

# **The Impact of Claim and Executional Greenwashing on Consumers' Purchase Intention for High-Involvement Products**

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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## Abstract

Over the past few decades, firms have had the opportunity to exploit consumers' increasing environmental concerns to differentiate and position their products such that they can capture market share in emerging green markets (Chen & Chang, 2012). However, consumers have often viewed organizations' green marketing efforts as being deceiving or misleading because of greenwashing (Nyilasy et al., 2014; Akturan, 2018). Greenwashing poses a serious problem; not only does it hurt consumers, but it also disadvantages companies that are truly seeking to contribute to the transition to a more sustainable economy.

The environmental marketing literature defines two types of greenwashing: claim greenwashing, which can be investigated by focusing on false greenwashing claims, and executional greenwashing, which can be examined by considering nature-invoking images. The research conducted in this paper focuses on both types of greenwashing. The central problem statement concerns the influence of claim and executional greenwashing in green advertisements on consumers' purchase intentions toward a featured high-involvement product, when accounting for a possible mediating effect of consumers' perceived greenwashing, as well as a possible moderating effect of consumers' environmental involvement on the relationship between this mediator and both types of greenwashing.

The results show that claim greenwashing, executional greenwashing, and a combination of both greenwashing types all indirectly influence consumers' purchase intentions toward high-involvement products through the mediating effect of consumers' perceived greenwashing. Furthermore, the effect of claim greenwashing is moderated by consumer' green product attitudes and green purchase behavior, and the effect of the combination of both greenwashing types is moderated by consumers' green purchase behavior.

This paper's findings are of practical relevance as they show that marketers should try to eliminate any signs of greenwashing in their green advertisements for high-involvement products, so consumers' purchasing intent will not be adversely impacted. In addition, marketers should design their environmental advertisements while taking into account the effects that consumers' green product attitudes and green purchase behavior have on their perceived greenwashing which, in turn, influences their purchasing intent toward the advertised product. Finally, the findings suggest that managers should disregard the possible beneficial effects of greenwashing; instead, they need to acknowledge the negative consequences of claim and executional greenwashing.

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## 1. Introduction

The advertising of environmentally friendly products is increasingly important, as the number of organizations that offer green products is growing quickly, as well as the demand for such products (Schmuck et al., 2018a). Over the past few decades, there has been an increasing concern among consumers about the preservation of the environment for future generations (Newman et al., 2014). This has generated extraordinary growth in the market for green products (Newman et al., 2014). In fact, a globally conducted poll from 2015 shows that 66% of consumers are willing to pay more for products that are environmentally friendly (Nielsen, 2015a). This percentage even increases to 72% for Generation Z consumers (Nielsen, 2015b). This has provided firms with an opportunity; they can exploit the environmental concerns to differentiate and position their products such that they can capture market share in emerging green markets (Chen & Chang, 2012).

However, consumers often view organizations' green marketing efforts as being deceiving or misleading because of greenwashing (Nyilasy et al., 2014; Akturan, 2018). Greenwashing refers to "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (Underwriters Laboratories, n.d.). Greenwashing poses a serious problem. It has been described by advertising company Ogilvy as "insidious, eroding consumer trust, contaminating the credibility of all sustainability-related marketing and hence inhibiting progress toward a sustainable economy" (Winston, 2010). Thus, not only does greenwashing hurt consumers, but it also disadvantages companies that are truly seeking to contribute to the transition to a more sustainable economy. Moreover, as this transition will subsequently take longer to achieve, greenwashing is harmful for society at large.

The environmental marketing literature defines two types of greenwashing: claim greenwashing and executional greenwashing. First, claim greenwashing refers to "the use of textual arguments in the ad that create a misleading environmental claim" (Parguel et al., 2015). Prior literature has focused on false greenwashing claims in advertisements to examine claim greenwashing. A false greenwashing claim is a deceptive claim that can deceive consumers and is demonstrably false according to objective evidence, in the context of green advertising (Schmuck et al., 2018a).

Second, in executional greenwashing, “nature-evoking elements in the ad execution may induce false perceptions of a brand’s greenness, whether intentionally or not on the part of the advertiser” (Parguel et al., 2015). In order to investigate executional greenwashing, previous studies have considered nature-invoking images. In advertisements, nature-invoking images depict landscapes that represent the beauty of nature, as a way of communicating the ecological attributes of the product or brand that is advertised (Schmuck et al., 2018b). Pictures of pleasant natural scenery can generate false perceptions of the eco-friendliness of an advertised product or brand, when there is no reference to its actual ecological features (Schmuck et al., 2018a).

The research conducted in this paper focuses on both types of greenwashing. The central problem statement concerns the influence of claim and executional greenwashing in environmental advertisements on consumers’ purchase intentions toward a featured high-involvement product, when accounting for a possible mediating effect of consumers’ perceived greenwashing, as well as a possible moderating effect of consumers’ environmental involvement on the relationship between this mediator and both types of greenwashing.

*High-involvement products.* The effects of a greenwashing strategy on consumer purchase intentions vary depending on whether it concerns low-involvement or high-involvement products (Akturan, 2018; Schmuck et al., 2018a). In general, low-involvement products are equally relevant to all consumers, and do not require detailed background knowledge regarding the its features (Schmuck et al., 2018a). On the other hand, high-involvement products are more expensive and important to the consumer. As a result, consumers pay more attention to the information presented in advertisements of high-involvement products compared to those of low-involvement products (Akturan, 2018).

*Perceived greenwashing.* When firms lack corporate credibility regarding their green products, it is likely that their those products are perceived by consumers as greenwashing (Olsen et al., 2014). Moreover, when there are contradictions between firms’ environmental advertising and their environmental performance, consumers generally become skeptical. This is called the ‘perceived greenwashing effect’ (Nyilasy et al., 2014). These perceptions of greenwashing are suggested to impact consumers’ purchase intentions toward green products. For example, in the context of green advertising, Newell et al. (1998) find that higher levels of perceived greenwashing are associated with less favorable attitudes toward the advertisement and the brand, as well as with a reduction in purchasing intent toward the featured product. In addition, Chen and Chang (2013) argue that greenwashing prevents consumers to determine

the reliability of environmental claims, which also negatively affects consumer purchasing intent.

*Environmental involvement.* Environmental involvement can be defined as the degree to which an individual considers the state of the environment to be personally relevant and important (Grimmer & Bingham, 2013). It consists of three dimensions: environmental concern, green product attitudes, and green purchase behavior. According to the Elaboration Likelihood Model (ELM), highly involved consumers are likely to follow the so-called central route to persuasion, meaning that they are highly motivated as well as able to evaluate the arguments presented in an advertisement (Petty & Cacioppo, 1984). Consumers low in involvement, on the other hand, use the so-called peripheral route to persuasion, meaning that they lack either the motivation or the ability to interpret arguments. Therefore, these individuals rely on various cues to assess the merits of an advertised product (Petty & Cacioppo, 1984). In the context of green advertising, highly environmentally involved consumers are likely to base their opinions of an advertised product on arguments rather than emotional appeals, whereas less environmentally involved consumers are likely to rely on emotions and feelings to form their opinions (Matthes et al., 2014).

Accordingly, the main research question of this paper is the following.

How do claim greenwashing and executional greenwashing influence consumers' purchase intention for high-involvement products?

Additionally, there are three subquestions to aid the solving of the problem statement.

Are advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, directly associated with consumers' purchase intention for high-involvement products?

Is the relationship between consumers' purchase intention for high-involvement products and advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, mediated by the extent to which they perceive greenwashing?

Is the relationship between consumers' perceived greenwashing for high-involvement products and advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, moderated by their environmental involvement?

Despite the general trend of increased environmental concern among consumers, research that examines how managers could alleviate greenwashing concerns is scarce (Parguel et al., 2015). This paper is of managerial relevance as it sheds light on the relationship between green advertising and purchase intention. By demonstrating which factors influence consumers' perceived greenwashing and their purchase intention toward environmental products, this research provides a basis for managers and marketers to design their green advertisements in such a way that perceived greenwashing is mitigated, and purchase intentions are strengthened. This is critical if they wish to successfully bring environmentally friendly products to market; a decision that is increasingly attractive due to the extraordinary growth in the market for green products (Newman et al., 2014).

This paper is also of academic relevance for the following reasons. First, it contributes to the limited literature on the effects of perceived greenwashing. This is important because they affect a firm's bottom line, and they hurt all firms, both environmentally friendly and unfriendly ones, in the long run (Nyilasy et al., 2014). Secondly, this paper uses the framework of the ELM to study the effects of both claim and executional greenwashing on consumer purchase intentions. Whereas research on claim greenwashing has been developing over the past years, executional greenwashing has been investigated only marginally. Therefore, this paper contributes to this underdeveloped research area. Finally, the current literature on greenwashing concerns almost exclusively low-involvement products. Examining high-involvement products rather than low-involvement ones may yield different results regarding the influence of perceived greenwashing on purchase intention. This is because consumers are motivated to pay more attention to the information presented in advertisements of the former, as these products are typically more expensive and important to them (Akturan, 2018). As a result, the impact of perceived greenwashing in advertisements on consumers' purchase intention is expected to be stronger for high-involvement products compared to low-involvement ones. Thus, this paper further contributes to the existing greenwashing literature by focusing on high-involvement rather than low-involvement products.

## 2. Theory

This chapter presents an overview of the literature that is relevant to the research conducted in this paper. The literature review is divided into two parts. First, the concept of environmental involvement and its three dimensions are examined in the context of green advertising. Second, the theory concerning greenwashing is discussed, as well as the differences between low-involvement and high-involvement products. The chapter concludes with the conceptual model that is used in this study and the hypotheses that are tested.

### 2.1 Environmental Involvement

Involvement refers to the extent to which an attitude object is personally relevant and important to an individual (Grimmer & Bingham, 2013). In the context of advertising, the Elaboration Likelihood Model (ELM) proposes that highly involved consumers are likely to follow the so-called central route to persuasion, meaning that they are highly motivated as well as able to evaluate the arguments presented in an advertisement (Petty & Cacioppo, 1984). Consumers low in involvement, on the other hand, use the so-called peripheral route to persuasion, meaning that they lack either the motivation or the ability to interpret arguments. Therefore, these individuals rely on various cues to assess the merits of an advertised product (Petty & Cacioppo, 1984). The implication is that consumers who are highly involved are more strongly influenced by the attitude object compared to consumers who have a low degree of involvement (Grimmer & Bingham, 2013).

By extension, environmental involvement can be defined as the degree to which an individual considers the state of the environment to be personally relevant and important (Grimmer & Bingham, 2013). In the context of green advertising, highly environmentally involved consumers are likely to base their opinions of an advertised product on arguments rather than emotional appeals, whereas less environmentally involved consumers are likely to rely on emotions and feelings to form their opinions (Matthes et al., 2014). This suggests that the effectiveness of green advertisements is moderated by consumers' level of environmental involvement.

Indeed, prior literature indicates that consumers' level of environmental involvement impacts the way they respond to environmental claims in advertisements (Spack et al., 2012). For example, Schuhwerk and Lefkoff-Hagius (1995) find that highly environmentally involved

consumers are predisposed to buy green products regardless of the appeal type (green or non-green) that is used. For less environmentally involved consumers, on the other hand, the type of appeal is of great importance. These individuals form a more favorable attitude toward the advertisement of a green product when it features green appeals rather than non-green appeals (Schuhwerk & Lefkoff-Hagius, 1995).

Matthes et al. (2014) argue that research on the moderating effect of consumers' environmental involvement on green advertising effectiveness needs to consider the different facets of environmental involvement; namely, environmental concern, green product attitudes, and green purchase behavior. The reason is that these conceptualizations may have different antecedents and outcomes (Matthes et al., 2014). The three dimensions of environmental involvement are discussed in turn.

