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Introduction

Since the global concern for environmental sustainability has increased in the last years (Davis, 1993; Lima et al., 2023; Zinkhan & Carlson, 1995), brands have also tended to promote their commitment to climate change. Related to this trend, research has shown consumers' preference for advertisements that emphasize the ecological attributes of their products over those that present general products (Santa & Drews, 2023). Consequently, this phenomenon has led to the emergence of green advertising, which aims to promote the environmental features of a product or service to influence consumers' cognitions, attitudes, and behaviors (Matthes, 2019). In that regard, green advertising presents an opportunity to persuade consumers and enhance brand image and outcomes. At the same time, the consumers' demand for green products has pushed brands to shift towards environmentalism (Chen, 2010). Besides, some companies have difficulties to make their products or services environmentally neutral or friendly (Chen & Chang, 2013). As a result, some brands have misled consumers about their environmental features, resulting in and giving rise to the so-called phenomenon of greenwashing (e.g., Carlson et al., 1993; de Freitas Netto et al., 2020; Kangun et al., 1991; Neureiter et al., 2023; Neureiter & Matthes, 2023). More specifically, greenwashing occurs when there are discrepancies between what companies communicate about their environmental characteristics and actions and their actual performance in combating climate change (Delmas & Burbano, 2011).

When companies use misleading claims instead of substantiated claims to promote their products or services, there is a risk that consumers could recognize greenwashing. (Carlson et al., 1993). According to dual-process models of information processing (Chaiken, 1980; Petty & Cacioppo, 1986), when brands use false claims (i.e., outright lies) to boast about the environmental benefits of their products, recipients could perceive greenwashing as

they may elaborate more on those messages including information that is logically wrong and inconsistent with their schema (e.g., Neureiter & Matthes, 2023; Schmuck et al., 2018). However, this thorough elaboration of green claims only occurs when consumers cognitively and systematically process the information, enabling them to detect greenwashing. As a result, perceptions of greenwashing can decrease consumers' trust in green products and negatively affect their pro-environmental attitudes and behavior (e.g., Chen & Chang, 2013; Rahman et al., 2015). More specifically, the perception of greenwashing can create reluctance and increase skepticism among consumers, handicapping those brands that strive to contribute to mitigating climate change. Thus, greenwashing practices pose a potential threat to society's sustainable goals and those brands within the framework of environmental sustainability.

Besides the use of green claims, brands also employ other persuasion techniques, such as the strategic use of frames, to enhance the effectiveness of their messages (Santa & Drews, 2023). Research on framing effects refers to *goal framing* as the focus on the consequences (i.e., gain or loss) of conducting (or not conducting) a specific behavior with the aim of persuading the recipients of a message (Levin et al., 1998). More specifically, gain frames emphasize the positive outcome of completing an action, and loss frames underline the negative consequences when not compliant. In green advertising, brands frequently use gain and loss frames to influence consumers' attitudes and purchase intentions (e.g., Casado-Aranda et al., 2017; Chang et al., 2015; Segev et al., 2015). Until now, research in the context of environmental decisions (i.e., recycling intentions, green consumption, pro-environmental behavior) presents mixed findings regarding which frame is more persuasive. Whereas loss frames have been more effective on a behavioral level, gain frames seem to be more persuasive when recipients' choice involves low commitment (Ropret Homar & Knežević Cvelbar, 2021). In green advertising, gain frames seem to generate more favorable responses

compared to loss frames, eliciting consumers' attitudes toward brands and their purchase intentions to a higher degree (Segev et al., 2015). Despite the significant body of research investigating the effectiveness of gain and loss frames in green advertising, there is no study on how these frames influence recipients' perceptions of greenwashing. Moreover, most of the previous experimental research has manipulated gain and loss frames in a text-based context, leaving a few that have employed an image manipulation (e.g., Ahn et al., 2015; Mir et al., 2016).

Moreover, there is no research on how green claims and gain and loss frames interact and influence consumers' perceptions of greenwashing and, subsequently, their attitudes and intentions. While recipients can potentially perceive greenwashing when elaborating on the arguments of false claims (e.g., Schmuck et al., 2018), they may also use heuristics and guide their evaluations by employing peripheral cues when processing green advertisements containing loss and gain frames (Santa & Drews, 2023), leading them to misperceive greenwashing.

Furthermore, perceptions of greenwashing depend on the recipients' characteristics (Matthes, 2019). With the increase in the usage of misleading strategies from brands seeking to greenwash their products and services, skepticism among consumers towards green advertising has also risen in the last years (do Paço & Reis, 2012; Matthes & Wonneberger, 2014; Shrum et al., 1995). Consumers with high skepticism towards green advertising tend to distrust green claims in advertisements (De Sio et al., 2022). Thus, consumers who have a lower degree of trust in green advertising may be biased and perceive greenwashing differently from those who have higher trust levels. Yet, no study has investigated how recipients' trust in green products moderates their perceptions of greenwashing when being exposed to green claims in advertisements.

Against this background, the present master thesis investigates the effects of false claims (vs. substantiated claims) in recipients' perceptions of greenwashing and how the frame used in the advertisement (gain frame vs. loss frame) and consumers' trust in green advertising moderate these effects. Furthermore, in this study, I analyze how recipients' perceptions of greenwashing subsequently affect their brand evaluation, green purchase intentions, and political consumerism. For this aim, I conducted a between-subjects online experiment: 2 (false claims vs. substantiated claims) X 2 (gain frame vs. loss frame).

Theoretical Framework

Dual-Process Models of Information Processing and Green Advertising

Research in advertising has tended to use dual-process models of information processing as a theoretical framework to explain individuals' attitudinal and behavioral changes when exposed to persuasive messages (Kim et al., 2014). In green advertising, studies have followed the same procedure to predict the effects of green advertisements (Matthes, 2019). Considering the area of interest of the present study, dual-process models such as the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986) can serve as a framework to explain how different green claims, frames used in green advertisements, and recipients' characteristics such as green trust interact and influence consumers' information processing, attitudes and intentions.

According to the ELM (Petty & Cacioppo, 1986), there are two routes of persuasion, a *central route* and a *peripheral route*. On the one hand, the *central route* takes place as a result of the elaboration on the arguments included in a message (e.g., green claims). In other words, this happens when recipients scrutinize the message based on its facts. Similarly, Chaiken (1980) refers to this route as a systematic information processing in which receivers employ significant cognitive effort to validate the arguments of a message. On the other hand, the *peripheral route* occurs when the assessment of the message is based on cues

unrelated to the arguments' quality (e.g., frames). Along this route, recipients use mental short-cuts and simple rules, also known as heuristics, that require less cognitive effort than the systematic information processing to form their attitudes on a message (Chaiken, 1980; O'Keefe, 2012). Depending on the degree of the elaboration on the arguments from a message, recipients can engage in one of the two routes. In that regard, different variables can interplay in the process of elaboration and "affect the amount and direction of receivers' attitude change by serving as persuasive arguments, peripheral cues, and/or affecting the extent or direction of issue and argument elaboration" (Petty & Cacioppo, 1986, p.133).

Concerning persuasive arguments in green advertising, previous research has supported that functional environmental attributes (i.e., specific characteristics of a product that contribute to preserve the environment) can enhance attitudes towards green products when recipients are highly involved in environmental issues (Hartmann & Apaolaza-Ibáñez, 2008; Matthes et al., 2014). In this case, receivers with high involvement are likely to elaborate on message arguments when processing green advertisements (Matthes, 2019), and thus are more likely to follow the *central route* than those less involved. Depending on the quality of a message, its arguments can be evaluated as strong when recipients' opinions towards them are favorable or weak when receivers perceive them as unfavorable (Petty & Cacioppo, 1986). Considering the arguments' strength and their persuasiveness, advertisers have the opportunity to present the environmental features of their products and the advantages to others through green claims. However, those green claims may also contain deceptive information and mislead consumers (e.g., Carlson et al., 1993; Kangun et al., 1991; Neureiter & Matthes, 2023; Schmuck et al., 2018).

The ELM also distinguishes variables that can act as peripheral cues. For instance, frames can serve as heuristics when recipients process green advertisements (Santa & Drews, 2023). More specially, receivers' attitudes may be shaped according to how the

advertisement is framed. In that regard, previous research has studied the persuasiveness of gain and loss frames in green advertising (e.g., Casado-Aranda et al., 2017; Chang et al., 2015; Segev et al., 2015). Although there is a significant amount of research on environmental decisions, results are not consistent among the existing studies (Ropret Homar & Knežević Cvelbar, 2021). Findings generally suggest that gain frames are more persuasive when recipients' choices involve less commitment, but less effective at behavioral levels than loss frames. In green advertising, gain frames seem to influence consumers' responses more favorable than loss frames (e.g., Casado-Aranda et al., 2017; Segev et al., 2015). However, most of the experimental studies on environmental decisions have manipulated frames in a text base, leaving only a few that have visually manipulated the frames conditions (e.g., Ahn et al., 2015; Mir et al., 2016). Therefore, these findings may not be consistent as recipients process verbal cues and non-verbal cues in a different manner (Santa & Drews, 2023). In that regard, imagery can lead receivers to affectively process the information of green advertisements and activate emotional responses (Matthes, 2019). Consequently, those emotional responses may alter the way in which recipients elaborate on the presented information (e.g., Hartmann et al., 2013; Hartmann & Apaolaza-Ibáñez, 2009; Parguel et al., 2015).

Lastly, the ELM states that variables can influence the elaboration of arguments in a biased direction (Petty & Cacioppo, 1986). The biased elaboration is driven by the recipients' previous attitudes before processing a message, making the arguments that are in line with their initial attitudes favorable and the opposite unfavorable. Consequently, receivers can be positively biased or negatively biased when processing the information of a specific message. In green advertising, the evaluation of messages may depend on the consumers' initial environmental values and attitudes (Matthes, 2019). For instance, consumers' trust in green

products may lead them to be positively or negatively biased when assessing green advertisements.

In sum, the ELM perspective encompasses a series of postulates that help to specify how variables such as green claims, gain and loss frames, and green trust are expected to interact and impact the persuasion of green advertisements. In the following sections, I delve into the variables mentioned above, considering the state of the research in green advertising.

Green Advertising Claims

Research in marketing has shown that the implementation of green products can positively impact consumers' attitudes toward a brand (Olsen et al., 2014). This positive brand enhancement depends on how advertisers communicate about their products. In that regard, brands can highlight the environmental characteristics of their products by using green claims. Thus, those claims can serve to feature the benefits of a brand to the environment. In consequence, the employment of green claims has drastically increased among advertisements in the last years (Matthes et al., 2014). Furthermore, the rise of consumer preferences for green products and the difficulties of companies that are inherently harmful to the environment (e.g., airlines, oil and gas companies) to adapt to sustainable processes have driven brands to use misleading green claims about their products, resulting in practices of greenwashing (Delmas & Burbano, 2011).

In line with the use of green claims, Carlson and colleagues (1996) distinguished between substantive claims and associative claims. *Substantive claims* are those that provide tangible and concrete information about the product characteristics and manufacturing process, making salient the direct positive effects of a brand to the environment. In contrast, *associative claims* promote the environmental image of the brand or use environmental facts with the purpose of enhancing the connection between the brand and the environment. Moreover, these claims are limited to present intangible or abstract information about the

positive impact of the brand on the physical environment. Related to that, Davis (1993) demonstrated that green advertisements with claims that contain specific information and meaningful benefits to the environment were more likely to generate consumers favorable attitudes than those with unspecific claims. Furthermore, incomplete claims that merely aim to improve the environmental reputation of a brand can be considered as misleading (de Freitas Netto et al., 2020). Concerning the deceptiveness of green claims, Kangun and colleagues (1991) developed a typology in which they categorized the following types: *false claims*, *vague claims*, *omission claims*, *combination claims*, and *acceptable claims*. More specially, *false claims* present an outright lie; *vague claims* provide ambiguous information about environmental features of a product; *omission claims* hide necessary aspects for the truthfulness evaluation of the advertisement; and *combination claims* mix elements from the claims described before. Oppositely, *acceptable claims* do not content any kind of deception. Related to this typology, Carlson and colleagues (1993) extended the type of green claims in a content analysis by adding a new dimension that classified the orientation of environmental advertisements: *product orientation*, *process orientation*, *image orientation*, and *environmental facts*. In more detail, *product orientation* refers to claims that make the environmentally friendly attributes of a product salient; *process orientation* involves claims that describe how the production of a product benefits the environment; *image orientation* deals with claims that address how a brand is committed to a specific environmental cause or action; and lastly, *environmental facts* are claims that simply highlight issues in the environment.

The scope of this study lies in the difference between false claims and substantiated claims. On one hand, false claims contain outright lies about the environmental features of a brand (Kangun et al., 1991) with the purpose of enhancing its environmental image. On the other hand, substantiated claims can be considered as acceptable as they provide evidence of

the environmental benefits of a brand, and therefore, they are not deceptive. Besides, substantiated claims content specific and detailed information about the characteristics of a product or manufacturing process, making tangible the positive impact of a brand to the environment (Atkinson & Rosenthal, 2014; Carlson et al., 1996; Davis, 1993).

