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Sustainable Signals, Sceptical Minds: Probing Advertising Factors Leading to Greenwashing Perception

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Master in Marketing

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Resumo

Este estudo aborda o panorama em evolução da sustentabilidade na publicidade, salientando a preponderância da publicidade verde e o desafio associado para os consumidores de a distinguirem do greenwashing. Esta investigação visa compreender o aparecimento da perceção de greenwashing (GWP), bem como identificar os seus factores de influência. Foi elaborada uma estrutura concetual que engloba o conteúdo da publicidade (congruência, transparência) e os elementos de design (aspeto visual, enquadramento da mensagem, especificidade) para explorar o seu impacto no GWP. Além disso, o estudo examinou o papel da preocupação ambiental do consumidor (EC) na formação desta mesma perceção. Realizado sob a forma de um inquérito experimental em linha, com 145 participantes, a análise estatística utilizou testes t e análises de moderação para testar as hipóteses.

Os resultados revelaram três factores influentes entre os cinco analisados: O enquadramento da mensagem e a aparência visual não apresentaram efeitos percetíveis, na medida em que a elevada transparência (vs. baixa transparência), as afirmações específicas (vs. afirmações vagas) e os argumentos incongruentes (vs. congruentes) reduziram significativamente o GWP na publicidade ecológica. Estes efeitos não foram moderados, ou foram-no apenas marginalmente, e foram amplificados por um EC elevado. Este estudo, especialmente pertinente para produtos de baixo envolvimento e anúncios impressos, evidencia os factores internos da empresa que influenciam o GWP, fornecendo informações valiosas para decisões de gestão. Destaca também o desafio que os consumidores enfrentam na distinção entre publicidade verde genuína e greenwashing, sugerindo oportunidades para uma maior proteção dos consumidores. Ao contrário de pesquisas anteriores sobre greenwashing, este estudo centra-se exclusivamente na perceção do consumidor e é o primeiro a revelar como as empresas influenciam o GWP, através de vários componentes publicitários.

Palavras-chave: Perceção do greenwashing, consumidor, publicidade verde, mensagens verdes, alegação ambiental, preocupação ambiental

JEL Sistema de Classificação: M31, M37, D01

Abstract

This study addresses the evolving landscape of sustainability in advertising, emphasizing the prevalence of green advertising and the associated challenge for consumers to distinguish it from greenwashing. The research aims to comprehend the emergence of greenwashing perception (GWP) and identify its influencing factors. A conceptual framework was devised, encompassing advertising content (congruency, transparency) and design elements (visual appearance, message framing, specificity) to explore their impact on GWP. Additionally, the study examined the role of consumer environmental concern (EC) in shaping this perception. Conducted as an experimental online survey with 145 participants, the statistical analysis employed t-tests and moderation analyses to test the hypotheses.

The findings revealed three influential factors among the five analysed: message framing and visual appearance exhibited no discernible effects, whereas high transparency (vs. low transparency), specific claims (vs. vague claims), and incongruent arguments (vs. congruent) significantly reduced the GWP in green advertising. These effects were not or only marginally moderated and amplified by high EC. This study, especially pertinent for low-involvement products and print advertisements, sheds light on internal company factors influencing GWP, providing valuable insights for managerial decisions. It also highlights the challenge consumers face in distinguishing between genuine green advertising and greenwashing, suggesting opportunities for enhanced consumer protection. Unlike previous research on greenwashing, this study exclusively focuses on consumer perception and is the first to unveil how companies influence GWP through various advertising components.

Keywords: Greenwashing perception, consumer, green advertising, green messages, environmental claim, environmental concern

JEL Classification System: M31, M37, D01

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Glossary of Acronyms

CSR	Corporate Social Responsibility
GWP	Greenwashing Perception
EC	Environmental Concern
FTC	Federal Trade Commission of the US

1 Introduction

1.1 Problem Statement

We are currently in the midst of a climate crisis where the consequences of global warming and the resulting environmental impacts are undeniable. Not a day goes by without news of catastrophic effects or reports of extreme weather events. What was once the exclusive concern of activists and movements such as “Fridays for the Future” or the “Last Generation” has now captured the attention of the entire population (Finisterra do Paço & Raposo, 2010; Ying Sun et al., 2018). As a result, it is hardly surprising that individuals are beginning to incorporate this aspect into their consumption choices. Consumers are placing increasing value on the sustainability of the products they purchase, leading to a transformation in consumption patterns and purchase behaviour (Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz [BMUV], 2022; T. B. Chen & Chai, 2010; Hesse, 2022).

Alongside this heightened awareness of environmental issues, companies are responding to the evolving needs of their customers. A growing number of companies are now embedding sustainability into their business models, product development and marketing strategies, leading to a significant growth in the green market (Y.-S. Chen et al., 2020; Jong & van der Meer, 2017). In addition to the environmental gains, companies are also reaping the economic rewards of incorporating sustainability into their strategies (Hesse, 2022; Rahman et al., 2015; Vries et al., 2015). Recent data indicates that corporate social responsibility initiatives (CSR initiatives) now represent the third largest communications expenditure for large companies, with the trend expected to be upward (Hutton et al., 2001; Parguel et al., 2011). Predictions suggest that the market for eco-friendly products will grow by roughly 20.8 % annually from 2023 to 2030 (Laricchia, 2023), which will further consolidate the importance of green products.

Unfortunately, further examination reveals, that, while some companies are genuinely committed to sustainability, others are merely opportunistically jumping on the bandwagon for profitability reasons (Delmas & Burbano, 2011; Torelli et al., 2020). In the consequences of this, it is alarming that greenwashing is emerging as a growing problem. Instead of genuinely striving for sustainability in their offerings, certain companies are resorting to deception and misrepresentation. Scandals, such as the Volkswagen emissions affair in 2015, are shaking consumer trust around the world and raising questions about the authenticity of green advertising in general (Y.-S. Chen & Chang, 2013a; Mansouri, 2016; Wang et al., 2020).

Customers are faced with the challenge of determining whether green products really do represent a sustainable solution, or whether they are just a shallow form of marketing technique. Nevertheless, distinguishing between the two is becoming increasingly difficult due to the overload of green advertising in press and media. Numerous studies have demonstrated that the amount of green advertising encountered today is leading to increased confusion and scepticism among consumers (Akehurst et al., 2012; Y.-S. Chen & Chang, 2013b; Özkan & Tolon, 2015; Segev et al., 2016). Despite companies' best efforts, there often appears to be a discrepancy between advertised environmental initiatives and actual practices, potentially undermining the desired successes companies hope to achieve through green advertising (García, 2011; Nyilasy et al., 2014; Yongbo Sun & Shi, 2022; Zhang et al., 2018).

The difficulty in distinguishing true from false advertising may not only cause consumers to doubt the authenticity of green marketing claims, but may also lead to a negative backlash if customers feel betrayed (Brehm & Brehm, 1981; Campbell & Kirmani, 2000; Grégoire & Fisher, 2008; Yongbo Sun & Shi, 2022). The core problem with this situation arises from the fact that the consequences of perceived greenwashing are almost identical to those of actual greenwashing (Nyilasy et al., 2014; Zhang et al., 2018). Companies that fail to convey their green marketing messages as trustworthy face nearly the same negative consequences as those that deliberately mislead their customers. The mere perception that greenwashing may be at play puts companies at risk of damaging their reputation and eroding customer trust (S. Kim, 2019; Skarmeas & Leonidou, 2013). This, in turn, can result in long-term consequences for both their financial position and their brand value (Torelli et al., 2020).

Meanwhile, a growing number of consumers are considering CSR issues and ethical conduct when making purchasing decisions, making it impossible for companies to exclude these issues entirely from their communications (T. B. Chen & Chai, 2010; Hesse, 2022). Hence, it is vital for companies that are seriously committed to sustainability to understand how customers perceive their communications, in order to avoid being misconstrued as greenwashing. For this reason, this study focuses on the topic of greenwashing perception (GWP) and examines the factors that may influence it. The aim is to comprehend what makes people doubt the authenticity of green advertising, even when it might be based on truthful messages.

1.2 Relevance of the Topic

Recognising the urgent need to understand the mechanisms behind perceived greenwashing, it also becomes evident that current regulations on greenwashing are lacking. The absence of binding obligations for companies to disclose their environmental practices creates an environment that is conducive to greenwashing and allows it to occur in the first place (Delmas & Burbano, 2011; Segev et al., 2016).

The lack of a regulatory framework for sustainability marketing has been identified as a major driver of greenwashing (Delmas & Burbano, 2011). The purpose of this study is to derive recommendations for policy makers and the conceptualisation of green advertising. To achieve this, it is crucial to understand the criteria consumers use to evaluate green advertising messages. It is essential to delineate the criteria that influence individuals' subjective judgments about the veracity of green advertising messages in order to facilitate informed decision-making and foster a more transparent policy discourse.

If consumers fail to make this distinction correctly, it not only threatens the integrity of the green market, but also the wider global movement towards sustainability (Finisterra do Paço & Raposo, 2010). Misidentifying genuine green advertising as greenwashing may discourage companies from engaging in sustainable practices, thus hindering progress towards a more environmentally friendly society.

Research investigating customer perceptions of green advertising provides insights into the formation and prevention of these perceptions, and thus offers an important contribution to the wider field of consumer research. This study predominantly focuses on consumer perceptions rather than actual consumer behaviour, which distinguishes it from conventional market research. Bringing together the fields of marketing, psychology, environmental science and corporate governance, it looks into the mind of the consumer to provide fundamental insights for policy makers who can then use these to shape purchasing behaviour.

Taking the consumer perspective makes logical sense given that consumers are a key stakeholder for companies (Brammer & Pavelin, 2006; Torelli et al., 2020). Businesses that are committed to environmental responsibility are challenged to communicate their efforts in a way that builds trust. In today's society where green issues are gaining importance, many companies are required to present their environmental initiatives as an integral part of their brand identity (Ki et al., 2022). Despite their well-intended ambitions, companies face consumers who view green advertising with growing concern about the possibility of greenwashing, and who may perceive these efforts as mere pretension.