### **2.1.1 Environmental Concern**

Over the past few decades, there has been an increasing concern among consumers about the preservation of the environment for future generations (Newman et al., 2014). Consumers' environmental concern refers to their "awareness of environmental problems and perception of the necessity to protect the environment" (Schmuck et al., 2018b). The general trend of increased environmental concern among consumers provides firms with an opportunity; they can exploit the environmental concerns to differentiate and position their products such that they can capture market share in emerging green markets (Chen & Chang, 2012).

Environmentally concerned consumers are less loyal to brands and tend to shop carefully (Spack et al., 2012). They are also more aware of green product marketing (Pickett-Baker & Ozaki, 2008). This could possibly be due to their increased perception of the negative environmental consequences that are associated with purchase behavior (Chen & Chang, 2013). Furthermore, environmentally concerned individuals tend to view themselves as opinion leaders (Spack et al., 2012), and use peer pressure to influence the behavior of others (Paul et al., 2016). Finally, consumers from developed countries appear to be more environmentally concerned than those from developing countries (Paul et al., 2016).

It is important for marketers to realize that not all consumers are concerned about the environment. For example, prior research finds that consumers with low levels of environmental concern do not show positive attitudes toward environmentally friendly brands

(Akturan, 2018). Furthermore, Kronrod et al. (2012) find that environmental communications with assertive language are only effective for more environmentally concerned consumers. For consumers who are less concerned about the environment, the importance of the issue needs to be elevated first in order for assertive phrasing to work (Kronrod et al., 2012). Finally, and most importantly for this paper's research, previous studies suggest that environmental claims have a stronger impact on consumers with high levels of environmental concern than those with low levels (Schmuck et al., 2018a).

### **2.1.2 Green Product Attitudes**

The second dimension of environmental involvement concerns green product attitudes, defined as consumers' "general positive attitude toward green products" (Schmuck et al., 2018b). These attitudes relate to the benefits, favorability, or the quality of sustainable products (Matthes et al., 2014).

At the time Pickett-Baker and Ozaki (2008) published their article, companies generally made little or no green claims in the advertising of environmentally improved products. As a result, it has been typically more difficult for consumers to form attitudes about green products than mainstream products (Pickett-Baker & Ozaki, 2008). Even if information on a green product is available, it is not always evident how consumers' attitudes toward the product evolve. Luchs et al. (2010) find that sustainability does not uniformly increase positive or negative reactions to products. However, if consumers consider a green product and are presented with information about product strength, like a product guarantee, they are found to develop a more favorable attitudes toward the green product (Luchs et al., 2010; Lin & Chang, 2012). Complicating matters further, Chang (2011) asserts that consumers may hold ambivalent attitudes toward green products, even if they have high levels of environmental concern. This occurs when they experience positive and negative product evaluations simultaneously. For example, consumers may have positive attitudes toward green products because they feel proud when they buy them, as well as negative attitudes due to their perception of the green product's inferior quality or higher cost (Chang, 2011). Chang (2011) argues that high effort green claims (i.e., those that require more effort to be successful) may elicit discomfort and deteriorate brand attitudes when consumers have ambivalent green product attitudes.

Most importantly for the research conducted in this paper, Matthes et al. (2014) conclude that functional appeals (i.e., those about green product attributes or production

processes) in environmental advertising do not equally impact all consumers. Functional appeals appear to be most powerful for consumers with highly positive green product attitudes (Matthes et al., 2014). The authors use the ELM to explain this finding. People who like environmentally friendly products have a higher motivation to process the arguments presented in a green advertisement. In turn, this processing makes them like the advertisement more (Matthes et al., 2014).

### **2.1.3 Green Purchase Behavior**

The final dimension of environmental involvement is consumers' green purchase behavior, which describes their actual behavior, or behavioral intentions, toward buying green products (Matthes et al., 2014).

Prior literature suggests that consumers are more inclined to purchase a green product when its brand has a strong environmentally sustainable identity through the introduction of more green products (Olsen et al., 2014). Furthermore, Newman et al. (2014) investigate consumers' green purchase interest when a firm intentionally improves its product's environmental benefits, as well as when the same benefits occur as an unintended side effect. As their results show, consumers are less likely to buy a green product in the case of intentional environmental improvements. This is because they believe that resources may have been diverted from other important product attributes (Newman et al., 2014; Gershoff & Frels, 2015).

Many researchers report the existence of a so-called attitude-behavior gap (also known as the value-action gap). Although consumers report favorable attitudes toward green behaviors, they do not necessarily buy green products (White et al., 2019; Gershoff & Frels, 2015; Pickett-Baker & Ozaki, 2008; Alwitt & Pitts, 1996). International survey results show that, while 87% of consumers claim to be concerned about the environment, only 33% are ready to purchase green products or have done so in the past (Bodur et al., 2015).

The existing literature reports a variety of potential explanations for this discrepancy. First, when consumers evaluate a product, they also consider its attributes, such as functionality and performance. If the product's attributes are not satisfactory, consumers' environmental values will not lead to green purchase behavior (Pickett-Baker & Ozaki, 2008). Moreover, Grimmer and Bingham (2013) argue that the costs of firms' environmentally-oriented initiatives are invariably passed on to customers: the 'green premium'. According to the

authors, there may be a ‘critical ethical point’ beyond which the added cost is too high to counter the environmental benefits of a product (Grimmer & Bingham, 2013). Similarly, consumers may be reluctant to buy a green product when it has a higher cost but there are no improvements in terms of product quality (Bodur et al., 2015). In addition, there may be situational factors that inhibit green purchase behavior, such as the unavailability of green products, financial constraints, and social influences (Bodur et al., 2015). Finally, although consumers may hold favorable attitudes toward green products, their attachment to certain nongreen brands may nevertheless prevent them from purchasing eco-friendly products (Marciniak, 2009).

## 2.2 Greenwashing

Regarding the concept of greenwashing, many scholars have adopted the definition provided by TerraChoice (which is now part of Underwriters Laboratories): it represents “the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service” (Underwriters Laboratories, n.d.). Companies may engage in greenwashing for two reasons: to obtain legitimacy as reported by legitimacy theory, and to communicate their values regarding environmental issues as stated in signaling theory (Torelli et al., 2020).

Legitimacy theory posits that firms can only survive if they operate in accordance with the value system held by society. Therefore, firms disclose information in order to become legitimate in the eyes of society, which means that their actions are perceived as desirable, proper, or appropriate (Hora & Subramanian, 2019). Obtaining legitimacy is crucial for companies as it ultimately leads to improved financial performance (Seele & Gatti, 2017). However, environmental disclosures are commonly made for strategic purposes, and have little to do with corporate responsibilities or obligations (Laufer, 2003). Threats to a firm’s legitimacy, such as its poor environmental performance, prompt deception; in order to avoid the resulting negative image, the firm is motivated to publish other information with only the positive aspects of its environmental performance (Laufer, 2003).

Signaling theory describes how one party (e.g., a firm) communicates and how the other party (e.g., a consumer) interprets the signal when there are information asymmetries between them (Seele & Gatti, 2017). Companies can successfully employ a signaling strategy to mislead consumers; the information asymmetry enables them to use false environmental communications as a signal of environmental behavior. They can effectively signal positive

environmental values to consumers, regardless of their actual values (Seele & Gatti, 2017). Basing their judgments on this false information, consumers are wrongfully led to believe that they have good reasons to buy these companies' products (Chen & Chang, 2012).

Two important consequences of greenwashing include green consumer confusion and green perceived risk. Green consumer confusion means that consumers are unable to interpret the environmental aspects of a product or service correctly (Chen & Chang, 2013). It arises due to the unclarity of information, caused by ambiguous, misleading, or inadequate information in marketing communications (Chen & Chang, 2013). Green perceived risk refers to consumers' "expectation of negative environmental consequences associated with purchase behavior" (Chen & Chang, 2013). It occurs when consumers are unable to determine the reliability of environmental claims (Chen & Chang, 2013). Because of this, consumers become uncertain about their purchasing decision (Akturan, 2018).

The environmental marketing literature defines two types of greenwashing: claim greenwashing and executional greenwashing. The remainder of this section discusses them in turn. Afterward, the literature on the impact of perceived greenwashing on consumers' purchase intention is reviewed. Finally, this section concludes with the notion that the effects of a greenwashing strategy on purchase intent may vary, depending on whether it concerns low-involvement or high-involvement products.

### **2.2.1 Claim Greenwashing and Executional Greenwashing**

The environmental marketing literature defines two types of greenwashing: claim greenwashing and executional greenwashing. First, claim greenwashing refers to "the use of textual arguments in the ad that create a misleading environmental claim" (Parguel et al., 2015). Prior literature has focused on false greenwashing claims in advertisements to examine claim greenwashing. A false greenwashing claim is a deceptive claim that can deceive consumers and is demonstrably false according to objective evidence, in the context of green advertising (Schmuck et al., 2018a). Schmuck et al. (2018a) find evidence that false greenwashing claims activate a mechanism of rational cognitive persuasion, which leads consumers to recognize greenwashing practices.

Second, in executional greenwashing, "nature-evoking elements in the ad execution may induce false perceptions of a brand's greenness, whether intentionally or not on the part

of the advertiser" (Parguel et al., 2015). In order to investigate executional greenwashing, previous studies have considered nature-invoking images. In advertisements, nature-invoking images depict landscapes that represent the beauty of nature, as a way of communicating the ecological attributes of the product or brand that is advertised (Schmuck et al., 2018b). Pictures of pleasant natural scenery can generate false perceptions of the eco-friendliness of an advertised product or brand, when there is no reference to its actual ecological features (Schmuck et al., 2018a).

Whereas false greenwashing claims can activate a rational mechanism by which consumers are able to perceive greenwashing in advertisements, nature-invoking images can appeal to their affinity toward nature through an affective mechanism (Schmuck et al., 2018a). Since both mechanisms can lead to different outcomes, they are typically modeled separately in empirical research (Schmuck et al., 2018a).

### **2.2.2 Impact of Perceived Greenwashing on Purchase Intention**

Previous research has studied how firms' environmental efforts impact consumers' purchase intentions. Sen and Bhattacharya (2001) examine the effect of companies' CSR actions on consumers' purchase intentions, and show that this effect is generally positive. In addition, Spack et al. (2012) find that green claims, as well as nature imagery, on product packaging increase consumers' purchasing intent. However, do companies' environmental efforts also lead to higher purchase intentions in the context of green advertising, when consumers detect that they are used for greenwashing purposes?

Through their efforts to positively impact the environment, companies can establish a corporate credibility that enhances the perceptions of their green products, as such credibility can alleviate concerns among consumers about a company's use of greenwashing (Olsen et al., 2014). In contrast, when firms lack this kind of corporate credibility, it is more likely that their green products are perceived by consumers as greenwashing (Olsen et al., 2014). In the context of advertising, perceived greenwashing can be defined as "consumers' ability to unmask greenwashing intentions in ads" (Schmuck et al., 2018a).

Nyilasy et al. (2014) describe the 'perceived greenwashing effect', which occurs when environmental advertising (talk) and corporate environmental performance (action) interact. When there are contradictions between talk and action, consumers generally become skeptical

(Nyilasy et al., 2014). Nyilasy et al. (2014) conclude that consumer perceptions of greenwashing significantly impact purchase intentions. Furthermore, Newell et al. (1998) compare consumers' attitudes toward an advertisement when it contains a false greenwashing claim with their attitudes toward a similar non-deceptive advertisement. They find that higher levels of perceived greenwashing are associated with less favorable attitudes toward the advertisement and the brand, as well as with a reduction in purchasing intent toward the featured product (Newell et al., 1998). Moreover, simply the perception of greenwashing appears to be enough to elicit negative feelings toward the advertisement, whether it is objectively deceptive or not (Newell et al., 1998). Finally, the green perceived risk resulting from greenwashing, as discussed earlier, has also been argued to negatively affect consumer purchase intention (Chen & Chang, 2013).

