

## Article

# Impact of Environmental Concern, Emotional Appeals, and Attitude toward the Advertisement on the Intention to Buy Green Products: The Case of Younger Consumer Audiences

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**Abstract:** The protection of our natural environment and the rational use of our natural resources are topics that have gained enormous attention the last years, with thousands of people changing their buying behaviors and making more environmentally conscious purchase decisions. Green consumer behavior is concerned with environmental issues or societal considerations that are reflected in purchase decisions. In this article, we study the factors influencing the intention of consumers to buy green products by proposing and validating a research model depicting the dependencies of green purchase intention from the selected factors. More specifically, the aim of the exploratory study is to investigate the impact of positive and negative emotions on individuals' perceptions of environmentally friendly products and services, as well as the influence of attitudes toward green ads and of consumers' environmental concerns on green purchasing behavior. The study was conducted with 75 participants who were shown six ads promoting a specific ecofriendly product, with each ad featuring a different emotional appeal both through its visual imagery and its textual information; three of the ads elicited negative emotions (fear, guilt, and disgust) and three positive emotions (joy, interest/curiosity, and inspiration). Findings indicate that ads that elicit negative emotions demonstrate a significant positive effect on consumers' attitudes toward the green ad and on their intention to buy the promoted green product, but this does not apply to ads that elicit positive emotions. The statistical analysis also revealed that the attitudes toward the green ad are not a significant predictor of consumers' buying intention. Moreover, as expected, consumers with high environmental concern demonstrate stronger intention to buy the promoted green product compared to consumers with low environmental concern.

**Keywords:** green marketing; emotional appeals; environmental concern; green purchase intention; undergraduate students



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## 1. Introduction

Green marketing theory explores rationales for minimizing the environmental effect of value production, as well as trade [1,2]. Green marketing indicates that an organization is market oriented and operates sustainably. Green marketing is defined as promotional activities targeted at achieving advantages by influencing customer behavior toward a company. Such alterations are gradually impacted by a company's practices and policies that affect the environment and encompass and demonstrate its concern for the community at large. Given that the main objective of businesses is profit, it is a challenge for businesses to obtain income and maintain their environmental responsibilities [1–3]. Companies must be conscious of their environmental and societal duties, as well as those of their consumers, employees, and shareholders.

Environmental attitudes and practices have become a critical part in individuals' daily lives, as well as in the functioning of modern enterprises [2,4]. Businesses need to chart courses for future development using practices that are universally accepted by society for

the purpose of increasing environmental awareness and sustainable development. Green marketing varies from other social and ecological marketing theories since it combines ecological and social concerns while focusing on the real-world implementation of enterprises' ecological endeavors [1–3]. Because it is closely tied to the preservation of the natural environment, green advertising has been recognized as an effective means to market products, services, and business concepts. Consumers of green products are the primary focus for firms operating in the present economic conditions since they are regarded as a driving force for consumption [4–6].

Corporate social responsibility (CSR) is a guiding principle for organizations seeking to be environmentally friendly and sustainable [7–9]. It is a commitment by businesses to become more sustainable and ethical in their daily operations, with the ultimate objective of profit and social impact through enhancing people's quality of life. Furthermore, by including CSR policies in their economic development, they can reduce a significant amount of disposable income on utility costs and acquire a competitive edge by establishing themselves as a socially responsible firm [7–9]. CSR and customer engagement are concepts that are intertwined and that greatly improve green marketing activities. While numerous individuals associate sustainable development with green practices and environmental preservation, "ecofriendly economic growth" is a more appropriate term for this concept. This reflects the essence of merging economic advancement with ecologically conscientious practices, emphasizing the significance of promoting both financial prosperity and ecological sustainability [7,10]. This is due to the fact that in order to claim that their products are environmentally friendly, companies must thoroughly evaluate the products to fulfil acceptable standards for acquiring approved ecolabels [8,10–12].

Considering the dynamic changes in consumer behavioral intentions, marketers need to treat this issue meticulously to achieve optimum results. These behavioral changes incorporate emotions, theories, and behaviors of those demonstrating green purchase intention [13–15]. The influence of environmental attitudes on psychological states, beliefs, and behaviors contributes to the decision-making process—even more so in the case of green marketing, which promotes societal advancements with the primary purpose of enhancing people's lives and protecting the environment, as it responds to the modern public's significant environmental concerns, which are steadily expanding [15–17]. As a result, our research delves into the factors that impact people's green purchasing decisions and the awareness that leads to civic engagement, with an emphasis on environmentally friendly products. We investigate to what extent environmental concern is associated with and influences ecofriendly attitudes, as well as other variables that could affect how consumers perceive advertising messages via emotional appeal. It is critical to understand the reasons that inspire individuals to participate, both physically and through external social dynamics (such as attitudes toward advertising and ecolabels). These factors are required to better understand how organizations can continue their green practices while achieving greater income and satisfy customers' needs in terms of ecofriendly products or services but also encourage sustainable behavior.

The article is structured as follows: the next three subsections present an overview of the relevant research on how green marketing is connected to the concepts of green purchasing behavior and the factors that influence it. We are also interested in how consumers perceive and react to various advertising messages, as well as the implications of emotional appeal. From a psychological standpoint, we investigated the influence of environmental concerns on their purchase decisions. Section 2 contains a detailed description of the model we developed and tested for our research purposes along with our methodological approach, followed by the data analysis in Section 3. Section 4 highlights and interprets the main findings and indicates relevant limitations. Finally, we conclude the article and make recommendations for further research in Section 5.

### 1.1. Green Purchase Intention

Green products are any products that are produced incorporating green technology and are not associated with any hazards to the environment [1,4,18]. The promotion of green technologies and green goods is critical for natural resource conservation and sustainable development. To date, terminologies such as green consumerism, green consumption, green demand, green purchasing, environmentally friendly consumer behavior, ecological consumption, and pro-environmental consumption have been adopted [1,6,13,19,20].

A person's consuming behavior can be influenced by the economic, political, and technological environments, as well as by the company's marketing mix in terms of pricing, product, distribution, and promotion. These impacts are the initial triggers that cause a person to act as a consumer [16,21,22]. Relevant research has pointed out that the values that distinguish each consumer, such as ambition, social recognition, and pleasure, do not impact the customer's willingness to be ecologically responsible [17,22,23]. Ecological conscientiousness, on the other hand, has a substantial impact on a consumer's possibility of developing ecological behavior and developing emotions of individual responsibility. In another attempt [24], the authors concentrated their efforts on the investigation of the variables that impact the final purchasing decision and consumer attitudes toward the decision to buy environmentally friendly products. Environmental knowledge or concepts were discovered to have a positive relationship with customers' future intention of buying items that are green. Furthermore, environmental concern has a statistically significant effect on consumers' intention to purchase ecological products. In fact, the stronger the consumers' considerations of the environment, the more likely they are to purchase ecological products. To begin with, customers' belief in the effectiveness of their environmental conduct is positively related to their intention to purchase sustainable merchandise [25]. Consumers' altruistic and prosocial inclinations represent a few of the additional factors that impact their likelihood to purchase sustainable products [5,25,26]. Once customers become aware that their choices and behaviors could contribute to social changes and ensure sustainability, their motivation increases.

### 1.2. Environmental Concern

Green consumer behavior could be defined as consumer behavior that is concerned with environmental issues or societal considerations, which is reflected in purchase decisions [17,24,27]. Numerous organizations acquire influential status as they update product information and recommend particular measures to satisfy consumer's needs in relation to their environmental concerns. In terms of the environmental characteristics of the green consumer, we recognize that the public's perception of the environmentally conscious consumer, the consumer's tendencies to purchase environmentally friendly products, their environmental activism, and environmental knowledge all play a significant role in defining a consumer as an environmentalist [28]. There have been a few studies that incorporated environmental knowledge as a variable and studied its influence on either environmental attitudes or pro-environmental behavior [5,20,29]. Moisander [22] demonstrates that green consumerism necessitates an in-depth examination of consumer behavior and expertise, as ecologically responsible consumer behavior differentiates. Ismail et al. [30] discovered that the more consumers are familiar with environmental and social issues, the more pro-social and environmentally conscious choices they make. According to SGuin, Pelletier, and Hunsley [16], environmental concern can have a considerable impact on the extent to which individuals are motivated to adapt their everyday practices to ameliorate the environmental problems at hand. Environmental concern has been demonstrated to be a key factor of the purchasing of organic and green foods in various research studies [4,20,24,31]. Mostafa [32] highlights the impact of environmental concern on purchase decisions. This positive correlation not only contributes to the intention to consume green products but also enhances consumer motivation to search for the necessary information about the green properties of these products, thus becoming environmentally and socially responsible [33]. The environmentally conscious consumer is more likely to purchase ecofriendly items

than the indifferent consumer. Furthermore, when consumers are adequately informed about the environmental impacts of their choice of environmentally friendly products, this substantially contributes toward them being environmentally responsible. In a similar study, Abdul-Muhmin [19] contradicts prior research claiming that environmental concern and environmentally friendly behavior did not demonstrate a statistically significant association. However, the study revealed that the constructive experiences that consumers have when they contribute to environmental safeguarding are positively associated to the strengthening of their motivation to engage in pro-environmental behavior.