Ironically, consumers who demonstrate a particular interest in environmental issues are more likely to be sceptical of such advertising (Albayrak et al., 2013; Iglesias et al., 2020). The risk of misperception of greenwashing is greatest for sustainable companies targeting environmentally conscious consumers. Thus, it is cynically apparent that genuinely committed companies, who take responsibility for the environment, are disproportionately affected by this phenomenon.

The core of the matter lies in the difficulty companies face in ensuring authentic communication that builds consumer trust while avoiding any perceptions of greenwashing. This study offers a new opportunity for enhanced marketing practices: by analysing the issue of GWPs and identifying associated advertising characteristics, green companies can tailor their strategies to build consumer credibility and promote sincere commitment to sustainability.

1.3 Research Gap and Questions

The investigation of the causes and effects of GWPs does not represent a fully new approach in research. Numerous studies have examined the effects of such perceptions, revealing their potential to negatively impact not only brand image, but also customers' brand reputation and purchase intentions (Nyilasy et al., 2014; Yongbo Sun & Shi, 2022; Szabo & Webster, 2021; Zhang et al., 2018).

In the quest to understand how these perceptions arise, additional aspects have come to the forefront. One body of research has looked at the characteristics of consumers themselves, including relatively stable dispositions such as general trust or scepticism (Y.-S. Chen, 2010; Chrisjatmiko, 2018). Additional investigations have explored the impact of situational and more adaptable characteristics, such as environmental awareness, on the perception of green advertising (Dunlap & Jones, 2002; Finisterra do Paço & Raposo, 2010; Matthes et al., 2014).

Other studies have investigated external and situational factors, including the context of the purchase process or industry dynamics. One example of this is the finding that greenwashing scandals by competitors can have a negative impact on the perception of green advertising campaigns by other companies in the same industry (Hesse, 2022; Vries et al., 2015; Wang et al., 2020).

However, in spite of their informative value, all of these factors have one thing in common: they are external to the company and beyond their direct control. Consequently, the ability of affected companies to take direct action is limited. There is a lack of tangible factors that green companies can immediately incorporate into their strategies.

Despite the rising significance of the issue, there is still a lack of systematic research into particular internal factors within companies that may contribute to the perception of greenwashing. These factors, which are under the direct operational management of companies, have received little attention in terms of explaining how GWPs are self-induced or what components might be influencing them. To fill this gap more comprehensively, this study examines internal causes and factors that could trigger GWPs, providing valuable insights into the mechanisms involved.

To achieve this goal, the focus of this study is on one of the most central components of sustainability strategies under corporate control: the advertisement. Unlike previous studies, this research analyses specific advertising elements and their influence on GWPs. This approach is both pragmatic and action-oriented by enabling marketing managers to incorporate the findings directly into their marketing strategies.

Based on these considerations, the research questions of this study are directed towards gaining a deeper understanding of how design features, message characteristics and environmental concerns (EC) shape the perception of greenwashing:

RQ1: Which factors lead to the perception of green marketing efforts as greenwashing?

RQ2: What design features and message characteristics of advertisements contribute to a greenwashing perception?

RQ3: What is the moderating role of environmental concern on the effect of advertising factors on the greenwashing perception?

1.4 Research Outline

This dissertation provides a comprehensive exploration of the interplay between green advertisement, consumer perception and the consequent phenomenon of GWP. The initial chapter acted as a gateway, presenting the problem statement, providing contextual background, and stating the research questions that provide guidance throughout the study.

The Literature Review, which is covered in Chapter 2, navigates the theoretical landscape of sustainability in marketing. It examines the changes in consumption patterns and looks into the specifics of environmental marketing and green advertising. This exploration extends its reach into consumer perceptions, scrutinizing elements of confusion, trust and scepticism. The chapter systematically unravels the complexity of GWPs, constructing a theoretical framework from the interplay of concepts and influencing factors.

The research methodology and approach are outlined in Chapter 3. It covers construct measurement, data collection procedures and analysis methods, from the stimulus development to the questionnaire. Thus, it provides a transparent view of the methodological underpinnings of the study.

Chapter 4 is the centrepiece of the study and reveals the empirical results of the research. The impact of advertising factors is thoroughly examined, testing the hypotheses using statistical tests, thereby unfolding the empirical pattern that has been constructed throughout the research.

The concluding chapter, consolidates vital conclusions originating from the study, emphasizing theoretical and practical implications. To sum up, nuanced recommendations for businesses are provided. This chapter discusses the limitations of the study, while at the same time offering astute recommendations for future research initiatives in the evolving green advertising and consumer perceptions research.

2 Literature Review

2.1 Sustainability in Marketing

2.1.1 Changing Consumption Patterns

The climate crisis is one of the most urgent challenges of our time. It has long been a scientific consensus that our human activities are having an increasing impact on its development. According to the Intergovernmental Panel on Climate Change (2023), the burning of fossil fuels in particular is one of the main causes of global warming, and studies by the Potsdam Institute for Climate Impact Research (Wunderling et al., 2021) show that the CO_2 concentration in the atmosphere is at its highest level in 3 million years. The possible consequences and impacts on the ecosystem and humanity are hardly foreseeable, but alarming effects such as the melting of the polar ice caps and devastating weather events can already be observed today.

In view of a steadily growing world population and the limited resources available on earth, it is by no means certain how the future living needs of nine billion people can be met (BMUV, 2022). In the face of this dramatic situation, the scientific community has called for urgent changes in our behaviour and consumption patterns in order to collectively address the climate crisis.

Pollution, droughts, floods, species extinctions and natural disasters have contributed to shifting the debate from a scientific one to a societal one. Such events have led to a concerned attention to the environment and have provided the impetus to rethink private habits and actions as well. In Germany, for example, household consumption alone is responsible for more than a quarter of all greenhouse gas emissions in the country, which means that private individuals must also be held accountable (BMUV, 2022).

These findings, along with corresponding media coverage, have led to increased awareness of sustainability and a growing concern for the environment (Ying Sun et al., 2018). Studies by Finisterra do Paço and Raposo (2010) for example, have shown that environmental awareness among consumers in Portugal is increasing and that more people than ever before are aware of the limited natural resources on earth. As a result, there is also a shift in the behaviour towards more conscious consumption and corresponding expectations from companies (Hesse, 2022).

This development is reflected in a new consumption pattern, according to which the growing importance of sustainability and environmental aspects is also reflected in purchasing decisions. In this sense, one can speak of sustainable consumption as part of a sustainable

lifestyle and consumer behaviour that takes into account, among other things, ecological and social aspects when buying and using products and services, but also when disposing resources in the everyday life (BMUV, 2022). These so-called "green consumers" increasingly look for environmentally friendly products in their shopping and try to avoid products that could potentially harm the environment (T. B. Chen & Chai, 2010).

McKinsey & Company (2021) conducted a representative survey of more than 5000 consumers in the DACH region (Germany, Austria, Switzerland) to determine what role sustainability and environmental protection play for the general population. They were able to show that younger consumers in particular attach more value to the topic and that 60 % of them are also willing to spend more on the matter. Moreover, the willingness to pay more money for sustainably marketed products was somewhat higher among the higher income groups as well as among women.

These trends can also be observed at an international level. As suggested by the international study of the "Greendex" (National Geographic & GlobeScan, 2009), which surveyed consumer trends on sustainable consumption in 17 different countries, everyday customer preferences are increasingly ecologically oriented. Changing customer needs are leading to an increasing demand for sustainable and ethical companies and green products (Brunk, 2010). This importance in the purchasing decisions can be seen across generations and product categories (Simon-Kucher & Partner, 2021) and the trend has been even further exacerbated by the Corona pandemic. Almost half of people spend more money on such products since the pandemic started in order to reduce their environmental footprint and contribute to society, and as many as 78 % consciously pay attention to these factors when shopping (McKinsey & Company, 2021).

In the broader market, this manifests itself in a strengthening of the competitive situation across all sectors. However, one problem with this assertion is that companies often lack a clear understanding of the specific ethical beliefs of their customers (Crane, 2005). In particular, companies that have a direct relationship with private customers need to adapt or at least respond to these trends in order to remain competitive (Papadopoulou et al., 2022). Consumers are no longer empowering themselves only through their purchasing behaviour, but also by increasingly joining consumer protection groups and environmental watchdog sites that provide clarification on environmental issues. Especially through the new information and communication technologies which can be found throughout the internet, consumers have been shown to know more about green issues and have better access to information that verifies the veracity of green claims (Segev et al., 2016).

2.1.2 Environmental Marketing and Green Advertising

Due to the developments described above, companies today can no longer avoid aligning or reorienting themselves towards the topic of sustainability. This has led to a huge increase in the number of companies engaging in CSR, green marketing and social marketing (Carroll, 1979; Y.-S. Chen et al., 2020; Peattie & Crane, 2005).

As diverse as the motivations and drives of the companies are, as multifaceted are the underlying concepts and definitions of sustainability, which is why an overview on those concepts will be provided at first now.

Various hierarchical levels can be identified that distinguish sustainability and its ecological dimensions from one another. Following Brundtland (1987), *sustainability* in general describes "a development that seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs". For companies, three dimensions can be distinguished in which they should strive for this issue: the environmental, social and economic dimension.

If this concept is adapted to a corporate model, the term CSR is commonly used. This describes a *corporate social responsibility* that goes beyond the legal requirements. Van de Ven (2008) found that companies usually follow one of three different approaches in order to meet this aim. The reputation management approach, which is primarily concerned with the overall image; the virtuous corporate brand approach, which works primarily with communication instruments; and the ethical product differentiation approach, which focuses on the products and services offered.

Sustainable marketing mainly takes up the second of those point with the aim of "forming and maintaining sustainable relationships with customers, the social environment and the natural environment" (Belz, 2006). If, on the other hand, the term *green marketing* or ecological marketing is used, it refers primarily to the type of marketing activities that are intended to prevent or reduce ecological problems (Fontes et al., 2021) or otherwise attempt to protect the environment (Gordon et al., 2011). However, it is important to note that the focus of this term is clearly on environmental friendliness (Jain & Kaur, 2004; Polonsky, 2011), hence the term encompasses neither the social nor the economic dimension (Kenning, 2014).