### **2.2.3 Low-Involvement versus High-Involvement Products**

The effects of a greenwashing strategy on consumer purchase intentions vary depending on whether it concerns low-involvement or high-involvement products (Akturan, 2018; Schmuck et al., 2018a). In general, low-involvement products are equally relevant to all consumers, and do not require detailed background knowledge regarding the its features (Schmuck et al., 2018a). The decision to buy a low-involvement product is typically made in the shopping situation (Thøgersen, 2000). On the other hand, high-involvement products are more expensive and important to the consumer. As a result, consumers pay more attention to the information presented in advertisements of high-involvement products compared to those of low-involvement products (Akturan, 2018). Therefore, when a firm engages in greenwashing in its advertisements, its trustworthiness and expertise in the mind of the consumer are damaged to a greater extent if the advertised product is a high-involvement one (Akturan, 2018).

## **2.3 Conceptual Model and Hypotheses**

The aim of this paper is to investigate how claim greenwashing and executional greenwashing in environmental advertisements influence consumers' purchase intentions toward a featured high-involvement product, when accounting for a possible mediating effect of consumers' perceived greenwashing, as well as a possible moderating effect of consumers' environmental involvement on the relationship between this mediator and both types of greenwashing. The conceptual framework visualizing this paper's research is presented in Figure 1.

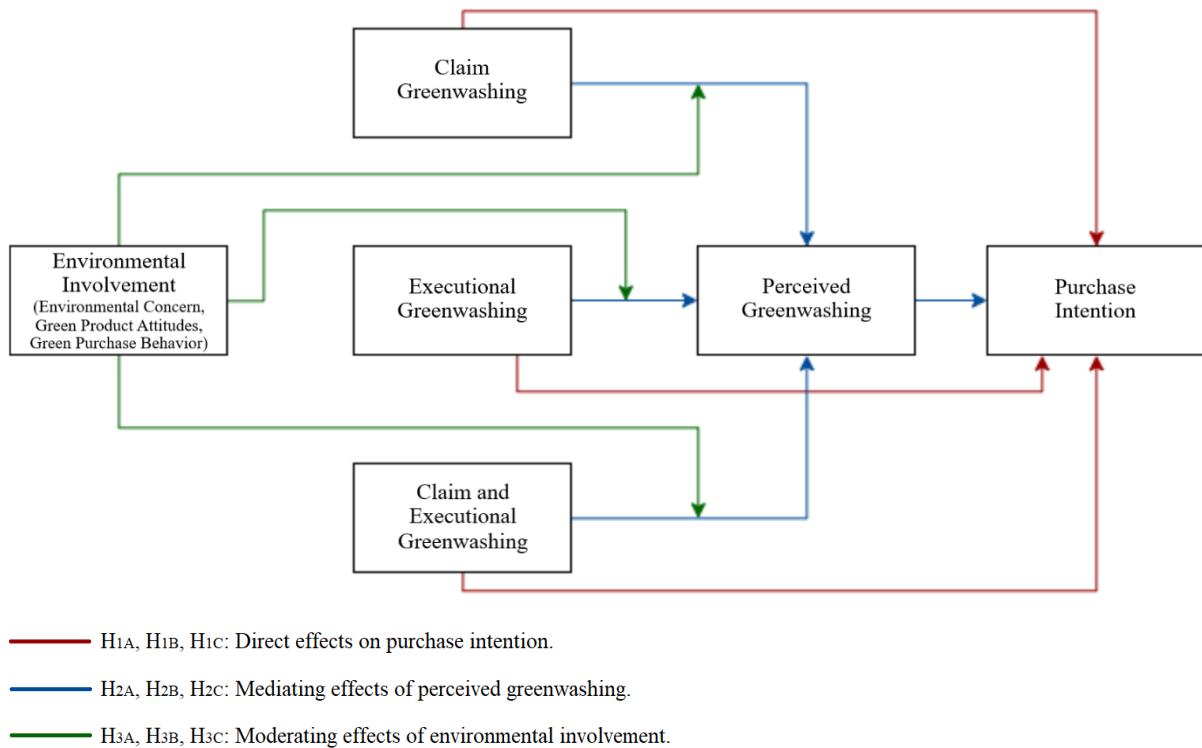


Figure 1: Conceptual Framework.

The conceptual framework shows that the independent variables of Claim Greenwashing, Executional Greenwashing, and Claim and Executional Greenwashing directly influence the dependent variable of Purchase Intention, as indicated by the red arrows. Furthermore, the independent variables of Claim Greenwashing, Executional Greenwashing, and Claim and Executional Greenwashing indirectly impact the dependent variable of Purchase intention through the mediator variable of Perceived Greenwashing, as demonstrated by the blue arrows. Finally, the moderator variable of Environmental Involvement (constituted by Environmental Concern, Green Product Attitudes, and Green Purchase Behavior) moderates the relationship between Claim Greenwashing and Perceived Greenwashing, as well as the relationship between Executional Greenwashing and Perceived Greenwashing, and the relationship between Claim and Executional Greenwashing and Perceived Greenwashing, as shown by the green arrows.

In order to answer the research question “How do claim greenwashing and executional greenwashing influence consumers’ purchase intention for high-involvement products?”, this paper tests nine hypotheses. Since research on executional greenwashing is relatively scarce, the hypotheses are mostly based on the literature on claim greenwashing. The hypotheses that relate to claim greenwashing (H<sub>1A</sub>, H<sub>2A</sub>, and H<sub>3A</sub>) are then extended to executional

greenwashing ( $H_{1B}$ ,  $H_{2B}$ , and  $H_{3B}$ ). In addition, hypotheses concerning the combination of claim greenwashing and executional greenwashing are included, because advertisements with both these greenwashing types may yield stronger attitudinal effects than advertisements with only one of the two (Matthes et al., 2014; Schmuck et al., 2018b) ( $H_{1C}$ ,  $H_{2C}$ , and  $H_{3C}$ ).

$H_{1A}$ : Advertisements with claim greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

$H_{1B}$ : Advertisements with executional greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

$H_{1C}$ : Advertisements that combine claim greenwashing and executional greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

Hypothesis 1A is based on the expectation that false greenwashing claims about an advertised product, representing claim greenwashing, decrease consumers' purchasing intent. This could be due to green consumer confusion and/or green perceived risk; false greenwashing claims might complicate the interpretation of the environmental aspects of a product, as well as the determination of green claims' reliability (Chen & Chang, 2013). The latter creates feelings of uncertainty about the purchasing decision, leading to decreased purchase intentions (Akturan, 2018). This assumption is in accordance with the research by Newell et al. (1998), who find that advertisements with a false greenwashing claim reduce consumers' purchase intentions toward the featured product. However, this paper's research differs from Newell et al.'s (1998) study in that it examines high-involvement rather than low-involvement products. Nevertheless, if only a direct link exists between claim greenwashing and purchase intention, this research should provide similar results to Newell et al.'s (1998) study.

Hypothesis 1B extends Hypothesis 1A by testing if executional greenwashing decreases consumers' purchase intention for high-involvement products as well. One reason might be green consumer confusion; nature-invoking images could make it harder for consumers to interpret a product's environmental aspects correctly (Chen & Chang, 2013). As a result, they might be less inclined to purchase the product.

Finally, Hypothesis 1C tests if the results for Hypothesis 1A and Hypothesis 1B change when the attitudinal effects are stronger, due to the combination of both greenwashing types (Matthes et al., 2014; Schmuck et al., 2018b).

H<sub>2A</sub>: The relationship between advertisements with claim greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

H<sub>2B</sub>: The relationship between advertisements with executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

H<sub>2C</sub>: The relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

Hypothesis 2A is based on the notion that false greenwashing claims activate a mechanism of rational cognitive persuasion, which leads consumers to recognize greenwashing practices (Schmuck et al., 2018a). In turn, perceived greenwashing has been shown to significantly influence purchase intentions (Nyilasy et al., 2014). Although Newell et al. (1998) find that advertisements with a false greenwashing claim reduce consumers' purchase intentions toward the featured product, their study examines light bulbs; a low-involvement product. In contrast, this paper studies a high-involvement product. The expectation is that the finding of decreased purchase intent will be more pronounced in this research, because consumers pay more attention to the information presented in advertisements of high-involvement products compared to those of low-involvement products (Akturan, 2018). By more attentively reading the false greenwashing claims present in the advertisement, consumers could be more likely to unmask greenwashing intentions than if the advertisement featured a low-involvement product. That is, claim greenwashing in high-involvement product advertisements may increase perceived greenwashing. In turn, higher perceived greenwashing leads to lower purchasing intent (Nyilasy et al., 2014).

By extension, Hypothesis 2B tests if the relationship between executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing as well.

Finally, Hypothesis 2C tests if the results for Hypothesis 2A and Hypothesis 2B change when the attitudinal effects are stronger, due to the combination of both greenwashing types (Matthes et al., 2014; Schmuck et al., 2018b).

H<sub>3A</sub>: The relationship between advertisements with claim greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

H<sub>3B</sub>: The relationship between advertisements with executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

H<sub>3C</sub>: The relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

The motivation for Hypothesis 3A stems from the ELM. In contrast to consumers low in environmental involvement, highly environmentally involved consumers are more motivated, as well as more capable, to evaluate the arguments presented in a green advertisement (Petty & Cacioppo, 1984). Furthermore, they are likely to base their opinions of the advertised product on arguments rather than emotional appeals (Matthes et al., 2014). Less environmentally involved consumers, on the other hand, are likely to rely on emotions and feelings to form their opinions (Matthes et al., 2014). This suggests that the relationship between claim greenwashing and consumers' perceived greenwashing for high-involvement products is stronger for consumers high in environmental involvement; they might have stronger perceptions of greenwashing due to their inclination of evaluating false greenwashing claims more thoroughly.

A similar moderating effect is expected for the relationship between executional greenwashing and consumers' perceived greenwashing for high-involvement products, as formulated in Hypothesis 3B. Consumers low in environmental involvement may base their opinions of the featured product on the nature scenery presented in the advertisement, without requiring more substantial information (Matthes et al., 2014). Such an image may be enough to generate positive affective responses (Matthes et al., 2014). Thus, since less environmentally involved consumers use nature-invoking images to guide their attitudes toward an advertised product (Matthes et al., 2014), they are less likely to detect greenwashing through nature-invoking images. This suggests that the relationship between executional greenwashing and consumers' perceived greenwashing for high-involvement products is stronger for consumers high in environmental involvement.

Finally, Hypothesis 3C tests if the results for Hypothesis 3A and Hypothesis 3B change when the attitudinal effects are stronger, due to the combination of both greenwashing types (Matthes et al., 2014; Schmuck et al., 2018b).

### 3. Method

This chapter describes the methodological procedure followed for this paper's research. It discusses the choice of methodology, the measurement of the variables, and, finally, the statistical techniques used to test the hypotheses that were formulated in section 2.3.

#### 3.1 Methodological Approach

This paper examines the impact of claim and executional greenwashing in environmental advertisements on consumers' purchase intentions toward a featured high-involvement product, when accounting for a possible mediating effect of consumers' perceived greenwashing, as well as a possible moderating effect of consumers' environmental involvement on the relationship between this mediator and both types of greenwashing. The main research question of this paper is the following.

How do claim greenwashing and executional greenwashing influence consumers' purchase intention for high-involvement products?

In order to find an answer to this question, explanatory research is conducted. Similar research papers typically perform between-subjects experimental studies (e.g., Nyilasy et al., 2014; Matthes et al., 2014; Schmuck et al., 2018a; Schmuck et al., 2018b). Likewise, this paper conducts a 2 (claim greenwashing: false greenwashing claim versus nondeceptive claim)  $\times$  2 (executional greenwashing: nature-evoking image versus neutral image) between-subjects design in which an advertisement's textual and visual layout are manipulated. Accordingly, there are four conditions: a functional advertisement (false greenwashing claim and neutral image), an emotional advertisement (nondeceptive claim and nature-evoking image), a combined advertisement (false greenwashing claim and nature-evoking image), and a control advertisement (nondeceptive claim and neutral image).

