of study population (*n* = 829).

Variable			
Age	**Years**	**Gender**	**%**
Mean age	40.93	Male	47.65
Median age	40.00	Female	52.35
Annual Household Income	**%**	**Education**	**%**
Less than $20,000	9.77	High school or less	24.85
$20,000–39,999	18.46	Associate degree	23.52
$40,000–59,999	17.85	Bachelor's degree	31.60
$60,000–79,999	15.80	Graduate degree	16.65
$80,000–99,999	10.50	Other	3.38
$100,000–119,999	7.00		

Table 3. *Cont.*

Variable			
$120,000–139,999	4.46	**Employment**	**%**
$140,000–$159,999	3.98	Employed	66.95
$160,000 or more	6.03	Unemployed	19.54
I prefer not to answer	6.15	Retired	13.51
Race	**%**	**Marital Status**	**%**
African-American	18.70	Married	51.27
Caucasian	55.13	Single, never married	35.10
Native American	0.72	Separated, divorced, widowed	10.86
Asian or Pacific Islander	5.07	Other	2.77
Hispanic	17.13		
Other	3.26		

3.3. Measures

The measures used in this study were adopted and modified from existing scales. Specifically, the scale items for perceived environmental benefit were adapted from Schuhwerk and Lefkoff-Hagius [66], perceived nature connectedness from Mayer and Frantz [45], perceived apparel uniqueness from Argo, et al. [80] and Kim, et al. [81], perceived apparel quality from Chandrashekaran [82] and Grewal, et al. [83], perceived caring from Aaker, et al. [84], perceived ethicality from Reidenbach and Robin [85], and purchase intention from Dodds, et al. [86]. All scale items were measured on a 7-point Likert-type scale (1 = strongly disagree, 7 = strongly agree).

3.4. Main Data Analysis Procedure

To check the final versions of the 8 advertising types, the survey respondents were asked to rate their perception of an advertisement in the main data collection. They were given similar statements as the pretest using a 7-point Likert scale. Table 2 shows the example statements for the main test. The mean scores of ad evaluation ranged from 5.3 to 5.7 out of 7, greater than a 5-point level (5 = somewhat agree) for all types of advertisements. This indicates an appropriate representation of the intended types of advertising messages (Table 2).

To assess the internal consistency of all 7 constructs, we used Cronbach's alpha coefficient of reliability. To create a binary decision tree, the target variable (intention to purchase green apparel) was standardized (as z-score) and dichotomized by the mean value (0) of the standardized scores based on the recommendation of Osborne [87]. When respondents' standardized scores of purchase intent were greater than zero, they were classified as a high-purchase group. If respondents' standardized scores were less or equal to zero, they were classified as a low-purchase group. Subsequently, an independent sample t-test showed that a significant difference existed between the high- and low-purchase groups. The mean of the high group (M = 5.73, SD = 0.64) is significantly higher than that of the low group (M = 3.51, SD = 1.08): t (827) = 36.10, $p < 0.001$, 95% CI [2.09, 2.33].

To determine the relationships and predictive rules among the 6 perceived factors and purchasing intentions, we created a binary classification tree using R statistical software. We split the full data (*n* = 829) by using a sampling strategy of 50/25/25, partitioning 50% into a training dataset (n = 414), 25% into a validation dataset (*n* = 208), and 25% into a testing dataset (n = 207). First, we built the decision tree model with the training dataset (*n* = 414). To evaluate the performance and accuracy of the final tree model, we then conducted error matrix and receiver operating characteristic (ROC) analyses on the validation dataset (*n* = 208) and the testing dataset (*n* = 207) [88].

4. Results

4.1. Measurement and Reliability

The resulting Cronbach's alpha coefficients for the seven constructs ranged from 0.88 to 0.95, meeting the minimum criterion of 0.70 [89]. Table 4 shows the reliability results for the seven constructs and the source of each scale. The main analysis of the data then used these summated scales. We checked discriminant validity with the correlation coefficients among all pairs of constructs in our framework. The correlation coefficients of all constructs are below the threshold of 0.85, which supports discriminant validity in the seven constructs [90].

Table 4. Measures and reliability ($n = 829$).

Construct	Total Number of Scale Items	Source in the Literature	Cronbach's Alpha (α)
Perceived caring	3	Aaker, Stayman, and Vezina (1988)	0.899
Perceived ethicality	5	Reidenbach and Robin (1988)	0.947
Perceived environmental benefit	3	Schuhwerk and Lefkoff-Hagius (1995)	0.882
Perceived nature connectedness	5	Mayer and Frantz (2004)	0.943
Perceived apparel quality	4	Chandrashekaran (2004) Grewal, Monroe, and Krishnan (1998)	0.912
Perceived apparel uniqueness	4	Argo, Popa, and Smith (2010) Kim, Han, and Yoon (2010)	0.883
Purchase intention	3	Dodds, Monroe, and Grewal (1991)	0.908

4.2. Main Analysis: Decision Tree Predictive Model

Using R statistical software, we generated a binary classification tree model (Figure 2) from the training data ($n = 414$). The final decision tree consists of six terminal nodes (i.e., the last node that is not split any further). Three terminal nodes in gray represent the high-purchase groups, denoted as "Yes," and another three (squares with no fill) are the low-purchase groups, denoted as "No." The terminal nodes are represented by squares, whereas the other nodes are represented by rectangles. The probability of observation (prob) indicates the strength of the decision rule as determined from the final decision tree model [91].