Environmental concern appears as a critical aspect in understanding green consumer behavior, comprising both the behavioral and psychological forces that lead consumers to make ecofriendly purchasing decisions and even to actively campaign for the preservation of our environment. Personality, self-esteem, and lifestyle represent examples of psychological influences. The perception that all individuals possess about themselves in terms of their physical appearance, intellectual capacity, personality, and every other aspect that defines their identity as a social being is referred to as self-impression [34–37]. More specifically, in [38], environmental awareness and consciousness were demonstrated to positively influence consumer attitudes toward green products. Furthermore, the collective behavior of individuals had a direct impact on consumer attitudes toward ecologically friendly products. Consumer environmental concern has a favorable relationship to both individual viewpoints and the willingness to actively participate in issues related to the environment [39]. Environmental concern broadens people's mental mechanisms, enabling them to seek alternative routines in their daily lives that could improve preservation of the environment both on an individual and social level [27,29,30,34,35]. Personal perspectives on this issue strengthen people's responsibilities, willingness, and conscientiousness for social change, whereas economic variables play a big role in the development of a consumer as an environmentalist [4,27,36]. Undoubtedly, consumer environmental concern has a beneficial connection to consumer desire to become part of a group that advocates for the environment.

Numerous studies have been conducted to investigate the association between different psychosocial characteristics and green consumption [40–44]. It has been shown that personal and social aspects impact consumer behavior, and thus, understanding green purchasing behavior requires a social approach [17,45,46]. Connection with nature refers to how individuals experience being connected to and integrated into the natural environment. This implies that individuals see themselves as a part of nature and recognize the value of nature to their well-being [2,47,48]. According to [47,49], being acquainted with nature enhances people's well-being. People satisfy their desire for social connection and improve their psychological condition when they experience a connection to nature. This connection with nature can lead to pro-environmental attitudes and behaviors, as individuals see their interconnectedness and reliance on the environment and strive to safeguard it [41,50–53].

### *1.3. Emotional Arousal and Attitude toward the Advertisement*

Green marketing, as opposed to corporate marketing, aims to reduce ecological damage and raise environmental awareness through consumer and industrial goods, with modern businesses emphasizing their ecofriendliness in marketing strategies [7,9,10]. The green initiatives of the corporation will be a long-term commitment of the organization's leadership. A business's development strategy revolves around environmental issues and customer mindfulness [1,18,33,54]. Green marketing must begin with green product design, which implies that the environmentally friendly product must support environmental sustainability. Ecological objectives should guide green product design [55]. While the vast majority perceive green marketing simply as advertising green products, it in fact encompasses a wide range of initiatives such as design, product improvements, production process changes, packaging changes, pricing, distribution, and altering advertising [1,2]. Companies should aim to create awareness and positive attitudes toward green advertisements and increase the demand for green products through environmentally friendly

brands [13,27,35,56]. Advertising that simply conveys the values of green and ecofriendly principles, implying a pro-environmental mentality, is an effective strategy for appealing to consumers. At the same time, it could highlight the product's renewable raw materials, as well as the "green" manufacturing procedure [5,25,57,58].

Green marketing relies heavily on a company's promotional materials. As a bridge between industry and society, green practices inevitably participate in an important exercise in global relations as they promote the legitimacy of their practices and strengthen people's sense of unity in their endeavors to protect the environment. Green advertising could be used to market products, justify their features, and justify their prices [2–4]. For instance, these tasks could include redesigning a product to be more ecologically friendly, transitioning from plastic to sustainable packaging, and adjusting ads to favor environmentally friendly products. Environmental awareness and concern alone cannot ensure that consumer purchasing behavior is necessarily and consistently pro-environmental. This issue of dubious customer response is caused in part by ambiguities and miscommunications in green product advertising statements. There are corporations that have employed deceptive pro-environmental marketing slogans, claiming that their products are ecological without making any changes to their products or even their manufacturing methods [2–4]. The above made it challenging to identify and purchase truly ecologically friendly products. Particularly in such a new thematic segment of the market, research and regulatory bodies are lacking in terms of studying and applying the appropriate criteria for companies to state in their advertisements the environmentally friendly effect of their products or services. Consequently, the so-called ecological merchandise will be distributed on the market without customers being aware of their true origins and attributes. This is a strategy that damages both consumers and numerous businesses, many of whom, although undertaking green activities, struggle to persuade the consumer audience of their good intentions and practices [1,3,5].

Kilbourne [59] investigated green advertising within this theoretical framework and determined that each form of green notion indicates a distinct political orientation and a different positioning of humankind toward nature. One key aspect marketers place particular focus on is to add strong emotional features to green brands with the intention to enhance one's understanding of the unique advantages derived from adopting a green philosophy [60–62]. The emotional motives and incentives connected with environmentally conscious consumer behavior have been a subject of several studies for efficient implementation and representation of emotions or impulses related to the human interaction with nature [63–66]. Fear, guilt, humor, self-esteem, and compassion are examples of emotional responses that can be elicited and be displayed in an advertisement to capture consumer interest [62,65,67–69]. Individuals' perceptions of the unique benefits associated with adopting a green ideology have been strengthened by the inclusion of prominent emotional qualities in green corporations. Furthermore, negative emotions function as potential motivators for behavioral change, compelling customers to consider the environmental impact of their green or cause-related purchase decisions [62,66]. Green advertising, in contrast to emotion, can appeal to logic by referencing, for example, environmental performance and include features that emphasize the economic implications of ecology [70–73]. Furthermore, consumers exhibit specific feelings that emerge from green consumption: well-being as an outcome of altruistic behavior and personal expression, both of which positively influence consumer attitudes toward the environment. The aim of this study is to further comprehend the impact of emotional appeals in green advertising, including both positive and negative emotions and how they influence consumer attitudes toward green advertisements and their impact on consumer intentions for environmentally conscious purchases.

## 2. Materials and Methods

### 2.1. Methodology, Study Design, and Experimental Procedure

After reviewing the literature, we developed the research model depicted in Figure 1. The model comprises elements for the assessment of various behavioral aspects that impact

human behavior and shape fundamental beliefs for green purchase intentions. Attitudes toward the ad (AAD) were measured with a five-item semantic differential scale obtained and adapted from Kim and Cha [74]. The construct included the items of likeness (dislike/like the ad), favorable reaction (unfavorable/favorable), reliability (i.e., “I think green advertising is generally reliable.”), and overall attitude (bad/good). To measure the emotional arousal, we implemented the Greek version of the differential emotions scale (DES) [75]. The construct included items to measure positive emotions (joy, interest/curiosity, and inspiration), namely the DESPositive construct, and negative emotions (guilt, disgust, and fear), namely DESNegative, to confirm that the displayed ads evoke the intended emotional reaction in each respective case. Green purchase intention (GPI) was measured with a six-item scale used by Kim and Cha [74]. Example items are as follows: “I am willing to recommend ecofriendly products to others.” and “I can make a substantial contribution to the environment by using ecofriendly products.” Environmental Concern (EC) was measured with a five-item scale adapted from Muralidharan, La Ferle, and Sung [37]. All items were measured in a 5-point Likert scale, and as the instrument was distributed to a Greek audience, questions were translated accordingly to ensure that the meanings of the questions remained intact for statistical validity in our analysis. All items are depicted in Appendix A. Table 1 lists the hypotheses tested.

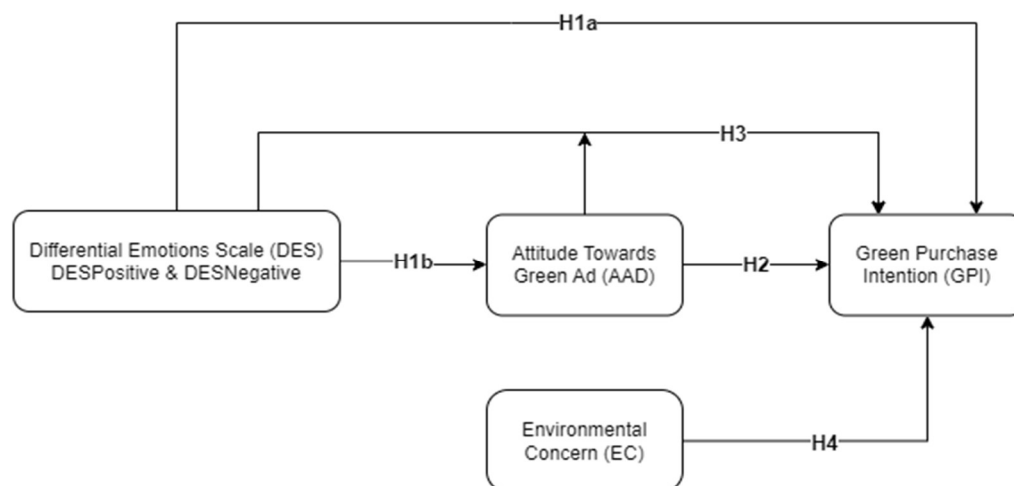


Figure 1. Research Model.