Gain and Loss Frames

With the emergence of green advertising, companies have employed different strategies to persuade consumers and strengthen the connection between their brands and the environment. Apart from green claims, firms can also employ framing techniques in their advertisements to elicit favorable consumer responses (e.g., Amatulli et al., 2019; Casado-Aranda et al., 2017; Chang et al., 2015; Kareklas et al., 2012; Segev et al., 2015).

In framing research, scholars have identified two main conceptualizations guided by the disciplines of psychology –*equivalency framing*– and sociology –*emphasis framing*– (Cacciatore et al., 2016). Druckman (2001) refers to equivalency framing when the same logically equivalent information differs in the use of words, phrases, and facts (e.g., to cut down 33% of trees or to save 66% of trees in a forest) and emphasis framing when certain aspects of the same information are intentionally salient over others (e.g., economy challenges of sustainability or environmental benefits of sustainability). When operationalizing framing, a transparent definition is important to increase the validity of the results (Matthes, 2009). According to the purpose of this investigation, this study is based on the definition of equivalency framing.

The equivalency framing conceptualization is rooted in the Prospect Theory (Kahneman & Tversky, 1979), which states that human decision-making and preferences under risk are influenced by the framing of information (Tversky & Kahneman, 1981). More precisely, people tend to be risk averse when decisions involve sure gains and risk seeking when they involve sure losses. Later and based on the Prospect Theory, Levin and colleagues

(1998) developed a typology of framing effects and classified them into *risky choice*, *attribute*, and *goal framing*. *Risky choice* framing refers to the original concept of framing by Tversky and Kahneman (1981) and the Prospect Theory in which a set of (risky) options in a given positive or negative situation influence individuals' decisions. In *attribute framing*, people evaluate (un)favorably an object depending on the given positive or negative features of it. Lastly, and of most interest to this study, *goal framing* focuses on the consequent gain when engaging in a particular behavior (i.e., gain frames – e.g., "buying this product will help to preserve forests") or the resulting loss when not conducting that behavior (loss frames – e.g., "not buying this product will consequence in the cutting of forests"). Unlike risky choice framing and attribute framing, goal framing is characterized as being unidirectional –i.e., gain and loss frames aim to promote the same result (Levin et al., 1998). Thus, the question arises: what frame leads to the strongest persuasion effect when influencing the likability of a specific targeted action?

Among the studies on environmental decisions, loss frames seem more persuasive regarding behavioral levels and in situations requiring more recipient involvement than gain frames (Ropret Homar & Knežević Cvelbar, 2021). However, gain frames appear to be more effective when responder choices demand less commitment. Concerning green advertising, studies have supported that gain frames generate more favorable responses than loss frames (e.g., Casado-Aranda et al., 2017; Segev et al., 2015).

Green Trust

Green advertising allows corporations to address consumers' desires (Zinkhan & Carlson, 1995). At the same time, companies can persuade consumers and influence their cognitions, attitudes, and behaviors by promoting the environmental features of their products and services (Matthes, 2019). This phenomenon has led brands to shift towards environmentalism (Chen, 2010), increasing misleading practices, also known as

greenwashing (Delmas & Burbano, 2011). Consequently, the rise of greenwashing practices has caused reluctance among consumers, who remain skeptical of green advertisements (Kangun et al., 1991; Zinkhan & Carlson, 1995).

Apart from the increase in misleading strategies in green advertising, some studies have stated that those consumers who prefer environmentally friendly products (i.e., green consumers) generally tend to be skeptical when confronting green advertisements (e.g., do Paço & Reis, 2012; Hartmann & Apaolaza-Ibáñez, 2009; Shrum et al., 1995). However, in two survey studies, Matthes and Wonnerberg (2014) found that green consumerism actually was negatively associated with green advertising skepticism. The authors discussed that green consumers are highly involved when processing green advertisements and base their evaluations on the information and arguments presented. Thus, consumers may not be generally skeptical toward green advertising. Whether green advertisement recipients are skeptical depends on their personal characteristics and environmental values (Matthes, 2019). In that regard, Chen (2010) defined the construct of green trust as the "willingness to depend on a product, service, or brand based on the belief or expectation resulting from its credibility, benevolence, and ability about its environmental performance" (p. 309). With the skepticism generated by misleading strategies in green advertising, consumers could distrust green products claims to a higher degree (De Sio et al., 2022). In that manner, the general green trust toward green products developed by consumers' previous experiences can interplay as a variable that biases their information processing of green advertisements. In other words, consumers can be influenced by their willingness to trust green products when evaluating green advertisements.

Hypotheses and Research Questions

Effects on Perceived Greenwashing

Previous research in green advertising has defined perceived greenwashing as the ability of consumers to detect greenwashing strategies from brands in advertisements (Schmuck et al., 2018). In other words, recipients perceive greenwashing when they notice that a brand promotes its environmental commitment, but its real performance does not correspond with what is communicated (Delmas & Burbano, 2011). In that regard, previous studies investigating misleading claims in green advertising support that false claims increase perceptions of greenwashing to a higher degree compared to other claims (e.g., Neureiter & Matthes, 2023) as false claims present affirmations that logically contradict the objective evidence of their arguments (e.g., these napkins have zero carbon emissions). In this way, recipients can recognize them as greenwashing by comparing the actual features of the product with what is claimed in the advertisement (Schmuck et al., 2018). According to the Schema Incongruity Processing Theory (Mandler, 1982), false affirmations are incongruent with receivers' schemata as they can logically verify that the information is wrong. When recipients process incongruent information with their schemata, their attention can potentially increase (Baker & Petty, 1994; Homer & Kahle, 1986), and they are more likely to follow the *central route* and elaborate on the arguments presented in the message in a detailed manner (Petty & Cacioppo, 1986). Besides, "false claims induce a mechanism of rational cognitive persuasion" when critically evaluating the claims of the advertisement (Schmuck et al., 2018, p. 129). This rational cognitive persuasion involves higher cognitive effort and, therefore, systematic information processing (Chaiken, 1980).

In contrast, substantiated claims present tangible and concrete information and present strong arguments when processing and evaluating the environmental features of a product. Related to that, claims containing specific information and meaningful benefits to the

environment can generate consumers' favorable attitudes to a higher degree than those with unspecific claims (Davis, 1993). Thus, considering argument quality, recipients may accept substantiated claims and consequently perceive greenwashing to a lower degree compared to false claims. In line with the ELM (Petty & Cacioppo, 1986) and the arguments exposed above, I introduce the following hypothesis:

H1: When participants are exposed to green advertisements including false claims, they will more likely perceive greenwashing compared to when being exposed to green advertisements including substantiated claims.

In addition to green claims, the messages of green advertisements can be gain or loss-framed in order to increase their persuasiveness. In that regard, the recipients' emotional response generated by the imagery of gain and loss frames may influence the direction of argument elaboration (Matthes, 2019) and moderate the effects of false (vs. substantiated) claims on perceived greenwashing. More specifically, on the one hand, loss frames may signal a risk to consumers, resulting in a higher involvement when processing the information of the green advertisements (Ropret Homar & Knežević Cvelbar, 2021). In consequence, this higher involvement may trigger the elaboration on the arguments of green claims and result in systematic information processing (Chaiken, 1980; Petty & Cacioppo, 1986). Therefore, loss frames may enhance the effects of false claims or substantiated claims.

However, gain frames may be more appealing as they can make the connection with a vital nature more salient than loss frames through nature imagery. Thus, this connection with nature may positively impact receivers' responses when evaluating green advertisements (e.g., Hartmann et al., 2013; Hartmann & Apaolaza-Ibáñez, 2009; Parguel et al., 2015). Besides, recipients may be more likely to positively assess messages that emphasize a desired goal because these messages are consistent with actions that could mitigate the risk of climate change (e.g., Detweiler et al., 1999; Millar & Millar, 2000; Segev et al., 2015). Furthermore,

gain frames lead to positive emotions, which may increase favorable responses when processing the information (Nabi et al., 2020). Additionally, gain frames may act as heuristics and enhance receivers' assessments when evaluating false claims and substantiated claims.

Due to the conflicting evidence, I introduce the following research question:

RQ1: How does the interaction between false claims (vs. substantiated claims) and gain frames (vs. loss frames) affect recipients' perceptions of greenwashing?

Apart from variables that serve as persuasive arguments or peripheral cues, there are other variables that can bias the elaboration of the messages when processing information (Petty & Cacioppo, 1986). More specifically, the green trust of recipients can influence their perceptions of greenwashing when assessing green claims, as the evaluation of green advertisements may depend on the initial receiver's environmental values and attitudes (Matthes, 2019). In that regard, consumers who trust green products are willing to rely on them, expecting the credibility, benevolence, and ability of the products to contribute to climate change mitigation (Chen, 2010). Previous research has shown a negative relationship between perceived greenwashing and green trust (Chen & Chang, 2012). However, there is no evidence whether initial consumers' green trust on green products can bias their evaluations of greenwashing.

According to the ELM (Petty & Cacioppo, 1986), when messages include information that is consistent with the initial attitudes of the receivers, high-involvement receivers should tend to elaborate in favor of the arguments presented in the messages. However, when receivers' initial attitudes are inconsistent with the information in the messages, high involvement receivers should be more likely to elaborate counterarguments to the arguments found in the messages. Thus, subjects who are skeptical toward green products may generally be negatively biased when evaluating green advertisements, and individuals who trust green products may tend to be positively biased when assessing them. Related to that, consumers

could have an initial favorable opinion when their green trust is high, leading them to generally perceive greenwashing to a lower degree even when processing false claims. However, consumers who trust green products may be more involved in green consumption (Matthes & Wonneberger, 2014) and consequently scrutinize the arguments presented in green advertising claims to a greater extent, respectively increasing the effects of false claims and substantiated claims. Due to the lack of evidence in previous research, I proposed the following research question:

RQ2: How does recipients' level of green trust affect recipients' perceptions of greenwashing in false claims (vs. substantiated claims)?

Effects on Brand Evaluation and Purchase Intentions

Gain vs. Loss

Previous studies on environmental decisions have shown that loss frames are more persuasive than gain frames in situations that require recipients' involvement (Ropret Homar & Knežević Cvelbar, 2021). However, gain frames have been found to be more influential when choices demand less commitment. In that regard, product decisions influenced by green advertising may involve less commitment to subjects as they do not pose any direct risk to consumers (Segev et al., 2015). The latter can be explained by recipients considering pro-environmental behaviors as preventative since they do not expect a near risk on the construal level (Loroz, 2007). Moreover, Kareklas and colleagues (2012) found that promotion-framed advertising messages (i.e., gain frames) together with environmental appeals were more effective when a collective focus was mentioned in the messages. Related to that, Thøgersen (2011) discovered that green consumption was associated with universal values, indicating that consumers buy green products for the 'common good'. In that regard, gain frames may make universal values more salient in green advertising, and consequently, they may be more effective than loss frames (e.g., Kareklas et al., 2012). Besides, individuals may be more

favorable to gain frames as they highlight a desired goal and the positive impact of engaging in actions congruent with mitigating the risk of, for example, climate change (Detweiler et al., 1999; Millar & Millar, 2000).

In line with previous findings in green advertising that generally support gain frames to be more persuasive than loss frames (e.g., Casado-Aranda et al., 2017; Segev et al., 2015) and the arguments mentioned above, I propose the following hypothesis:

H2: When participants are exposed to green ads with gain frames, their a) brand evaluation and b) green purchase intentions will be more favorable compared to when being exposed to loss frames.

Perceived Greenwashing

Perceived greenwashing threatens the integrity of environmentally sustainable goals in brands and societies (de Freitas Netto et al., 2020; Delmas & Burbano, 2011) as it can increase consumers' skepticism towards green brands (e.g., do Paço & Reis, 2012; Matthes & Wonneberger, 2014), resulting in consumers' lack of trust toward green advertising (e.g., De Sio et al., 2022). At the same time, perceiving greenwashing may negatively affect consumers' attitudes toward a brand and reduce purchase intentions (e.g., Chen & Chang, 2013; Matthes, 2019).

According to the Theory of Reactance (Brehm, 1966), negative cognitions can make receivers of persuasive messages react with reactance (e.g., Dillard & Shen, 2005). Thus, negative cognitions such as perceptions of misleading persuasive attempts in green advertisements (i.e., perceptions of greenwashing) can threaten consumers' freedom of choice. This may undermine their evaluations of the brands and intentions to purchase green products (e.g., Neureiter & Matthes, 2023). In that regard, the empirical evidence from previous research on green advertising demonstrates perceptions of greenwashing as a negative predictor of attitudes towards the brand and purchase intentions (e.g., Neureiter &

Matthes, 2023; Newell et al., 1998; Nyilasy et al., 2014; Rahman et al., 2015; Schmuck et al., 2018). In line with previous findings, I state the following hypothesis:

H3: Perceived greenwashing will decrease recipients' a) brand evaluation and b) green purchase intentions.