A close look at the tree structure shows that the root node ($n = 414$), which is the top node in the tree, is split into two branches according to the primary indicator of perceived apparel quality. Consumers who perceive apparel quality greater than or equal to 4.9 ($n = 188$, 45%, prob = 0.87) and the feeling of caring greater than or equal to 4.8 are predicted to be in the high-purchase group in the final terminal node ($n = 147$, 36%, prob = 0.95). Perceived apparel quality and the feeling of caring have the strongest predictive powers in forecasting membership in the high-purchase group (prob = 87% and 95%, respectively). Membership in the high-purchase group also occurs when caring is less than 4.8 and nature connectedness is greater than or equal to 3.8 ($n = 31$, 7%, prob = 0.71). However, when nature connectedness is less than 3.8, consumers are expected to be in the low-purchase group ($n = 10$, 2%, prob = 0.80).

Consumers who perceive apparel quality at less than 4.9 ($n = 226$, 55%, prob = 0.80) and apparel uniqueness at less than 4.6 are predicted to be in the low-purchase group ($n = 132$, 32%), with

95% prediction certainty. When perceived uniqueness of apparel is greater than or equal to 4.6, these consumers are in the low-purchase group ($n = 94$, 23%, prob = 0.60) and the node is split further by apparel uniqueness for the second time. When uniqueness is less than 5.6, these consumers are in the low-purchase group as well ($n = 73$, 18%, prob = 0.67). However, when apparel uniqueness is greater than or equal to 5.6, consumers are in the high-purchase group ($n = 21$, 5%, prob = 0.67).

The results of the decision tree analysis identify four influential factors: perceived caring (RQ1a), perceived nature connectedness (RQ1d), perceived apparel quality (RQ1e), and perceived apparel uniqueness (RQ1f). However, perceived ethicality (RQ1b) and perceived environmental benefit (RQ1c) are not significant. The largest consumer segment ($n = 147$, 36%), categorized as a high-purchase group, is influenced by the predictors of perceived apparel quality (≥ 4.9, $n = 188$, 45%) and perceived caring (≥ 4.8, $n = 147$, 36%). Perceived apparel quality, which split the top root node, is the most influential variable in predicting a high-purchase group with a strong probability of certainty (87%). Furthermore, lower scores in perceived apparel quality and uniqueness are important predictors of less intention to purchase green apparel ($n = 132$, 32%) with 95% probability certainty.

In summary, while perceived ethicality (RQ1b) and perceived environmental benefit (RQ1) are not identified as significant predictors of the intention to purchase green apparel, perceived caring (RQ1a), perceived nature connectedness (RQ1d), perceived apparel quality (RQ1e), and perceived apparel uniqueness (RQ1f) are. Among these four influential factors, perceived apparel quality and caring are the strongest predictors of the high-purchase group, which answers our second research question, RQ2a. Conversely, low levels of perceived apparel quality and uniqueness are the most unfavorable combination in predicting the low-purchase group, which answers research question RQ2b.
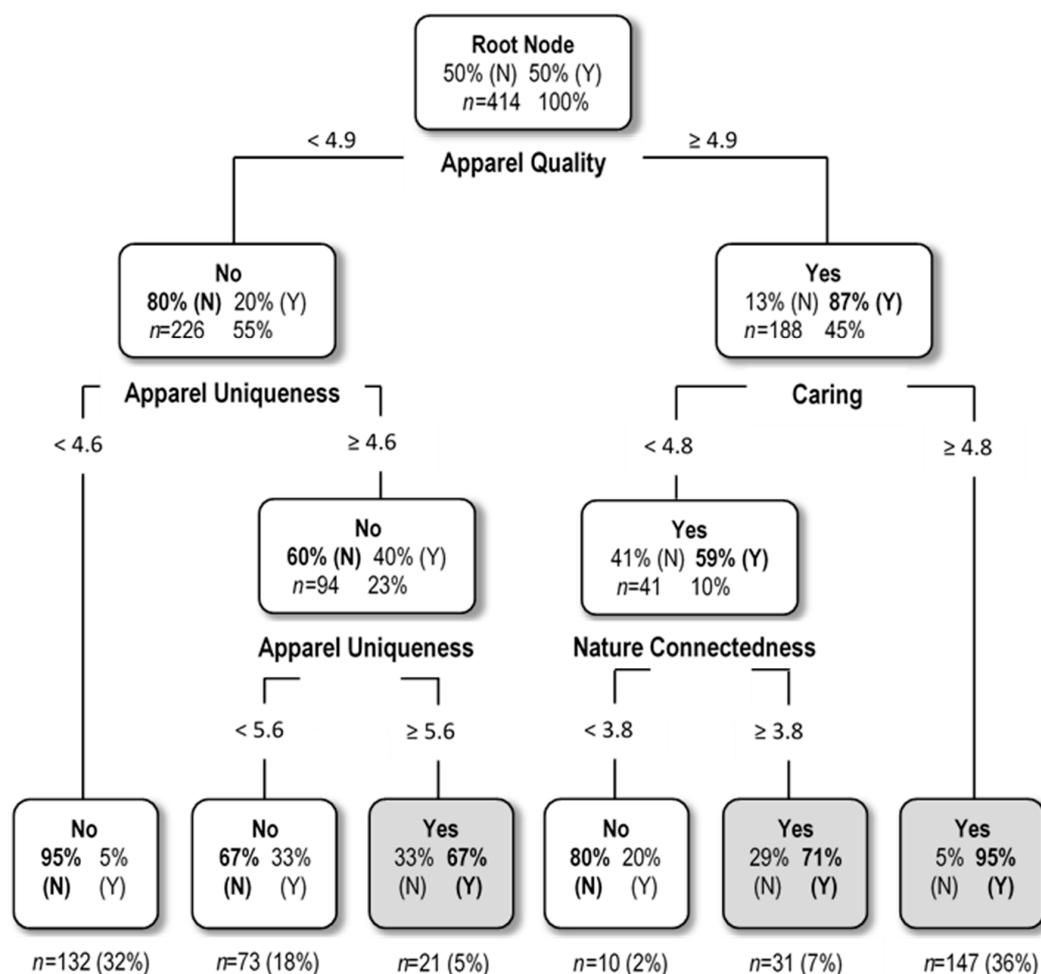