Table 1. Hypotheses.

Hypotheses	
H1a	Emotional arousal (DES) presented in the advertisement will have an effect on the subject's green purchase intention (GPI).
H1b	Emotional arousal (DES) presented in the advertisement will have an effect on attitude toward green ad (AAD).
H2	Attitude toward green ad (AAD) presented in the advertisement will have an effect on the subject's green purchase intention (GPI).
H3	Both attitude toward green ad (AAD) and emotional arousal (DES) presented in the advertisement will have an effect on the subject's green purchase intention (GPI).
H4	Consumers with high environmental concern (EC) will report higher purchase intention for all six ads compared to consumers with low environmental concern (EC).

The primary aim of this study is to investigate the impact of positive and negative emotions on individuals' perceptions of environmentally friendly products and services, as well as the influence of attitude toward green ads and environmental concern on green purchasing behavior. To achieve this objective, a total of six (6) advertising messages were utilized, with three (3) designed to evoke negative emotions (fear, guilt, and disgust), and three (3) aimed at eliciting positive emotions and conveying associated messages (environmental benefits, personal benefits, and societal benefits). All of these advertisements showcased the same ecofriendly product, a hand sanitizer.

The study was conducted at the Department of Management Science and Technology, University of Patras. A total of 75 individuals took part in the study, mostly university students, even though we also included people from the general population. It is important to note that participation in the study was voluntary. The participants were provided with a concise introduction to the study procedure and its objectives, along with a brief explanation of green advertising and corporate responsibility concepts. They were then informed about their right to abort the process at any point and for any reason, as well as the details of the data collection and analysis. They were requested to carefully review and sign the participant consent form and were informed that all COVID-19 safety measures and procedures would be strictly followed.

Next, participants were asked to complete a pre-test questionnaire that aimed to gather information about their demographic characteristics (such as age, gender, education, etc.) and general inquiries regarding their preferences for green products. Following the completion of the questionnaire, participants were shown the six advertisements as static images on a computer screen in random order. Each advertisement was displayed for a duration of 10 s, with a brief interval of a grey screen between each advertisement transition. To ensure comprehensive analysis, a repeated-measures within-subject design was implemented, whereby the same participants were exposed to all treatment conditions [76,77]. To minimize potential user bias, a *“completely randomized factorial design was employed for randomization to assign participants to all treatment conditions”* [78,79]. Following the termination of the experiment, participants were tasked to complete the post-test questionnaire, which included the aforementioned constructs to measure attitudinal and behavioral aspects of green consumer behavior, i.e., attitude toward the advertisements, emotional arousal, green purchase intention, and environmental concern.

## 2.2. Sample Profile

As illustrated in Table 2, most participants (87.9%) exhibit a considerable familiarity with environmentally conscious consumer products, as evidenced by their prior experience and expressed preference for specific green product types. The descriptive statistics of the sample reveal a well-balanced gender distribution, with males accounting for 56% of respondents and females comprising 44%. Regarding age distribution, the “18–25” age group represents the largest segment, constituting 85.3% of the sample, followed by the “26–30” age group with a proportion of 8%. In terms of educational background, the respondents primarily consist of bachelor’s degree students (81.3%) and graduates (8%).

**Table 2.** Sample Profile.

		Frequency	Percentage
Gender	Male	42	56%
	Female	33	44%
Age	18–25	64	85.3%
	26–30	6	8%
	31–40	3	4%
	41–50	1	1.3%
	51–60	0	0%
	60+	1	1.3%
Education	High school graduate	3	4%
	Bachelor’s Degree Student	61	81.3%
	Graduate	6	8%
	Postgraduate Student	0	0%
	Postgraduate	3	4%
	PhD Candidate	2	2.7%
	Doctoral	0	0%
	Other	0	0%

**Table 2.** *Cont.*

		Frequency	Percentage
Green Product Preference	Household Appliances	10	13.3%
	Beauty Products	19	25.3%
	Food or Beverages	12	16%
	Electronic Devices	19	25.3%
	Clothing	6	8%

### 3. Results

Our aim is to investigate hypotheses H1a–H3 and determine the predictive power of the independent variables on the dependent variable (GPI). For this reason, we used regression and multiple regression tests, while an independent t-test was performed to compare the means of low EC (Group A) and high EC (Group B) (H4) [80–82].

For hypothesis H1a, a regression analysis was conducted to examine the relationship between the predictor variables DESPositive and DESNegative and the dependent variable GPI. The descriptive statistics showed that the mean score for GPI was 3.7050 (SD = 0.4830), for DESPositive was 1.7511 (SD = 0.70831), and for DESNegative was 3.3733 (SD = 1.0146). The correlation matrix indicated a significant positive correlation between GPI and DESNegative ( $r = 0.227, p < 0.05$ ) and a significant negative correlation between GPI and DESPositive ( $r = -0.252, p < 0.05$ ), suggesting that higher scores on DESNegative were associated with higher scores on GPI, while higher scores on DESPositive were associated with lower scores on GPI, as illustrated in Table 3. These results suggest that DESNegative is a significant positive predictor of GPI, while DESPositive is a significant negative predictor of GPI (Table 4).

**Table 3.** Correlations between GPI, DESPositive, and DESNegative.

	M	SD	GPI	DESPositive	DESNegative
GPI	3.7050	0.48300	1		
DESPositive	1.7511	0.70831	−0.252 (0.015 **)	1	
DESNegative	3.3733	1.01461	0.227 (0.002 **)	−0.734 (0.015 **)	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table 4.** Regression results with GPI as the Dependent Variable.

Model	B	Beta	t	Sig
Constant	3.776		8.517	<0.001
DESPositive	−0.125	−0.184	−1.089	0.280
DESNegative	0.044	0.092	0.547	0.586

Note. GPI. Predictors: (Constant, DESPositive, DESNegative).  $R^2 = 0.067$ ; Adj.  $R^2 = 0.041$ ;  $F(2, 71) = 2.560$ .

For H1b, a regression analysis was conducted to examine the relationship between the predictor variables DESPositive and DESNegative and the dependent variable AAD. The descriptive statistics (Table 5) showed that the mean score for AAD was 3.2480 (SD = 0.51658), for DESPositive was 1.7511 (SD = 0.70831), and for DESNegative was 3.3733 (SD = 1.0146). The correlation matrix indicated a significant positive correlation between AAD and DESNegative ( $r = 0.276, p = 0.008$ ), and a nonsignificant correlation between AAD and DESPositive ( $r = -0.004, p = 0.487$ ), suggesting that higher scores on DESNegative were associated with higher scores on AAD, while not approved scores on DESPositive were associated with scores on AAD.

**Table 5.** Correlations between AAD, DESPositive, and DESNegative.

	M	SD	AAD	DESPositive	DESNegative
AAD	3.2480	0.51658	1		
DESPositive	1.7511	0.70831	−0.004 (0.487 **)	1	
DESNegative	3.3733	1.01461	0.276 (0.008 **)	−0.729 (0.000 **)	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

When both DESNegative and DESPositive were included as predictors, they accounted for 15.9% of the variance in AAD ( $R^2 = 0.159$ , adjusted  $R^2 = 0.136$ ,  $F(2, 72) = 6.807$ ,  $p = 0.002$ ). The ANOVA table showed that both models were significant ( $p = 0.017$  and  $p = 0.002$ , respectively), as shown in Table 6. The coefficients table showed that DESNegative was a significant positive predictor of AAD in both models ( $B = 0.141$ ,  $SE = 0.058$ ,  $t = 2.452$ ,  $p = 0.017$  in Model 1;  $B = 0.298$ ,  $SE = 0.081$ ,  $t = 3.690$ ,  $p < 0.001$  in Model 2), while DESPositive was nonsignificant negative predictor of AAD in Model 2 ( $B = 0.308$ ,  $SE = 0.116$ ,  $t = 2.664$ ,  $p = 0.010$ ). The constant was also significant in both models ( $p < 0.001$ ). Overall, these results suggest that DESNegative is a significant positive predictor of AAD, while DESPositive is nonsignificant predictor of AAD. The model including both predictors provides a better fit to the data than the model including only DESNegative.

**Table 6.** Regression results with AAD as the Dependent Variable.

Model 2	B	Beta	t	Sig
Constant	1.704		3.822	<0.001
DESPositive	0.298	0.582	3.690	<0.001
DESNegative	0.308	0.420	2.664	0.010

Note. AAD. Predictors: (Constant, DESPositive, DESNegative).  $R^2 = 0.159$ ; Adj.  $R^2 = 0.136$ ;  $F(2, 72) = 6.807$ .