Effects on Political Consumerism

Political consumerism involves purchasing or avoiding certain products or services following a political purpose (Copeland & Boulianne, 2022). More specifically, individuals engage in political consumerism as a political response to companies that do not follow ethical and environmental practices or as a reward for those that adhere to sustainable standards (Stolle & Micheletti, 2013). Consumers can boycott brands when they dislike the environmental policies within a brand, or oppositely, buycott them when they consider that a product contributes to climate change mitigation.

Drawing on the Theory of Reactance (Brehm, 1966), perceptions of misleading attempts in green advertisements may trigger consumers to react with reactance and impose their freedom of choice when deciding to purchase products. Consequently, they may punish a brand when they perceive greenwashing intentions and reward other brands that are in line with their environmental and ethical values. In that matter, Neureiter and colleagues (2023) showed in a panel study that perceived greenwashing can motivate consumers to engage in political consumerism. Accordingly, I propose the following hypothesis:

H4: Perceived greenwashing increases recipients' political consumerism.

Method

Design and Procedure

For this investigation, I conducted an online experimental survey with a 2 X 2 between-subjects design to test the proposed hypotheses and research questions: 2 (false claims vs. substantiated claims) X (loss vs. gain frame). For data collection, I programmed an online questionnaire in Qualtrics. Qualtrics guaranteed the random assignment of the experimental condition to respondents. Since the study was conducted in Germany, participants were provided with the online questionnaire in German. Before starting with the data collection, the experimental design was supervised and approved by the Institutional Review Board of the Department of Communication at the University of Vienna (approval ID: 20220310_012). The final questionnaire can be found in Appendix B.

Sample

Participants were recruited with the help of the SoSci Panel, a non-representative pool of German interviewees that voluntarily support scientific and research projects at universities and colleges (Leiner, 2016). Before to proceed with the data collection, the SoSci Panel supervised and reviewed the online questionnaire for its optimization and best performance. The final sample consisted of $N = 394$ ($M_{age} = 49.87$, $SD = 15.21$; 54.3 % were female, 43.3% were male, 2.5 % were neutral gender; 27.2% completed lower education, 72.8% completed higher education). Respondents who did not pass the attention checks (e.g., “I have never used a computer before”, “My birthday is on February 30”) and did not finish the whole questionnaire were not included in the final sample. Besides, those who completed the questionnaire in less than one third of the median total time were excluded.

Stimulus

As stimulus material, I created fictional Instagram posts to manipulate the experimental factors. In addition, I used a multiple-message design to ensure external validity

(Reeves et al., 2016). Thus, each participant was exposed to two self-created advertisements from two fictious brands. For the purpose of the study, the items that were chosen for the green advertisements were low-involvement products. Therefore, one brand advertised toothbrushes, and the other one was about napkins. The claim experimental factor (false claim vs. substantiated claim) was manipulated in the caption of the Instagram posts. While the false claim condition contained an outright lie about the environmental features of the products (e.g., Retama napkins have no impact on your carbon footprint), the substantiated claim condition provided evidence about how the product contributed to the environment (e.g., at Retama, we have used 100% recycled paper, thus using fewer resources). The frame factor was manipulated on the Instagram image. The image showed a loss frame condition (e.g., without Retama napkins you contribute to the deforestation of trees) or a gain frame condition (e.g., with Retama napkins you help the trees grow). The combination of all conditions resulted in a total of eight different posts (please see Figures 2-5 to have an overview of the posts in Appendix A).

Measures

Before exposing participants to the stimulus material, they reported their trust toward green products. For measuring green trust, I adapted three items (McDonalds's $\omega = .96$, $M = 3.63$, $SD = 1.39$) from Chen and Chang (2012): "I feel that green products' environmental reputation is generally reliable"; "I feel that green products' environmental claims are generally trustworthy"; "Green products keep promises and commitments for environmental protection". Respondents evaluated the items on a 7-point Likert scale from 1 – strongly disagree to 7 – strongly agree. Afterward, the stimulus material was shown to participants.

After participants saw the stimulus material, they answered four items indicating to what extent respondents perceived greenwashing (McDonalds's $\omega = .88$, $M = 5.10$, $SD = 1.48$) inspired from Chen and Chang (2013), and Neureiter and Matthes (2023): "These ads

do not tell the truth about the products' environmental features"; "I have the feeling that these brands only pretend to care about the environment in the ads, but in reality, they do not"; "The brands sound more pro-environmental in the ads than they actually are"; "The brands create a misleading image in the ads when they claim to be environmentally friendly". Respondents answered to the items on a 7-point Likert scale from 1 – strongly disagree to 7 – strongly agree.

Afterward, the dependent variables were measured. First, participants evaluated each brand presented with 3 items on a seven-point semantic differential scale derived from Schmuck and colleagues (2018): unattractive – attractive; not likable – likable; not recommendable – recommendable. Since the focus of this study was not on the effects between the brands, but on the overall effect, I created one index with the 6 items (McDonalds's $\omega = .92$, $M = 3.05$, $SD = 1.42$). Second, participants expressed their willingness to buy the green products from the fictional Instagram posts by assessing 3 items for each brand adapted from Chen and Chang (2012): "I intend to buy SAX toothbrush/retama napkins because of its/their environmental concern"; "I intend to buy SAX toothbrush/Retama napkins in the future because of its/their environmental performance"; "Overall, I am glad to purchase SAX toothbrush/retama napkins because it is/they are environmentally friendly". Again, I created one index with the 6 resulting items (McDonalds's $\omega = .91$, $M = 2.20$, $SD = 1.33$) as the interest of this study was in the overall effect. Lastly, respondents answered 3 items (McDonalds's $\omega = .84$, $M = 4.33$, $SD = 1.49$) about political consumerism from Shah and colleagues (2007): "I will not buy a product from a company whose environmental values I do not share"; "I will boycott products or companies that are not sustainable"; "I will make a special effort to buy from companies that support climate change mitigation". Both measures, green purchase intentions, and political

consumerism were measured on a 7-point Likert scale from 1 – strongly disagree to 7 – strongly agree.

Manipulation Check

After being exposed to the stimulus material, respondents answered to two manipulation checks. The first one dealt with the claim manipulation (false claims vs. substantiated claims). I created 6 items in which participants indicated to what extent they recognized the claims in the captions from the Instagram posts ("This advertising message was used in one of the advertising posts..."): "That's why we offer the most eco-friendly toothbrush to make your toothbrushing experience as environmentally friendly as possible"; "At Retama, we want to dedicate ourselves to it [our planet] so you don't have to worry about choosing the most sustainable napkins"; "That's why we make our toothbrush from recycled plastic. At Retama, we used 100% recycled paper and thus used fewer resources"; "That's why we have the most elegant toothbrush to make the most of your experience"; "At Retama you will find the perfect napkins for all occasions and for every taste". Two items indicated the presence of greenwashed false claims, the other two items included substantiated claims, and the other two items contained claims unrelated to green advertising. The second manipulation check concerned the frame manipulation. I used 4 items inspired by Huang and colleagues (2019) and White and colleagues (2011): "The SAX promotional post focuses on the environmental benefits (helping to keep the oceans clean of plastic waste) when people use the SAX toothbrush"; "The Retama promotional post points out the positive consequences for the environment (growth of trees) when people buy the Retama napkins"; "The SAX promotional post focuses on the disadvantages (preventing the oceans from being kept clean of plastic waste) when people do not use the SAX toothbrush"; "The Retama promotional posting points out the negative consequences for the environment (deforestation of trees) when people do not buy the Retama napkins". ANOVAs for every item indicated

that the manipulation of the two experimental factors worked successfully (please see Tables 1 and 2 for the statistical results in Appendix A).

Randomization Check

Every participant was randomly assigned to an experimental condition. The random assignment was confirmed by the randomization check results of the control variables for both experimental factors: age (claim factor: $F(1, 392) = 0.33$, $p = .564$; frame factor: $F(1, 392) = 0.19$, $p = .663$), gender (claim factor: $\chi^2(3) = 2.72$, $p = .436$; frame factor: $\chi^2(3) = 1.41$, $p = .704$), and education (claim factor: $\chi^2(5) = 5.13$, $p = .400$; frame factor: $\chi^2(5) = 5.34$, $p = .376$).

Data Analysis

For testing the hypothesis and research questions, I used the statistical software SPSS. More specifically, I ran a moderated mediation analysis using PROCESS 4 macro model No. 10 with 10,000 bootstraps (Hayes, 2022). In the model, I defined the claim factor as the independent variable (0 = substantiated claim, 1 = false claim). As moderators, I inserted the frame factor (0 = gain frame, 1 = loss frame) and the continuous variable green trust. As a mediator, I used perceived greenwashing. In total, I ran 3 analyses, one for each dependent variable: brand evaluation, green purchase intentions, and political consumerism. In all the analyses, I controlled for respondents' age, education (0 = lower education, 1 = higher education), and gender. For gender, I introduced two dummy coded variables: female gender (0 = male, 0 = neutral, 1 = female) and neutral gender (0 = male, 0 = female, 1 = neutral). Below, I reported unstandardized regression coefficients (*b*).

Results

Recipients were more likely to perceive greenwashing when they saw advertisements with false claims compared to ads with substantiated claims (H1; $b = 0.66$, $p < .001$; 95% CI [.38, .93]). Moreover, the interaction between false claims and gain frames had a significant positive effect on perceived greenwashing (RQ1; $b = 0.62$, $p = .028$; 95% CI [.07, 1.17]). Thus, recipients perceived more greenwashing in advertisements with false claims (vs. substantiated claims) when the advertisements were gain-framed compared to loss-framed. In addition, independently of the experimental conditions (claims and frames), respondents who had higher levels of green trust perceived less greenwashing than those with lower levels ($b = -0.32$, $p < .001$; 95% CI [-.43, -.21]). In contrast, gain frames (vs. loss frames; $b = 0.13$, $p = .341$; 95% CI [-.14, 0.41]) and the interaction between false claims (vs. substantiated claims) and green trust (RQ2; $b = 0.05$, $p = .655$; 95% CI [-.17, .27]) had no significant effects on perceive greenwashing.

Moreover, when recipients perceived more greenwashing, they evaluated the brands more negatively (H3a; $b = -0.39$, $p < .001$; 95% CI [-.50, -.29]). Furthermore, independent from perceptions of greenwashing, respondents evaluated brands more negatively when they were exposed to advertisements with false claims compared to being exposed to ads with substantiated claims ($b = -0.43$, $p < .001$; 95% CI [-.67, -.18]). Additionally, recipients who were exposed to gain frames evaluated brands more positively than those who were exposed to loss frames (H2a; $b = 0.62$, $p < .001$; 95% CI [.39, .86]). Besides, respondents with higher levels of green trust evaluated the brands more positively than those with lower levels ($b = 0.11$, $p = .032$; 95% CI [.01, .20]). Regarding the interaction between false claims and green trust, recipients who were exposed to advertisements with false claims were more likely to negatively evaluate brands when they had higher levels of green trust than when having lower levels ($b = -0.38$, $p < .001$; 95% CI [-.56, -.20]). In opposition, the interaction between

false claims and gain frames (vs. loss frames) did not have a significant effect on brand evaluation (b = -0.44, p = .070; 95% CI [-.92, .04]).

Concerning green purchase intentions, when recipients perceived more greenwashing, their green purchase intentions decreased significantly (H3b; b = -0.34, p < .001; 95% CI [-.43, -.24]). Besides, respondents had fewer intentions to buy the green products presented in the advertisements when they saw false claims compared to substantiated claims (b = -0.39, p < .001; 95% CI [-.61, -.17]). However, recipients with higher levels of green trust were more likely to buy the green products presented in the advertisements compared to those with lower levels (b = 0.20, p < .001; 95% CI [.13, .28]). In addition, the interaction between false claims and gain frames (vs. loss frames) had a significant negative effect on green purchase intentions (b = -0.56, p = .012; 95% CI [-1.00, -.12]). Thus, respondents who were exposed to advertisements with false claims were less likely to purchase the green products when the advertisements were gain-framed compared to loss-framed. Similarly, the interaction between false claims and green trust had a significant negative effect on green purchase intentions (b = -0.29, p < .001; 95% CI [-.45, -.14]). Hence, recipients who were exposed to advertisements with false claims were less likely to purchase the products when they had higher trust towards green products than when having lower green trust. In contrast, gain frames (vs. loss frames) had not significant effect on green purchase intentions (H2b; b = 0.09, p = .432; 95% CI [-.13, .30]).

Lastly, when recipients perceived more greenwashing, they were more likely to engage in political consumerism (H5; b = 0.14, p = .009; 95% CI [.03, .24]). In addition, participants with higher levels of green trust were more likely to engage in political consumerism than those with lower levels (b = 0.40, p < .001; 95% CI [.28, .51]). Regarding the interaction between false claims and gain frames, participants who were exposed to advertisements with greenwashing false claims were more likely to engage in political

consumerism when the advertisements were gain-framed compared to loss-framed (b = 0.57, p = .046; 95% CI [.01, 1.14]). In contrast, false claims (vs. substantiated claims; b = 0.24, p = .106; 95% CI [-.05, 0.52]), gain frames (vs. loss frames; b = 0.08, p = .584; 95% CI [-.20, 0.36]), and the interaction between false claims and green trust (b = -0.13, p = .250; 95% CI [-.35, .09]) had not significant effects on political consumerism. Please see the plots of all the effects in Figures 6–9, Appendix A.