Green advertising, in a more specific manner, describes only the communicative segment of green marketing and refers to promotional messages about the environmentally friendly products, attributes or characteristics of a company (Hartmann & Apaolaza-Ibáñez, 2009; Scammon & Mayer, 1995), which have the goal of influencing the perception, evaluation and

behaviour of customers (Matthes, 2019). Especially during the 1970s, green advertising experienced an upswing when the recession, triggered by high oil prices, required a new approach to environmental issues (Haytko & Matulich, 2008). While traditional advertising had three goals (inform, remind, persuade), green advertising is more about drawing attention to sustainable values (D'Souza & Taghian, 2005). Already in the 1990s, Banerjee et al. (1995) were able to establish criterions that serve to describe green advertising. According to these criteria, green advertising is considered to be present if at least one of the following three points is fulfilled: (1) the relationship between the product/service and the biophysical environment is addressed implicitly or explicitly, (2) a green lifestyle is promoted, or (3) the corporate image of environmental responsibility is presented.

Nowadays, business leaders state that CSR has become a top priority for their management (Porter & Kramer, 2006) and a look at the largest companies shows that CSR takes up the third highest budget item in the communication departments in recent times (Hutton et al., 2001). There are many different ways for companies to not only become more sustainable, but also to communicate this in a manner that is profitable for both sides. Although there are few legal requirements for this type of communication, most companies voluntarily report on their contribution to the environment through their websites or publish annual sustainability reports on their goals and activities (Ki et al., 2022; Simnett et al., 2009).

The reasons for companies to strategically integrate their sustainability commitment into their communication strategies are complex. First and foremost, the majority of them are concerned with informing consumers about the environmental impact of their offerings (Pranee, 2010). In addition, they expect customers to develop a positive attitude towards the environmental friendliness associated with companies and brands (D'Souza & Taghian, 2005) and that this will in turn stimulate the demand for their green products (Carlson et al., 1993).

In this context, Y.-S. Chen (2010) has identified five main reasons why it is valuable for companies to develop green marketing concepts. (1) Environmental compliance: in the face of increasing environmental problems, it is the responsibility of companies to take action to reduce their environmental impact. By practising green marketing, they can show that they take these environmental challenges seriously and strive to adopt sustainable business practices. (2) Gaining a competitive advantage: with green marketing, companies can differentiate themselves from their competitors and develop new niches by emphasising their sustainability efforts and gaining the trust of environmentally conscious consumers. (3) Improving corporate image: consumers are increasingly interested in aligning their purchasing decisions with their values and beliefs, which can be achieved through green marketing. Allen (2016) was able to

confirm that one of the most important goals for companies is to improve green reputation. However, the chances of success depend on the extent to which companies' activities incorporate the ECs of their stakeholders (Brammer & Pavelin, 2006). (4) Developing new markets: the market for green products and services is growing steadily. By developing green marketing, companies can target new customer segments and expand their market presence. (5) Increasing product value: green marketing can help communicate the added value of a product by highlighting its environmental benefits. This can improve price perception and increase sales, as many customers are willing to pay a premium for environmentally friendly products (Laroche et al., 2001; McKinsey & Company, 2021).

In order to achieve these goals, a wide variety of marketing activities can be differentiated. Besides the actual adaptation and development of sustainable products, innovations and processes, the commercialisation of these particular efforts is crucial in order to effectively convey the message. Hesse (2022) compared some of the most prominent and popular methods in a meta-analysis: ecolabels and environmental marks are one of the best-known options that have an important influence on the perception and evaluation of products (Alamsyah et al., 2020), but can also cause confusion due to their great variety (Sharma & Kushwaha, 2019). A similar picture can be observed with green brand extensions, which are mostly extensions within a product line (Hesse et al., 2022), resulting in a reciprocal effect on the parent brand (Olsen et al., 2014; Tauber, 1981). However, these may not only have a positive impact on the customer's evaluation of the company's environmental responsibility (Hill & Lee, 2015), but also trigger scepticism and mistrust (Bhaduri & Copeland, 2021). In addition, there are many other measures of the marketing mix that can be addressed in the context of green marketing, whereby an enthralling counter-trend is currently emerging, the so-called green demarketing (Hesse, 2022). This describes the appeal made by companies to consume less, and more responsibly, although the commercially intended orientation must also be emphasised here, in that demand is reduced at the level of the product category, but promoted at the brand level (Reich & Soule, 2016). In other words, companies that follow this approach try to make individuals consume less, but if they do consume, they are supposed to buy from their brand.

While it is apparent what motivates companies to communicate their sustainability activities, it remains questionable whether green advertising can actually achieve these outputs. The research situation in this regard is indeed far less clear than one might think.

Generally, however, it has been shown that green advertising is effective in principle and is also liked by consumers (Kong & Zhang, 2014; Matthes et al., 2014; Reich & Soule, 2016; Schmuck, Matthes, Naderer, & Beaufort, 2018; Schuhwerk & Lefkoff-Hagius, 1995). In

addition, the communication of green marketing activities has an impact on brand perceptions (Y.-S. Chen et al., 2020; Groza et al., 2011; Vlachos et al., 2009) and can have a positive impact on perceived corporate brand equity (Benoit-Moreau & Parguel, 2011). However, some activities, such as brand extensions, can have a negative impact on brand perception (Schmuck, Matthes, & Naderer, 2018).

It has already been noted that companies often intend to improve their green reputation through advertising (Allen, 2016). The basis of this approach is the so-called halo effect, according to which an attitude transfer from the product level to the brand level is expected (Leuthesser et al., 1995). However, studies by Nyilasy et al. (2014) suggest that in some cases green advertising can even have the opposite effect and other studies on purchase intention also show a contradictory picture of how and whether green advertising has any effect at all.

Furthermore, a number of studies have shown that the credibility of green advertising is often questioned (Olsen et al., 2014) and that ecologically oriented advertising is considered less trustworthy (Iyer & Banerjee, 1993). One of the possible reasons for this is that many consumers find it difficult to assess the true impact of environmental innovations (Parguel et al., 2011). Consumers often do not have the necessary knowledge to understand the information underlying environmental claims (Furlow, 2010) and react with confusion, especially when the sources of the message do not seem credible (Taufique et al., 2017).

As a result, many consumers react with indecisiveness and scepticism to green marketing efforts (Obermiller & Spangenberg, 1998; Vlachos et al., 2009). In addition, the increased environmental awareness of consumers leads to increased scepticism towards such green practices (Bhaduri & Copeland, 2021; Chatterjee, 2009; Iglesias et al., 2020).

Besides that, it has been shown that consumers are often more interested in why companies engage in green marketing than in the actual activities they contribute to protect the environment (Groza et al., 2011). Although they do not systematically question the credibility of the green advertising messages (Du et al., 2010), the perceived and assumed motives play a central role in the evaluation of the companies (Klein & Dawar, 2004; Sjovall & Talk, 2004) to the point of accusing companies that their repositioning is exclusively using the ecological approach to increase profits (Hesse et al., 2022; Rahman et al., 2015).

To avoid these potentially negative effects of green advertising and to increase its acceptance, some framework models have already been designed to categorise this type of advertising. While one branch of research deals with what induces consumers to adopt sustainable behaviours, another branch of research deals with the question of what makes a green advertisement effective.

In their empirical work, for example, Rathee and Milfeld (2024) synthesised that ad context, source characteristics and message design have a significant influence on the effectiveness of green advertising, whereas consumer characteristics can strengthen or reduce this relationship. It could be proven that different appeals are perceived differently by green and non-green consumers (Matthes et al., 2014; Schmuck, Matthes, & Naderer, 2018). Parguel et al. (2011) were able to identify six domains that constitute the origin of perceived brand ethics: consumers, employees, environment, overseas communication, local economy and community, and corporate community. In doing so, they were able to show that ethical perceptions are formed in a much more diverse and complex way than previously assumed.

Further studies by Banerjee et al. (1995) have tried to find out the underlying structures of green advertising and were able to work out three crucial dimensions. According to these, the assessment of green advertising depends on the sponsor type (for-profit or non-profit), the ad focus (focus on advertiser or on the consumer), as well as the advertising depth (shallow, moderate, deep depending on the extent of environmental information mentioned). Carlson et al. (1993) first carried out a large-scale analysis of green advertising messages in media in 1993 and were able to show that 60 % of the advertisements were misleading or deceptive. Segev et al. (2016) replicated this approach and examined hundreds of advertisements published in 2009 and 2010. They were able to show that advertisers today use green advertising significantly more often. Contrary to the results of their previous colleagues, however, they came to the conclusion that the majority of environmental claims (63 %) could be classified as acceptable and that this reflected a trend towards increasing reliability of green advertising. The question of whether this objective assessment of green advertising is also reflected in the subjective perception of consumers therefore seems all the more compelling.

2.2 Consumer Perceptions of Green Advertising Appeals

2.2.1 Consumer Confusion

Looking at the individual perception of advertising, there are various mechanisms and processes that have an influence upon this. One of them, which has a major explanatory contribution in the field of sustainability advertising, is the so-called consumer confusion. In order for consumers to perceive and adequately process green advertisements, they must first be able to understand it. If, on the other hand, confusion arises, this proves to be a challenge. The phenomenon of *confusion* itself does not originate in the stream of marketing, but in the field

of psychology. There it was found and described as a neurological clinical syndrome, which describes a disturbance of consciousness and the impairment of cognitive functions (Kukolja et al., 2011). This concept was later taken up in marketing research, where *consumer confusion* describes the failure to perceive the different facets of a product or service properly and to process the given information correctly (Y.-S. Chen & Chang, 2013b; Turnbull et al., 2000).