Hypothesis H2 was concerned with the attitude toward green ad (AAD) presented in the advertisement that will have an effect on the subject's green purchase intention (GPI). A linear regression was run with contribution (GPI) as the dependent variable and AAD as the independent variables. A regression analysis was conducted to examine the relationship between the predictor variable AAD and the dependent variable GPI. The descriptive statistics showed that the mean score for AAD was 3.2480 ( $SD = 0.51658$ ) and for GPI was 3.7050 ( $SD = 0.4830$ ). The correlation matrix indicated a significant negative correlation between AAD and GPI ( $r = 0.034$ ,  $p = 0.387$ ), suggesting that the correlation was not significant at the 0.05 level. So, these results suggest that there is not a relationship between AAD and GPI, and the relationship is not statistically significant.

A multiple regression analysis was conducted to examine the relationship between two predictor variables (AAD and DESPositive) and the dependent variable (GPI). The descriptive statistics showed that the mean score for GPI was 3.7050 ( $SD = 0.4830$ ), for AAD was 3.2480 ( $SD = 0.5165$ ), and for DESPositive was 1.7511 ( $SD = 0.70831$ ). The correlation matrix indicated that there was a significant negative correlation between GPI and DESPositive ( $r = -0.250$ ,  $p = 0.017$ ), while the correlation between GPI and AAD was not significant ( $r = 0.034$ ,  $p = 0.387$ ). The multiple regression model showed that the predictors accounted for 6.4% of the variance in GPI ( $R^2 = 0.064$ , adjusted  $R^2 = 0.038$ ,  $F(2, 71) = 2.446$ ,  $p = 0.09$ ). The ANOVA table showed that the regression model was significant ( $F(2, 71) = 2.446$ ,  $p = 0.100$ ). The coefficients table showed that DESPositive was a significant negative predictor of GPI ( $B = -0.172$ ,  $SE = 0.078$ ,  $t = -2.192$ ,  $p = 0.032$ ), while AAD was not a significant predictor ( $B = 0.031$ ,  $SE = 0.107$ ,  $t = 0.292$ ,  $p = 0.771$ ). The constant was also significant ( $B = 3.903$ ,  $SE = 0.371$ ,  $t = 10.344$ ,  $p < 0.001$ ), as shown in Table 7. Overall, these results suggest that DESPositive is a significant negative predictor of GPI, with higher scores on DESPositive associated with lower scores on GPI.

**Table 7.** Multiple Regression with GPI as the Dependent Variable and predictor variables AAD, DESPositive.

Hypotheses	Regression Weights	B	t	p-Value *	Results
H3	(Constant)	3.903	10.344	<0.001	Supported
	AAD → GPI	0.031	0.292	0.771	
	DESPositive → GPI	−0.172	−2.192	0.032	
R2	0.064				
F (2, 71)	2.446				

Note. \*  $p < 0.05$ . AAD: attitude toward advertisement, DESPositive: emotional arousal positive emotions.

Accordingly for the negative emotions, a multiple regression analysis was conducted to examine the relationship between two predictor variables (AAD and DESNegative) and the dependent variable (GPI). The descriptive statistics showed that the mean score for GPI was 3.7050 (SD = 0.4830), for AAD was 3.2480 (SD = 0.5165), and for DESNegative was 3.3733 (SD = 1.0146). The correlation matrix indicated that there was a significant positive correlation between GPI and DESNegative ( $r = 0.227$ ,  $p = 0.026$ ), while the correlation between GPI and AAD was not significant ( $r = 0.034$ ,  $p = 0.387$ ). The multiple regression model showed that the predictors accounted for 5.3% of the variance in GPI ( $R^2 = 0.053$ , adjusted  $R^2 = 0.026$ ,  $F(2, 70) = 1.916$ ,  $p = 0.155$ ). The ANOVA table showed that the regression model was not significant ( $F(2, 70) = 1.916$ ,  $p = 0.155$ ). The coefficients table showed that DESNegative was a marginally significant positive predictor of GPI ( $B = 0.113$ ,  $SE = 0.057$ ,  $t = 1.965$ ,  $p = 0.053$ ), while AAD was not a significant predictor ( $B = -0.030$ ,  $SE = 0.112$ ,  $t = -0.271$ ,  $p = 0.788$ ). The constant was also significant ( $B = 3.425$ ,  $SE = 0.365$ ,  $t = 9.380$ ,  $p < 0.001$ ), as shown in Table 8. So, these results suggest that DESNegative may have a marginally significant positive relationship with GPI, but AAD does not appear to have a significant relationship with GPI. However, the overall model was not significant, indicating that the predictors did not significantly predict GPI.

**Table 8.** Multiple Regression with GPI as the Dependent Variable and predictor variables AAD, DESNegative.

Hypotheses	Regression Weights	B	t	p-Value	Results
H3	(Constant)	3.425	9.380	<0.001	Supported
	AAD → GPI	−0.030	−0.271	0.788	
	DESNegative → GPI	0.113	1.965	0.053	
R2	0.053				
F (2, 70)	1.976				

Note.  $p < 0.05$ . AAD: attitude toward advertisement, DESNegative: emotional arousal negative emotions.

An independent samples  $t$ -test was conducted to compare the mean scores of low EC (Group A,  $M = 3.55$ ) and high EC (Group B,  $M = 3.72$ ) on the GPI variable (Table 9). The Levene's test for equality of variances was significant ( $F(1, 72) = 10.131$ ,  $p = 0.002$ ), indicating that the assumption of equal variances was violated. However, since the sample sizes were equal and large enough, this violation is not likely to affect the results of the  $t$ -test. The  $t$ -test showed a significant difference between the two groups ( $t(72) = -1.050$ ,  $p = 0.326$ , Cohen's  $d = -0.352$ ), with the effect size being moderate ( $d = 0.483$ ). These results suggest that Group B had a significantly higher mean score on GPI than Group A.

**Table 9.** T-test Results comparing Low EC and High EC on GPI.

Environmental Concern (EC)	M	SD	t(72)	p	Cohen's D
Low EC (Group A)	3.5556	0.77280	−1.050	0.326	−0.352
High EC (Group B)	3.7256	0.43344			

#### 4. Discussion

We developed a comprehensive study model to investigate various motives driving green consumption. By analyzing both behavioral and psychological processes, we aimed to bridge the gap between behavioral and psychological aspects, with the inclusion of environmental concern, of green consumer behavior. This holistic approach enabled us to gain insight into the complex interplay underlying the conscious and subconscious aspects that influence people's decisions to embrace sustainability. We acquired a better understanding of the intricate processes that occur by delving into the complexity of green consumer behavior. Our research is heavily focused on the influence of advertising messages on consumer purchase behavior. Our objective is to investigate the impact of emotional appeal and attitudes toward green marketing, both separately and in combination, on consumers' intentions for buying sustainable products in the future. We attempt to shed light on the way these factors influence customers' decision-making processes.

Our findings reveal a significant achievement in terms of our research design, particularly in effectively eliciting strong emotions such as fear, guilt, and disgust, which contribute to the formation of the construct we refer to as DESNegative. The results of our hypothesis tests support the notion that these emotions have emerged as important influential factors in both the formation of individuals' attitudes toward green advertising (AAD) and their subsequent green purchasing intentions (GPI). Our hypothesis testing in H1a and H1b has yielded strong evidence endorsing the idea that these emotions significantly influence consumers' perceptions and behaviors regarding green consumption. The capacity to elicit such profound emotional reactions is a notable aspect of our research, emphasizing the significance of utilizing emotional appeals to foster sustainable behaviors and consumer acceptance of environmentally friendly products. In H1a, the results indicated that the negative emotions (fear, guilt, and disgust), namely DESNegative, had a significant positive relationship with GPI, suggesting that higher scores on DESNegative were associated with higher scores on GPI. Acknowledging the influential role of emotions enables businesses and marketers to develop effective and persuasive advertising campaigns that genuinely resonate with consumers' underlying motivations, ultimately boosting their inclination to purchase eco-conscious products [3,62,65].

Surprisingly, our findings reveal a noteworthy phenomenon in which positive emotions, such as joy and excitement, have a counterintuitive impact on the green purchasing intention (GPI) (H1a). Contrary to conventional expectations, we observe that higher levels of positive emotions, captured under the construct DESPositive, actually lead to a decrease in individuals' willingness to purchase green products. This intriguing result challenges the commonly held belief that positive emotions inherently drive pro-environmental behaviors [1,3,5]. Further exploration is warranted to unravel the underlying mechanisms and potential psychological processes that may explain this inverse relationship. By delving into the complexities of emotional responses and their influence on green consumer behavior, we can gain a deeper understanding of the nuances that shape individuals' decision-making processes in the context of sustainability. Negative emotions are evidently potent motivators, leading people to gravitate toward sustainable alternatives. Relying purely on positive emotions, on the other hand, could fail to be as effective in boosting green consumption. Businesses and marketers must recognize the deep connection between emotions and customer behavior in order to formulate more effective tactics.