Discussion

Drawing on the ELM (Petty & Cacioppo, 1986) and based on the previous literature on green advertising, in this experimental study, I have tested the effects and interactions of false claims (vs. substantiated claims), gain frames (vs. loss frames), and green trust on perceived greenwashing. Subsequently, I have analyzed how perceived greenwashing is associated with brand evaluation, green purchase intentions, and political consumerism.

According to H1 expectations, false claims increased participants' perceptions of greenwashing to a higher extent compared to substantiated claims. As stated in previous research, one requirement to perceive greenwashing is the cognitive effort from the receivers of the message (Schmuck et al., 2018). In this sense, following the Schema Incongruity Processing Theory (Mandler, 1982), false claims present information that is logically wrong and incongruent with the recipients' schemata. Consequently, receivers' cognitive attention may rise, leading them to follow the central route when processing green advertisements and perceive greenwashing as a result (e.g., Neureiter & Matthes, 2023). Inversely, when dealing with substantiated claims in green advertisements, individuals are more likely to validate and positively assess the green advertisements, since these affirmations provide concrete and specific information about the characteristics of the products or manufacturing process (Davis, 1993). Thus, recipients can process substantiated claims as strong arguments, which can potentially enhance their evaluations of green advertisements.

Regarding RQ1, the subjects of this study perceived more greenwashing in advertisements with false claims (vs. substantiated claims) when the advertisements were gain-framed compared to loss-framed. Petty and Cacioppo (1986) discuss that although some variables (e.g., green claims) can be expected to have a specific role by acting as persuasive arguments or peripheral cues and activating the *central route* or the *peripheral route*, in some cases, they may alter according to the influence of other external factors (O'Keefe, 2012). In

that regard, individual contextual factors such as their initial attitudes and values, cognitive effort, and involvement can determine whether a variable is processed systematically elaborating on the arguments of the messages – i.e., *central route* – or using heuristics – i.e., *peripheral route* (Maclnnis & Jaworski, 1989; Payne et al., 1993; Samson & Voyer, 2012). For instance, when being exposed to false claims, receivers may elaborate on the information because noticing misleading information that is inconsistent with their schemata may trigger their need for cognition (e.g., Neureiter & Matthes, 2023; Schmuck et al., 2018). Following this logic, recipients may identify brand tactics and persuasive attempts when processing gain frames and being exposed to false claims. As a result of their cognitive effort, receivers may use their persuasion knowledge (Campbell & Kirmani, 2000; Friestad & Wright, 1994; Xie et al., 2015), considering gain frames as a greenwashing strategy. One explanation is that, although gain frames may make actions that can mitigate climate change risk more salient (e.g., Segev et al., 2015), recipients may view a brand that misleads about its environmental characteristics as not meeting the environmental needs of green consumers, making the relationship between the brand and the environmental goals of green consumers incongruent. In contrast, when exposed to substantiated claims, since the messages present strong arguments, receivers may simply use heuristics to validate and accept the information, not activating their persuasion knowledge when evaluating gain or loss frames.

Concerning RQ2, the interaction between false claims (vs. substantiated claims) and green trust did not affect participants' perceptions of greenwashing. Thus, the green trust of subjects had no influence on their assessment of false claims and substantiated claims. However, individuals with lower levels of green trust were generally more likely to perceive greenwashing than those with higher levels. These findings are in line with the ELM (Petty & Cacioppo, 1986), thus, the green trust from recipients can act as a variable that bias the evaluation of green advertisements and influence their perceptions of greenwashing. More

specifically, consumers who are willing to trust on green products can generally generate more favorable opinions towards green advertisements than those who do not rely on them (Chen & Chang, 2012; Chen, 2010; Chen & Chang, 2013).

Furthermore, the results of the study partially supported H2. On the one hand, gain frames enhanced bran evaluation to a higher degree than loss frames. On the other hand, gain frames did not influence participants green purchase intentions. These findings are consistent with those of previous studies on environmental decision making, whereby gain frames are more persuasive than loss frames in low-involvement choices (Ropret Homar & Knežević Cvelbar, 2021). Accordingly, previous research in green advertising has shown gain frames to enhance consumers' brand evaluation to a higher degree than loss frames (e.g., Casado-Aranda et al., 2017; Segev et al., 2015). However, in contrast to the results of Segev and colleagues (2015), gain frames (vs. frames) did not affect subjects' purchase intentions. This discrepancy may be due to the fact that behavioral choices, such as green purchase intentions, require more involvement than elaborating opinions on brands. In that regard, other variables may be more crucial in the influence of consumer green purchase intentions. For instance, the results of this study showed a positive association between participants' green trust and purchase intentions. Thus, consumers may be guided by their previous experiences with green products in terms of their credibility, benevolence, and ability to contribute to climate change mitigation (Chen, 2010), when considering whether to buy a product, rather than by peripheral cues such as gain or loss frames. These results are consistent with previous research that showed that green trust increased purchase intentions (Chen & Chang, 2013). In addition, consistently with H3 expectations, perceptions of greenwashing are related to worse brand evaluations and lower purchase intentions. Thus, when recipients perceive misleading persuasion attempts triggered by the use of misleading green claims (e.g., false claims), they

may feel that their freedom of choice is threatened and, consequently, act with reactance towards the green advertisement (Neureiter et al., 2023; Neureiter & Matthes, 2023).

Lastly, participants' political consumerism was positively associated with their perceptions of greenwashing. Thus, H4 was supported. According to the Theory of Reactance (Brehm, 1966), consumers who perceive greenwashing in green advertisements may politically response against companies that mislead about their environmental performance. In that regard, Neureiter and colleagues (2023) demonstrated in a previous study that perceptions of greenwashing were associated with boycott intentions, a subcategory of political consumerism (Copeland & Boulianne, 2022; Stolle & Micheletti, 2013). However, they did not find a significant relationship between perceived greenwashing and buycott intentions. This inconsistency in the results may be because a unidimensional construct was used to measure political consumerism in this study (Shah et al., 2007), not dividing boycott and buycott intentions into two subcategories. Additionally, subjects' green trust was positively correlated with their political consumerism. This finding is in line with previous research that showed that green consumers (i.e., consumers who trust green products) are highly involved in the processing of green advertisements (Matthes & Wonneberger, 2014), leading them to have a committed response against brands that mislead and do not meet their environmental standards.

Theoretical Implications

As Matthes (2019) has stated: "there is a great need for moderated mediation models to simultaneously model argument-based, affective, and greenwashing-related processes (i.e., mediators), while systematically varying content-related and consumer-related boundary conditions (i.e., moderators)" (p. 99). With that concern and drawing on the ELM (Petty & Cacioppo, 1986), this study has investigated for the first time the moderation role of gain and loss frames and green trust on the assessment of perceived greenwashing in green claims (i.e.,

false claims and substantiated claims). Besides, this experiment has tested how perceived greenwashing mediated the effects of green claims on recipients' brand evaluation, green purchase intentions, and political consumerism. Thus, this experiment contributes to the existing knowledge in green advertising research by providing new insights on how content-related variables such as gain and loss frames and consumer conditions such as their green trust influence individuals' perceptions of greenwashing on the claims of green advertisements. Moreover, the findings of this study are in line previous research that states that the role of variables in information processing can shift from persuasive arguments to peripheral cues according to contextual factors, activating the *central route* or the *peripheral route* (e.g., Maclnnis & Jaworski, 1989; O'Keefe, 2012; Payne et al., 1993; Samson & Voyer, 2012). More precisely, the participants of this study processed green claims differently depending on whether they were false or substantiated. Thus, when they were exposed to false claims, they seemed to treat those as persuasive arguments. However, when they were encountered to substantiated claims, they could simply accept them by using heuristics.

Furthermore, previous experimental research in environmental decision-making (e.g., green consumption, recycling intentions, pro-environmental behavior) has mainly used text stimuli for manipulating gain and loss frames (Ropret Homar & Knežević Cvelbar, 2021), being only a few that have employed image manipulation (e.g., Ahn et al., 2015; Mir et al., 2016). This experiment has contributed to this line of research, going beyond than previous studies on green advertising investigating gain and loss frames (e.g., Casado-Aranda et al., 2017; Kareklas et al., 2012; Segev et al., 2015).

Lastly, previous studies have found that nature imagery can mislead consumers and be as greenwashing strategy, developing an implicit connection between products and nature (e.g., Parguel et al., 2015; Schmuck et al., 2018). Consistently, gain frames may be expected to have a similar effect by presenting a vital nature as consequence of a particular action and

enhancing the connection between the consumer and nature (e.g., Kareklas et al., 2012; Segev et al., 2015). However, this study has not found gain frames to diminish perceptions of greenwashing compared to loss frames.

Practical Implications

The results of this study encourage companies in the framework of environmental sustainability to use a fair communication of the environmental benefits of their products and manufacturing processes by using substantiated claims that provide specific and tangible information to consumers. Those brands that experience difficulties and challenges to adapt their processes to environmental sustainability – especially those that offer products or bring services that are inherently harmful to the environment (e.g., oil and gas companies, airlines) – may refrain from simply enhancing their corporative image by using greenwashing strategies, as consumers can potentially detect them, decreasing their brand evaluations and purchase intentions and raising their political consumerism. In that concern, persuasion techniques such as the use of gain and loss frames may not be effective when the companies mislead about their benefits for climate change mitigation. Rather, brands should focus on provide transparent information of their products and how they can improve the climate change situation.

Furthermore, the focus on green trust of this study alarms the current state of green consumption. This study has shown that those consumers who do not trust green products are negatively biased when evaluating and considering purchasing them, even when they are exposed to substantiated claims. The general lack of green trust supposes challenges and disadvantages for those brand that make efforts to contribute to the climate change mitigation. Therefore, current societies should create more awareness of green consumption and provide education on persuasion techniques that are used in green advertising. This will

support consumers to better apply their persuasion knowledge when encountering green advertisements.

Limitations and Future Directions

As every study, this one also faces limitations. First, the external validity of the results may be limited as false claims may be not too often presented in green advertising. Further studies should explore the interaction of gain and loss frames and green trust with other types of green claims and test the effects on perceive greenwashing. For instance, compensation claims may be reinforced by gain frames as they could give the wrong impression to consumers that they are taking action in fighting climate change. Besides, recipients may distinguish false claims from substantiated claims, however it is not clear whether consumers can recognize substantiated claims from other misleading green claims (e.g., vague claims, compensation claims). Thus, further studies might explore consumers' cognitive capacities to recognize green claims. In addition, receivers' persuasion knowledge may be measured in future experimental research, providing a better understanding on the underlying mechanisms of different persuasion techniques employed in green advertising (e.g., gain frames and loss frames, nature imagery, green claims).

Furthermore, despite the connection between gain and loss frames and emotions (e.g., Nabi et al., 2020), this study has not analyzed receivers' emotional responses when being exposed to gain and loss frames. In that concern, emotions could shed light on the influence of gain and loss framing on green consumers' evaluations. Bearing in mind the relationship between emotions and gain and loss frames, further studies using experimental set-ups with immersive technologies (e.g., Ahn et al., 2015) may be considered due to the expectation of strong emotional responses and the rise of virtual reality and augmented reality in the promotion of green consumption (e.g., Meijers et al., 2022, 2023; Smit et al., 2021).

Lastly, this study has used self-reports to measure behaviors such as green purchase intentions and political consumerism. Future research in green advertising may use more sophisticated measurements than self-reports to investigate consumer behavior. Measuring real behaviors may contribute to a better understanding of the green consumption attitude-behavior gap and bring practical implications to close it.

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Appendix A

Table 1.

Manipulation Check I (Greenwashed False Claims vs. Substantiated Claims)

	Were these promotional messages used? This advertising message was used in one of the advertising posts...					
	That's why we offer the most eco-friendly toothbrush to make your toothbrushing experience as environmentally friendly as possible.	*At Retama, we want to dedicate ourselves to it [our planet] so you don't have to worry about choosing the most sustainable napkins.*	*That's why we make our toothbrush from recycled plastic.*	*At Retama, we used 100% recycled paper and thus used fewer resources.*	*That's why we have the most elegant toothbrush to make the most of your experience.*	*At Retama you will find the perfect napkins for all occasions and for every taste.*
Claim Condition	*M (SD)*					
False Claims	**5.07 (2.19)**	**4.83 (2.25)**	2.33 (2.07)	2.21 (1.93)	**1.36 (1.06)**	1.51 (1.24)
Substantiated Claims	2.52 (2.06)	2.12 (1.81)	**5.92 (1.91)**	**5.95 (1.86)**	1.17 (0.77)	1.40 (1.16)
	F (1, 392) = 142.01 $p < 0.001$	F (1, 392) = 174.26 $p < 0.001$	F (1, 392) = 321.15 $p < 0.001$	F (1, 392) = 384.40 $p < 0.001$	F (1, 392) = 4.38 $p < 0.05$	F (1, 392) = 0.76 $p = 0.38$

Note. ANOVA test results for all the items in Manipulation Check I.