In this context, the concept first appeared in the course of research on information overload in the 1980s. Accordingly, the information processing capacities of consumers in the purchasing process are limited, which can subsequently lead to consumer confusion when there is information overload (Malhotra, 1984). Malhotra (1984) back than was already able to establish that consumers rather resort to heuristics and alternative strategies in the decision-making process instead of processing information efficiently. This is particularly interesting in the context of green advertising, since it often tries to convince by the means of environmental facts (Segev et al., 2016) which require cognitive processing. Today, it can be observed that more and more companies are implementing green marketing campaigns and thus the overload of green advertising messages is also increasing (Akehurst et al., 2012; Y.-S. Chen & Chang, 2013b; Segev et al., 2016; Tarabieh, 2021). Özkan and Tolon (2015) were able to show that consumers are also confronted with an information overload in the new media formats, such as user-generated content, and that these results in consumer confusion.

Based on this findings, a discipline of research has been established in marketing which tries to find out what exactly determines consumer confusion. Mitchell and Papavassiliou (1999) identified three main causes of consumer confusion: overchoice of products, similarity of products, and unclarity of information. Further studies were able to confirm these findings to a large extent and complement them even further. For example, Mishra et al. (1998) showed that not only the amount and type of information is important, but also the asymmetry of information between companies and consumers plays a role. This asymmetry makes it difficult for potential customers to verify and assess the actual qualities of the products.

In the context of green marketing, it was also found that consumers often do not have the technical or scientific knowledge that underlies environmental claims (Furlow, 2010). Carlson et al. (1993) also identified additional reasons for confusion about green advertising. According to this, green advertising often works with complex terminology that does not have a clear meaning or require specific expertise and, in addition, regularly uses comparisons between products that are based on only one environmental aspect. The impact of such promotional efforts is further amplified if the sources of information are not considered credible (Taufique et al., 2017) or the purchase decision is perceived as risky (Harridge-March, 2006).

However, once consumer confusion occurs, this does not remain without consequences. Not only do consumers resort to alternative strategies in the purchase decision process (Malhotra, 1984), but recent studies by Özkan and Tolon (2015) suggest that there is a general decrease in purchases following. In the field of green marketing, consumers have been found to view environmental considerations as riskier when they cannot accurately evaluate the claims. Moreover, consumer confusion plays a crucial role in the interplay between greenwashing, trust and purchasing behaviour. Y.-S. Chen and Chang (2013a) were able to show that the effect of greenwashing behaviour on trust is significantly mediated by confusion and beyond this, confusion is mediating the effect of greenwashing on the purchase intention (Tarabieh, 2021).

2.2.2 Green Trust

Since it has already been shown that the overload of information emanating from green advertising messages leads to confusion and that this has an effect on trust (Y.-S. Chen & Chang, 2013a), the question arises, what role trust plays in green advertising. In comparison to traditional advertising approaches, green advertising works with complex claims that are hardly controllable for the ordinary consumer (Newell et al., 1998), it seems reasonable to assume that trust plays a more important role here than in conventional advertising. Y.-S. Chen and Chang (2013b) confirmed this assumption and stated that green messages must be reliable, accurate and true in order to have the desired effect.

Accordingly, Tarabieh (2021) defined *green trust* as “the typical aspiration of consumers to rely on a product's ability to fulfil its purpose”. The definition of Y.-S. Chen and Chang (2013b) defines the term more narrowly and describes it 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". In their definition, however, they already anticipate the underlying factors on which trust can be built: beliefs, expectations, credibility, benevolence and ability.

These inherent components of the definition can be traced back in part to research by Schurr and Ozanne (1985), who found that trust is primarily based on three beliefs: integrity, benevolence and ability. Rousseau et al. (1998) further enriched these findings by discovering that expectations also affect the development of trust. They were able to show that positive expectations about the intentions or behaviour of others lead to greater trust. On the other hand, if companies exaggerate the environmental performance of their products (Kalafatis et al.,

1999), if the purchase decision is perceived as risky or if green quality is thought to be low, trust in green advertising decreases (Y.-S. Chen & Chang, 2013b; Harridge-March, 2006).

Further studies have also looked at the specific advertising elements and their effect on trust. For example, it has been shown that trust in eco-seals and labels depends on label source and argument specificity (Atkinson & Rosenthal, 2014). In addition, the framing and appeal of the advertising messages is decisive in determining how much trust is placed in green advertising (Xue, 2015).

This has been found to be highly relevant as trust is one of the three main drivers (green brand image, green satisfaction, green trust) of green brand equity (Y.-S. Chen, 2010). Thus it can be seen that trust is one of the core elements for the evaluation of green brands, but is also a key determinant for purchasing behaviour (Tarabieh, 2021). Further studies could also prove that loyalty towards green brands is positively influenced by trust (Chrisjatmiko, 2018).

However, trust is not only related to green advertising itself, but also to greenwashing, which describes positioning attempts that intend to deliberately deceive consumers and try to exploit their consumers' trust. These greenwashing behaviours have a direct negative impact on green trust in brands and products (Y.-S. Chen & Chang, 2013a) and, in addition, a lower willingness to purchase follows from the lowered trust (Tarabieh, 2021).

2.2.3 Green Scepticism

The consequential counterpart to trust is formed in mistrust, or in other words scepticism towards green advertising. When the credibility and truthfulness of advertising messages are questioned, consumers react with hesitation and scepticism (Obermiller & Spangenberg, 1998; Vlachos et al., 2009). In addition, it has been proven that consumers begin to doubt the authenticity of the company as a whole and suspect ulterior motives (Forehand & Grier, 2003; Hilton et al., 1993; Olsen et al., 2014; Yoon et al., 2006). Numerous studies have already confirmed that green advertising in particular is quickly called into question and companies are accused of positioning themselves in this way only for economic or self-serving motives (Campbell & Kirmani, 2000; Forehand & Grier, 2003; Hilton et al., 1993; Rahman et al., 2015; Yoon et al., 2006). Companies in some sectors, such as the energy sector or the fast fashion industry, are especially affected by this accusation (Hesse, 2022; Vries et al., 2015), but also in general it can be stated that the increased ecological awareness of consumers has also led to an increase in scepticism towards green marketing activities (Chatterjee, 2009; Iglesias et al.,

2020). And thus it follows that consumers often find environmental information in advertising neither credible nor reliable (Carlson et al., 1996; Iyer & Banerjee, 1993; Newell et al., 1998).

Scepticism itself describes the general tendency to doubt the credibility of any form of organisational communication (Forehand & Grier, 2003; Obermiller & Spangenberg, 1998). Two distinct forms of scepticism can be distinguished: situational and dispositional scepticism (Forehand & Grier, 2003; Obermiller & Spangenberg, 1998). While the former describes a momentary state of feeling suspicious in a certain situation, the latter describes an individual and ongoing tendency to be critical of the intentions of others. Mohr et al. (1998) have further specified this construct for the application context of green brand communication and define green scepticism as "scepticism towards environmental claims in marketers' communications regarding perceived exaggerations, misleading or confusing information, and the perception of truth in ads and packages". It can thus be concluded that scepticism is a potential cognitive reaction that can follow an advertising exposure.

According to studies by Hesse et al. (2022), different categories of scepticism can also be distinguished, based on the communication element to which the scepticism is directed. Accordingly, three different types can be found based on the intentions (image intentions, sales intentions, ...), the product presentation (use of labels, certificates, non-transparency, ...) or the sender characteristics (company size, reputation, ...). Similar results can be found in studies on CSR communication methods, in which four key elements were identified that can mitigate scepticism towards the messages: social topic information, CSR commitment, CSR impact specificity and moderation by corporate personality cues (Pomering & Johnson, 2009).

In addition to these kinds of studies, which pursue the approach of enabling a systematic classification, another stream of research is concerned with finding the specific factors that cause scepticism. A decisive contributing criterion is the design and formulation of the messages themselves. Given that many consumers are already confused by the terminology used in the media (Turnbull et al., 2000), it follows that this is a major cause of scepticism. Carlson et al. (1993) have shown that the types of advertising that can be classified as misleading are predominantly aimed at corporate image and use vague or ambiguous phrases. It has also been found that consumers are fundamentally more sceptical of subjective claims than of objective claims (Ford et al., 1990).

In addition to the advertising message itself, the transmitter also has an influence on the evaluation. To the disadvantage of all companies, however, it has been shown that information about the environmental impact that comes from the company itself is the least credible (Iyer & Banerjee, 1993). Studies by Hesse (2022) showed that the size and environmental reputation

of the companies behind a brand further limits its believability significantly. Using the fast fashion industry as an example, they were able to show that scepticism towards sustainable collections was primarily triggered by the fact, that environmentally friendly activities were significantly underrepresented in comparison to the core business.

However, since dispositional scepticism is more of an evaluation pattern than a reaction to a certain advertising material, the characteristics of the consumers themselves are also crucial in this respect. It has been shown, for example, that socialisation, but also personal experience and knowledge play a role in how sceptical people are about advertising in general (Obermiller & Spangenberg, 1998). With regard to green advertising, it is also noteworthy that consumers who are more environmentally aware and more interested in green products are also the ones who are more sceptical about green advertising (Finisterra do Paço & Raposo, 2010).

It is precisely this fact, however, that poses an enormous problem for companies. The communication barrier to reach the sceptical green consumers is particularly high and can discourage environmentally friendly brands from further developing green products and processes (Finisterra do Paço & Raposo, 2010). This poses a certain dilemma because those companies that act with good (green) intentions are the ones that have to expect the greatest backlash from sceptical consumers.

Several studies have shown, that consumers who are concerned about the environment also tend to be more sceptical about green advertising, which in turn has a negative impact on the purchasing behaviour (Albayrak et al., 2013; Finisterra do Paço & Raposo, 2010; Hesse, 2022). However, the consequence may not only be a lack of purchases, but when the doubts about the advertising messages are so strong that they are considered untrue the allegation of greenwashing is made (Alves, 2009; Nyilasy et al., 2014; Olsen et al., 2014).