The experiment is conducted by using an online questionnaire survey. There are four versions of the survey, to which participants are randomly assigned. All surveys start with several Likert scale items about participants' environmental involvement. Next, a short introduction is provided of the company behind the advertised product. This is necessary in order for respondents to form an opinion on the advertisement's credibility. Then, in all surveys, respondents are presented with an advertisement image of a high-involvement

product. As explained, this product is featured with either a false greenwashing claim or a nondeceptive claim, and against a background with either a nature-evoking image or a neutral image, yielding four conditions. After having seen the assigned advertisement, participants are asked to answer several Likert scale items about their perception of greenwashing in the advertisement, and the likelihood that they would buy the advertised product (as a measure of purchase intention). Lastly, respondents are asked several demographic questions.

### **3.1.1 The Advertisement**

The high-involvement product that is featured in the advertisements is a cashmere sweater of an unknown brand. The choice of focusing on an unknown brand is made deliberately, as researching greenwashing in advertisements requires respondents to be unaware of a firm's actual environmental performance (Schmuck et al., 2018a). Otherwise, respondents may answer the survey questions (partly) based on their current attitudes toward a certain brand. This needs to be avoided if one wishes to examine the effects of false greenwashing claims and nature-evoking images in isolation from a brand's advertising history.

Mongolia is known for its cashmere goats, the wool of which is used for making cashmere clothing. Therefore, the name of the brand for the cashmere sweater was chosen as “Yama”, inspired by the Mongolian translation for goat (ямаа, or yamaa). The different advertisement images of the Yama sweater can be found in Figure A1 (functional advertisement), Figure A2 (emotional advertisement), Figure A3 (combined advertisement), and Figure A4 (control advertisement) in the Appendix.

### **3.1.2 Company Introduction**

Before the advertisement is presented in the survey, respondents are provided with the following introduction of Yama so that they can subsequently form an opinion on the advertisement's credibility. The company description is inspired by Rauturier's (2019) article.

Yama is a luxurious clothing brand. It is known for its soft, cashmere products. The material for the clothing comes from Alasan cashmere goats that live on the grasslands of Mongolia. Yama claims that its cashmere is of the highest quality, as the firm only keeps purebred Alasan goats with wool that is longer and finer than any other type of cashmere goat.

Recently, the brand has received strong criticism by outside stakeholders. The rising demand for cashmere products has put pressure on Yama to increase the size of its herds. However, the growing number of cashmere goats has led to severe land degradation. As more goats graze on the Mongolian grasslands, these regions are rapidly turning into deserts. In turn, this creates an ecological imbalance, thereby contributing to climate change.

### **3.2 Variables**

This section elaborates on the variables in the experimental design.

#### **3.2.1 Environmental Involvement**

Respondents' environmental involvement is measured along three dimensions: environmental concern, green product attitudes, and green purchase behavior. They are measured using 7-point Likert scales that range from "strongly disagree" (1) to "strongly agree" (7).

First, the measurement of environmental concern is obtained from the research by Schuhwerk and Lefkoff-Hagius (1995) ("I am concerned about the environment," "I am willing to make sacrifices to protect the environment," and "My actions impact on the environment"). Second, the measurement of green product attitudes is based on the research by Chang (2011) and Matthes et al. (2014) ("I like green products," "I feel positive toward green products," and "I feel proud when I buy/use green products"). Finally, the measurement of green purchase behavior is derived from the research by Kim and Choi (2005) and Matthes et al. (2014) ("I have switched products for ecological reasons," "When I have a choice between two equal products, I purchase the one less harmful to the environment," and "I have avoided buying a product because it had potentially harmful environmental effects"). The final values for respondents' environmental concern, green product attitudes, and green purchase behavior are their average scores on the corresponding three statements.

#### **3.2.2 Perceived Greenwashing**

Respondents' perception of greenwashing is measured using 7-point Likert scales that range from "strongly disagree" (1) to "strongly agree" (7). The measurement of perceived greenwashing is derived from the research by Chen and Chang (2013) and Schmuck et al. (2018a) ("This ad misleads with words in its environmental features," "This ad misleads with

visuals or graphics in its environmental features,” “This ad uses information about environmental features that is false,” and “This ad does not tell the truth about the product’s green functionality”). The final value for respondents’ perceived greenwashing is their average score on the corresponding four statements.

### **3.2.3 Purchase Intention**

Respondents’ purchase intention is measured using one 7-point Likert scale that ranges from “extremely unlikely” (1) to “extremely likely” (7). The measurement of purchase intention follows the research by Nyilasy et al. (2014) (“How likely are you to purchase the advertised product?”).

### **3.2.4 Demographic Variables**

At the end of the survey, demographic questions are asked regarding respondents’ gender (Female, Male, or Other/Prefer not to say), age, nationality, and highest degree or level of education completed (Less than a high school diploma, High school diploma or an equivalent, Bachelor’s degree, Master’s degree, Doctorate, or Other (please specify)).

## **3.3 Statistical Technique**

This section provides the model specifications that are used to test the hypotheses as formulated in section 2.3. All specifications include four demographic variables as control variables.

### **3.3.1 Model specification for Hypothesis 1A, 1B, and 1C**

In order to test Hypothesis 1A, Hypothesis 1B, and Hypothesis 1C, a regression analysis is performed. The experimental conditions are dummy-coded, using the control advertisement (nondeceptive claim and neutral image) as the reference group. The indicator variables FA, EA, and CA are created to equal 1 if the experimental condition corresponds to the functional, emotional, or combined advertisement, respectively, and equal 0 otherwise. Respondents who are exposed to the control advertisement are represented in the intercept of the regression as the reference category. The model specification is as follows.

$$(1) \quad PI = \beta_0 + \beta_1 \cdot GEN + \beta_2 \cdot AGE + \beta_3 \cdot NAT + \beta_4 \cdot EDU + \beta_5 \cdot FUA + \beta_6 \cdot EMA + \beta_7 \cdot COA + \varepsilon$$

The meaning of the terms in Model (1) are as follows.

- PI represents respondents' purchase intention.
- GEN represents respondents' gender.
- AGE represents respondents' age.
- NAT represents respondents' nationality.
- EDU represents respondents' highest degree or level of education completed.
- FUA represents the functional advertisement indicator variable.
- EMA represents the emotional advertisement indicator variable.
- COA represents the combined advertisement indicator variable.
- $\varepsilon$  represents the disturbance term.

The  $\beta$  parameters are unknown and estimated by ordinary least squares (OLS).

First, if  $\beta_5$  is negative and statistically significant, Hypothesis 1A is supported. Secondly, if  $\beta_6$  is negative and statistically significant, Hypothesis 1B is supported. Finally, if  $\beta_7$  is negative and statistically significant, Hypothesis 1C is supported.

### 3.3.2 Model specifications for Hypothesis 2A, 2B, and 2C

In order to test Hypothesis 2A, Hypothesis 2B, and Hypothesis 2C, two regression analyses are performed. The first regression examines the effect of the experimental condition indicator variables (FA, EA, and CA) on the mediator variable (PG). The second regression investigates the effect of the mediator variable (PG) on the dependent variable (PI), while also including the experimental condition indicator variables (FA, EA, and CA). The model specifications are as follows.

$$(2) \quad PG = \alpha_0 + \alpha_1 \cdot GEN + \alpha_2 \cdot AGE + \alpha_3 \cdot NAT + \alpha_4 \cdot EDU + \alpha_5 \cdot FUA + \alpha_6 \cdot EMA + \alpha_7 \cdot COA + v$$

The definitions of the variables are analogous to Model (1). The meaning of the newly introduced terms in Model (2) are as follows.

- PG represents respondents' perceived greenwashing.

- $v$  represents the disturbance term.

The  $\alpha$  parameters are unknown and estimated by OLS.

$$(3) \quad PI = \beta_0 + \beta_1 \cdot GEN + \beta_2 \cdot AGE + \beta_3 \cdot NAT + \beta_4 \cdot EDU + \beta_5 \cdot FUA + \beta_6 \cdot EMA + \beta_7 \cdot COA + \beta_8 \cdot PG + \varepsilon$$

The definitions of the variables and the parameter estimations are analogous to Model (1) and Model (2).

The mediating effect of PG is analyzed using both the joint significance test and the Sobel test.

The joint significance test assumes that if the relation between the independent variable and the mediator variable, and the relation between the mediator variable and the dependent variable, are both statistically significant, then it can be concluded that the mediator variable mediates the relationship between the independent variable and dependent variable. First, if  $\alpha_5$  and  $\beta_8$  are both statistically significant, Hypothesis 2A is supported according to the joint significance test. Secondly, if  $\alpha_6$  and  $\beta_8$  are both statistically significant, Hypothesis 2B is supported according to the joint significance test. Finally, if  $\alpha_7$  and  $\beta_8$  are both statistically significant, Hypothesis 2C is supported according to the joint significance test.

The Sobel test uses the coefficient for the effect of the independent variable on the mediator variable, the coefficient for the effect of the mediator variable on the dependent variable, and these two coefficients' standard errors to calculate the Sobel test statistic. In turn, this value can be used in a t-test to determine whether the mediator variable mediates the relationship between the independent variable and dependent variable. First, if the Sobel test statistic using  $\alpha_5$ ,  $\beta_8$ , and these coefficients' standard errors is statistically significant, Hypothesis 2A is supported according to the Sobel test. Secondly, if the Sobel test statistic using  $\alpha_6$ ,  $\beta_8$ , and these coefficients' standard errors is statistically significant, Hypothesis 2B is supported according to the Sobel test. Finally, if the Sobel test statistic using  $\alpha_7$ ,  $\beta_8$ , and these coefficients' standard errors is statistically significant, Hypothesis 2C is supported according to the Sobel test.

### 3.3.3 Model specifications for Hypothesis 3A, 3B, and 3C

Finally, in order to test Hypothesis 3A, Hypothesis 3B, and Hypothesis 3C, two regression analyses are performed. In the first regression, interaction terms are included between the

experimental condition indicator variables (FA, EA, and CA) and the variables representing the three dimensions of respondents' environmental involvement (EC, GPA, and GPB). This enables an investigation of possible moderating effects of the environmental involvement dimensions on the three relationships as described in Hypothesis 3A, Hypothesis 3B, and Hypothesis 3C. In the second regression, interaction terms are included between the experimental condition indicator variables (FA, EA, and CA) and a variable that represents respondents' average scores on the three dimensions of environmental involvement (EI). By combining the three dimensions of respondents' environmental involvement into one average score, fewer variables are included in the regression analysis. As a result, the model becomes less complex, and could provide more precise estimates. Thus, the second regression enables an examination of possible moderating effects of the overall environmental involvement score on the three relationships as described in Hypothesis 3A, Hypothesis 3B, and Hypothesis 3C. The model specifications are as follows.

$$(4) \quad PG = \beta_0 + \beta_1 \cdot GEN + \beta_2 \cdot AGE + \beta_3 \cdot NAT + \beta_4 \cdot EDU + \beta_5 \cdot FUA + \beta_6 \cdot EMA + \beta_7 \cdot COA + \beta_8 \cdot EC + \beta_9 \cdot GPA + \beta_{10} \cdot GPB + \beta_{11} \cdot (FUA \cdot EC) + \beta_{12} \cdot (EMA \cdot EC) + \beta_{13} \cdot (COA \cdot EC) + \beta_{14} \cdot (FUA \cdot GPA) + \beta_{15} \cdot (EMA \cdot GPA) + \beta_{16} \cdot (COA \cdot GPA) + \beta_{17} \cdot (FUA \cdot GPB) + \beta_{18} \cdot (EMA \cdot GPB) + \beta_{19} \cdot (COA \cdot GPB) + \varepsilon$$

The definitions of the variables and the parameter estimations are analogous to Model (1) and Model (2). The meaning of the newly introduced terms in Model (4) are as follows.