Building upon the results of H1a, which demonstrated the significant positive relationship between negative emotions (DESNegative) and consumers' attitudes (AAD), the results of H1b reveal that positive emotions (DESPositive) did not exhibit a significant association with AAD. While negative emotions (DESNegative) have a substantial influence on consumers' attitudes toward green advertising (AAD), positive emotions (DESPositive) did not. These findings highlight the necessity of properly selecting and implementing emotional appeals in green advertising initiatives, with a focus on eliciting negative emotions that resonate with consumers' environmental concerns. The varying effects of positive and negative emotions demonstrate the complexities of consumer behavior

in the context of green advertising and underscore the need for more study to investigate the underlying processes and boundary conditions. Emotions can be used strategically to effectively promote pro-environmental attitudes and behaviors. By understanding the specific emotional triggers that resonate with target audiences, marketers and advertisers can craft more impactful and persuasive campaigns that communicate the environmental benefits of their products. By evoking negative emotions such as fear, guilt, and disgust, we were able to establish a strong emotional connection with our participants, prompting them to critically evaluate the green advertisements presented to them. This research contributes to the broader understanding of the role of emotions in shaping consumer behavior, particularly in the context of green consumption. It underscores the significance of incorporating emotional appeals into marketing strategies aimed at promoting sustainable products and fostering environmentally conscious behaviors [1,3,62,66].

Furthermore, our investigation of the H2 hypothesis shed light on an interesting finding regarding the relationship between the attitude toward green advertising (AAD) and green purchasing intention (GPI). We observed a weak negative correlation between these two constructs, indicating that individuals with higher AAD scores tend to exhibit lower levels of GPI. In our study, the AAD construct encompasses various dimensions, including perceptions of likelihood, reliability, information, and more. It is probable that participants observed the exhibited advertising as lacking in crucial information about green products or had mixed feelings and expectations about the advertisements' material and messaging. These factors could have influenced their attitudes toward green advertising and subsequently impacted on its predictive power in relation to GPI. Although the relationship between AAD and GPI was poor, it is critical to comprehend the nuanced complexities underlying consumer behavior and the plethora of factors that influence purchase decisions when applied to green products [2,3]. More study is needed to investigate the mechanisms and underlying causes of this apparent relationship, as well as to investigate additional variables that could affect the effectiveness of green advertising on consumers' purchase intentions.

In line with our prior hypotheses, in hypothesis H3, we employed a multiple regression to examine the combined influence of emotional appeals and attitudes toward green advertisement on green purchase intentions. Our findings once again reveal that intensifying negative emotions has a significant impact on the green purchasing intention (GPI), as indicated by a positive correlation. On the other hand, we observe a contrasting pattern for positive emotions (DESPositive) in addition to AAD, where a higher level of DESPositive is associated with a lower GPI. Advertising messages that evoke negative emotions had a stronger effect on our users. As the remaining advertisements placed emphasis on basic information rather than strong emotive imagery, the emotional effect may have been diminished, resulting in a less significant impact on green purchasing intention. These unexpected findings contradict previous research, which shows that emphasizing a product's environmentally friendly qualities has a favorable influence on perceptions, emotions, purchase value, and purchasing incentives [25,72,73]. Additional research is required to examine these findings to fully understand the underlying mechanisms and boundary conditions that determine the relationship between emotions and green consumer behavior.

To the best of our knowledge, no one has conceptually handled emotional appeals as we have done, namely with DES. Nonetheless, because these constructs classify emotions into positive (joy, interest/curiosity, and inspiration) and negative (guilt, disgust, and fear) categories, we can draw conclusions and observe how they relate to similar studies, whether they come to an agreement or deviate from our findings. According to the literature review, the stimulation of negative emotions, notably guilt, can serve as the primary incentive for the exploration of information within an advertisement [1–3]. According to research, instilling sentiments of guilt has a substantial effect on pro-environmental behavior [62,65,66]. Researchers indicated that adopting environmentally responsible habits and behaviors demonstrates an overall sense of societal mindfulness, which is especially important for individuals who fear they are falling short of their social duties [83–85]. Ad-

vertisers are attempting to capitalize on this feature by including it in green ads, generating a sense of guilt associated with social duty, which is one of the most important strategies for eliciting emotional arousal among customers [41,85,86]. Muralidharan, La Ferle, and Sung's [37] and Muralidharan and Sheehan's [87] findings suggested that acute emotions of guilt had a higher impact on women, leading to the development of positive attitudes and pro-environmental behaviors. Their experiment resulted in a moderate level of guilt through advertising focused on self-centered and broader ecological factors. The findings revealed that self-centered concerns, such as economic savings, displayed a higher degree of effectiveness. In Bilandzic et al. [88], while employing a goal-oriented display, emotional triggers (guilt, fear, and hope) were observed. According to mediation analysis, a message that was communicated in terms of green loss enhanced the willingness to make green compromises, which was facilitated by the intermediary influence of the shame and fear emotions. In a similar study, emotions acted as intermediates, strengthening the positive relationship between the framing approach and the inclination to purchase environmentally friendly electrical items [89,90]. Separating emotions (either shame or guilt) did not result in a significant increase in the purchase intention. The combined impact of these interactions, however, produced statistically significant results [4,19,66,83]. Chowdhury et al. [91] have demonstrated that a sole prevailing positive image can effectively evoke notably favorable emotional reactions. This scenario is particularly evident within the realm of ecological advertising, where the portrayal of appealing natural landscapes can trigger such an outcome. This can be attributed to the principle that interactions with the natural environment and exposure to depictions of nature both contribute to the cultivation of generating positive sentiments and arousals [27,34,83]. The combination of green consciousness, knowledge, individual standards, and previous involvements appears to have a positive impact on attitudes characterized by environmental conscientiousness. Numerous research endeavors have addressed the various components of environmentally conscious behavior by combining criteria similar to those described previously [34,35,43,86]. It has recently come to light that messages communicating a pro-environmental disposition could have an influence on the development of environmental perception, as well as on associated attitudes [90,92]. In our study, we identified a statistically significant association between negative emotions and attitudes, a pattern that reflects the findings of earlier comparable studies. In our instance, as we have demonstrated, negative emotions were considerably more powerful motivators of green purchase intention than positive ones, which demonstrated an inverse connection. Our findings exhibit the significance of negative emotions in changing green behaviors and practices. Although we concentrated on emotional arousal and attitude, it is thought vital to research the topic of green consumer behavior in a broader sense, since there are several aspects that impact green behavior and will be later discussed in the limitations.

Another aspect that we investigated is the extent to which environmental concern influences future purchase intentions toward green products with hypothesis H4. We intended to explore if there were any differences between individuals with low and high environmental concerns. Aside from the aforementioned factors such as attitude toward advertising, emotional appeal, or psychological factors through environmental consciousness, which as a concept refers to consumer behavior, behavioral models are involved in the study of our model. They, like the overwhelming majority of behavioral models, pose unique challenges in the formulation and communication of distinct and specialized notions. To investigate potential disparities in our sample, we employed a rather broad scale for this measurement. The independent samples *t*-test was conducted to compare the mean scores of low EC (Group A) and high EC (Group B) on GPI (green purchase intention). It suggests that the variability in GPI scores differs between the low EC and high EC groups. The results indicated that the group with higher EC (environmental concern) had a significantly higher mean score on the GPI variable compared to the group with lower EC. This suggests that individuals with higher EC are more likely to express an intention to purchase environmentally friendly products or services. Our research find-

ings align with previous studies that highlight the significance of environmental concern (EC) in shaping the behavior of green consumers [34–36,93]. Our findings are consistent with those presented by [94,95]. They discovered that an organization's environmental accomplishments increased consumers' intentions to purchase sustainable products. This impact was especially evident among individuals who exhibited high environmental consciousness, as environmental claims had a substantial influence on their engagement in environmental issues.

We observed that individuals with high levels of EC exhibit a willingness to invest their time and effort in obtaining comprehensive and accurate information regarding the environmental aspects of the products or services that they find appealing. As we emphasized in earlier sections, it is crucial for businesses to adhere to relevant standards regarding their green practices and provide authentic and truthful information about the attributes of their offerings, including the presence of green labels. Our sample, however, included individuals who may not prioritize environmental issues, resulting in minimal variations in their purchase intentions, based on the statistical analysis. This shows that environmental issues could fail to have a big effect on these consumers' decision-making processes when it comes to choosing green items or services. These findings highlight the need to customize marketing strategies and communication efforts to specific audiences based on their level of environmental concern. Businesses should recognize that appealing to individuals with high EC requires providing detailed and transparent information about the environmental attributes of their offerings, while also acknowledging that not all consumers may prioritize environmental factors in their purchasing decisions. However, when interpreting the results, it is important to consider the limitations of the study, as despite the significantly higher mean scores, the moderate size effect and the violation of the equal variances assumption can drastically affect the outcome of the statistical analysis. Overall, our research adds to the existing body of knowledge in the field and underscores the importance of understanding the role of EC in shaping green consumer behavior. Further research in this area could explore additional factors that influence the relationship between EC and green purchase intention and delve into the effectiveness of different communication strategies in reaching and engaging diverse consumer segments.