2.3 Greenwashing Perception

2.3.1 Greenwashing

To explore this phenomenon in more detail, it is first necessary to clarify what it is, that constitutes greenwashing. Numerous definitions can be found in the literature (Y.-S. Chen et al., 2020; Delmas & Burbano, 2011; Laufer, 2003; Parguel et al., 2011). One of the most prominent approaches comes from TerraChoice, who described *greenwashing* as "the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service" (TerraChoice, 2009) and provided a list of seven

"sins of greenwashing", which breaks down its possible variations (UL Solutions, 2023). They discovered that the majority of products that advertise with environmental messages commit at least one of these sins (1: Sin of the Hidden Trade-off, 2: Sin of No Proof, 3: Sin of Vagueness, 4: Sin of Irrelevance, 5: Sin of Lesser of Two Evils, 6: Sin of Fibbing, 7: Sin of Worshiping False Labels). To summarise these aspects, it can be stated that greenwashing describes any form of disinformation by companies that attempts to portray the public image as environmentally friendly.

However, it should be pointed out, that greenwashing is an interplay of two opposing behaviours, positive communication on environmental performance on the one hand and poor environmental performance on the other. Consequently, Delmas and Burbano (2011) typecast those companies that actually deliver good environmental performance as "vocal green brands" or "silent green brands", provided they do not make this performance a focal point of their communication. On the other hand, companies that have a poor environmental performance but do not run any green advertising about it are classified as "silent brown brands" and only if these companies engage in positive environmental communication are they referred to as "greenwashing brands".

However, this is not a black-and-white construct, but rather different levels of greenwashing can be delineated. One of the first classifications of this goes back to Kangun et al. (1991), who distinguished between three types of greenwashing: false claims, omission of important information and the use of unclear or undefined terms. Torelli et al. (2020) extended this categorisation and identified four different levels of greenwashing, which highlight exactly to what the greenwashing claims are referred to. (1) Greenwashing at the corporate level concerns misleading environmental communication that affects the image, reputation or goodwill of the company as a whole. (2) Greenwashing at the strategic level concerns misleading environmental communication that relates to future strategies, goals and ambitions. (3) Greenwashing at the dark level concerns misleading environmental communication that serves to conceal and cover up illegal activities. (4) Product-level greenwashing concerns misleading environmental communication that relates to specific features of a product.

In the course of this, the question arises as to what tempts companies to engage in greenwashing in the first place. Torelli et al. (2020) refer to two key motives why companies practise greenwashing: increasing legitimacy and corporate value. It has been shown that corporate legitimacy is enhanced by the disclosure of information on sustainable development (Cormier & Magnan, 2015). In addition, green information functions as a signal that is used as

an indication of the company's sustainability and can thus increase the company's value (Connelly et al., 2011).

In a comprehensive review of current research on this topic, Delmas and Burbano (2011) also identified three main drivers of greenwashing. According to this, there are motivators at the individual and psychological level, such as behavioural tendencies and biases. Next, there are drivers at the organisational level, which include internal characteristics, such as corporate values, incentive structures or internal communication. Finally, they also identify external drivers. These can be market-related factors such as investor and consumer demands, but also non-market drivers such as NGOs and the media. However, among all these different drivers for greenwashing, they found that the main cause lies in the current regulatory environment, which enables companies to greenwash their operations in the first place. Although there are agencies, such as the FTC, that have established green marketing guides in the US and monitor those, their enforcement is not clearly regulated (Segev et al., 2016). One reason for this is that terms such as "green", "sustainable" or "environmentally friendly" are not legally protected, which makes lawsuits for the deceptive use of them almost impossible.

However, these deceptive attempts are increasingly recognised by consumers (Nyilasy et al., 2014) and thus capture attention with negative headlines. In Germany, for example, the negative prize "Goldener Windbeutel" is awarded every year to the most audacious advertising lie of the year in order to draw attention to the problem of consumer deception in the food market. In 2021, the prize went to a perfect example of greenwashing: a chicken breast fillet advertised as "climate-neutral" that in fact was neither produced without emissions nor were the CO_2 emissions compensated (foodwatch Deutschland, 2021). Consequently, it is not surprising that consumer scepticism towards environmental advertising is growing and, as a result, the demand for green products is even decreasing in some parts (Pomering & Johnson, 2009).

Torelli et al. (2020) attempted in their study to assess the different influences that greenwashing can have on the perception of a company's environmental responsibility. They found that the different degrees of greenwashing have different effects on perception. They were furthermore able to show that different stakeholders react differently to misleading communication, which means that the perception of consumers is not necessarily identical with the assessment of other stakeholders whose interests the companies are trying to align and satisfy. In addition, they found that companies in environmentally sensitive industries, or in other words, industries that are directly linked to environmentally critical products or resources, can expect more severe reactions to greenwashing activities.

As far as consumer perceptions and reactions are concerned, greenwashing has a particularly negative impact on trust and this effect is mediated by consumer confusion and green perceived risk (Y.-S. Chen & Chang, 2013a; Tarabieh, 2021). In addition, greenwashing can also damage the general attitude of consumers towards a company (Peattie & Crane, 2005). A study by Tarabieh (2021) was moreover able to prove that greenwashing has a direct negative effect on the intention to purchase. In summary, it can therefore be concluded that once greenwashing is detected and companies are exposed, there are serious consequences for the companies.

2.3.2 The Green Paradox

However, this creates a dilemma for all those companies that strive for genuine sustainability efforts and want to integrate them into their communication. If they become victims of the assumption that their green advertising is (even if falsely) considered greenwashing, they are threatened with negative consequences. At the same time, the communication of environmental information is a highly problematic one (Dawkins, 2004; Pomering & Johnson, 2009), as a number of paradoxes can be found in its perception, which are not only counterintuitive, but most prominently turn out to be counterproductive for the companies as well.

The first area of tension occurs in the fact that the intended target group of green advertising campaigns, green consumers, may be the wrong one. Some studies suggest that a strong environmental awareness leads to increased environmentally friendly behaviour and purchasing patterns (Hou & Wu, 2020). Accordingly, these people trust green advertising more and like it more than people who are not involved in the topic (D'Souza & Taghian, 2005; Shin et al., 2017). In contradiction, however, the opposite picture emerged, showing that a high ecological conscience of consumers leads to more scepticism towards green marketing practices (Chatterjee, 2009; Iglesias et al., 2020). Research by D'Souza and Taghian (2005) confirms this by showing that environmentally concerned consumers tend to see green advertising as exaggerating rather than convincing. This was supported by other studies which showed that environmentally concerned persons are not only more critical of advertising, but are also less willing to purchase as a result (Albayrak et al., 2013; Finisterra do Paço & Raposo, 2010).

Furthermore, it could be shown that the social exchange theory also counts for environmentally conscious consumers. According to this, people weigh up the relative costs and benefits before making purchase decisions or engaging in behaviour (Adetola et al., 2021; Feldmann & Hamm, 2015; Zhang et al., 2018). Following this, Adetola et al. (2021) showed

that perceived consumption value plays a decisive role even with high environmental knowledge and concern. This, however, contradicts the argumentation logic that often underlies green advertising, according to which the advertised value proposition of the products consists of an advantage for the environment and not of an advantage for the consumer.

Another antinomy can be found in the fact that green performance seems to be more crucial for success than green advertising. Studies by Nyilasy et al. (2014) were able to show that when companies have poor environmental performance, attitudes towards the company deteriorate when they run green advertising (compared to general corporate advertising or no advertising at all). On the other hand, when green environmental performance is high, both green and general corporate advertising cause brand attitudes to decline. Therefore, in both cases (low and high environmental performance) it would make more sense not to use green advertising and thus take the safer option.

Another problem is that consumers tend to seek out the purpose behind green advertising (Finisterra do Paço & Reis, 2012). In the course of this interpretation, however, the so-called change-of-meaning effect can occur. For example, Brunk and Boer (2020) found that consumers reinterpret non-directional information to fit their pre-existing ethical impression of the company. Consequently, when consumers see sustainable advertising, they are only confirming their previous prejudices about the company rather than letting the advertising influence their perceptions.

Considering the paradoxical ways of processing green advertising just described, one can agree with the statement of Drumwright (1996), who already in the 1990s came to the conclusion that "company advertisements with a social dimension have been among the most controversial of marketing approaches". Various studies have shown that the risk of backfire is significantly higher with green advertising and can lead to a series of negative effects, such as a negative brand image, negative brand attitudes, negative word of mouth or reduced brand quality (S. Kim, 2019; Skarmeas & Leonidou, 2013; Yoon et al., 2006). If this is the case, the so-called greenwashing phenomenon occurs, whereby green advertising elements are viewed with particularly high suspicion and are ultimately declared untrue (Durif et al., 2010).

The reactions to such an assessment can be fatal, because contrary to the assumption that loyal customers would more easily forgive companies for a mistake, the opposite effect is once again evident in the area of green advertising. Thus, Grégoire and Fisher (2008) were able to show that when customers feel betrayed, they also resort to retaliatory measures to counterbalance this perceived betrayal. In this case, the so-called "love becomes hate" effect

can arise, according to which the stronger the relationship was before, the stronger the negative reactions afterwards.

Finally, another paradox should be pointed out, which can be seen in the question of which companies are hit by greenwashing accusations. It has already been pointed out that some industries are considered particularly environmentally sensitive and must consequently expect stronger GWPs (Hesse, 2022; Torelli et al., 2020; Vries et al., 2015). In addition, studies by Wang et al. (2020) have also shown that greenwashing causes a spillover effect. According to this, the greenwashing behaviour of a brand has a negative effect on the purchase intention of consumers for green products of other brands in the industry. This means that even for green companies that objectively do everything correctly, that they are not immune to the risk that their green advertising will be perceived to be greenwashing.

2.3.3 Perceived Greenwashing

It has already been established that when it comes to green advertising, a distinction must be made between two matters: greenwashing itself on the one hand and the GWP on the other. The latter is not a case of misconduct or attempted deception on behalf of the company, but consumers nevertheless perceive the advertising material and communication attempts as such. Perceived corporate environmental responsibility is not necessarily the same as the factual responsibility (Torelli et al., 2020). Instead*, perceived greenwashing* is about consumers' reactions to the extent to which green advertising messages match a company's actual environmental responsibility (Y.-S. Chen & Chang, 2013a; Nyilasy et al., 2014). Yongbo Sun and Shi (2022) emphasise once more that it is exclusively a psychological assessment of whether a company is misrepresenting itself or hiding its true environmental message. However, this assessment is at least as important as the question of whether a company is actually engaging in greenwashing, as it is the decisive criterion for consumer reactions to green communication attempts (Yongbo Sun & Shi, 2022).