Figure 2. Decision tree predictive model.

4.3. Cross-Validation and Model Evaluation

For the purpose of evaluating the validity of our decision tree model, we conducted a cross-validation analysis on a validation dataset (n = 208, 25% of the full dataset) and a testing dataset (n = 207, 25% of the full dataset) [72,92]. An error matrix analysis was conducted to determine an overall error rate that shows the misclassification ratio of a decision tree model [88]. The ROC analyses were run to diagnose the performance of a binary classification system that compared the false positive rate to the true positive rate and calculated an area under the ROC curve (AUROCC) that displays the accuracy of the prediction rules [91].

The results of the error matrix and ROC analyses on the validation dataset (n = 208) indicate an overall error rate of 0.16, a precision rate of 0.89, and an AUROCC of 0.91, indicating that the tree model is accurate and has a low misclassification rate [93]. Another set of error matrix and ROC analyses were conducted on the testing dataset (n = 207) to generate a final unbiased estimate of the model's performance. The results indicate an overall error rate of 0.19, a precision rate of 0.83, and an AUROCC of 0.86, thus verifying the good performance of the final model on the testing dataset [93]. In short, the decision tree model generated from our training dataset was cross-validated on the validation and testing datasets, demonstrating high accuracy and precision in its performance (Table 5).

Table 5. Decision tree model evaluation and cross-validation. AUROCC, area under the receiver operating characteristic curve.

Sample	Sampling Strategy	n	AUROCC	Overall Error Rate	Accuracy	Precision
Validation dataset	25%	208	0.91	0.16	0.84	0.89
Testing dataset	25%	207	0.86	0.19	0.81	0.83
Training dataset	50%	414	0.92	0.14	0.88	0.86

5. Discussion and Implications

One of the most important findings of this study is that the largest segment of consumers (36%), those who perceived greater levels of apparel quality and caring in the advertising, was identified as a high purchase group. This result means that an effective advertising strategy to maximize the purchasing of green apparel requires focusing on increasing both the perception of apparel quality and the humanistic perception of caring. However, if green advertisements do not elicit consumers' positive perception of apparel quality first, they will most likely fail to sell green products.

This observation provides a new perspective on predicting consumers' sustainable behavior in contrast to previous literature, which primarily focused on identifying social initiatives and environmentalism as the main reasons behind green choices [42]. In general, marketers have not focused on improving responses to the functional benefits of green products in advertising but instead have offered broader environmental images or portraits of social responsibility [2,5]. If marketers choose to strengthen consumers' responses to product-related benefits as they promote green products, apparel manufacturers will need to simultaneously maintain high-quality green products while finding new ways to facilitate eco-friendly and ethical production. Usually, consumers have limited knowledge about a green product and simply assume that it will underperform [2,49]. To avoid such doubt, green apparel advertisers must provide clear information that being eco-friendly does not require any sacrifice in quality or functional superiority.

Furthermore, the results show that a low level of perceived apparel uniqueness is an influential factor in predicting less intention to purchase green apparel. In fact, this study finds that the second largest segment of consumers (32%), who perceive low levels of apparel quality and uniqueness, are identified as a low-purchase group. This result means that if consumers do not perceive some degree of uniqueness in the green apparel from green advertising, they are not likely to purchase the item. Our finding supports the previous literature, which indicates that perceived uniqueness is a key determinant of sustainable apparel consumption [59]. Thus, we suggest that when marketers develop green apparel advertisements, they frame the messages to improve the perceptions of uniqueness

and design, which would help avoid consumers' unfavorable responses to green apparel. In addition, manufacturers should find better ways to meet consumers' needs for uniqueness and quality in green apparel. In turn, the added product value will help extend the product life cycle, which would result in a better evaluation of green products and lessen the detrimental effects on the environment and society [5,51].