Table 2.

Manipulation Check II (Gain Frame vs. Loss Frame)

	The SAX promotional post focuses on the environmental benefits (helping to keep the oceans clean of plastic waste) when people use the SAX toothbrush.	The Retama promotional post points out the positive consequences for the environment (growth of trees) when people buy the Retama napkins.	The SAX promotional post focuses on the disadvantages (preventing the oceans from being kept clean of plastic waste) when people do not use the SAX toothbrush.	The Retama promotional posting points out the negative consequences for the environment (deforestation of trees) when people do not buy the Retama napkins.
Frame Condition	*M (SD)*			
Gain Frame	**5.73 (1.91)**	**5.53 (2.04)**	3.03 (2.24)	2.63 (2.09)
Loss Frame	3.71 (2.50)	2.91 (2.29)	**6.05 (1.78)**	**5.88 (1.86)**
	F (1, 392) = 81.37 $p < 0.001$	F (1, 392) = 144.80 $p < 0.001$	F (1, 392) = 216.14 $p < 0.001$	F (1, 392) = 262.00 $p < 0.001$

Note. ANOVA test results for all the items in Manipulation Check II.

Table 3.

Overview of the Regression Model Results

Variables	Perceive Greenwashing		Brand Evaluation		Green Purchase Intentions		Political Consumerism	
	b	*SE*	*b*	*SE*	*b*	*SE*	*b*	*SE*
False Claims[1]	**0.66*** **	0.14	**-0.43*** **	0.13	**-0.39*** **	0.11	0.24	0.15
Gain Frame[2]	0.13	0.14	**0.62*** **	0.12	0.09	0.11	0.08	0.14
Green Trust	**-0.32*** **	0.05	**0.11***	0.05	**0.20*** **	0.04	**0.39*** **	0.06
Age	0.01	0.01	.004	.004	-0.01	.004	.005	.004
Education	-0.20	0.16	-0.09	0.13	0.12	0.12	0.17	0.16
Female Gender[3]	0.09	0.14	0.03	0.12	0.04	0.12	0.22	0.15
Neutral Gender[4]	-0.24	0.64	-0.43	0.47	0.11	0.40	0.78	0.4
False Claims * Gain Frame	**0.62***	0.28	-0.44	0.24	**-0.56***	0.22	**0.57***	0.29
False Claims * Green Trust	0.05	0.11	**-0.38*** **	0.09	**-0.29*** **	0.08	-0.13	0.11
Perceived Greenwashing			**-0.39*** **	0.05	**-0.34*** **	0.05	**0.14** **	0.05
	$R^2 = 0.17$ F (9, 384) = 11.16		$R^2 = 0.35$ F (10, 383) = 23.85		$R^2 = 0.35$ F (10, 383) = 16.07		$R^2 = 0.16$ F (10, 383) = 6.8	

Note. SPSS PROCESS 4 macro model No. 10 using 10,000 bootstraps; $N = 394$; *** $p < .001$; ** $p < .01$; * $p < .05$.

[1] Substantiated claims condition defined as a reference group.
[2] Loss frame condition defined as a reference group.
[3] Male and neutral gender defined as reference groups.
[4] Male and female gender defined as reference groups.

Figure 1.

Theoretical Model

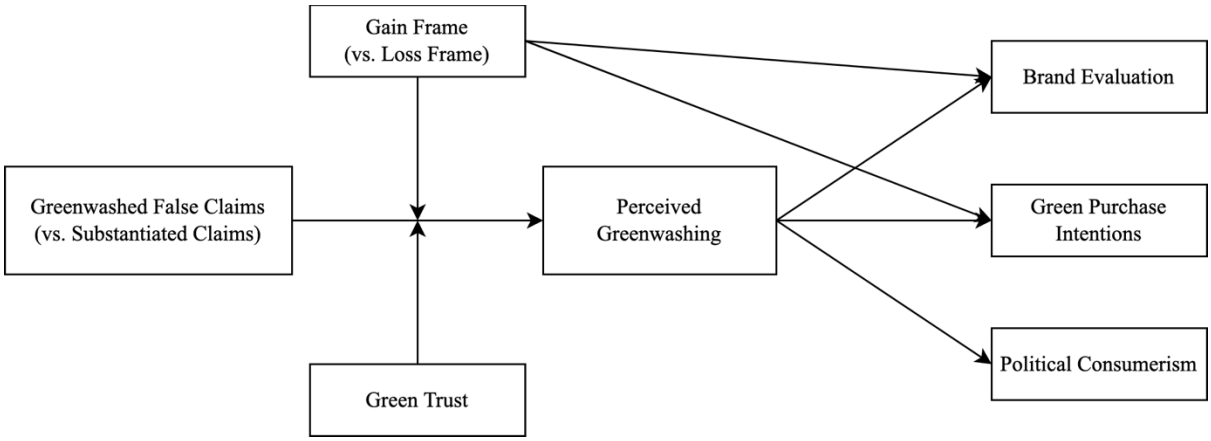


Figure 2.

False Claim and Loss Frame Conditions

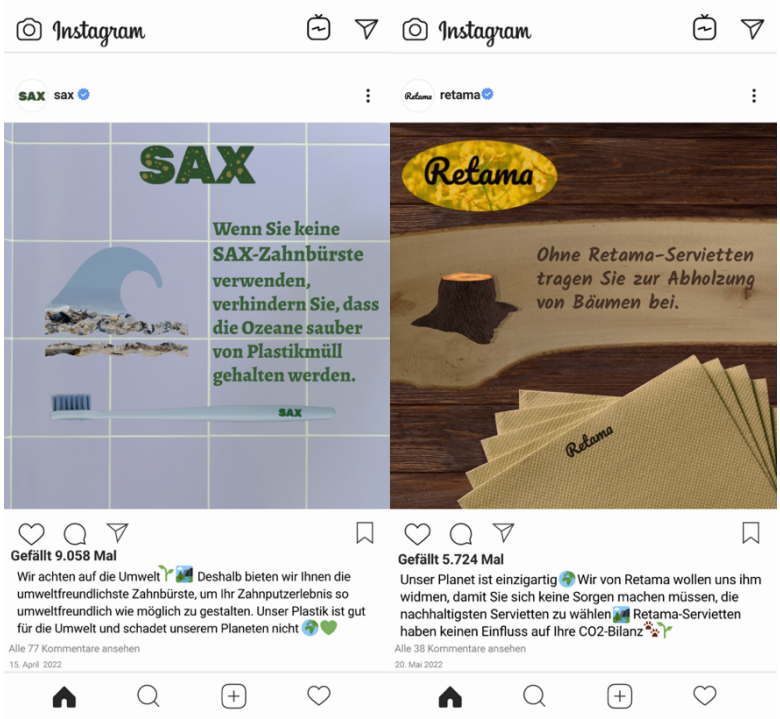


Figure 3.

Substantiated Claim and Loss Frame Conditions

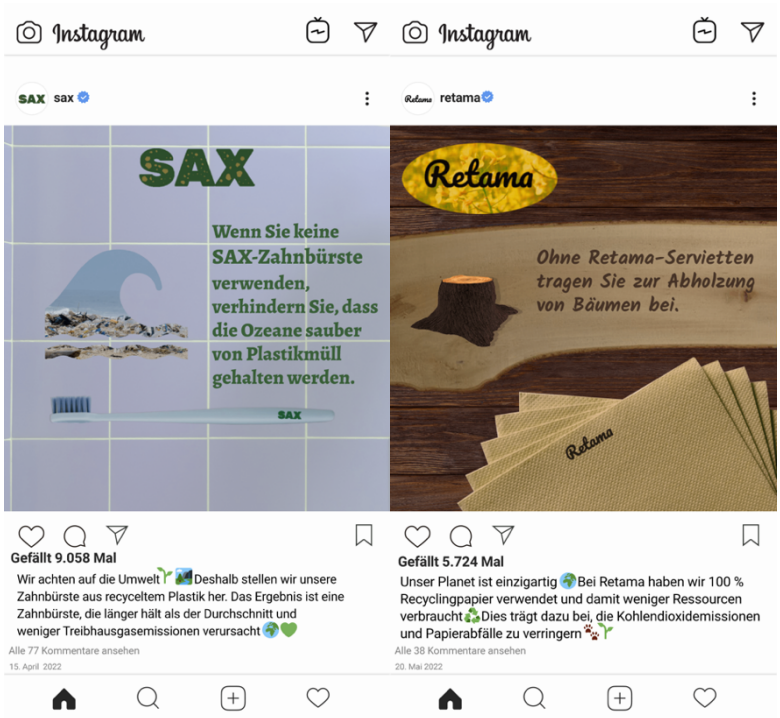


Figure 4.

False Claim and Gain Frame Conditions

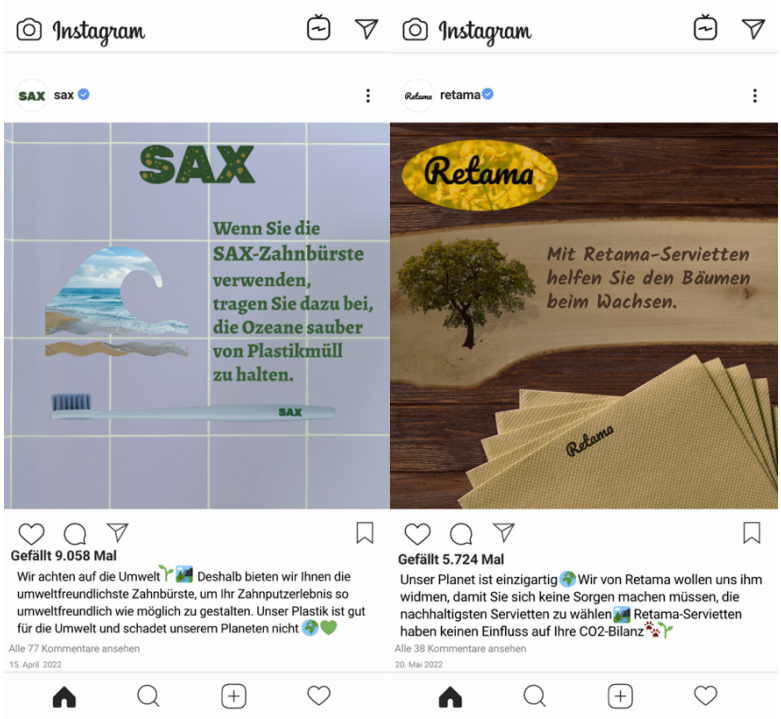


Figure 5.

Substantiated Claim and Gain Frame Conditions

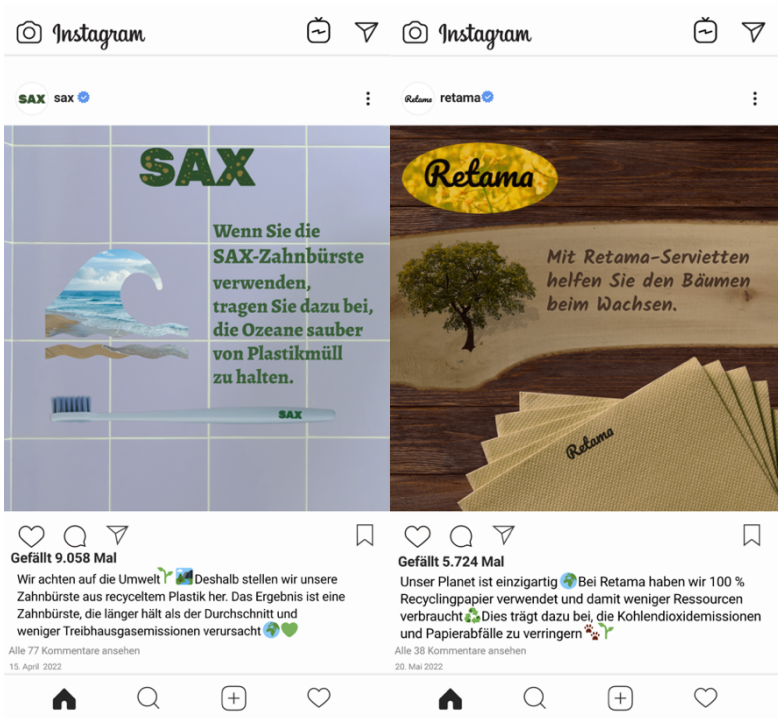


Figure 6.