- EC represents respondents' environmental concern.
- GPA represents respondents' green product attitudes.
- GPB represents respondents' green purchase behavior.

First, if  $\beta_{11}$ ,  $\beta_{14}$ , and  $\beta_{17}$  are all statistically significant, all dimensions of environmental involvement have a moderating effect on the relationship between advertisements with claim greenwashing and perceived greenwashing, and Hypothesis 3A is supported according to Model (4). Secondly, if  $\beta_{12}$ ,  $\beta_{15}$ , and  $\beta_{18}$  are all statistically significant, all dimensions of environmental involvement have a moderating effect on the relationship between advertisements with executional greenwashing and perceived greenwashing, and Hypothesis 3B is supported according to Model (4). Finally, if  $\beta_{13}$ ,  $\beta_{16}$ , and  $\beta_{19}$  are all statistically significant, all dimensions of environmental involvement have a moderating effect on the relationship between advertisements that combine claim greenwashing and executional

greenwashing and perceived greenwashing, and Hypothesis 3C is supported according to Model (4).

The three hypotheses could be partially supported when at least one, but not all, dimensions of environmental concern have a moderating effect.

$$(5) \quad PG = \beta_0 + \beta_1 \cdot GEN + \beta_2 \cdot AGE + \beta_3 \cdot NAT + \beta_4 \cdot EDU + \beta_5 \cdot FUA + \beta_6 \cdot EMA + \beta_7 \cdot COA + \beta_8 \cdot EI + \beta_9 \cdot (FUA \cdot EI) + \beta_{10} \cdot (EMA \cdot EI) + \beta_{11} \cdot (COA \cdot EI) + \varepsilon$$

Again, the definitions of the variables and the parameter estimations are analogous to Model (1) and Model (2). The meaning of the newly introduced term in Model (5) is as follows.

- EI represents respondents' overall environmental involvement score.

First, if  $\beta_9$  is statistically significant, respondents' overall environmental involvement score has a moderating effect on the relationship between advertisements with claim greenwashing and perceived greenwashing, and Hypothesis 3A is supported according to Model (5). Secondly, if  $\beta_{10}$  is statistically significant, respondents' overall environmental involvement score has a moderating effect on the relationship between advertisements with executional greenwashing and perceived greenwashing, and Hypothesis 3B is supported according to Model (5). Finally, if  $\beta_{11}$  is statistically significant, respondents' overall environmental involvement score has a moderating effect on the relationship between advertisements that combine claim greenwashing and executional greenwashing and perceived greenwashing, and Hypothesis 3C is supported according to Model (5).

## 4. Results

This chapter starts by illustrating the sample characteristics and providing the descriptive statistics of the key variables. Afterward, the results of the OLS regressions used to test this paper's hypotheses are reported in turn. The significance level used in this research is 10%.

### 4.1 Descriptive Statistics

This section first describes some sample characteristics, after which the descriptive statistics of the key variables are presented.

In total, 92 people participated in the survey, 75 of whom completed it. Of these respondents, 20 (26.67%) were exposed to the functional advertisement, 19 (25.33%) to the emotional advertisement, 18 (24.00%) to the combined advertisement, and 18 (24.00%) to the control advertisement.

The gender distribution of the respondents is shown in Figure 2. Since the sample does not include any respondents who chose the “Other/Prefer not to say” option, only one gender dummy variable is created, where GEN equals 1 when the respondent is female, and 0 when the respondent is male. This implies that male respondents are represented in the intercept of the regression analyses as the reference category.

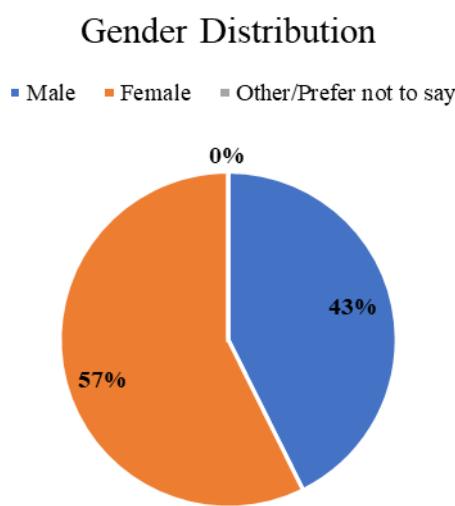


Figure 2: Gender Distribution.

The youngest respondent is 17 years old; the oldest respondent is 66 years old. The age breakdown of the respondents is shown in Figure 3.

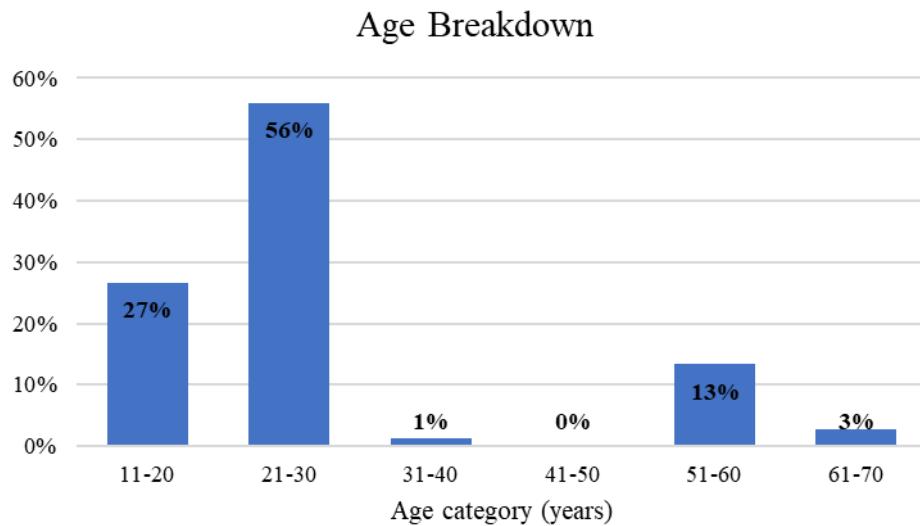


Figure 3: Age Breakdown.

The number of respondents with a certain nationality is shown in Table 1. In the following regression analyses, respondents with a country of nationality that equals the Netherlands (NL) are represented in the intercept as the reference category.

Country of nationality	Number of respondents	Country of nationality	Number of respondents
Netherlands	61	Estonia	1
Belgium	2	Indonesia	1
Germany	2	Italy	1
Greece	2	Russia	1
Canada	1	Suriname	1
China	1	United States	1

Table 1: Number of respondents per country of nationality.

The number of respondents with a certain highest degree or level of education completed is shown in Table 2. In the following regression analyses, respondents with less than a high school diploma as their highest level of education completed are represented in the intercept as the reference category.

Highest degree or level of education completed	Number of respondents
Less than a high school diploma	2
High school diploma or an equivalent	40
Bachelor's degree	29
Master's degree	4
Doctorate	0
Other	0

Table 2: Number of respondents per highest degree or level of education completed.

The descriptive statistics of the key variables are shown in Table 3.

	Mean	Standard deviation	Minimum value	Maximum value
Environmental concern	5.8444	0.5911	4.0000	7.0000
Green product attitudes	5.5200	0.9868	2.0000	7.0000
Green purchase behavior	4.9733	1.1174	1.6667	7.0000
<i>Control advertisement</i>				
Perceived greenwashing	3.5972	1.3936	1.0000	6.0000
Purchase intention	3.0000	1.3284	1.0000	5.0000
<i>Functional advertisement</i>				
Perceived greenwashing	4.8750	1.4246	2.5000	7.0000
Purchase intention	2.7500	1.6819	1.0000	7.0000
<i>Emotional advertisement</i>				
Perceived greenwashing	4.7632	0.9260	3.0000	6.5000
Purchase intention	2.6316	1.2566	1.0000	5.0000
<i>Combined advertisement</i>				
Perceived greenwashing	5.5694	0.9026	4.0000	7.0000
Purchase intention	2.2222	1.2154	1.0000	5.0000

Table 3: Descriptive statistics of key variables.

## 4.2 Results for Hypothesis 1A, 1B, and 1C

Hypothesis 1A, Hypothesis 1B, and Hypothesis 1C essentially test the direct associations of advertisements with claim greenwashing, executional greenwashing, or a combination of these two greenwashing types, respectively, with consumers' purchase intention for high-involvement products. In order to test these hypotheses, an OLS regression is performed as described by Model (1).

If heteroskedasticity is present in the regression, the standard errors may be biased. Therefore, a White test is used to test for this potential problem. At a 10% significance level, the White test revealed that there is sufficient evidence to assume heteroskedasticity (p-value

= 0.0195). The results of the OLS regression, after correcting for heteroskedasticity, are shown in Table 4.

	Purchase intention		Purchase intention	
$\beta_0$ (intercept)	3.4456*** (1.0520)	$\beta_{10}$ (IT)	2.0111*** (0.5092)	
$\beta_1$ (GEN)	-0.0893 (0.3920)	$\beta_{11}$ (RU)	-0.9722* (-0.5159)	
$\beta_2$ (AGE)	0.0167 (0.0223)	$\beta_{12}$ (SR)	0.4345 (0.4942)	
$\beta_3$ (BE)	-0.2691 (1.6138)	$\beta_{13}$ (US)	-1.4782*** (0.5146)	
$\beta_4$ (DE)	-0.6946 (1.0376)	$\beta_{14}$ (HS)	-1.3803** (0.5565)	
$\beta_5$ (GR)	0.3997 (0.6694)	$\beta_{15}$ (BD)	-0.7509 (0.5313)	
$\beta_6$ (CA)	1.1305*** (0.3538)	$\beta_{16}$ (MD)	-1.4104 (1.3944)	
$\beta_7$ (CN)	2.4884*** (0.5339)	$\beta_{17}$ (FUA)	0.0794 (0.6140)	
$\beta_8$ (EE)	1.4645 (1.5033)	$\beta_{18}$ (EMA)	-0.2213 (0.5182)	
$\beta_9$ (ID)	-0.5489 (0.5000)	$\beta_{19}$ (COA)	-0.4401 (0.5195)	
Observations	75			
R-squared	0.2421			
Adjusted R-squared	-0.0197			
Standard errors in parentheses				
* p < 0.10, ** p < 0.05, *** p < 0.01				

Table 4: Results OLS regression for Hypothesis 1A, 1B, and 1C; Model (1).

Table 4 shows the regression coefficients of the intercept and the independent variables under the “Purchase intention” columns. The independent variables include respondents’ gender (GEN); respondents’ age (AGE); the nationality indicator variables for Belgium (BE), Germany (DE), Greece (GR), Canada (CA), China (CN), Estonia (EE), Indonesia (ID), Italy (IT), Russia (RU), Suriname (SR), and United States (US); the education indicator variables for a high school diploma or an equivalent (HS), bachelor’s degree (BD), and master’s degree (MD); and, finally, the experimental condition indicator variables for the functional advertisement (FUA), emotional advertisement (EMA), and combined advertisement (COA). The intercept represents male respondents from the Netherlands with less than a high school diploma as their highest level of education, who are exposed to the control advertisement. The asterisks indicate the significance of the coefficients. The coefficients’ standard errors are presented in parentheses. The number of observations and the values of R-squared and adjusted R-squared are also shown in the table.