Therefore, it is essential to first take a look at which explanatory approaches exist to describe the causes of this phenomenon. One concept that is worth looking at in this context is that of perceived persuasion. Friestad and Wright (1994) have developed an explanatory theory under the name *persuasion knowledge model*, which sheds light on how persuasion attempts are recognised, analysed, interpreted and evaluated. According to them, this process consists of two steps. While in the first phase, positive reactions can initially occur when the persuasion intention is identified and recognised, an evaluation of this follows in the second phase. For this

purpose, persuasion knowledge is activated in order to make an assessment of the persuader's motives, goals and tactics. If the conclusion is that persuasion is present, this can be perceived as a threat to personal freedom (Koch & Zerback, 2013). In that case, consumers can react to a green advertising approach with reactance, resistance and distrust (Brehm & Brehm, 1981; Campbell & Kirmani, 2000).

Another derivation can be found in *attribution theory*. This theory examines the lay causal explanations that people make when confronted with the behaviour of others. If the fit between ecological efforts and companies is assessed as low, people tend to make egoistic attributions and hold the companies responsible for their actions (Nyilasy et al., 2014). In addition, it has already been argued that there are a number of other latent constructs, such as trust and scepticism, which play a role in and can influence the evaluation of green advertising approaches.

Since perceived greenwashing is the consumers' perception that a green advertisement actually is greenwashing, it can be assumed that the effects and reactions are widely comparable to those of actual greenwashing. Thus, Szabo and Webster (2021) were able to confirm this assumption using the example of website interactions, highlighting that the GWP itself has an influence on product and brand perception, and also that the neurological emotional state is affected during the interaction with the website. Further studies have also shown that the GWP is related to a perceived betrayal (Grégoire & Fisher, 2008; Yongbo Sun & Shi, 2022) and consumers are willing to compensate for this perceived manipulation through one of two mechanisms: demanding reparation or retaliating. And from the real world there is also evidence of the consequences of perceived greenwashing. García (2011), for example, conducted an analysis of the reactions to BP's "Go Green" campaign and found that it failed thoroughly and received mostly negative media backlash.

In terms of impact on actual behaviour, findings from research also suggest a negative effect (Nyilasy et al., 2014; Zhang et al., 2018). Studies by Yongbo Sun and Shi (2022) confirm that purchase intentions decline when consumers have the impression of greenwashing and this effect is mediated by perceived betrayal. Research by Zhang et al. (2018) also showed that there is not only a direct influence of the GWP, but that this is also mediated by negative word of mouth.

In summary, it can be said that there are a number of findings on the consequences of GWPs. However, the causes of this phenomenon have so far been explained mainly on a theoretical and psychological level. What has remained mostly unexplained so far, however, are the tangible factors in advertising composition itself that could have an impact on this

perception. However, since communication design is the first tool under the direct control of companies, it is worth taking a look at advertising means to find out whether and how they contribute to a GWP.

2.4 Drivers of Greenwashing Perception

In the following, specific aspects of advertising conception will be examined, which can be taken into account in the context of sustainability communication by companies. Although concrete findings of their effect on GWP are still lacking, there are some findings on related constructs, such as trustworthiness or green purchasing behaviour, which indicate that the aspects to be discussed in the following could be related to GWP. Among these, it can be distinguished between advertising factors that apply to the content of the advertising itself and factors that apply to the appearance and presentation of the advertising. Both will be looked at in the following.

2.4.1 Influential Factors in the Ad Content

2.4.1.1 Congruency

Last spring, there was a huge public outcry when Dove went on air with the short film "Cost of Beauty: A Dove Film" (Dove US, 2023). As part of their so-called Self-Esteem Project, they used this film to raise awareness on anorexia by following shocking stories of young girls struggling with an eating disorder. However, the release of the film sparked a real controversy (Donoher, 2023), not only because the content was presented in a triggering way, but also because more and more people were raising questions: what is it that Dove actually has to do with eating disorders? As long as moisturising does not help against an eating disorder, should the brand even get involved in this topic in order to polish up its image? Taking a look at the media world, however, shows that Dove is not the only one doing this. More and more brands are trying to add value to their products by boasting that they are doing good in other social areas. This technique has also established itself as a popular tool in the area of sustainability. It is our high electricity consumption, inefficient heating, high meat consumption and frequent air travel that generate the highest emissions, but in the meantime, there are more and more offers on the market to mitigate their negative consequences - and to compensate for the emissions produced. However, climate activists criticise that this approach suggests "climate sins" to be

acceptable as long as people pay for them instead of avoiding the actual emissions (Tolzmann, 2021). And for companies, this offers a new area for greenwashing, presenting themselves as climate-friendly to the outside world under the guise of CO_2 compensation, but without having to stop their own climate-damaging behaviour. But how can the success of such programmes be explained if all consumers would perceive compensations this way and what role does the congruence of different advertising elements play for consumers in general?

In exploring the perception and evaluation of advertising, congruence appears to be a potential key factor. When talking about this term, congruency is often referred to as the so-called match-up effect. This notion describes how the congruence or incongruence between two elements in an advertisement can influence the advertising effectiveness (Shin & Ki, 2019; Zhang et al., 2018). It is based on the finding that people tend to strive for a balance between their attitudes towards related entities (Basil & Herr, 2006; Jong & van der Meer, 2017). Furthermore, it has also been shown that congruence between two advertising elements is processed on a higher processing route following the elaboration likelihood model and as a result the advertising appears more credible, elicits better attitudes and increases purchase intention (Gong & Wang, 2023; Kumar et al., 2021).

In order to understand how this congruence could be used in the context of green advertising, it is first necessary to outline the different types of "fits" to which references are made in this field. For example, Yuan et al. (2011) distinguished between internal consistency (between the organisation and CSR activities), external consistency (between stakeholder requirements and CSR activities) and coherence (between the different CSR activities). Alcañiz et al. (2010), on the other hand, made a distinction between the functional fit (to the nature of the products or services) and image fit (similarity to brand associations). Other researchers proposed numerous other classification methods, which were taken up by Jong and van der Meer (2017) and explored in a qualitative content analysis. In doing so, they concluded that there are six intrinsic corporate areas that need to be aligned, as well as two superordinate levels of fit that need to be distinguished: the means-level fit, which refers to the tools that the organisation uses for the CSR activity. And the ends-level fit, on the other hand, which refers to the goals that the organisation wants to achieve with the activity. Taking into account those different suggestions, it can be noted that congruence can be achieved and sought at different levels when it comes to creating green advertising campaigns. Aligning these different advertising elements thematically results in a wide range of positive outcomes, such as attitudes towards the advertising itself, the brand, advertising recall or credibility (Carrillat et al., 2013;

Jong & van der Meer, 2017; Kamins, 1990; Pelsmacker et al., 2002; Shin & Ki, 2019) and therefore it is worthwhile to consider the aspect of congruency in the advertising conception.

Pelsmacker et al. (2002) found, within their study, that the congruence between the ad style and the context appreciation in which the ad is presented has a positive effect on attitudes towards the ad and that people also remember the ad better. Other studies, however, looked at the reputation of the company as a whole and the extent to which this should match up with the advertising. For example, Brammer and Pavelin (2006) designed a model of corporate reputation and were able to show that companies need to achieve a fit between the types of social environmental performance and the company's stakeholder environment. Depending on whether this environmental performance fits the company's activities in the eyes of the stakeholders, it can damage or improve the reputation. The same conclusion was also reached by Du et al. (2010), who stated that the CSR fit should be high because stakeholders tend to value those CSR activities more that arise naturally from the organisation's core business. However, other studies pointed out that this fit is not necessarily the best option. Accordingly, a fit is only beneficial in the case when the companies are strongly associated with CSR (vs. associated with entrepreneurial capabilities) and indeed also only when consumer brand awareness is high (R. Chen et al., 2014; Nan & Heo, 2007).

Another stream of research has looked at the congruence between green advertising appeal and the promoted product. These studies have shown that advertising messages are most persuasive when they are congruent with the product category being advertised (K. Kim et al., 2019) and that advertising is rated as more credible when the environmental message is congruent with the brand positioning (Da Vilasanti Luz et al., 2020). Furthermore, it has been shown that a high congruence between advertising appeal, claimed environmental issue and product category not only has a positive effect on advertising attitudes, but consequently also on the purchase intentions (Gong & Wang, 2023; Shin & Ki, 2019).

Further studies by Alniacik and Yilmaz (2012) were able to show that the product does not only have to fit the advertisement, but that this fit is also dependent on the extent to which the product itself is perceived as environmentally relevant. However, there are also contrary findings in which no influence was found of whether the product is associated with environmental issues or not (Ganz & Grimes, 2018).

One topic that has been largely left out of this research area is the question of compensation contributions. Especially in green advertising, marketing arguments are repeatedly encountered that attempt to create an ecological balance by means of green compensation, such as planting trees or donating to non-profit organisations, in order to compensate for the negative impact of

one's own products (Kronenberg & Mieszkowicz, 2011; Neureiter & Matthes, 2023; Rousse, 2008). Following the understanding of congruence efforts described above, two opposing advertising elements can be found in this. The first element consists of the sustainability of the advertised product itself, the second element consists of the sustainability argument. This can refer to the product itself and thus be congruent, or alternatively refer to a compensation service and thus be incongruent with the actual product. Therefore, for the present work congruence will be considered as: the fit between the sustainability argument and the advertised product. A high degree of congruence is present if the sustainability argument is directly related to the product being advertised or its attributes, a low degree of congruence is present if the sustainability argument is product-unrelated and refers to compensatory offsetting services by the company instead.