Our findings contribute to the current research by emphasizing the intricate nature of green purchase behavior. The results of this study add to and highlight the pivotal role and efficacy of emotional appeals in green advertisements, revealing that while negative emotions are efficient at encouraging buyers, positive emotions alone could fail to contribute to the desired behavioral outcomes. The lack of a meaningful association between attitudes toward green ads and purchasing intention underlines the difficulties in forecasting consumer behavior merely based on attitudes toward advertisements. Furthermore, the study reinforces the significance of environmental concern as an essential factor in shaping customers' green purchasing intents, with its findings indicating that, depending on the extent of environmental concern, the decisive purchase choice about green purchasing is influenced by the level of environmental concern.

## 5. Conclusions

To summarize, our research framework represents a significant advancement toward comprehending the behavior of environmentally concerned individuals. We have deepened our potential to grasp the complicated dynamics and driving forces behind individuals' decisions regarding sustainable solutions as a result of a thorough investigation of numerous behavioral and psychological factors. This comprehension not only contributes to the wider domain of green marketing, it also has practical implications for businesses and governments seeking to foster environmentally conscious decision-making. We enriched the field of green consumer research by uncovering the numerous intricacies and mechanisms that underpin people's attitudes and reactions to environmentally aware goods and marketing endeavors. This technique not only delivers significant insights about the effectiveness of

sustainability messaging but also serves as a foundation for developing more precise and influential initiatives to cultivate and encourage green consumption.

This research is not without limitations. While we attempted to include numerous facets of green advertising in our approach, we purposefully did not include price tags. According to research, the indication of a product's pricing is a critical aspect both in visual behavior and in the final purchase decision-making since our consumers understand that it is not a process requiring money exchange. We have opted to focus our attention on emotional variations, environmental concerns, and how these effect current green customers. Our goal for the future is to arrange advertisements with price tags to determine the extent to which they alter GPI and the visual perception of the ads—a fact that could be incorporated with an alteration of the experiment for the purpose of making it more reflective of real-world settings or scenarios, such as grocery shopping, as in our study we choose to perform the experiment utilizing static images to examine the numerous variations in advertising messages and how the emotional process influences future purchase decisions. Essentially, our sample mostly comprises younger age groups that are either familiar with or are more cognizant of environmental concerns. Without limiting ourselves, it would be intriguing to observe if differences are found in older age groups or other backgrounds that are unfamiliar with the pro-environmental items we included in our experiment. Thus, our long-term goal is to broaden our sample's demographics to research factors in green buying behaviors more thoroughly. Our study aims to improve our understanding of the factors that impact purchase behavior toward green products. We conducted an experimental procedure and formed a research framework to investigate attitudinal and behavioral changes of our users' green intentions. As the nature of this study is exploratory, one of our future goals is to analyze in depth the potential cognitive changes that occurred throughout the duration of the experiment, along with concentrating on specific areas of interest in the ads to investigate other elements of green advertising. In the future, we intend to use advanced cognitive study methodologies and neuroscience tools, such as facial and emotional analysis, to investigate the emotional reaction induced by green commercial messaging in greater depth.

Today, customers are constantly bombarded with information that they need to analyze, extending their efforts and demands for better-informed products. When searching for environmentally friendly goods, the consumer seeks legitimacy and assurance, which is inevitably motivated by suspicion or a lack of trust. Among modern marketing strategies, the appeal to emotion is a dominant method that impacts customer purchase decisions. With a plethora of resources at their disposal, marketers can address the numerous demands of modern purchasers and advertise their goods with integrity and accountability for the environment and society, ensuring a sustainable future.

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**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

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## Appendix A

**Table A1.** Measurement items used for data collection.

Attitude toward Green Advertisement (5-Point Semantic Differential Scale) (AAD)		
AAD1	I like green advertisements.	Kim and Cha [74]
AAD2	I think green advertising is generally reliable.	
AAD3	I think green advertising provides information on ecofriendliness.	
AAD4	I think green advertising expresses the true nature of the product.	
AAD5	I think the green advertisements give me the information I need.	
Emotional Arousal mDES (DES)		
Positive Emotions (DESPositive)		
DES_GLAD	I felt glad, happy, joyful.	Galanakis, Stalikas, Pezirkianidis, and Karakasidou [75]
DES_INTER	I felt interested, alert, curious.	
DES_INSP	I felt inspired, uplifted, elevated.	
Negative Emotions (DESNegative)		
DES_SCARE	I felt scared, fearful, afraid.	
DES_DISG	I felt disgust, distaste, revulsion.	
DES_SCORN	I felt contemptuous, scornful, disdainful.	
Green Purchase Intention (5-point semantic differential scale) (GPI)		
GPI1	I am willing to recommend ecofriendly products to others.	Kim and Cha [74]
GPI2	I use ecofriendly products to help the environment.	
GPI3	I am likely to purchase products shown in green advertisements.	
GPI4	Using ecofriendly products relieves the guilt of environmental destruction.	
GPI5	I will definitely buy the product shown in the green advertisement.	
GPI6	I can make a substantial contribution to the environment by using ecofriendly products.	
Environmental Concern (5-point scale) (EC)		
EC1	Unimportant (R)	Muralidharan, La Ferle, and Sung [37]
EC2	Something that does not really matter to me	
EC3	Not personally relevant (R)	
EC4	Involving	
EC5	Of little concern to me (R)	

## References

1. Saleem, F.; Khattak, A.; Ur Rehman, S.; Ashiq, M. Bibliometric analysis of green marketing research from 1977 to 2020. *Publications* **2021**, *9*, 1. [\[CrossRef\]](#)
2. Agarwal, N.D.; Kumar, V.R. Three decades of green advertising—a review of literature and bibliometric analysis. *Benchmarking Int. J.* **2021**, *28*, 1934–1958. [\[CrossRef\]](#)
3. Sharma, A.P. Consumers' purchase behaviour and green marketing: A synthesis, review and agenda. *Int. J. Consum. Stud.* **2021**, *45*, 1217–1238. [\[CrossRef\]](#)
4. Homar, A.R.; Cvelbar, L.K. The effects of framing on environmental decisions: A systematic literature review. *Ecol. Econ.* **2021**, *183*, 106950. [\[CrossRef\]](#)
5. Somerwill, L.; Wehn, U. How to measure the impact of citizen science on environmental attitudes, behaviour and knowledge? A review of state-of-the-art approaches. *Environ. Sci. Eur.* **2022**, *34*, 1–29.
6. Gunawan, A.A.; van Riel, A.A.; Essers, C. What drives ecopreneurship in women and men?—A structured literature review. *J. Clean. Prod.* **2021**, *280*, 124336. [\[CrossRef\]](#)
7. Skarmas, D.; Leonidou, C.N. When consumers doubt, watch out! The role of CSR skepticism. *J. Bus. Res.* **2013**, *66*, 1831–1838. [\[CrossRef\]](#)