Moderation for Perceived Greenwashing

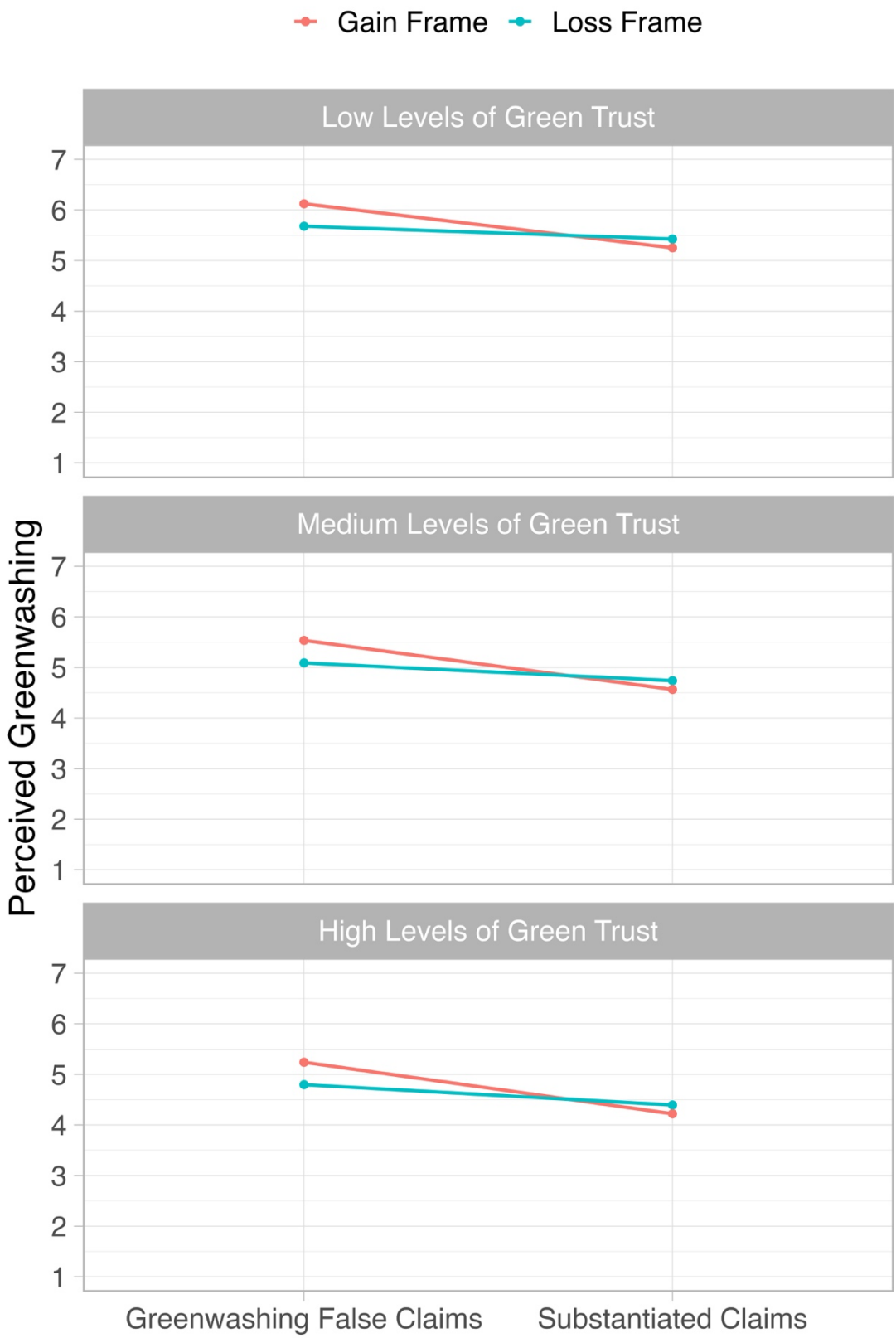


Figure 7.

Moderation for Brand Evaluation

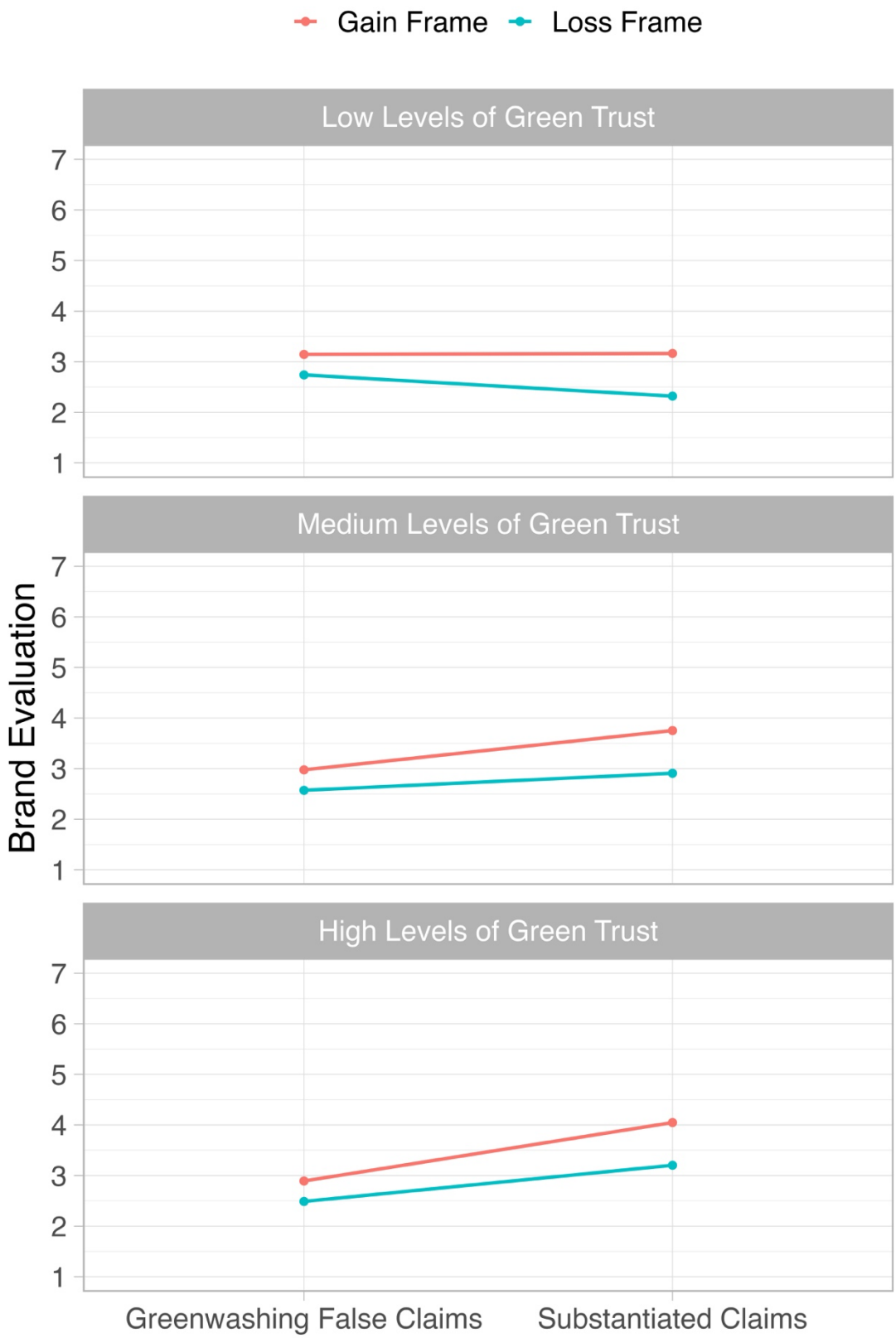


Figure 8.

Moderation for Green Purchase Intentions

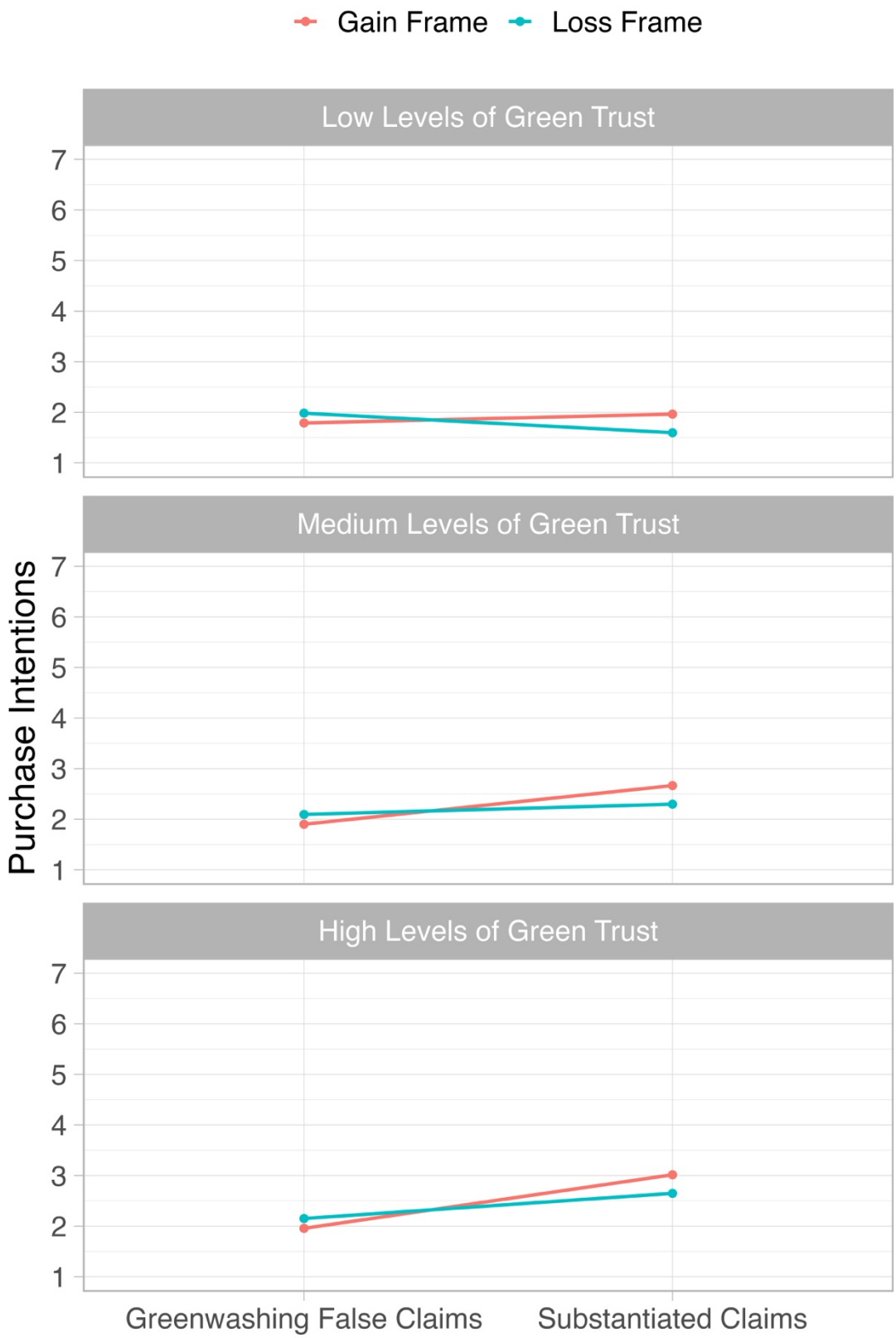
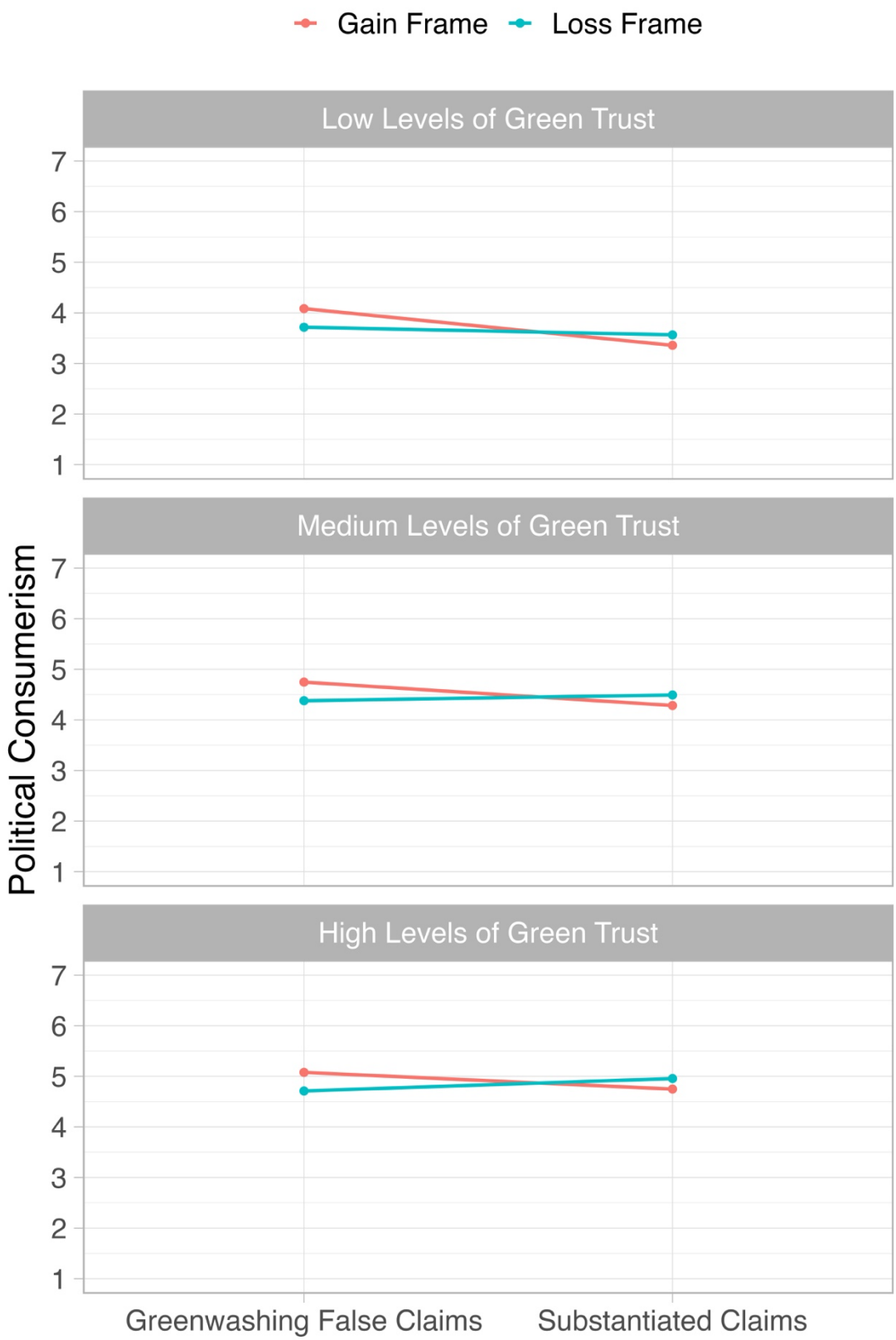