While it is not yet clear how exactly this type of message affects GWPs, the largely negative effects of incongruent advertising elements in general suggest that negative consequences can be expected in this case as well. Therefore, it is assumed that green advertising arguments that are directly related to and congruent with the product are less likely to trigger GWPs than arguments that promote compensation benefits that do not match up with the sustainability of the product itself. As such, the hypothesis suggests:

H1: Environmental advertisements with low congruency (product-unrelated) will lead to a higher greenwashing perception compared to those with high congruency (product-related).

2.4.1.2 Transparency

If someone in our private lives would try to make us believe that they are perfect and superior in every respect, we would probably come to the conclusion that they are not to be trusted and rather attribute a good deal of hubris or narcissism to them. On the other hand, when we hear about brands that present themselves as flawless and the impeccable number one, only few of us seem surprised. And thus, it has become common practice in marketing to only include positive news in communication. Particularly with regard to environmental responsibility, successes and progress are predominantly reported. Only recently have companies begun to proactively admit that they are not yet implementing everything perfectly. For example, the website of Veja, a sustainable shoe brand, has a dedicated section entitled "limits" (Veja, 2023). Here, the brand lists all the points that have not yet been realised sustainably and what damage

this currently means for the environment. But is this really the right way to convince consumers of their credibility in terms of their commitment to sustainability or does it rather deter them?

The resulting question with regard to the perception of green advertising is that of what specific information should be provided on the topic of sustainability in the first place. One of the biggest hurdles for sustainability-related corporate communication is, that many consumers become aware of the persuasion and conclude that companies are keeping something secret from them (Friestad & Wright, 1994; Pomering & Johnson, 2009). One approach to anticipate this occurrence is therefore to already disclose oneself within the frame of the communication. The term advertising disclosure represents the concept of informing directly in the advertising about the commercial character of advertisements as well as their motivations (Beckert et al., 2020). Studies have shown that such disclosure can help consumers to better recognise the persuasive intent of advertising, which can have positive effects on their perception (Boerman & van Reijmersdal, 2016; Evans & Park, 2015).

However, it should first be noted that a distinction must be made between controllable and uncontrollable CSR information, which means that companies cannot influence all communication in the same way (Parguel et al., 2011). In the context of green business concepts, independent information such as sustainability ratings provided by external organizations are therefore often brought into play, since consumers have greater trust in these sources of information and studies such as the one by Parguel et al. (2011) have been able to show that such ratings can have a positive effect on the reactions to the CSR communication of companies (provided the ratings are good). Besides that, the information provided by the companies themselves also has an impact on the perception. According to Pomering and Johnson (2009), environmental image and corporate identity can be influenced by the type of CSR advertising and found that scepticism towards advertising can be reduced by providing information on long-term commitment and concrete impact, rather than information on policies or programmes in general. However, when it comes to providing negative information, companies have three options they have to choose from: full disclosure, partial disclosure or no disclosure at all. Lyon and Maxwell (2011) called the resulting challenge of this decision making “the basic disclosure game”. According to this, managers would always strive to report as few failures as possible and would prefer to only report successes, unless they are threatened with punishment for withholding negative news. At the same time, however, exclusively positive reporting would lead environmental activists and attentive consumers to suspect greenwashing.

Consequently, there are incentives for companies committed to sustainability to disclose their negative information as well as to withhold such information. A crucial aspect in this respect is the threat of audit and the fear of a public backlash. In their study, Lyon and Maxwell (2011) found that when companies face activist pressure, the types of companies most likely to make partial disclosure are those with a medium likelihood of achieving positive environmental and social outcomes. Because withholding information about a failure can prevent the substantial negative risk of a public backlash for "greenwash", companies are more likely to hold things back than to be forthcoming and transparent. Research by Plumlee et al. (2015), on the other hand, suggests that there is a positive relationship between the quality of a company's voluntary environmental disclosures and firm value, and that voluntary disclosure can be quite beneficial.

In addition to negative information and failures, the disclosure of the company's motivation for engaging in sustainable activities also has a decisive impact on the perception of green advertising (Klein & Dawar, 2004; Parguel et al., 2011; Sjovall & Talk, 2004). A difference can be made between motives that benefit external individuals outside the company (public-serving motives) and motives that benefit the company itself (firm-serving motives) (Forehand & Grier, 2003), whereby the latter can evoke negative reactions from consumers (Campbell & Kirmani, 2000; Drumwright, 1996; Hilton et al., 1993; Yoon et al., 2006). According to this, it would be primarily detrimental for companies to disclose their self-serving intentions. Forehand and Grier (2003) have found, however, that the negative impact of consumer scepticism about a firm's motives can be inhibited by public recognition of the strategic benefits to the firm, which would suggest to rather reveal them. On the other hand, when companies have firm-serving motives but only disclose public benefit motives to the outside world, the evaluation is the lowest, which is why transparency turns out to be the most lucrative option. The same conclusion was reached by Vries et al. (2015), who looked at this issue in an environmentally critical industry, the energy sector. They were able to confirm that the suspicion of greenwashing is reduced by acknowledging economic motives instead of communicating environmental motives for such investments.

The admission of economic intent can thus be quite useful. But also, in terms of the green advertising message itself, these findings can be applied and confirmed. In that regard, a distinction can be made between one-sided and two-sided messages. While one-sided messages only contain arguments that reinforce one particular position, two-sided messages additionally include opposing arguments (O'Keefe, 1999), which can contribute to the perceived objectivity of the advertisement (Hacket, 2008). Beckert et al. (2020) however, were able to show on the

basis of native ads on news websites that even though consumers fundamentally value this transparency, it also leads to the persuasive intent of the ad being perceived as stronger in the short term. With regard to the type of content, they also came to a contrary conclusion than previous researchers, stating that one-sided messages triggered more positive effects than two-sided messages.

Accordingly, it cannot be conclusively said whether one-sided or two-sided messages are more favourable in the context of green advertising. Henceforth, in the context of this study, transparency describes: the degree of openness in the communication of green advertising messages. High transparency refers to a two-sided communication, where weaknesses and failures are acknowledged in addition to successes, low transparency refers to a one-sided communication, where only positive positions are put forward.

While several studies suggest that transparent communication can create a negative attitude, at least in the short term, other studies point to the opposite effect. However, it has been shown that objectivity can be increased through transparency, which is why it is assumed that transparent advertising messages are less likely to be mistaken for greenwashing. Therefore, it is proposed that:

H2: Environmental advertisements with low transparency (one-sided message) will lead to a higher greenwashing perception compared to those with high transparency (two-sided message).

2.4.2 Influential Factors in the Ad Appearance

In addition to the content of the advertising messages, the outer appearance and "packaging" of the advertising messages also have an important influence. A large number of studies have therefore dealt with the visual, but also the textual design of green advertising messages. There are a number of design elements, such as colour, shape, images, logos and claims, which influence consumer reactions (Hoegg et al., 2010; Magnier & Schoormans, 2015; Schoormans & Robben, 1997; Silayoi & Speece, 2007). In terms of visual presentation, it has been fundamentally established that visually appealing advertising is superior in attracting the attention of customers (Pieters et al., 2010). Visual signals are primarily processed by consumers, which is why they are especially important in attracting the attention (Rettie & Brewer, 2000; Schoormans & Robben, 1997). In contrast, verbal elements are associated with more conscious cognitive processing (Obermiller & Spangenberg, 1998).

These effects are specifically used in the field of green advertising. Kostan and Salendu (2020) examined the effect of the general visual aesthetic quality of the advertising as well as the verbal environmental message and were able to determine that both elements had an influence on the green brand associations as well as the respondents' attitude towards the brand, whereby the influence of the visual elements was stronger. Similar studies by Magnier and Schoormans (2015) support these results but in addition found that the congruence of verbal and visual aspects is also important.

2.4.2.1 Visual Appearance

When people speak of green marketing, in many cases this is actually being taken literally. Green colours and nature imagery bridge the gap between the message to be conveyed and the visual expression of sustainability advertising. These associations are deliberately created by brands, but a critical look shows that not only sustainable brands make use of them. In 2009, for example, McDonald’s Germany underwent a major colour change: with loads of green instead of red as the new brand colour. Holger Beeck, Vice President of McDonald's Germany, explained in the ‘Financial Times’ that the colour shift should also be understood as a commitment and respect for the environment (Maier, 2019). However, anyone who is serious about environmental protection must present a convincing concept in addition to a new exterior facade. A proof that the fast-food chain has so far failed to provide. One could therefore come to the conclusion that the fast-food group's eco-friendly image is nothing more than window-dressing (Liebrich, 2010). So how do consumers perceive it when the green paintbrush is wielded in advertising campaigns? Are brands like McDonalds doing themselves a favour with this kind of visual presentation or are they just encouraging further scepticism?

There are various theoretical approaches to explain the influence of visual elements on the perception of advertising. Some studies, for example, fall back on evolutionary psychological explanatory models and were able to show that these reflect a valid instruments in explaining advertising effects (Hartmann & Apaolaza-Ibáñez, 2010; Saad, 2007). According to those, visual elements can have a positive effect on physical and psychological well-being (Frumkin, 2003) and further influence consumer behaviour.

Another explanatory approach can be found in the signalling theory. Due to the information asymmetry between buyers and sellers in the marketplace, consumers rely on judging products and services based on insufficient, misleading or otherwise incomplete information and therefore use cues or signals to evaluate the product quality (Atkinson & Rosenthal, 2014;

Kirmani, 1997). This signal thus represents an informational cue by the seller that has nothing to do with the product itself, but is intended to help the consumer to draw conclusions about the quality or value of a product (Bloom & Reve, 1990).

One of these signals is the deliberate use of colours. Colours can fundamentally change the perception in two different ways: firstly, through the embodied meaning of a colour which is intrinsic and context-independent, conveyed through hedonic or biological aspects. Secondly, through the referential meaning, which is generated by semantic associations or concepts from the real world (Meyers-Levy & Zhu, 2010). In the field of sustainability communication, the colour green is used frequently, as it is associated with environmental practices, environmental commitments and concerns (Y.-S. Chen, 2010; Choi et al., 2019). Lim et al. (2020) have studied the reactions of consumers to advertisements in which environmental friendliness is presented by colour and were able to confirm that the colour green (vs. grey) is associated with environmental friendliness and is more effective in generating positive attitudes and purchase intentions.