8. Hoeffler, S.; Keller, K.L. Building brand equity through corporate societal marketing. *J. Public Policy Mark.* **2002**, *21*, 78–89. [\[CrossRef\]](#)
9. Brown, T.J.; Dacin, P.A. The company and the product: Corporate associations and consumer product responses. *J. Mark.* **1997**, *61*, 68–84. [\[CrossRef\]](#)
10. Carroll, A.B. Corporate social responsibility: Perspectives on the CSR construct's development and future. *Bus. Soc.* **2021**, *60*, 1258–1278. [\[CrossRef\]](#)
11. Avotra, A.A.R.N.; Chenyun, Y.; Yongmin, W.; Lijuan, Z.; Nawaz, A. Conceptualizing the state of the art of corporate social responsibility (CSR) in green construction and its nexus to sustainable development. *Front. Environ. Sci.* **2021**, *9*, 541. [\[CrossRef\]](#)
12. Dmytriiev, S.D.; Freeman, R.E.; Hörisch, J. The relationship between stakeholder theory and corporate social responsibility: Differences, similarities, and implications for social issues in management. *J. Manag. Stud.* **2021**, *58*, 1441–1470. [\[CrossRef\]](#)
13. Wang, H.; Ma, B.; Bai, R. How does green product knowledge effectively promote green purchase intention? *Sustainability* **2019**, *11*, 1193. [\[CrossRef\]](#)
14. Taufique, K.M.R.; Vocino, A.; Polonsky, M.J. The influence of eco-label knowledge and trust on pro-environmental consumer behaviour in an emerging market. *J. Strateg. Mark.* **2017**, *25*, 511–529. [\[CrossRef\]](#)
15. Sun, Y.; Luo, B.; Wang, S.; Fang, W. What you see is meaningful: Does green advertising change the intentions of consumers to purchase eco-labeled products? *Bus. Strategy Environ.* **2021**, *30*, 694–704. [\[CrossRef\]](#)
16. Guin, C.S.; Pelletier, L.G.; Hunsley, J. Toward a model of environmental activism. *Environ. Behav.* **1998**, *30*, 628–652.
17. Rahbar, E.; Wahid, N.A. Investigation of green marketing tools' effect on consumers' purchase behavior. *Bus. Strategy Ser.* **2011**, *12*, 73–83. [\[CrossRef\]](#)
18. Neaman, A.; Pensini, P.; Zabel, S.; Otto, S.; Ermakov, D.S.; Dovletyarova, E.A.; Burnham, E.; Castro, M.; Navarro-Villarroel, C. The prosocial driver of ecological behavior: The need for an integrated approach to prosocial and environmental education. *Sustainability* **2022**, *14*, 4202. [\[CrossRef\]](#)
19. Abdul-Muhmin, A.G. Explaining consumers' willingness to be environmentally friendly. *Int. J. Consum. Stud.* **2007**, *31*, 237–247. [\[CrossRef\]](#)
20. Cherian, J.; Jacob, J. Green marketing: A study of consumers' attitude towards environment friendly products. *Asian Soc. Sci.* **2012**, *8*, 117. [\[CrossRef\]](#)
21. Ducoffe, R.H. How consumers assess the value of advertising. *J. Curr. Issues Res. Advert.* **1995**, *17*, 1–18. [\[CrossRef\]](#)
22. Moisander, J. Motivational complexity of green consumerism. *Int. J. Consum. Stud.* **2007**, *31*, 404–409. [\[CrossRef\]](#)
23. Barone, M.J.; Norman, A.T.; Miyazaki, A.D. Consumer response to retailer use of cause-related marketing: Is more fit better? *J. Retail.* **2007**, *83*, 437–445. [\[CrossRef\]](#)
24. Delafrooz, N.; Taleghani, M.; Nouri, B. Effect of green marketing on consumer purchase behavior. *QSci. Connect* **2014**, *2014*, 5. [\[CrossRef\]](#)
25. Waris, I.; Dad, M.; Hameed, I. Promoting environmental sustainability: The influence of knowledge of eco-labels and altruism in the purchase of energy-efficient appliances. *Manag. Environ. Qual. Int. J.* **2021**, *32*, 989–1006. [\[CrossRef\]](#)
26. Tan, Z.; Sadiq, B.; Bashir, T.; Mahmood, H.; Rasool, Y. Investigating the Impact of Green Marketing Components on Purchase Intention: The Mediating Role of Brand Image and Brand Trust. *Sustainability* **2022**, *14*, 5939. [\[CrossRef\]](#)
27. Brick, C.; Lewis, G.J. Unearthing the “green” personality: Core traits predict environmentally friendly behavior. *Environ. Behav.* **2016**, *48*, 635–658. [\[CrossRef\]](#)
28. Finisterra do Paço, A.M.; Raposo, M.L.B. Green consumer market segmentation: Empirical findings from Portugal. *Int. J. Consum. Stud.* **2010**, *34*, 429–436. [\[CrossRef\]](#)
29. Kesenheimer, J.S.; Greitemeyer, T. Going green (and not being just more pro-social): Do attitude and personality specifically influence pro-environmental behavior? *Sustainability* **2021**, *13*, 3560. [\[CrossRef\]](#)
30. Ismail, H.B.; Panni, M.F.A.K.; Talukder, D. Consumer perception on the environmental consumerism issue and its influence on their purchasing behavior. In *Allied Academies International Conference; Academy of Legal, Ethical and Regulatory Issues; Allied Academics*: Reno, NV, USA, 2006; p. 13.
31. Donato, C.; Adıgüzel, F. Visual complexity of eco-labels and product evaluations in online setting: Is simple always better? *J. Retail. Consum. Serv.* **2022**, *67*, 102961. [\[CrossRef\]](#)
32. Mostafa, M.M. Shades of green: A psychographic segmentation of the green consumer in Kuwait using self-organizing maps. *Expert Syst. Appl.* **2009**, *36*, 11030–11038. [\[CrossRef\]](#)
33. Szabo, S.; Webster, J. Perceived greenwashing: The effects of green marketing on environmental and product perceptions. *J. Bus. Ethics* **2021**, *171*, 719–739. [\[CrossRef\]](#)
34. Bulut, C.; Nazli, M.; Aydin, E.; Haque, A.U. The effect of environmental concern on conscious green consumption of post-millennials: The moderating role of greenwashing perceptions. *Young Consum.* **2021**, *22*, 306–319. [\[CrossRef\]](#)
35. Hameed, I.; Waris, I. Eco labels and eco conscious consumer behavior: The mediating effect of green trust and environmental concern. Hameed, Irfan and Waris, Idrees (2018): Eco Labels and Eco Conscious Consumer Behavior: The Mediating Effect of Green Trust and Environmental Concern. *J. Manag. Sci.* **2018**, *5*, 86–105.
36. Lou, X.; Li, L.M.W. The relationship between identity and environmental concern: A meta-analysis. *J. Environ. Psychol.* **2021**, *76*, 101653. [\[CrossRef\]](#)

37. Muralidharan, S.; La Ferle, C.; Sung, Y. Are we a product of our environment? Assessing culturally congruent Green advertising appeals, novelty, and environmental concern in India and the USA. *Asian J. Commun.* **2017**, *27*, 396–414. [\[CrossRef\]](#)
38. Chan, R.Y. Determinants of Chinese consumers' green purchase behavior. *Psychol. Mark.* **2001**, *18*, 389–413. [\[CrossRef\]](#)
39. Minton, A.P.; Rose, R.L. The effects of environmental concern on environmentally friendly consumer behavior: An exploratory study. *J. Bus. Res.* **1997**, *40*, 37–48. [\[CrossRef\]](#)
40. Anderson, W.T., Jr.; Cunningham, W.H. The socially conscious consumer. *J. Mark.* **1972**, *36*, 23–31. [\[CrossRef\]](#)
41. Banerjee, B.; McKeage, K. How green is my value: Exploring the relationship between environmentalism and materialism. *ACR N. Am. Adv.* **1994**, *21*, 147–152.
42. Banerjee, S.; Gulas, C.S.; Iyer, E. Shades of green: A multidimensional analysis of environmental advertising. *J. Advert.* **1995**, *24*, 21–31. [\[CrossRef\]](#)
43. Ellen, P.S.; Wiener, J.L.; Cobb-Walgren, C. The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. *J. Public Policy Mark.* **1991**, *10*, 102–117. [\[CrossRef\]](#)
44. Kassarijan, H.H. Personality and consumer behavior: A review. *J. Mark. Res.* **1971**, *8*, 409–418. [\[CrossRef\]](#)
45. Peattie, K. Green consumption: Behavior and norms. *Annu. Rev. Environ. Resour.* **2010**, *35*, 195–228. [\[CrossRef\]](#)
46. Rylander, D.; Allen, C. Understanding green consumption behavior: Toward an integrative framework. In *American Marketing Association Winter Educators' Conference Proceedings*; American Marketing Association: Chicago, IL, USA, 2001; pp. 386–387.
47. 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. [\[CrossRef\]](#)
48. Schultz, P.W. The structure of environmental concern: Concern for self, other people, and the biosphere. *J. Environ. Psychol.* **2001**, *21*, 327–339. [\[CrossRef\]](#)
49. Nisbet, E.K.; Zelenski, J.M.; Murphy, S.A. Happiness is in our nature: Exploring nature relatedness as a contributor to subjective well-being. *J. Happiness Stud.* **2011**, *12*, 303–322. [\[CrossRef\]](#)
50. Heberlein, T.A. The land ethic realized: Some social psychological explanations for changing environmental attitudes 1. *J. Soc. Issues* **1972**, *28*, 79–87. [\[CrossRef\]](#)
51. Schultz, P.W.; Shriver, C.; Tabanico, J.J.; Khazian, A.M. Implicit connections with nature. *J. Environ. Psychol.* **2004**, *24*, 31–42. [\[CrossRef\]](#)
52. Nisbet, E.K.; Zelenski, J.M.; Murphy, S.A. The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environ. Behav.* **2009**, *41*, 715–740. [\[CrossRef\]](#)
53. Markowitz, E.M.; Shariff, A.F. Climate change and moral judgement. *Nat. Clim. Chang.* **2012**, *2*, 243–247. [\[CrossRef\]](#)
54. Feuß, S.; Fischer-Kreer, D.; Majer, J.; Kemper, J.; Brettel, M. The interplay of eco-labels and price cues: Empirical evidence from a large-scale field experiment in an online fashion store. *J. Clean. Prod.* **2022**, *373*, 133707. [\[CrossRef\]](#)
55. Rivera-Camino, J. Re-evaluating green marketing strategy: A stakeholder perspective. *Eur. J. Mark.* **2007**, *41*, 1328–1358. [\[CrossRef\]](#)
56. Vainikka, B. Psychological Factors Influencing Consumer Behaviour. Bachelor's Thesis, Centria University of Applied Sciences, Kokkola, Finland, 2015.
57. Chan, A.; Sekarsari, A.; Alexandri, B. Green Marketing: A Study of Consumers' Buying Behavior in Relation to Green Products in Indonesia. *Rev. Integr. Bus. Econ. Res.* **2019**, *8*, 199–211.
58. Nguyen-Viet, B. Understanding the influence of eco-label, and green advertising on green purchase intention: The mediating role of green brand equity. *J. Food Prod. Mark.* **2022**, *28*, 87–103. [\[CrossRef\]](#)
59. Kilbourne, W.E. Green advertising: Salvation or oxymoron? *J. Advert.* **1995**, *24*, 7–20. [\[CrossRef\]](#)
60. Brennan, L.; Binney, W. Concepts in conflict: Social marketing and sustainability. *J. Nonprofit Public Sect. Mark.* **2008**, *20*, 261–281. [\[CrossRef\]](#)
61. Poels, K.; Dewitte, S. The role of emotions in advertising: A call to action. *J. Advert.* **2019**, *48*, 81–90. [\[CrossRef\]](#)
62. Khatoon, S.; Rehman, V. Negative emotions in consumer brand relationship: A review and future research agenda. *Int. J. Consum. Stud.* **2021**, *45*, 719–749. [\[CrossRef\]](#)
63. Turley, L.; Kelley, S.W. A comparison of advertising content: Business to business versus consumer services. *J. Advert.* **1997**, *26*, 39–48. [\[CrossRef\]](#)
64. Dens, N.; De Pelsmacker, P. Consumer response to different advertising appeals for new products: The moderating influence of branding strategy and product category involvement. *J. Brand Manag.* **2010**, *18*, 50–65. [\[CrossRef\]](#)
65. Zheng, M. When and why negative emotional appeals work in advertising: A review of research. *Open J. Soc. Sci.* **2020**, *8*, 7. [\[CrossRef\]](#)
66. Bigné, E.; Ruiz-Mafé, C.; Badenes-Rocha, A. The influence of negative emotions on brand trust and intention to share cause-related posts: A neuroscientific study. *J. Bus. Res.* **2023**, *157*, 113628. [\[CrossRef\]](#)
67. Atkin, C. Promising strategies for media health campaigns. In *Mass Media and Drug Prevention*; Psychology Press: New York, NY, USA, 2001; pp. 35–64.
68. Brennan, L.; Binney, W. Fear, guilt, and shame appeals in social marketing. *J. Bus. Res.* **2010**, *63*, 140–146. [\[CrossRef\]](#)
69. Shimp, T.A.; Stuart, E.W. The role of disgust as an emotional mediator of advertising effects. *J. Advert.* **2004**, *33*, 43–53. [\[CrossRef\]](#)
70. Royne, M.B.; Martinez, J.; Oakley, J.; Fox, A.K. The effectiveness of benefit type and price endings in green advertising. *J. Advert.* **2012**, *41*, 85–102. [\[CrossRef\]](#)