As can be seen in Table 4, the coefficient for the functional advertisement indicator variable (FUA),  $\beta_{17}$ , is positive at 0.0794. This result is not statistically significant at a 10% significance level (p-value = 0.898). This implies that Hypothesis 1A is rejected at a 10% significance level; there is not sufficient evidence to conclude that advertisements with claim greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

Secondly, the coefficient for the emotional advertisement indicator variable (EMA),  $\beta_{18}$ , is negative at -0.2213. This result is not statistically significant at a 10% significance level (p-value = 0.671). Therefore, Hypothesis 1B is also rejected at a 10% significance level; there is not sufficient evidence to conclude that advertisements with executional greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

Finally, the coefficient for the combined advertisement indicator variable (COA),  $\beta_{19}$ , is negative at -0.4401. This result is not statistically significant at a 10% significance level (p-value = 0.401). This means that Hypothesis 1C is rejected as well at a 10% significance level; there is not sufficient evidence to conclude that advertisements that combine claim greenwashing and executional greenwashing are negatively associated with consumers' purchase intention for high-involvement products.

The finding that there is no significant direct effect, or 'total effect', of the independent variables (the experimental condition indicator variables FA, EA, and CA) on the dependent variable (respondents' purchase intention PI) does not rule out the possibility that the relationship between these independent variables and the dependent variable is mediated by some mediator variable. In fact, Hayes (2009), who is well known globally for his work on mediation and moderation analyses, asserts that it is false to assume that an independent variable cannot affect a dependent variable indirectly through a mediator without a detectable total effect.

Accordingly, one possible reason for the finding that none of these three hypotheses can be supported at a 10% significance level may be because the relationship between consumers' purchase intention for high-involvement products and advertisements with claim greenwashing, executional greenwashing, or a combination of these two greenwashing types, is mediated by consumers' perceived greenwashing. The model fit for Model (1) is also extremely low, as indicated by a negative value of adjusted R-squared, which suggest that the regression model has considerable room for improvement. Therefore, Hypothesis 2A, 2B, and 2C expand Hypothesis 1A, 1B, and 1C by accounting for the possible mediating effect of perceived greenwashing, and are discussed next.

### 4.3 Results for Hypothesis 2A, 2B, and 2C

Hypothesis 2A, Hypothesis 2B, and Hypothesis 2C test if the relationship between consumers' purchase intention for high-involvement products and advertisements with claim greenwashing, executional greenwashing, or a combination of these two greenwashing types, respectively, is mediated by the extent to which they perceive greenwashing.

First, an OLS regression is performed with respondents' perceived greenwashing as the dependent variable, as described in Model (2). After using a White test to examine the potential presence of heteroskedasticity, it appeared that there is not sufficient evidence to assume heteroskedasticity at a significance level of 10% (p-value = 0.2322). The results of the OLS regression are shown in Table 5.

	Perceived greenwashing	Perceived greenwashing
$\alpha_0$ (intercept)	2.7562*** (1.0079)	$\alpha_{10}$ (IT) (1.2075)
$\alpha_1$ (GEN)	1.1176*** (0.3255)	$\alpha_{11}$ (RU) (1.2084)
$\alpha_2$ (AGE)	0.0060 (0.0121)	$\alpha_{12}$ (SR) (1.2177)
$\alpha_3$ (BE)	0.5352 (0.9208)	$\alpha_{13}$ (US) (1.1999)
$\alpha_4$ (DE)	0.6539 (0.8693)	$\alpha_{14}$ (HS) (0.8696)
$\alpha_5$ (GR)	-0.4437 (0.8969)	$\alpha_{15}$ (BD) (0.8904)
$\alpha_6$ (CA)	-1.0777 (1.1956)	$\alpha_{16}$ (MD) (1.0743)
$\alpha_7$ (CN)	1.6004 (1.2006)	$\alpha_{17}$ (FUA) (0.4320)
$\alpha_8$ (EE)	0.5775 (1.3857)	$\alpha_{18}$ (EMA) (0.4486)
$\alpha_9$ (ID)	-0.5902 (1.2182)	$\alpha_{19}$ (COA) (0.4530)
Observations	75	
R-squared	0.4763	
Adjusted R-squared	0.2954	
Standard errors in parentheses		

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Table 5: Results OLS regression for Hypothesis 2A, 2B, and 2C; Model (2).

Table 5 shows the regression coefficients of the intercept and the independent variables under the "Perceived greenwashing" columns. The independent variables are the same as in Table 4

for Model (1), as well as the representation of the intercept. The asterisks indicate the significance of the coefficients. The coefficients' standard errors are presented in parentheses. The number of observations and the values of R-squared and adjusted R-squared are shown in the table as well.

Secondly, an OLS regression is performed with respondents' purchase intention as the dependent variable and respondents' perceived greenwashing as an additional independent variable, as described in Model (3). Again, a White test indicated that there is not sufficient evidence to assume heteroskedasticity at a significance level of 10% (p-value = 0.1653). The results of the OLS regression are shown in Table 6.

Purchase intention		Purchase intention	
$\beta_0$ (intercept)	4.6135*** (1.2505)	$\beta_{11}$ (RU)	-1.4902 (1.4197)
$\beta_1$ (GEN)	0.3842 (0.4176)	$\beta_{12}$ (SR)	-0.1359 (1.4332)
$\beta_2$ (AGE)	0.0192 (0.0141)	$\beta_{13}$ (US)	-0.6890 (1.4271)
$\beta_3$ (BE)	-0.0424 (1.0752)	$\beta_{14}$ (HS)	-1.2863 (1.0129)
$\beta_4$ (DE)	-0.4175 (1.0171)	$\beta_{15}$ (BD)	-0.8711 (1.0375)
$\beta_5$ (GR)	0.2117 (1.0464)	$\beta_{16}$ (MD)	-1.2045 (1.2529)
$\beta_6$ (CA)	0.6739 (1.4020)	$\beta_{17}$ (FUA)	0.5197 (0.5287)
$\beta_7$ (CN)	3.1666** (1.4200)	$\beta_{18}$ (EMA)	0.4131 (0.5726)
$\beta_8$ (EE)	1.7092 (1.6156)	$\beta_{19}$ (COA)	0.3488 (0.6029)
$\beta_9$ (ID)	-0.7989 (1.4211)	$\beta_{20}$ (PG)	-0.4237*** (0.1570)
$\beta_{10}$ (IT)	1.7025 (1.4103)		
Observations	75		
R-squared	0.3322		
Adjusted R-squared	0.0849		
Standard errors in parentheses			
* p < 0.10, ** p < 0.05, *** p < 0.01			

Table 6: Results OLS regression for Hypothesis 2A, 2B, and 2C; Model (3).

Table 6 shows the regression coefficients of the intercept and the independent variables under the "Purchase intention" columns. The independent variables are the same as in Table 4 for Model (1) and Table 5 for Model (2), as well as the representation of the intercept. However,

there is an additional independent variable representing respondents' perceived greenwashing (PG). The asterisks indicate the significance of the coefficients. The coefficients' standard errors are presented in parentheses. The number of observations and the values of R-squared and adjusted R-squared are also shown in the table.

#### **4.3.1 Joint Significance Test**

As can be seen in Table 5, the coefficient for the functional advertisement indicator variable (FUA),  $\alpha_{17}$ , is positive at 1.0392. This result is statistically significant at a 10% significance level (p-value = 0.020). Table 6 shows that the coefficient for respondents' perceived greenwashing (PG),  $\beta_{20}$ , is negative at -0.4237. Again, this result is statistically significant at a 10% significance level (p-value = 0.009). Since both these coefficients are statistically significant, Hypothesis 2A is supported according to the joint significance test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements with claim greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

Secondly, the coefficient for the emotional advertisement indicator variable (EMA) in Table 5,  $\alpha_{18}$ , is positive at 1.4972. This result is statistically significant at a 10% significance level (p-value = 0.002). Since the coefficient for respondents' perceived greenwashing (PG) in Table 6,  $\beta_{20}$ , is also statistically significant, as described above, Hypothesis 2B is supported according to the joint significance test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements with executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

Finally, the coefficient for the combined advertisement indicator variable (COA) in Table 5,  $\alpha_{19}$ , is positive at 1.8618. This result is statistically significant at a 10% significance level (p-value = 0.000). Since the coefficient for respondents' perceived greenwashing (PG) in Table 6,  $\beta_{20}$ , is also statistically significant, as mentioned above, Hypothesis 2C is supported according to the joint significance test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

### 4.3.2 Sobel Test

In order to test Hypothesis 2A, Hypothesis 2B, and Hypothesis 2C with the Sobel test, the Sobel test statistic needs to be calculated using the following equation.

$$z = \frac{a \cdot b}{\sqrt{b^2 \cdot s_a^2 + a^2 \cdot s_b^2}}$$

In the equation,  $a$  represents the coefficient for the effect of the independent variable on the mediator variable;  $b$  represents the coefficient for the effect of the mediator variable on the dependent variable;  $s_a$  represents the standard error of the coefficient for the effect of the independent variable on the mediator variable; and  $s_b$  represents the standard error of the coefficient for the effect of the mediator variable on the dependent variable.

First, the Sobel test statistic for Hypothesis 2A equals -1.7957. Since -1.7957 is more extreme than the critical value of -1.645, Hypothesis 2A is supported according to the Sobel test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements with claim greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

Secondly, the Sobel test statistic for Hypothesis 2B equals -2.0985. This value of -2.0985 is more extreme than the critical value of -1.645. Therefore, Hypothesis 2B is supported according to the Sobel test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements with executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

Finally, the Sobel test statistic for Hypothesis 2C equals -2.2559. Since -2.2559 is more extreme than the critical value of -1.645, Hypothesis 2C is supported according to the Sobel test at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing.

### **4.3.3 Overall Finding for Hypothesis 2A, 2B, and 2C**

Since both the joint significance test and Sobel test provide support for Hypothesis 2A, 2B, and 2C at a 10% significance level, the finding that the relationships between consumers' purchase intention for high-involvement products and advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, are all mediated by the extent to which they perceive greenwashing is quite robust.

As indicated by the statistically significant negative coefficient for respondents' perceived greenwashing (PG) in Table 6 ( $\beta_{20} = -0.4237$ ;  $p$ -value = 0.009), an increase in the extent to which consumers perceive greenwashing in an environmental advertisement that features a high-involvement product negatively influences their purchase intention toward this product. More specifically, a 1-point increase in the average of the perceived greenwashing 7-point Likert scales results in a 0.4237-point decrease in the purchase intention 7-point Likert scale.

## **4.4 Results for Hypothesis 3A, 3B, and 3C**

Hypothesis 3A, Hypothesis 3B, and Hypothesis 3C test for a possible moderating effect of consumers' environmental involvement on the relationship between their perceived greenwashing and advertisements with claim greenwashing, executional greenwashing, or a combination of these two greenwashing types, respectively.

### **4.4.1 Separate Environmental Involvement Dimensions**

First, an OLS regression is performed with interaction terms between the experimental condition indicator variables and the variables representing the three dimensions of respondents' environmental involvement. After using a White test to investigate the potential presence of heteroskedasticity, it appeared that there is not sufficient evidence to assume heteroskedasticity at a significance level of 10% ( $p$ -value = 0.4457). The results of the OLS regression are shown in Table 7.