According to our study results, the intention to purchase green apparel is strongly associated with the extent to which consumers perceive feelings of caring and nature connectedness in advertisements. This finding is consistent with past research in that the social aspects of green advertisements can add value to products and positively influence sustainable behavior [24]. However, focusing too much on altruistic dimensions alone in green advertising can backfire and result in a loss of sales and the failure to establish new products in the marketplace [2]. In making decisions on green purchases, consumers rely on their perception of caring for other people in green advertising; however, this perception only works when they perceive the quality of green apparel positively [2,94].

Limitations and Directions for Future Research

Several cautions should be mentioned in interpreting the results of our study. First, the study used a target variable that was dichotomized from a continuous variable (i.e., purchase intention). Although we followed the best practice in dichotomization for a binary predictive model [87], we might have introduced a potential bias from dichotomizing the purchase intention score [95]. Future studies should consider testing our framework by using a continuous target variable through other tree-based analyses, such as regression tree or random forest [72,91]. Second, we used eight styles of advertising to find a general effect of consumers' perceptions on their intention to purchase green apparel. For this study, we focused on determining which perceived factors are most important in generating a positive purchase intention rather than finding which ad type creates the effect. However, across the eight advertisement conditions, viewers' perceptions might have been different as well as their purchase intentions. Due to this methodological drawback, this study might suffer from limited internal validity and the results should be interpreted with appropriate caution in this regard.

In addition, the sustainability survey research typically suffers from social desirability response (SDR) bias on self-reported questionnaires [96]. The respondents might have given more positive ratings to the questions, and our survey might have overestimated the effect of perceptions on purchase intentions in green advertising. Thus, the results of our study are prone to SDR bias and should be interpreted with appropriate caution in this regard [97]. Future studies can mitigate this bias by using indirect questions or statistically controlling them with the use of the social desirability scale [98]. Further, although the random assignment of participants reduced the risk of confounding bias, we recognize the shortcoming of the potential confounding effect from variables such as age, gender, income level, and education. Especially, the average annual income of $60,000–$79,999 in the study population indicates household level instead of personal income. Whether using measures of individual earnings or family income would affect the demographic characteristics of the study population is an open question. Because the data were collected from consumer panelists in the United States, our predictive model and consumers' green consumption behavior would be shaped differently by diverse nationalities and cultural backgrounds. To generalize our results, future studies should consider running multiple decision tree models for various demographic segments of consumers. Through demographic profiling based on age, gender, individual earnings, ethnicity, nationality, and socioeconomic information, future studies could also provide valuable information about distinct clusters of green consumers. Furthermore, replication of this study with other domains of green advertisements, such as "fair trade," "recycled," and "animal-/wildlife-friendly" apparel, would enhance the external validity of the results.

6. Conclusions

Based on our decision tree analysis, an important rule in advertising green apparel should be to ensure effective communication to attain consumers' favorable perceptions of (i) apparel quality, (ii) caring, and (iii) apparel uniqueness. Remarkably, the largest segment of consumers (36%), those who perceive greater levels of apparel quality and caring, are identified as a high-purchase group. This result means that the perception of apparel quality and the feeling of caring in green apparel advertising are the most influential factors in predicting high purchase intent. Furthermore, a low level of perceived apparel uniqueness will most likely lead to nonpurchase of green apparel in response to an advertisement. While emphasizing that social initiatives of green advertising can foster sustainable consumption, consumer-centric product attributes also play a prominent role in green apparel purchasing. For an effective advertising strategy, orchestrating these product-related factors concurrently with the welfare of others will determine marketers' success in advertising green apparel. Our study endeavors to enhance marketers' strategies for advertising green apparel by providing a new analytical method for modeling consumer behavior in response to green apparel advertising. We hope that this study provides additional insight into how marketers can increase consumers' adoption of green apparel and to better understand their choices of sustainable consumption.

References

1. Yang, D.; Lu, Y.; Zhu, W.; Su, C. Going green: How different advertising appeals impact green consumption behavior. *J. Bus. Res.* **2015**, *68*, 2663–2675. [CrossRef]

2. Sheehan, K.B. Socially responsible advertising: Does a brand have a conscience. In *Controversies in Contemporary Advertising*; Sage Publications: Thousand Oaks, CA, USA, 2013; pp. 235–255.