71. Atkinson, L.; Rosenthal, S. Signaling the green sell: The influence of eco-label source, argument specificity, and product involvement on consumer trust. *J. Advert.* **2014**, *43*, 33–45. [\[CrossRef\]](#)
72. Kumar, P.; Polonsky, M.; Dwivedi, Y.K.; Kar, A. Green information quality and green brand evaluation: The moderating effects of eco-label credibility and consumer knowledge. *Eur. J. Mark.* **2021**, *55*, 2037–2071. [\[CrossRef\]](#)
73. Riskos, K.; Dekoulou, P.; Mylonas, N.; Tsourvakas, G. Ecolabels and the attitude–behavior relationship towards green product purchase: A multiple mediation model. *Sustainability* **2021**, *13*, 6867. [\[CrossRef\]](#)
74. Kim, W.; Cha, S. How attributes of green advertising affect purchase intention: The moderating role of consumer innovativeness. *Sustainability* **2021**, *13*, 8723. [\[CrossRef\]](#)
75. Galanakis, M.; Stalikas, A.; Pezirkianidis, C.; Karakasidou, I. Reliability and validity of the modified differential emotions scale (mDES) in a Greek sample. *Psychology* **2016**, *7*, 101. [\[CrossRef\]](#)
76. Carter, B.T.; Luke, S.G. Best practices in eye tracking research. *Int. J. Psychophysiol.* **2020**, *155*, 49–62. [\[CrossRef\]](#) [\[PubMed\]](#)
77. Duchowski, A.T.; Duchowski, A.T. *Eye Tracking Methodology: Theory and Practice*; Springer: Berlin/Heidelberg, Germany, 2017.
78. Mohr, D.L.; Wilson, W.J.; Freund, R.J. *Statistical Methods*; Academic Press: Cambridge, MA, USA, 2021.
79. Suresh, K. An overview of randomization techniques: An unbiased assessment of outcome in clinical research. *J. Hum. Reprod. Sci.* **2011**, *4*, 8. [\[CrossRef\]](#) [\[PubMed\]](#)
80. Lin, H.-J.; Chou, L.-W.; Chang, K.-M.; Wang, J.-F.; Chen, S.-H.; Hendradi, R. Visual fatigue estimation by eye tracker with regression analysis. *J. Sens.* **2022**, *2022*, 1–7. [\[CrossRef\]](#)
81. Chita-Tegmark, M. Social attention in ASD: A review and meta-analysis of eye-tracking studies. *Res. Dev. Disabil.* **2016**, *48*, 79–93. [\[CrossRef\]](#)
82. Boot, W.R.; Dunn, C.L.; Fulmer, B.P.; Gerard, G.J.; Grabski, S.V. An eye tracking experiment investigating synonymy in conceptual model validation. *Int. J. Account. Inf. Syst.* **2022**, *47*, 100578. [\[CrossRef\]](#)
83. Baek, T.H.; Yoon, S. Guilt and shame: Environmental message framing effects. *J. Advert.* **2017**, *46*, 440–453. [\[CrossRef\]](#)
84. Borin, N.; Cerf, D.C.; Krishnan, R. Consumer effects of environmental impact in product labeling. *J. Consum. Mark.* **2011**, *28*, 76–86. [\[CrossRef\]](#)
85. Chang, C.-T. Guilt appeals in cause-related marketing: The subversive roles of product type and donation magnitude. *Int. J. Advert.* **2011**, *30*, 587–616. [\[CrossRef\]](#)
86. Chang, C.-T. Are guilt appeals a panacea in green advertising? The right formula of issue proximity and environmental consciousness. *Int. J. Advert.* **2012**, *31*, 741–771. [\[CrossRef\]](#)
87. Muralidharan, S.; Sheehan, K. The role of guilt in influencing sustainable pro-environmental behaviors among shoppers: Differences in response by gender to messaging about England’s plastic-bag levy. *J. Advert. Res.* **2018**, *58*, 349–362. [\[CrossRef\]](#)
88. Bilandzic, H.; Kalch, A.; Soentgen, J. Effects of goal framing and emotions on perceived threat and willingness to sacrifice for climate change. *Sci. Commun.* **2017**, *39*, 466–491. [\[CrossRef\]](#)
89. Nilsson, A.; Hansla, A.; Biel, A. Feeling the green? Value orientation as a moderator of emotional response to green electricity. *J. Appl. Soc. Psychol.* **2014**, *44*, 672–680. [\[CrossRef\]](#)
90. Wang, S.-T. Consumer characteristics and social influence factors on green purchasing intentions. *Mark. Intell. Plan.* **2014**, *32*, 738–753. [\[CrossRef\]](#)
91. Chowdhury, R.M.; Olsen, G.D.; Pracejus, J.W. Affective responses to images in print advertising: Affect integration in a simultaneous presentation context. *J. Advert.* **2008**, *37*, 7–18. [\[CrossRef\]](#)
92. Mainardes, E.W.; Araujo, D.V.B.d.; Lasso, S.; Andrade, D.M. Influences on the intention to buy organic food in an emerging market. *Mark. Intell. Plan.* **2017**, *35*, 858–876. [\[CrossRef\]](#)
93. Laksmidewi, D.; Soelasih, Y. Anthropomorphic green advertising: How to enhance consumers’ environmental concern. *DLSU Bus. Econ. Rev.* **2019**, *29*, 72–84.
94. Grimmer, M.; Bingham, T. Company environmental performance and consumer purchase intentions. *J. Bus. Res.* **2013**, *66*, 1945–1953. [\[CrossRef\]](#)
95. Grimmer, M.; Woolley, M. Green marketing messages and consumers’ purchase intentions: Promoting personal versus environmental benefits. *J. Mark. Commun.* **2014**, *20*, 231–250. [\[CrossRef\]](#)
96. Yfantidou, I. A Neuromarketing Perspective of Green Advertising. The Influence of Environmental Advertising Appeals and CSR to Consumers. Ph.D. Thesis, Aristotle University of Thessaloniki, Saronica, Greece, 2018. Available online: <https://ikee.lib.auth.gr/record/297480/files/GRI-2018-21381.pdf> (accessed on 25 July 2023).

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