	Perceived greenwashing		Perceived greenwashing		Perceived greenwashing
$\beta_0$ (intercept)	9.4236** (3.8274)	$\beta_{11}$ (RU)	-1.6149 (1.2975)	$\beta_{22}$ (GPB)	1.0480* (0.5229)
$\beta_1$ (GEN)	1.1474*** (0.3750)	$\beta_{12}$ (SR)	-1.4461 (1.3872)	$\beta_{23}$ (FUA*EC)	1.6740 (1.1354)
$\beta_2$ (AGE)	0.0110 (0.0175)	$\beta_{13}$ (US)	2.0750 (1.2401)	$\beta_{24}$ (EMA*EC)	0.9792 (1.0668)
$\beta_3$ (BE)	-0.3550 (1.0823)	$\beta_{14}$ (HS)	0.1204 (0.9082)	$\beta_{25}$ (COA*EC)	1.4674 (1.1754)
$\beta_4$ (DE)	0.6655 (0.9895)	$\beta_{15}$ (BD)	-0.1906 (0.9222)	$\beta_{26}$ (FUA*GPA)	1.3767** (0.6551)
$\beta_5$ (GR)	-0.7825 (0.9548)	$\beta_{16}$ (MD)	0.1544 (1.2250)	$\beta_{27}$ (EMA*GPA)	0.7939 (0.6724)
$\beta_6$ (CA)	-1.1443 (1.3412)	$\beta_{17}$ (FUA)	-9.7077* (5.1412)	$\beta_{28}$ (COA*GPA)	0.8121 (0.6824)
$\beta_7$ (CN)	1.4962 (1.3594)	$\beta_{18}$ (EMA)	-2.9370 (5.0360)	$\beta_{29}$ (FUA*GPB)	-1.2854** (0.5938)
$\beta_8$ (EE)	-0.6759 (1.9074)	$\beta_{19}$ (COA)	-5.2492 (5.0969)	$\beta_{30}$ (EMA*GPB)	-1.0799 (0.7088)
$\beta_9$ (ID)	-0.7163 (1.3298)	$\beta_{20}$ (EC)	-1.3161 (0.9347)	$\beta_{31}$ (COA*GPB)	-1.1198* (0.6022)
$\beta_{10}$ (IT)	-0.7044 (1.2374)	$\beta_{21}$ (GPA)	-0.8314 (0.5946)		
Observations	75				
R-squared	0.5789				
Adjusted R-squared	0.2753				
Standard errors in parentheses					
* p < 0.10, ** p < 0.05, *** p < 0.01					

Table 7: Results OLS regression for Hypothesis 3A, 3B, and 3C; Model (4).

Table 7 shows the regression coefficients of the intercept and the independent variables under the “Perceived greenwashing” columns. The independent variables are the same as in Table 6 for Model (3), as well as the representation of the intercept. However, there are additional independent variables representing the interaction terms between the experimental condition indicator variables (FA, EA, and CA) and the variables representing the three dimensions of respondents’ environmental involvement (EC, GPA, and GPB). The asterisks indicate the significance of the coefficients. The coefficients’ standard errors are presented in parentheses. The number of observations and the values of R-squared and adjusted R-squared are shown in the table as well.

As can be seen in Table 7, the coefficient for the interaction term between the functional advertisement indicator variable and respondents’ environmental concern (FUA\*EC),  $\beta_{23}$ , is positive at 1.6740. This result is not statistically significant at a 10% significance level (p-value = 0.148). However, the coefficient for the interaction term between the functional

advertisement indicator variable and respondents' green product attitudes ( $FUA^*GPA$ ),  $\beta_{26}$ , is positive at 1.3767, which is statistically significant at a 10% significance level (p-value = 0.041). In addition, the coefficient for the interaction term between the functional advertisement indicator variable and respondents' green purchase behavior ( $FUA^*GPB$ ),  $\beta_{29}$ , is negative at -1.2854. This is also statistically significant at a 10% significance level (p-value = 0.036). Thus, Hypothesis 3A is partially supported according to Model (4) at a 10% significance level; there is sufficient evidence to conclude that the relationship between advertisements with claim greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their green product attitudes and by their green purchase behavior, although it is not moderated by their environmental concern.

Secondly, the coefficient for the interaction term between the emotional advertisement indicator variable and respondents' environmental concern ( $EMA^*EC$ ) in Table 7,  $\beta_{24}$ , is positive at 0.9792. This result is not statistically significant at a 10% significance level (p-value = 0.364). Furthermore, the coefficient for the interaction term between the emotional advertisement indicator variable and respondents' green product attitudes ( $EMA^*GPA$ ),  $\beta_{27}$ , is positive at 0.7939. This is not statistically significant at a 10% significance level (p-value = 0.244). In addition, the coefficient for the interaction term between the emotional advertisement indicator variable and respondents' green purchase behavior ( $EMA^*GPB$ ),  $\beta_{30}$ , is negative at -1.0799, which is not statistically significant at a 10% significance level (p-value = 0.135). Since these three coefficients are all statistically insignificant, Hypothesis 3B is rejected according to Model (4) at a 10% significance level; there is not sufficient evidence to conclude that the relationship between advertisements with executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

Finally, the coefficient for the interaction term between the combined advertisement indicator variable and respondents' environmental concern ( $COA^*EC$ ) in Table 7,  $\beta_{25}$ , is positive at 1.4674. This result is not statistically significant at a 10% significance level (p-value = 0.219). Furthermore, the coefficient for the interaction term between the combined advertisement indicator variable and respondents' green product attitudes ( $COA^*GPA$ ),  $\beta_{28}$ , is positive at 0.8121. This is not statistically significant at a 10% significance level (p-value = 0.241). Yet, the coefficient for the interaction term between the combined advertisement indicator variable and respondents' green purchase behavior ( $COA^*GPB$ ),  $\beta_{31}$ , is negative at -1.1198, which is statistically significant at a 10% significance level (p-value = 0.070). Therefore, Hypothesis 3C is partially supported according to Model (4) at a 10% significance

level; there is sufficient evidence to conclude that the relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their green purchase behavior, although it is not moderated by their environmental concern or green product attitudes.

#### 4.4.2 Overall Environmental Involvement Score

Secondly, an OLS regression is performed with interaction terms between the experimental condition indicator variables and a variable that represents respondents' average scores on the three dimensions of environmental involvement. After using a White test to examine the potential presence of heteroskedasticity, it appeared that there is not sufficient evidence to assume heteroskedasticity at a significance level of 10% (p-value = 0.4547). The results of the OLS regression are shown in Table 8.

	Perceived greenwashing		Perceived greenwashing		Perceived greenwashing
$\beta_0$ (intercept)	3.1156 (2.5928)	$\beta_8$ (EE)	0.4936 (1.6433)	$\beta_{16}$ (MD)	0.4692 (1.1942)
$\beta_1$ (GEN)	1.0432*** (0.3560)	$\beta_9$ (ID)	-0.5080 (1.2571)	$\beta_{17}$ (FUA)	-2.1522 (3.3207)
$\beta_2$ (AGE)	0.0081 (0.0130)	$\beta_{10}$ (IT)	-0.6615 (1.2392)	$\beta_{18}$ (EMA)	2.2030 (3.6298)
$\beta_3$ (BE)	0.5544 (0.9440)	$\beta_{11}$ (RU)	-1.1259 (1.2395)	$\beta_{19}$ (COA)	1.1914 (3.6217)
$\beta_4$ (DE)	0.7707 (0.9828)	$\beta_{12}$ (SR)	-1.2493 (1.2952)	$\beta_{20}$ (EI)	-0.0826 (0.4262)
$\beta_5$ (GR)	-0.4315 (0.9287)	$\beta_{13}$ (US)	1.6763 (1.2400)	$\beta_{21}$ (FUA*EI)	0.6076 (-0.6160)
$\beta_6$ (CA)	-1.0996 (1.2799)	$\beta_{14}$ (HS)	0.3405 (0.8990)	$\beta_{22}$ (EMA*EI)	-0.1339 (0.6500)
$\beta_7$ (CN)	1.3517 (1.2493)	$\beta_{15}$ (BD)	-0.2336 (0.9178)	$\beta_{23}$ (COA*EI)	0.1203 (0.6456)
Observations	75				
R-squared	0.4922				
Adjusted R-squared	0.2632				
Standard errors in parentheses					
* p < 0.10, ** p < 0.05, *** p < 0.01					

Table 8: Results OLS regression for Hypothesis 3A, 3B, and 3C; Model (5).

Table 8 shows the regression coefficients of the intercept and the independent variables under the "Perceived greenwashing" columns. Again, the independent variables are the same as in Table 6 for Model (3), as well as the representation of the intercept. However, there are additional independent variables representing the interaction terms between the experimental

condition indicator variables (FA, EA, and CA) and a variable that represents respondents' average scores on the three dimensions of environmental involvement (EI). The asterisks indicate the significance of the coefficients. The coefficients' standard errors are presented in parentheses. The number of observations and the values of R-squared and adjusted R-squared are also shown in the table.

As can be seen in Table 8, the coefficient for the interaction term between the functional advertisement indicator variable and respondents' overall environmental involvement score (FUA\*EI),  $\beta_{21}$ , is positive at 0.6076. This result is not statistically significant at a 10% significance level (p-value = 0.329). This implies that Hypothesis 3A is rejected according to Model (5) at a 10% significance level; there is not sufficient evidence to conclude that the relationship between advertisements with claim greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

Secondly, the coefficient for the interaction term between the emotional advertisement indicator variable and respondents' overall environmental involvement score (EMA\*EI) in Table 8,  $\beta_{22}$ , is negative at -0.1339. This result is not statistically significant at a 10% significance level (p-value = 0.838). Thus, Hypothesis 3B is rejected according to Model (5) at a 10% significance level; there is not sufficient evidence to conclude that the relationship between advertisements with executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

Finally, the coefficient for the interaction term between the combined advertisement indicator variable and respondents' overall environmental involvement score (COA\*EI) in Table 8,  $\beta_{23}$ , is positive at 0.1203. This result is not statistically significant at a 10% significance level (p-value = 0.853). Therefore, Hypothesis 3C is rejected according to Model (5) at a 10% significance level; there is not sufficient evidence to conclude that the relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their environmental involvement.

#### 4.4.3 Overall Finding for Hypothesis 3A, 3B, and 3C

Whereas Hypothesis 3A, Hypothesis 3B, and Hypothesis 3C are all rejected according to Model (5), Hypothesis 3A and Hypothesis 3C are partially supported according to Model (4) at a 10% significance level. The regression results for Model (4) indicate that the relationship between advertisements with claim greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their green product attitudes and by their green purchase behavior. In addition, the results for Model (4) show that the relationship between advertisements that combine claim greenwashing and executional greenwashing and consumers' perceived greenwashing for high-involvement products is moderated by their green purchase behavior. Thus, in the context of claim greenwashing in advertisements, consumers' green product attitudes and green purchase behavior appear to be relevant to their purchasing decision, and in the context of both claim and executional greenwashing, consumers' green purchase behavior seems to be relevant to their buying decision.

More specifically, the statistically significant positive coefficient for the interaction term between the functional advertisement indicator variable and respondents' green product attitudes (FUA\*GPA) in Table 7 ( $\beta_{26} = 1.3767$ ; p-value = 0.041) shows that a 1-point increase in the average of the green product attitudes 7-point Likert scales results in a 0.5453-point increase ( $\beta_{21} + \beta_{26} = -0.8314 + 1.3767 = 0.5453$ ) in the average of the perceived greenwashing 7-point Likert scales for the treatment group of the functional advertisement experimental condition.

Furthermore, the statistically significant negative coefficient for the interaction term between the functional advertisement indicator variable and respondents' green purchase behavior (FUA\*GPB) in Table 7 ( $\beta_{29} = -1.2854$ ; p-value = 0.036) indicates that a 1-point increase in the average of the green purchase behavior 7-point Likert scales results in a 0.2374-point decrease ( $\beta_{22} + \beta_{29} = 1.0480 - 1.2854 = -0.2374$ ) in the average of the perceived greenwashing 7-point Likert scales for the treatment group of the functional advertisement experimental condition.

Finally, the statistically significant negative coefficient for the interaction term between the combined advertisement indicator variable and respondents' green purchase behavior (COA\*GPB) in Table 7 ( $\beta_{31} = -1.1198$ ; p-value = 0.070) shows that a 1-point increase in the average of the green purchase behavior 7-point Likert scales results in a 0.0718-point decrease

$(\beta_{22} + \beta_{31} = 1.0480 - 1.1198 = -0.0718)$  in the average of the perceived greenwashing 7-point Likert scales for the treatment group of the combined advertisement experimental condition.