3. Bailey, A.A.; Mishra, A.; Tiamiyu, M.F. Green advertising receptivity: An initial scale development process. *J. Mark. Commun.* **2014**, *22*, 1–19. [CrossRef]

4. Banerjee, S.; Gulas, C.S.; Iyer, E. Shades of Green: A Multidimensional Analysis of Environmental Advertising. *J. Advert.* **1995**, *24*, 21–31. [CrossRef]

5. Yan, R.-N.; Hyllegard, K.H.; Blaesi, L.F. Marketing eco-fashion: The influence of brand name and message explicitness. *J. Mark. Commun.* **2012**, *18*, 151–168. [CrossRef]

6. Jung, S.; Jin, B. From quantity to quality: Understanding slow fashion consumers for sustainability and consumer education. *Int. J. Consum. Stud.* **2016**, *40*, 410–421. [CrossRef]

7. Grimmer, M.; Woolley, M. Green marketing messages and consumers' purchase intentions: Promoting personal versus environmental benefits. *J. Mark. Commun.* **2014**, *20*, 231–250. [CrossRef]

8. Kong, Y.; Zhang, L. When does green advertising work? The moderating role of product type. *J. Mark. Commun.* **2014**, *20*, 197–213. [CrossRef]

9. Smith, R.E.; Swinyard, W.R. Cognitive Response to Advertising and Trial: Belief Strength, Belief Confidence and Product Curiosity. *J. Advert.* **1988**, *17*, 3–14. [CrossRef]

10. Dekimpe, M.G.; Hanssens, D.M. Advertising Response Models. In *The SAGE Handbook of Advertising*; Tellis, G.J., Ambler, T., Eds.; SAGE Publications: Thousand Oaks, CA, USA, 2007; pp. 247–263.

11. Taylor, P.W. Environmental ethics and human ethics. In *Respect for Nature: A theory of Environmental Ethics*, 2nd ed.; Princeton University Press: New Jersey, NJ, USA, 2011; pp. 3–58.

12. Norton, B.G. Environmental ethics and weak anthropocentrism. *Environ. Ethics* **1984**, *6*, 131–148. [CrossRef]

13. Davis, I. How (not) to market socially responsible products: A critical research evaluation. *J. Mark. Commun.* **2013**, *19*, 136–150. [CrossRef]

14. Dhar, R. New directions in behavioral decision theory: Implications for consumer choice. *Adv. Consc. Res.* **1995**, *22*, 203.

15. Kareklas, I.; Carlson, J.R.; Muehling, D.D. "I Eat Organic for My Benefit and Yours": Egoistic and Altruistic Considerations for Purchasing Organic Food and Their Implications for Advertising Strategists. *J. Advert.* **2014**, *43*, 18–32. [CrossRef]

16. McDonald, L.M.; Rundle-Thiele, S. Corporate social responsibility and bank customer satisfaction: A research agenda. *Int. J. Bank Mark.* **2008**, *26*, 170–182. [CrossRef]

17. Kortenkamp, K.V.; Moore, C.F. Ecocentrism and anthropocentrism: Moral reasoning about ecological commons dilemmas. *J. Environ. Psychol.* **2001**, *21*, 261–272. [CrossRef]

18. Traer, R. Ethics and science. In *Doing Environmental Ethics*; Westview Press: Boulder, CO, USA, 2009; pp. 3–34.

19. Sheth, J.N.; Sethia, N.K.; Srinivas, S. Mindful consumption: A customer-centric approach to sustainability. *J. Acad. Mark. Sci.* **2011**, *39*, 21–39. [CrossRef]

20. Minton, E.A.; Kahle, L.R.; Kim, C.-H. Religion and motives for sustainable behaviors: A cross-cultural comparison and contrast. *J. Bus. Res.* **2015**, *68*, 1937–1944. [CrossRef]

21. Giacalone, R.A.; Thompson, K.R. Business Ethics and Social Responsibility Education: Shifting the Worldview. *Acad. Manag. Learn. Educ.* **2006**, *5*, 266–277. [CrossRef]

22. Jafari, A. Can Society Nurture Humanistic Marketing? In *Humanistic Marketing*; Varey, R., Pirson, M., Eds.; Palgrave Macmillan: London, UK, 2014; pp. 113–125.

23. Gopaldas, A. Translating anthropological consumption theories into humanistic marketing practices. In *Humanistic Marketing*; Varey, R.J., Pirson, M., Eds.; Palgrave Macmillan: London, UK, 2014; pp. 150–163.

24. D'Souza, C. Marketing Challenges for an Eco-fashion Brand: A Case Study. *Fash. Theory* **2015**, *19*, 67–82. [CrossRef]

25. Golob, U.; Lah, M.; Jančič, Z. Value orientations and consumer expectations of corporate social responsibility. *J. Mark. Commun.* **2008**, *14*, 83–96. [CrossRef]

26. Starr, M.A. The social economics of ethical consumption: Theoretical considerations and empirical evidence. *J. Socio-Econ.* **2009**, *38*, 916–925. [CrossRef]

27. Briggs, E.; Peterson, M.; Gregory, G. Toward a better understanding of volunteering for nonprofit organizations: Explaining volunteers' pro-social attitudes. *J. Macromark.* **2010**, *30*, 61–76. [CrossRef]

28. Huber, F.; Meyer, F.; Weihrauch, A.; Weisshaar, I. Cherish your loved ones–the role of the feeling of care and security in advertising. *Int. Rev. Retail Distrib. Consum. Res.* **2014**, *24*, 213–230. [CrossRef]

29. Stout, P.A.; Leckenby, J.D. The nature of emotional response to advertising: A further examination. *J. Advert.* **1988**, *17*, 53–57. [CrossRef]

30. Dickinson, R.A.; Carsky, M.L. The consumer as economic voter. In *The Ethical Consumer*; Harrison, R., Newholm, T., Shaw, D., Eds.; Sage Publications: London, UK, 2005; pp. 25–36.