Figure 9.

Moderation for Political Consumerism



Appendix B

Information

Liebe Teilnehmerin, lieber Teilnehmer,

wir freuen uns über Ihr Interesse an dieser Studie von Wissenschaftlerinnen und Wissenschaftlern des Instituts für Publizistik- und Kommunikationswissenschaft der Universität Wien teilzunehmen!

In dieser Studie wird untersucht, wie die Menschen Grüne Werbepostings in sozialen Netzwerken wahrnehmen. Generell beinhaltet Grüne Werbung Werbebotschaften, die entweder eine positive Beziehung zwischen einem Produkt oder Dienstleistung und der Umwelt suggerieren, einen grünen Lebensstil bewerben oder ein positives Umweltimage des Unternehmens präsentieren.

Wir bitten Sie, die Fragen aufmerksam durchzulesen und zu beantworten. Der Fragebogen dauert in etwa **15 Minuten.**

Wir bitten Sie, den Zurück-Button im Browser während der Untersuchung keinesfalls zu betätigen, da dies zu Problemen mit der Datenerfassung führen könnte.

Kontaktinformationen:
XXXXXXXXXXXXXXXXXXX

Einverständniserklärung

Bevor Sie mit dem Fragebogen beginnen, möchten wir Sie auf einige Punkte aufmerksam machen.

Ihre Daten werden ausschließlich auf Grundlage der gesetzlichen Bestimmungen (§ 2f Abs 5 FOG) erhoben und verarbeitet. Sie haben folgende persönlichen Rechte im Rahmen dieser Befragung:

- Die Teilnahme an der Studie ist freiwillig. Sie können den Fragebogen jederzeit abbrechen.
- Ihre Teilnahme ist anonym, Ihre Antworten können nicht auf Sie zurückgeführt werden und werden streng vertraulich behandelt.
- Das bedeutet ebenfalls, dass Ihr persönlicher Datensatz nach Abschluss der Befragung für uns nicht identifizierbar ist. Falls Sie nach der Studie Auskunft über Ihre Daten haben oder Ihre Teilnahme zurückziehen möchten, bitten wir Sie, dies im abschließenden Kommentarfeld (falls nötig gemeinsam mit einer Kontaktadresse) zu vermerken.
- Ihre Daten werden ausschließlich für wissenschaftliche Zwecke verwendet. Die Forschung folgt keinem kommerziellen Interesse.

- Wir behandeln all Ihre Daten streng vertraulich.

Damit Sie an dieser Studie teilnehmen können, benötigen wir Ihr Einverständnis.

☐ Ich wurde über meine Rechte im Rahmen der Untersuchung aufgeklärt und möchte nun fortfahren.

Moderators

Green Trust [3]

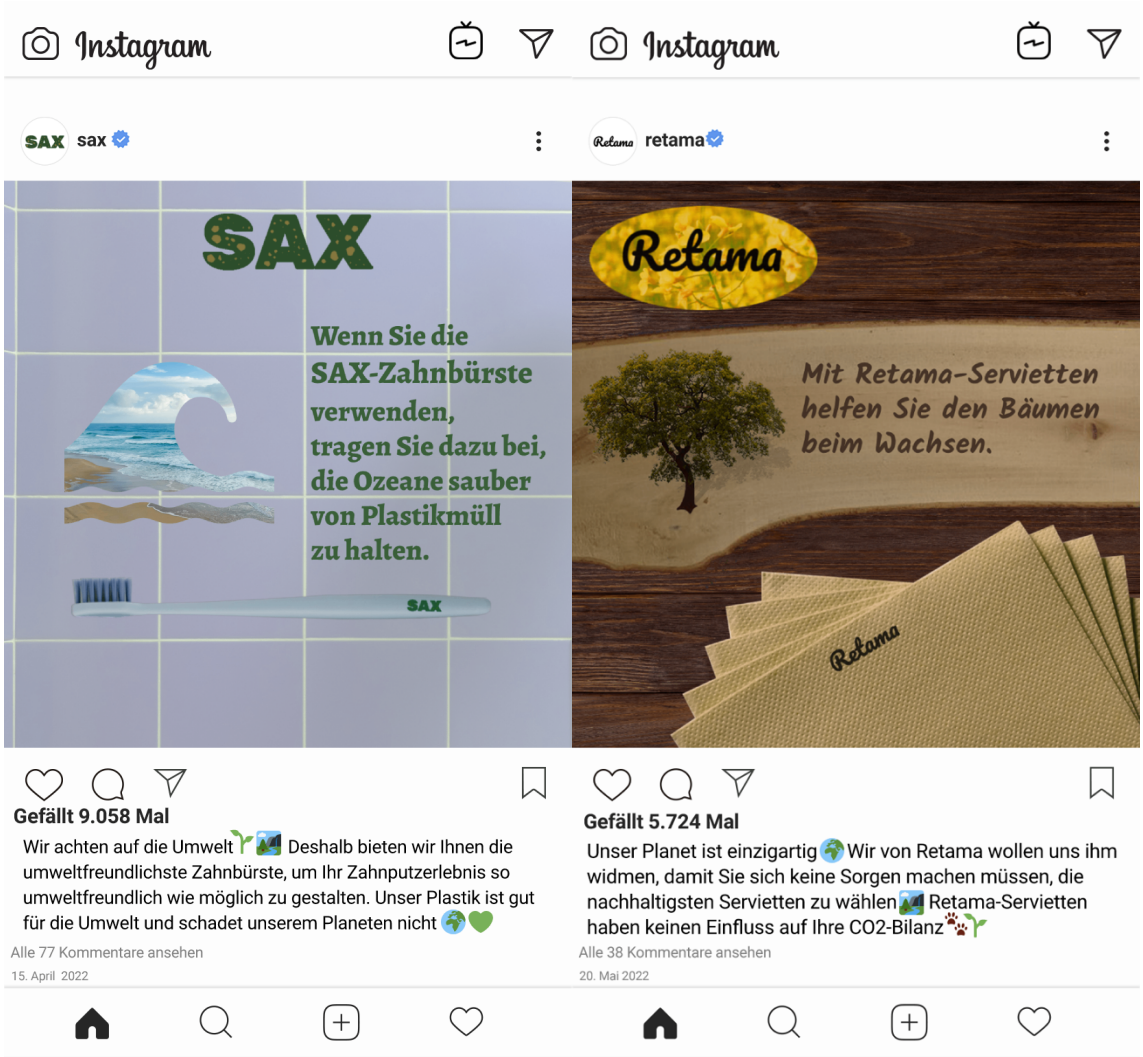
Die nächsten Aussagen beziehen sich auf Ihr Vertrauen in Grüne Produkte – Produkte, die weniger schädlich für die Umwelt sind. Antworten Sie bitte mit "1 – Stimme überhaupt nicht zu" bis "7 – Stimme voll und ganz zu“, wie stark Sie diesen Aussagen zustimmen.

	Stimme überhaupt nicht zu	**2**	**3**	**4**	**5**	**6**	**Stimme voll und ganz zu**
Ich bin der Meinung, dass der ökologische Ruf von Grünen Produkten im Allgemeinen zuverlässig ist.	☐	☐	☐	☐	☐	☐	☐
Ich glaube, dass die Umweltaussagen von Grünen Produkten im Allgemeinen vertrauenswürdig sind.	☐	☐	☐	☐	☐	☐	☐
Grüne Produkte halten Versprechen und Verpflichtungen zum Schutz der Umwelt ein.							

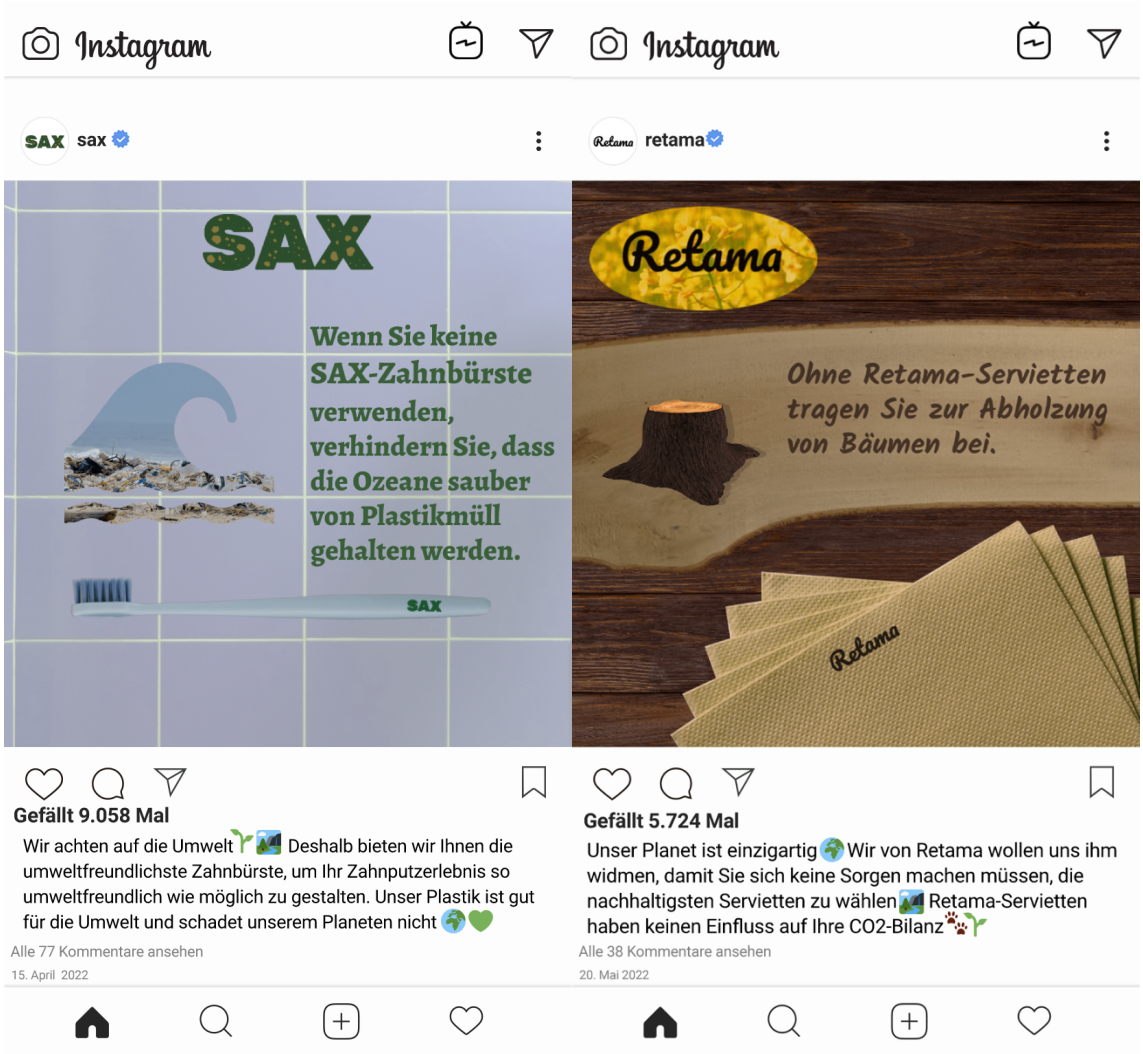
Stimuli

Im nächsten Teil sehen Sie zwei Werbepostings von Produkten des täglichen Lebens. Bitte lesen Sie den Inhalt jedes Beitrags sorgfältig durch. Wir werden Ihnen später Fragen dazu stellen.