Accordingly, three conclusions can be drawn. First, consumers' green product attitudes strengthen their perceptions of greenwashing for environmental advertisements that feature high-involvement products using claim greenwashing. This is in line with the expectation that consumers who have general positive attitudes toward green products perform more rigorous evaluations of the arguments presented in an environmental advertisement (Schmuck et al., 2018b; Petty & Cacioppo, 1984).

Secondly, consumers' green purchase behaviors weaken their perceptions of greenwashing for environmental advertisements that feature high-involvement products using claim greenwashing. However, this does not correspond with the expectation that consumers who buy green products relatively frequently, or have relatively strong intentions to do so, perform more rigorous evaluations of the arguments presented in an environmental advertisement (Matthes et al., 2014; Petty & Cacioppo, 1984).

Thirdly, consumers' green purchase behaviors weaken their perceptions of greenwashing for environmental advertisements that feature high-involvement products using both claim and executional greenwashing. However, this is not in line with the expectation that consumers who buy green products relatively frequently, or have relatively strong intentions to do so, are more likely to detect greenwashing through nature-invoking images (Matthes et al., 2014).

Thus, while Hypothesis 3A and Hypothesis 3C are partially supported, two of the three findings are contradictory to the expectations that underlie these hypotheses. As further explained in section 5.3, this suggests an opportunity for future research.

As Matthes et al. (2014) explain, the three dimensions of environmental involvement can have different antecedents and outcomes. As a result, it might make more sense to include these dimensions separately rather than to combine them into one overall environmental involvement score. Indeed, this paper's results show that analyzing the three dimensions separately provides support for the existence of a partial moderating effect of environmental involvement, whereas examining them as one overall environmental involvement score does not provide such support. Therefore, the findings of this paper emphasize the importance of modeling the environmental involvement dimensions separately rather than together.

## 5. General Discussion

In this chapter, the three subquestions formulated in the introduction chapter are evaluated, after which this paper's main research question is answered. Next, the academic and managerial implications of the findings are provided. Finally, the limitations of this paper's research are discussed, as well as some directions for future research.

### 5.1 Research Questions

The first subquestion was formulated as follows.

Are advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, directly associated with consumers' purchase intention for high-involvement products?

In order to find an answer to this subquestion, three hypotheses were created: Hypothesis 1A for advertisements with claim greenwashing, Hypothesis 1B for advertisements with executional greenwashing, and Hypothesis 1C for advertisements with a combination of the two greenwashing types. These hypotheses were tested by performing an OLS regression that examines the effect of the experimental condition indicator variables on respondents' purchase intention, controlling for respondents' gender, age, nationality, and highest degree or level of education completed. Since the coefficients for the three experimental condition indicator variables were all found to be statistically insignificant at a 10% significance level, Hypothesis 1A, 1B, and 1C were all rejected. As a result, the answer to first subquestion can be formulated as follows: neither advertisements with claim greenwashing, nor advertisements with executional greenwashing, nor advertisements with a combination of these two greenwashing types, are directly associated with consumers' purchase intention for high-involvement products.

The second subquestion was formulated as follows.

Is the relationship between consumers' purchase intention for high-involvement products and advertisements with claim greenwashing, executional greenwashing, and a

combination of these two greenwashing types, mediated by the extent to which they perceive greenwashing?

In order to answer this subquestion, three hypotheses were developed: Hypothesis 2A for advertisements with claim greenwashing, Hypothesis 2B for advertisements with executional greenwashing, and Hypothesis 2C for advertisements with a combination of the two greenwashing types. These hypotheses were tested by first conducting two regression analyses; one that investigates the effect of the experimental condition indicator variables on respondents' perceived greenwashing, and one that studies the effect of respondents' perceived greenwashing on their purchase intention, both controlling for respondents' gender, age, nationality, and highest degree or level of education completed. Then, the results of the regression analyses were used to perform a joint significance test and a Sobel test. At a 10% significance level, both tests provided support for Hypothesis 2A, 2B, and 2C. Therefore, the second subquestion can be answered as follows: advertisements with claim greenwashing, advertisements with executional greenwashing, and advertisements with a combination of these two greenwashing types all indirectly influence consumers' purchase intention for high-involvement products through the mediating effect of consumers' perceived greenwashing.

The third subquestion was formulated as follows.

Is the relationship between consumers' perceived greenwashing for high-involvement products and advertisements with claim greenwashing, executional greenwashing, and a combination of these two greenwashing types, moderated by their environmental involvement?

Again, three hypotheses were formulated in order to answer this subquestion: Hypothesis 3A for advertisements with claim greenwashing, Hypothesis 3B for advertisements with executional greenwashing, and Hypothesis 3C for advertisements with a combination of the two greenwashing types. These hypotheses were tested by conducting two regression analyses. The first includes interaction terms between the experimental condition indicator variables and the variables representing the three dimensions of respondents' environmental involvement, in addition to the inclusion of all these variables separately, as well as control variables for respondents' gender, age, nationality, and highest degree or level of education completed, and respondents' perceived greenwashing as the dependent variable. The second replaces these

interaction terms with interaction terms between the experimental indicator variables and a variable that represents respondents' average scores on the three dimensions of environmental involvement (i.e., respondents' overall environmental involvement score). Although the second regression analysis did not provide support for any of the hypotheses, Hypothesis 3A and 3C were partially supported in the first regression analysis at a 10% significance level. In the context of claim greenwashing in advertisements, consumers' green product attitudes and green purchase behavior appear to be relevant to their purchasing decision, and in the context of both claim and executional greenwashing, consumers' green purchase behavior seems to be relevant to their buying decision. Thus, the third subquestion can be answered as follows: although the effect of advertisements with executional greenwashing on consumers' perceived greenwashing for high-involvement products is not moderated by their environmental involvement, the effect of advertisements with claim greenwashing on consumers' perceived greenwashing for high-involvement products, as well as the effect of advertisements with a combination of these two greenwashing types on consumers' perceived greenwashing for high-involvement products, are both to some extent moderated by consumers' environmental involvement; more specifically, the first is moderated by consumers' green product attitudes and green purchase behavior, and the second is moderated by consumers' green purchase behavior only.

The main research question was formulated as follows.

How do claim greenwashing and executional greenwashing influence consumers' purchase intention for high-involvement products?

The answers to the subquestions can be used to solve this paper's central problem statement. Claim greenwashing, executional greenwashing, and a combination of both greenwashing types all indirectly influence consumers' purchase intentions toward high-involvement products through the mediating effect of consumers' perceived greenwashing, although there are no direct effects. Furthermore, the effect of claim greenwashing is moderated by consumer' green product attitudes and green purchase behavior, and the effect of the combination of both greenwashing types is moderated by consumers' green purchase behavior.

## 5.2 Academic and Managerial Implications

This paper's findings have several academic implications. First, this paper contributes to the limited literature on the effects of perceived greenwashing by showing that when consumers perceive greenwashing in an environmental advertisement that features a high-involvement product, their purchase intention toward this product is negatively influenced.

Secondly, this paper contributes to the underdeveloped research area of executional greenwashing. As mentioned in the introduction chapter, the effects of executional greenwashing have been investigated only marginally. This paper's research shows that the effect of advertisements with executional greenwashing on consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing. The influence of advertisements that combine claim and executional greenwashing on consumers' purchase intention for high-involvement products is mediated by the extent to which they perceive greenwashing as well. Furthermore, it is found that consumers' green purchase behaviors weaken their perceptions of greenwashing for environmental advertisements that feature high-involvement products using both claim and executional greenwashing.

Finally, this paper further contributes to the existing greenwashing literature by focusing on high-involvement rather than low-involvement products. As discussed in the introduction chapter, examining high-involvement rather than low-involvement products may yield different results regarding the influence of perceived greenwashing on purchase intention. Indeed, in contrast to previous literature that examines low-involvement products, this paper's research finds that for high-involvement products, consumers' environmental involvement may weaken, rather than strengthen, their perceptions of greenwashing in environmental advertisements (in the case of green purchase behavior for advertisements with claim greenwashing and for advertisements with both claim and executional greenwashing). In turn, the moderating effect of green purchase behavior on the relationship between perceived greenwashing and advertisements with claim greenwashing, as well as on the relationship between perceived greenwashing and advertisements with both claim and executional greenwashing, seems to mitigate the negative effect that perceived greenwashing has on purchase intention for high-involvement products.

The findings presented in this paper also suggest several managerial implications. First, marketers should try to eliminate any signs of greenwashing in their environmental

advertisements for high-involvement products, so consumers' purchasing intent will not be adversely impacted.

In addition, the findings suggest that marketers should design their environmental advertisements while taking into account the effects that consumers' green product attitudes and green purchase behavior have on their perceived greenwashing which, in turn, influences their purchasing intent toward the advertised product. For example, the finding that consumers' green product attitudes strengthen their perceptions of greenwashing for environmental advertisements that feature high-involvement products using claim greenwashing suggests that when marketers design such advertisements targeted at consumers who have general positive attitudes toward green products, the elimination of any signs of greenwashing becomes even more critical (Schmuck et al., 2018b).

Finally, the findings indicate that both false greenwashing claims and nature-invoking images in environmental advertisements can induce perceptions of greenwashing among consumers which, in turn, adversely impact their purchasing intent toward the advertised high-involvement product. Therefore, managers should disregard the possible beneficial effects of greenwashing, such as the possibility to obtain legitimacy and to communicate their values regarding environmental issues (Torelli et al., 2020). Instead, it is important for managers to acknowledge the negative consequences of claim and executional greenwashing. Also, marketers should carefully design both the claims made and the backgrounds used for green advertisements featuring high-involvement products in order to minimize consumers' perceptions of greenwashing and maximize their purchasing intent. Only then, companies can capture market share and succeed in the emerging green markets.

### **5.3 Limitations and Directions for Future Research**

This paper has several limitations. First, the research conducted in this paper may be of weak statistical power due to the small sample size of 75 respondents. Therefore, future research could repeat the approach taken in this paper for a larger sample size in order to obtain more reliable results. Secondly, most respondents in the survey are aged 30 years or younger (83%), so future research could also consider other age categories. Thirdly, most respondents in the survey have a Dutch nationality (81.33%). Hence, future research could verify this paper's findings for other nationalities, as Akturan (2018) notes as well. Fourthly, the measure of respondents' perceived greenwashing is based on only four Likert scale items, and the environmental performance dimensions are even based on only three Likert scale items each.

Although these items have been deemed valid and reliable in previous literature (Schmuck et al., 2018b), future research could devise more Likert scale items for these constructs to increase the reliability of the results. Fifthly, while the methodology of conducting an experiment provides a strong internal validity to this paper's research, it is limited in its external validity. Therefore, future research could consider other research methodologies to study the impact of claim and executional greenwashing on consumers' purchase intention for high-involvement products, in order to improve the generalizability of the findings. Sixthly, this paper focuses on a high-involvement product only. While the obtained results can be compared to those of other papers that examine low-involvement products, future research could simultaneously conduct two similar surveys; one for a low-involvement product, and one for a high-involvement one. This enables an easier comparison of the effects of claim and executional greenwashing on consumer purchase intentions for low-involvement products versus those for high-involvement ones. Finally, although the results in this paper provide partial support for Hypothesis 3A and Hypothesis 3C, two of the three corresponding findings are contradictory to the expectations that underlie these hypotheses. While consumers' green product attitudes strengthen their perceptions of greenwashing for environmental advertisements that feature high-involvement products using claim greenwashing, consumers' green purchase behaviors weaken their perceptions of greenwashing for environmental advertisements that feature high-involvement products using claim greenwashing, as well as for those that use both claim and executional greenwashing. Future research could study why these two environmental involvement dimensions have opposite effects on consumers' perceived greenwashing.

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## APPENDIX



Figure A1: Functional advertisement (false greenwashing claim and neutral image).



Figure A2: Emotional advertisement (nondeceptive claim and nature-evoking image).



Figure A3: Combined advertisement (false greenwashing claim and nature-evoking image).



Figure A4: Control advertisement (nondeceptive claim and neutral image).