31. Murphy, P.E.; Laczniak, G.R.; Bowie, N.E.; Klein, T.A. Ethical reasoning and marketing decisions. In *Ethical Marketing*; Pearson Prentice Hall: Upper Saddle River, NJ, USA, 2005; pp. 1–47.

32. Reidenbach, R.E.; Robin, D.P. Toward the development of a multidimensional scale for improving evaluations of business ethics. *J Bus. Ethics* **1990**, *9*, 639–653. [CrossRef]

33. Fiske, S.T.; Pavelchak, M.A. Category-based versus piecemeal-based affective responses: Developments in schema-triggered affect. In *Handbook of Motivation and Cognition: Foundations of Social Behavior*; Sorrentino, R.M., Higgins, E.T., Eds.; Guilford Press: New York, NY, USA, 1986; pp. 167–203.

34. Bearse, S.; Capozucca, P.; Favret, L.; Lynch, B. Finding the green in today's shoppers: Sustainability trends and new shopper insights. In *GMA/Deloitte Green Shopper Study*; GMA Deloitte Development LCC: Oakland, CA, USA, 2009; pp. 1–28.

35. Luchs, M.G.; Naylor, R.W.; Irwin, J.R.; Raghunathan, R. The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference. *J. Market.* **2010**, *74*, 18–31. [CrossRef]

36. Abdul-Muhmin, A.G. Explaining consumers' willingness to be environmentally friendly. *Int. J. Consum. Stud.* **2007**, *31*, 237–247. [CrossRef]

37. Brown, V.A.; Grootjans, J.; Ritchie, J.; Townsend, M.; Verrinder, G. *Sustainability And health: Supporting Global Ecological Integrity in Public Health*; Routledge: New York, NY, USA, 2014.

38. Emerich, M.M. Toward an integrative spirituality of sustainability. In *The Gospel of Sustainability: Media, Market, and LOHAS*; University of Illinois Press: Urbana, IL, USA, 2011; pp. 187–203.

39. Avlonas, N.; Nassos, G.P. *Practical Sustainability Strategies: How to Gain a Competitive Advantage*; John Wiley & Sons: Oxford, UK, 2013.

40. Segev, S.; Fernandes, J.; Hong, C. Is Your Product Really Green? A Content Analysis to Reassess Green Advertising. *J. Advert.* **2016**, *45*, 85–93. [CrossRef]

41. Cummins, S.; Reilly, T.M.; Carlson, L.; Grove, S.J.; Dorsch, M.J. Investigating the portrayal and influence of sustainability claims in an environmental advertising context. *J. Macromark.* **2014**, *34*, 332–348. [CrossRef]

42. Nyilasy, G.; Gangadharbatla, H.; Paladino, A. Perceived greenwashing: The interactive effects of green advertising and corporate environmental performance on consumer reactions. *J Bus. Ethics* **2014**, *125*, 693–707. [CrossRef]

43. Schultz, P.W.; Shriver, C.; Tabanico, J.J.; Khazian, A.M. Implicit connections with nature. *J. Environ. Psychol.* **2004**, *24*, 31–42. [CrossRef]

44. Zullig, K.J.; Ward, R.M.; Horn, T. The association between perceived spirituality, religiosity, and life satisfaction: The mediating role of self-rated health. *Soc. Indic. Res.* **2006**, *79*, 255–274. [CrossRef]

45. Mayer, F.S.; Frantz, C.M. The connectedness to nature scale: A measure of individuals' feeling in community with nature. *J. Environ. Psychol.* **2004**, *24*, 503–515. [CrossRef]

46. Hartmann, P.; Apaolaza, V.; Eisend, M. Nature Imagery in Non-Green Advertising: The Effects of Emotion, Autobiographical Memory, and Consumer's Green Traits. *J. Advert.* **2016**, *45*, 427–440. [CrossRef]

47. Geng, L.; Xu, J.; Ye, L.; Zhou, W.; Zhou, K. Connections with nature and environmental behaviors. *PLoS ONE* **2015**, *10*, 1–11. [CrossRef] [PubMed]

48. Leonidou, C.N.; Skarmeas, D. Gray Shades of Green: Causes and Consequences of Green Skepticism. *J. Bus. Ethics* **2015**, *144*, 401–415. [CrossRef]

49. D'Souza, C.; Taghian, M.; Lamb, P.; Peretiatko, R. Green decisions: Demographics and consumer understanding of environmental labels. *Int. J. Consum. Stud.* **2007**, *31*, 371–376. [CrossRef]

50. Kiessling, T.; Isaksson, L.; Yasar, B. Market Orientation and CSR: Performance Implications. *J. Bus. Ethics* **2015**, *137*, 269–284. [CrossRef]

51. Niinimäki, K. Eco-clothing, consumer identity and ideology. *Sustain. Dev.* **2010**, *18*, 150–162. [CrossRef]

52. Hugo, S.H.; van Aardt, A.M. Evaluative criteria applied by South African female fashion consumers when purchasing casual daywear. *Int. J. Consum. Stud.* **2012**, *36*, 460–471. [CrossRef]