Greenwashed Werbung/ Gewinn-Frame



Greenwashed Werbung/ Verlust-Frame



Nicht-Greenwashed Werbung/ Gewinn-Frame

Nicht-Greenwashed Werbung/ Verlust-Frame

Manipulation-Checks

(Nicht)Greenwashed Forderungen (Manipulationchecks I) [6]

Versuchen Sie sich nun bitte an die Werbepostings zu erinnern, die Sie gerade gesehen haben. Beurteilen Sie bitte, welche der folgenden Aussagen in den Werbepostings vorkamen. Wurden diese Werbebotschaften benutzt? Diese Werbebotschaft wurde in einem der Werbepostings benutzt...

	Stimme überhaupt nicht zu	**2**	**3**	**4**	**5**	**6**	**Stimme voll und ganz zu**
"Deshalb bieten wir Ihnen die umweltfreundlichste Zahnbürste, um Ihr Zahnputzerlebnis so umweltfreundlich wie möglich zu gestalten."	☐	☐	☐	☐	☐	☐	☐
"Deshalb stellen wir unsere Zahnbürste aus recyceltem Plastik her."	☐	☐	☐	☐	☐	☐	☐
"Deshalb haben wir die eleganteste Zahnbürste, um das Beste aus Ihrem Erlebnis zu machen."	☐	☐	☐	☐	☐	☐	☐
"Wir von Retama wollen uns ihm [unser Planet] widmen, damit Sie sich keine Sorgen machen müssen, die nachhaltigsten Servietten zu wählen."	☐	☐	☐	☐	☐	☐	☐
"Bei Retama haben wir 100 % Recyclingpapier verwendet und damit weniger Ressourcen verbraucht."	☐	☐	☐	☐	☐	☐	☐
"Bei Retama finden Sie die perfekten Servietten für alle Anlässe und für jeden Geschmack."	☐	☐	☐	☐	☐	☐	☐

Verlust-Frame und Gewinn-Frame (Manipulationchecks II) [4]

Bitte versuchen Sie, sich an den Inhalt der vorgestellten Werbepostings zu erinnern und bewerten Sie die folgenden Aussagen von "1 – stimme überhaupt nicht zu bis "7 – stimme voll und ganz zu".

	Stimme überhaupt nicht zu	2	3	4	5	6	Stimme voll und ganz zu
Das SAX-Werbeposting konzentriert sich auf die Vorteile für die Umwelt (Beitrag zur Sauberhaltung der Ozeane vom Plastikmüll), wenn Menschen die SAX-Zahnbürste verwenden.	☐	☐	☐	☐	☐	☐	☐
Das SAX Werbeposting konzentriert sich auf die Nachteile (Verhinderung der Sauberhaltung der Ozeane vom Plastikmüll), wenn Menschen keine SAX-Zahnbürste verwenden.	☐	☐	☐	☐	☐	☐	☐
In dem Retama-Werbeposting wird auf die positiven Folgen für die Umwelt (Wachstum der Bäume) hingewiesen, wenn Menschen die Retama-Servietten kaufen.	☐	☐	☐	☐	☐	☐	☐
In dem Retama-Werbeposting wird auf die negativen Folgen für die Umwelt (Abholzung von Bäumen) hingewiesen, wenn Menschen die Retama-Servietten nicht kaufen.	☐	☐	☐	☐	☐	☐	☐

Mediators

Perceived Green Washing [4]

Bitte denken Sie bei der Bewertung der folgenden Aussagen noch einmal an die Werbepostings zurück, die Sie gerade gesehen haben. Antworten Sie bitte mit "1 – Stimme überhaupt nicht zu" bis "7 – Stimme voll und ganz zu“, wie stark Sie diesen Aussagen zustimmen.

	Stimme überhaupt nicht zu	2	3	4	5	6	Stimme voll und ganz zu
Die Werbepostings sagen nicht die Wahrheit über die Umwelteigenschaften der Produkte.	☐	☐	☐	☐	☐	☐	☐
Ich habe das Gefühl, dass die Marken in der Werbung nur vorgeben, sich um die Umwelt zu kümmern, aber in Wirklichkeit tun sie das nicht.	☐	☐	☐	☐	☐	☐	☐
Die Marken klingen in der Werbung umweltfreundlicher als sie es tatsächlich sind.	☐	☐	☐	☐	☐	☐	☐
Die Marken vermitteln in der Werbung ein irreführendes Bild, wenn sie behaupten, umweltfreundlich zu sein.	☐	☐	☐	☐	☐	☐	☐
(*Attention Check 2*): Ich habe noch nie einen Computer benutzt.	☐	☐	☐	☐	☐	☐	☐

Abhängige Variablen

Brand evaluation [4]

Nun möchten wir Sie bitten, die Marke aus dem Werbeposting von SAX-Zahnbürste/Retama-Servietten, das Sie gerade gesehen haben, anhand der folgenden Adjektive zu bewerten.

	1	2	3	4	5	6	7	
unattraktiv	□	□	□	□	□	□	□	**attraktiv**
nicht sympathisch	□	□	□	□	□	□	□	**sympathisch**
nicht empfehlenswert	□	□	□	□	□	□	□	**empfehlenswert**

Green Purchase Intentions [3]

(

Die nächsten Aussagen beziehen sich auf Ihre Absicht, das Produkt aus dem Werbeposting von SAX-Zahnbürste/Retama-Servietten, das Sie gerade gesehen haben, zu kaufen. Bitte beantworten Sie mit "1 - stimme überhaupt nicht zu" bis "7 - stimme voll und ganz zu", wie stark Sie diesen Aussagen zustimmen.

	Stimme überhaupt nicht zu	**2**	**3**	**4**	**5**	**6**	**Stimme voll und ganz zu**
Ich beabsichtige, die SAX-Zahnbürste/Retama-Servietten zu kaufen, aufgrund ihrer umweltfreundlichen Eigenschaften.	□	□	□	□	□	□	□
Ich beabsichtige, SAX-Zahnbürste/Retama-Servietten in Zukunft zu kaufen aufgrund ihrer ökologischen Leistung.	□	□	□	□	□	□	□
Wenn ich die SAX-Zahnbürste/Retama-Servietten gekauft habe, werde ich insgesamt froh sein, da sie umweltfreundlich ist/sind.	□	□	□	□	□	□	□

Political consumerism [3]

(Shah et al., 2007)

Bitte bewerten Sie die folgenden Aussagen von "1 – Stimme überhaupt nicht zu" bis "7 – Stimme voll und ganz zu”.

	Stimme überhaupt nicht zu	**2**	**3**	**4**	**5**	**6**	**Stimme voll und ganz zu**
Ich werde kein Produkt von einem Unternehmen kaufen, dessen ökologische Werte ich nicht teile.	☐	☐	☐	☐	☐	☐	☐
Ich werde Produkte oder Unternehmen boykottieren, die nicht nachhaltig sind.	☐	☐	☐	☐	☐	☐	☐
Ich werde mich besonders bemühen, bei Unternehmen einzukaufen, die den Klimaschutz unterstützen.	☐	☐	☐	☐	☐	☐	☐
(*Attention Check 3*): Mein Geburtstag ist am 30. Februar.							

Demographische Daten

Zunächst bitten wir Sie um einige Angaben zu Ihrer Person.

Wie alt sind Sie? Bitte geben Sie Ihr Alter in Ziffern an.

____

Zu welchem Geschlecht fühlen Sie sich zugehörig?

☐ Männlich

☐ Weiblich

☐ Keine Angabe

☐ Divers

Was ist Ihr höchster Bildungsabschluss?

☐ Ohne Schulabschluss

☐ Haupt-/Volksschule

☐ Mittlere Reife/Realschule

☐ Berufsschule

☐ Abitur/Fachabitur

☐ Fachhochschule/Berufsakademie

☐ Universität

Hinweise

Sehr geehrte Teilnehmerin, sehr geehrter Teilnehmer!

Herzlichen Dank für Ihre Teilnahme!

Im Laufe der Befragung haben wir Ihnen Werbepostings von Unternehmen auf Sozialen Netzwerken gezeigt. Die Unternehmen und angebotenen Produkte bzw. Services existieren in der Realität in dieser Form nicht und sind von den Forscher*innen zum Zwecke dieser Studie entwickelt worden.

Die Werbebotschaften bzw. die Werbebilder, die Sie gesehen haben, haben teilweise übertriebene, irreführende, oder sogar falsche Aussagen bzgl. des Umweltnutzens des beworbenen Produktes, Services oder Unternehmens beinhaltet bzw. suggeriert. Insbesondere sahen einige Teilnehmer*innen die grünen Werbepostings mit einem Gewinnrahmen und andere mit einem Verlustrahmen. Außerdem sahen einige Teilnehmer*innen Beiträge mit falschen Behauptungen über die Umwelteigenschaften der Produkte und andere mit begründeten Behauptungen. Diese Studie konzentrierte sich darauf, wie diese Faktoren die Meinung der Empfänger über grüne Werbung beeinflussen.

Falls Sie sich über substantielle nachhaltige Konsummöglichkeiten informieren wollen, dann folgen Sie bitte den folgenden Internetlinks:
https://www.nachhaltigkeitsrat.de/nachhaltige-entwicklung/nachhaltiger-konsum/ ,
https://www.greenpeace.org/international/tag/consumption/

Gibt es noch etwas, das Sie abschließend zum Fragebogen sagen möchten?
_____

Vielen Dank für die Teilnahme!

Um den Fragebogen zu beenden klicken Sie bitte noch ein letztes Mal auf den "Weiter"-Button.

Kontaktinformationen:
XXXXXXXXXXXXXXXXXXX

Abstract

As the global interest in environmental sustainability rises, brands have employed strategies such as the use of green claims or frames to enhance their environmental image and influence consumers' cognitions, attitudes, and behaviors. In that regard, some of the practices in green advertising have resulted in greenwashing, misleading consumers, and decreasing their trust in green products. Drawing on the Elaboration Likelihood Model (Petty & Cacioppo, 1986), this master thesis investigates how green claims, gain and loss frames and green trust interact and impact the persuasion effects of green advertisements on individuals. More specifically, this study examines the effects of those variables on perceived greenwashing and, subsequently, on brand evaluation, green purchase intentions, and political consumerism. For that purpose, I conducted a between-subjects online experiment: 2 (false claims vs. substantiated claims) X 2 (gain frame vs. loss frame). Results showed an interaction effect of false claims (vs. substantiated claims) and gain frames (vs. loss frames) on perceived greenwashing. Moreover, perceived greenwashing was associated with less favorable brand evaluations and purchase intentions and an increase in political consumerism.

Keywords: Green Advertising Claims; Gain and Loss Frames; Green Trust; Perceived Greenwashing; Experiment

Zusammenfassung

Im Zuge des weltweit zunehmenden Interesses an ökologischer Nachhaltigkeit haben Marken Strategien wie die Verwendung grüner Werbeaussagen oder Frames eingesetzt, um ihr Umweltimage zu verbessern und die Erkenntnisse, Einstellungen und Verhaltensweisen der Verbraucher zu beeinflussen. In dieser Hinsicht haben einige der Praktiken der grünen Werbekampagnen zu Greenwashing geführt, die Verbraucher in die Irre geführt und ihr Vertrauen in grüne Produkte geschwächt haben. Auf der Grundlage des Elaboration Likelihood Model (Petty & Cacioppo, 1986) wird in dieser Masterarbeit untersucht, wie grüne Werbungen, Gewinn- und Verlust-Frames und grünes Vertrauen interagieren und die Überzeugungswirkung grüner Werbung auf Individuen beeinflussen. Genauer gesagt, untersucht diese Studie die Auswirkungen dieser Variablen auf das wahrgenommene Greenwashing und in der Folge auf die Markenbewertung, die grünen Kaufabsichten und den politischen Konsum. Zu diesem Zweck führte ich ein Online-Experiment zwischen den Versuchspersonen durch: 2 (falsche Behauptungen vs. begründete Behauptungen) X 2 ("Gewinn-Frame" vs. "Verlust-Frame"). Die Ergebnisse zeigten einen Interaktionseffekt von falschen Behauptungen (vs. begründeten Behauptungen) und Gewinn-Frame (vs. Verlust-Frame) auf wahrgenommenes Greenwashing. Darüber hinaus wurde wahrgenommenes Greenwashing mit weniger positiven Markenbewertungen und Kaufabsichten sowie einer Zunahme des politischen Konsumverhaltens in Verbindung gebracht.

Schlüsselwörter: Grüne Werbeaussagen; Gewinn- und Verlust-Frames; Grünes Vertrauen; Wahrgenommenes Greenwashing; Experiment