53. D'Souza, C.; Taghian, M.; Khosla, R. Examination of environmental beliefs and its impact on the influence of price, quality and demographic characteristics with respect to green purchase intention. *J. Target. Meas. Anal. Market.* **2007**, *15*, 69–78. [CrossRef]

54. Joshi, Y.; Rahman, Z. Factors Affecting Green Purchase Behaviour and Future Research Directions. *Int. Strategy Manag. Rev.* **2015**, *3*, 128–143. [CrossRef]

55. Alcañiz, E.B.; Cáceres, R.C.; Pérez, R.C. Alliances Between Brands and Social Causes: The Influence of Company Credibility on Social Responsibility Image. *J. Bus. Ethics* **2010**, *96*, 169–186. [CrossRef]

56. Karna, J.; Juslin, H.; Ahonen, V.; Hansen, E. Green advertising: Greenwash or a true reflection of marketing strategies? *Greener Manag. Int.* **2001**, *33*, 59–70. [CrossRef]

57. Netemeyer, R.G.; Krishnan, B.; Pullig, C.; Wang, G.; Yagci, M.; Dean, D.; Ricks, J.; Wirth, F. Developing and validating measures of facets of customer-based brand equity. *J. Bus. Res.* **2004**, *57*, 209–224. [CrossRef]

58. Niinimäki, K. Sustainable consumer satisfaction in the context of clothing. In *Product-Service System Design for Sustainability*; Vezzoli, C., Kohtala, C., Srinivasan, A., Xin, L., Fusakul, M., Sateesh, D., Diehl, J.C., Eds.; Greenleaf Publishing: Sheffield, UK, 2014; pp. 218–237.

59. Halepete, J.; Littrell, M.; Park, J. Personalization of fair trade apparel: Consumer attitudes and intentions. *Cloth. Text. Res. J.* **2008**, *27*, 143–160. [CrossRef]

60. Andreu, L.; Casado-Díaz, A.B.; Mattila, A.S. Effects of message appeal and service type in CSR communication strategies. *J. Bus. Res.* **2015**, *68*, 1488–1495. [CrossRef]

61. Chang, C. Feeling Ambivalent About Going Green. *J. Advert.* **2011**, *40*, 19–31. [CrossRef]

62. Romani, S.; Grappi, S.; Bagozzi, R. Explaining Consumer Reactions to Corporate Social Responsibility: The Role of Gratitude and Altruistic Values. *J. Bus. Ethics* **2013**, *114*, 193–206. [CrossRef]

63. Paek, H.-J.; Nelson, M.R. To buy or not to buy: Determinants of socially responsible consumer behavior and consumer reactions to cause-related and boycotting ads. *J. Curr. Issues Res. Advert.* **2009**, *31*, 75–90. [CrossRef]

64. Davis, J.J. Good Ethics Is Good for Business: Ethical Attributions and Response to Environmental Advertising. *J. Bus. Ethics* **1994**, *13*, 873–885. [CrossRef]

65. Dangelico, R.M.; Pujari, D. Mainstreaming Green Product Innovation: Why and How Companies Integrate Environmental Sustainability. *J. Bus. Ethics* **2010**, *95*, 471–486. [CrossRef]

66. Schuhwerk, M.E.; Lefkoff-Hagius, R. Green or non-green? Does type of appeal matter when advertising a green product? *J. Advert.* **1995**, *24*, 45–54. [CrossRef]

67. Cason, T.N.; Gangadharan, L. Environmental labeling and incomplete consumer information in laboratory markets. *J. Environ. Econ. Manag.* **2002**, *43*, 113–134. [CrossRef]

68. Woodside, A.G.; Taylor, J.L. Consumer purchase intentions and perceptions of product quality and national advertising. *J. Advert.* **1978**, *7*, 48–51. [CrossRef]

69. Knight, D.K.; Kim, E.Y. Japanese consumers' need for uniqueness: Effects on brand perceptions and purchase intention. *J. Fash. Mark. Manag. Int. J.* **2007**, *11*, 270–280. [CrossRef]

70. Hansen, K.T. Other people's clothes? The international second-hand clothing trade and dress practices in Zambia. *Fash. Theory* **2000**, *4*, 245–274. [CrossRef]

71. Breiman, L.; Friedman, J.; Stone, C.J.; Olshen, R.A. Introduction to tree classification. In *Classification and Regression Trees*; CRC press: Belmont, CA, USA, 1984; pp. 18–58.

72. Song, S.Y.; Kim, Y.-K. Theory of Virtue Ethics: Do Consumers' Good Traits Predict Their Socially Responsible Consumption? *J. Bus. Ethics* **2016**, 1–17. [CrossRef]

73. Koon, S.; Petscher, Y.; Foorman, B.R. Using Evidence-Based Decision Trees Instead of Formulas to Identify At-Risk Readers. In *Regional Educational Laboratory Southeast REL 2014-036*; U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance: Washington, DC, USA, 2014.

74. O'Flaherty, B.; Heavin, C. Positioning predictive analytics for customer retention. *J. Decis. Syst.* **2015**, *24*, 3–18. [CrossRef]

75. Ku, H.-H.; Kuo, C.-C.; Wu, C.-L.; Wu, C.-Y. Communicating green marketing appeals effectively: The role of consumers' motivational orientation to promotion versus prevention. *J. Advert.* **2012**, *41*, 41–50. [CrossRef]

76. Kareklas, I.; Carlson, J.R.; Muehling, D.D. The Role of Regulatory Focus and Self-View in "Green" Advertising Message Framing. *J. Advert.* **2012**, *41*, 25–39. [CrossRef]

77. Zhao, G.; Pechmann, C. The impact of regulatory focus on adolescents' response to antismoking advertising campaigns. *J. Mark. Res.* **2007**, *44*, 671–687. [CrossRef]

78. Chang, C. Guilt Regulation: The Relative Effects of Altruistic Versus Egoistic Appeals for Charity Advertising. *J. Advert.* **2014**, *43*, 211–227. [CrossRef]

79. Bickart, B.A.; Ruth, J.A. Green eco-seals and advertising persuasion. *J. Advert.* **2012**, *41*, 51–67. [CrossRef]

80. Argo, J.J.; Popa, M.; Smith, M.C. The sound of brands. *J. Mark.* **2010**, *74*, 97–109. [CrossRef]

81. Kim, B.H.; Han, S.; Yoon, S. Advertising creativity in Korea. *J. Advert.* **2010**, *39*, 93–108. [CrossRef]

82. Chandrashekaran, R. The influence of redundant comparison prices and other price presentation formats on consumers' evaluations and purchase intentions. *J. Retail.* **2004**, *80*, 53–66. [CrossRef]

83. Grewal, D.; Monroe, K.B.; Krishnan, R. The effects of price-comparison advertising on buyers' perceptions of acquisition value, transaction value, and behavioral intentions. *J. Mark.* **1998**, *62*, 46–59. [CrossRef]

84. Aaker, D.A.; Stayman, D.M.; Vezina, R. Identifying Feelings Elicited by Advertising. *Psychol. Market.* **1988**, *5*, 1–16. [CrossRef]

85. Reidenbach, R.E.; Robin, D.P. Some initial steps toward improving the measurement of ethical evaluations of marketing activities. *J. Bus. Ethics* **1988**, *7*, 871–879. [CrossRef]

86. Dodds, W.B.; Monroe, K.B.; Grewal, D. Effects of price, brand, and store information on buyers' product evaluations. *J. Mark. Res.* **1991**, *28*, 307–319. [CrossRef]

87. Osborne, J.W. *Best Practices in Logistic Regression*; SAGE Publications: Thousand Oaks, CA, USA, 2014.

88. Fielding, A.H.; Bell, J.F. A review of methods for the assessment of prediction errors in conservation presence/absence models. *Environ. Conserv.* **1997**, *24*, 38–49. [CrossRef]

89. Nunnally, J.C.; Bernstein, I. *Psychometric Theory*; McGrew-Hall: New York, NY, USA, 1994.

90. Brown, T.A. The common factor model and exploratory factor analysis. In *Confirmatory Factor Analysis for Applied Research*; Kenny, D.A., Ed.; Guilford Publications: New York, NY, USA, 2015; pp. 12–39.

91. Williams, G. Decision trees. In *Data mining with Rattle and R: The Art of Excavating Data for Knowledge Discovery*; Gentleman, R., Hornik, K., Parmigiani, G.G., Eds.; Springer: New York, NY, USA, 2011; pp. 205–243.

92. Chen, J.S. Developing a travel segmentation methodology: A criterion-based approach. *J. Hospit. Tour. Res.* **2003**, *27*, 310–327. [CrossRef]

93. Chirouze, C.; Schuhmacher, H.; Rabaud, C.; Gil, H.; Khayat, N.; Estavoyer, J.-M.; May, T.; Hoen, B. Low serum procalcitonin level accurately predicts the absence of bacteremia in adult patients with acute fever. *Clin. Infect. Dis.* **2002**, *35*, 156–161. [CrossRef] [PubMed]

94. Van Dyck, F. Conscience or cash? In *Advertising Transformed: The New Rules for the Digital Age?* Kogan Page Publishers: London, UK, 2014; pp. 103–116.

95. Altman, D.G.; Lausen, B.; Sauerbrei, W.; Schumacher, M. Dangers of using "optimal" cutpoints in the evaluation of prognostic factors. *J. Natl. Cancer Inst.* **1994**, *86*, 829–835. [CrossRef] [PubMed]

96. Randall, D.M.; Fernandes, M.F. The social desirability response bias in ethics research. *J. Bus. Ethics* **1991**, *10*, 805–817. [CrossRef]

97. Mohr, L.A.; Webb, D.J.; Harris, K.E. Do consumers expect companies to be socially responsible? The impact of corporate social responsibility on buying behavior. *J. Cons. Aff.* **2001**, *35*, 45–72. [CrossRef]

98. McDonald, G. Cross-Cultural Methodological Issues in Ethical Research. *J. Bus. Ethics* **2000**, *27*, 89–104. [CrossRef]