In addition to the colour itself, green advertising often relies on the use of nature imagery (Hartmann & Apaolaza-Ibáñez, 2010). It has been shown that nature images can evoke positive emotional responses (Chowdhury et al., 2008; Colarelli & Dettmann, 2003) and have a positive impact on well-being (Frumkin, 2003). It addition, it has been validated, that viewers have a stronger preference for familiar biomes and natural environments in the pictures used in ads (Cackowski & Nasar, 2003). These images can furthermore evoke autobiographical memories, causing feelings similar to those experienced in the real contact with nature, which increases the effectiveness of advertisements (Baumgartner et al., 1992). In order to analyse the affective reactions to advertising images, Hartmann and Apaolaza-Ibáñez (2010) conducted a study in which they compared natural environments to urban scenes and found more positive behavioural effects from those visual stimuli that depict nature scenes with biospheric content. They also confirmed the finding that the subject's familiarity with a particular type of landscape affected this effect. Further studies were able to support and supplement these results by showing that, in addition to affective reactions, nature images also cause an increase in ad attitude, brand attitude and purchase intention (Hartmann et al., 2016; Schmuck, Matthes, Naderer, & Beaufort, 2018).

Especially when consumers see advertisements for an unfamiliar brand these visual cues are used to infer unobservable brand attributes (Leuthesser et al., 1995). However, the effect is undermined in the case of green consumers in particular, who are very familiar with the topic

(Hartmann et al., 2016), and the stronger the suspicion or knowledge of persuasion, the smaller the effect of visual aspects (Lim et al., 2020).

Based on that, in the course of this study, the visual appearance is understood as: the visual elements and design aspects of an advertisement that are used to convey a message. In addition to the colour scheme, it also includes the imagery of the ad.

Hence, it can be summarized that the use of green visual cues can have positive affective and behavioural effects. If, on the other hand, there is a suspected manipulation in the room, this effect could be reduced. The open question, however, is whether the visual appearance itself can already induce this suspicion, which is why the present study investigates this issue. According to the signal theory and in line with the findings of evolutionary psychology, it is assumed that advertising, which is designed with the colour green and images of nature, is used as an indicator of sustainability and consequently leads to a lower GWP. Consequently, the hypothesis asserts that:

H3: Environmental advertisements containing neutral colour and imagery will lead to a higher greenwashing perception compared to green colour and nature imagery.

2.4.2.2 Message Framing

Dolphins tangled up in plastic nets, turtles covered in dirt and burning rainforests. These images are presented to users when they scroll through the Instagram profiles of environmental organisations such as “Greenpeace” or “Sea Shepherd (Greenpeace International [@greenpeace]; Sea Shepherd [@seashepherd], and for those for whom this is not enough, they can watch full-length videos on YouTube showing the shocking consequences that our environmental pollution is having on nature. Non-profit organisations have long recognised that scary images can move people to take action. But what is already common practice among these organisations, is something that companies still seem to shy away from. Instead of creating a guilty feeling, green advertising tends to favour telling the good news in order to sell products. True to the motto "Our ambition is to achieve ZERO Packaging Waste" (Carlsberg, 2023) or "Create Bottle Prototype Made from 100% Plant-Based Sources " (Coca Cola, 2021), brands are trying to make a name for themselves as environmentally friendly in a positively framed manner. But how credible are those claims actually perceived to be and which of these two approaches creates more trust among consumers?

One and the same message can be expressed in multiple different ways. A popular method, which incorporates this, is the so-called framing, in which the topic is intentionally embedded in an interpretive pattern (Segev et al., 2015; Xue, 2015). This approach goes back to some psychological effects that suggest that messages are processed differently depending on their framework. One of the best known of these explanatory models is the elaboration likelihood model, which goes back to Petty and Cacioppo (1984). According to this model, there are two routes by which the reception of messages is processed: the central and the peripheral route. The central route describes cognitive processes in which elaboration is high. On the peripheral route, on the other hand, elaboration is low and cue stimuli are used to make associations.

In advertising, this is often used when advertising messages are to be embedded functionally (central route) or emotionally (peripheral route). However, findings on this are mixed. Some researchers suggest that cognitive factors, such as environmental knowledge, have little influence on green purchase behaviour, while affective factors have a strong influence (Finger, 1994; Smith et al., 1994). For example, in a study that examined the influence of emotional and functional advertising attributes in green advertising on brand attitudes, Hartmann et al. (2005) showed that the emotional component had the stronger influence, but also found that the highest effects occurred with a combined green positioning strategy that displayed emotional as well as functional aspects. Further studies investigated whether there is a difference in processing between green and non-green consumers. Matthes et al. (2014) found that emotional appeals worked equally well for both consumer groups, while functional appeals only worked for green consumers. Pittman et al. (2021) confirmed this result and were able to show that especially non-green consumers can be persuaded by emotional advertising messages to adopt environmentally friendly behaviours.

Another question in the construction of the purchase argument for green products is who its benefit is primarily referring to. While self-referencing arguments establish a self-connection and lead consumers to associate the product and its advantages to themselves (Meyers-Levy & Peracchio, 1996), environment-referencing arguments are rather focused on highlighting the general benefit for the environment (Banerjee et al., 1995; Iyer & Banerjee, 1993). Also in this consideration, psychological aspects have a part to play. In particular, the creation of a self-reference can strengthen the perceived coping efficiency, meaning the feeling that one's action will actually lead to the desired outcome, and thus create an increased intention to engage (Torelli et al., 2020). Studies by Pickett-Baker and Ozaki (2008), among others, were able to confirm this by showing that the probability of consumption is increased when self-interest is emphasised in the ad message. A somewhat more detailed study, on the other hand, was able to

show that self-referential appeals work better with negative frames, while environmental appeals that emphasise benefits to others would work better with positively framed messages (Loroz, 2007). Segev et al. (2015) picked up on these findings and further discovered that in the context of green advertising, gain frames combined with self appeals generally elicited more positive responses than loss frames combined with environmental appeals. Green and Peloza (2014) also investigated the influence of the situational context in this sense. Their studies were able to show that green self-framed advertisements work better in a more private setting, while environmental appeals are more effective in a setting where public responsibility is emphasised.

Besides these aspects, another framing factor has just been brought into play: the positive or negative framing of advertising messages. In this context, this is often referred to as gain vs. loss framing. In terms of green advertising, this is extremely important, as one repeatedly encounters ads that use fear or guilt appeals about what one would stand to lose as a consumer if purchasing decisions were not made in a sustainable way (Kareklas et al., 2012; Segev et al., 2015). However, the research findings on what kind of framing works better are very complex. For example, loss messages have been shown to be more effective in encouraging risky behaviours, while gain messages are more effective in encouraging cautious behaviours (Rothman & Salovey, 1997). For example, when the goal is to encourage recycling, loss-messages coupled with a concrete appeal were more effective, while gain-messages coupled with an abstract appeal were more effective in achieving the goal (White et al., 2011). Xue (2015) added the cultural component to these effects, which also plays into the perception of such frames, and showed interaction effects with individualistic versus collectivistic appeals.

By contrast, the use of fear and threat in advertising often has the purpose of inducing a rapid change in behaviour, such as quitting smoking (Manyiwa & Brennan, 2012). The extent to which this call is subsequently followed can be explained by the theory of protection motivation (Maddux & Rogers, 1983). According to this, consumers confronted with a threat appeal follow four independent cognitive appraisal processes that determine the behavioural response: (1) the appraisal of the perceived severity of the threat, (2) the likelihood of the threat to occur, (3) the possibility of eliminating the threat, and (4) the ability to perform this coping behaviour. This type of framing follows the intention of inducing rapid behaviour change and emphasising attitude towards the issue (Hartmann et al., 2014; Shin et al., 2017). However, current research shows that this may not be the most prudent approach in the context of green advertising. Numerous studies have shown that fear appeals have a negative impact on attitudes towards the advertising itself and also towards the products advertised (Moore & Harris, 1996; Shin et al., 2017). Research by Hartmann et al. (2014), on the other hand, has shown that

exposure to environmental threat appeals related to climate change significantly increased pro-environmental intentions, with the effect being reinforced by perceived coping efficacy.

However, there is so far no empirical evidence on the specific impact of message framing on the GWP. In contrast to most of the findings just described, GWP is not about seeking behavioural change or capturing purchase intentions, which is why it is assumed that the superiority of negative messages as found in the initiation of rapid behavioural change will not be reflected in here. Instead, the focus is on the spontaneous assessment of the advertising and whether it is considered credible or as greenwashing. In this sense, for the present study, message framing is understood as: the thematic embedding in which information is presented. Positive appeals highlight the potential gains and benefits from the advertised product, while negative appeals aim to emphasise potential losses if the decision is made otherwise or to incite threat.

Since some studies already indicate that threat appeals negatively influence attitudes towards advertising and the respective product, it is assumed that such framing will also lead to a stronger GWP. Hence, it is hypothesized that:

H4: Environmental advertisements containing negative (threat) appeals will lead to a higher greenwashing perception compared to positive (gain) appeals.

2.4.2.3 Specificity

How do people recognise whether a product is green and a brand is truly sustainable? By CO_2-neutral production, the use of organic and natural raw materials, regional distribution, a durable construction method or by employees coming to work in Birkenstocks instead of Adilettes? And how are we supposed to evaluate it when companies can simply declare themselves as sustainable in their advertising? The European Commission addressed these questions and came to the conclusion under the European Green Deal, which was announced in 2019, that it wanted to create more clarity in the language used (European Commission, 2019). Generic environmental claims such as "environmentally friendly", "natural", "biodegradable", "climate neutral" or "eco" are to be banned in future if there is no evidence of recognised outstanding environmental performance that is relevant to the claims (European Parliament, 2023). However, the Commission failed to specify not only which criteria could be used to determine such environmental performance, but also to answer the question of whether consumers can actually be given more clarity in this way. While most people have an idea of what

"environmentally friendly" means, assessing that ingredients such as palm oil, Nylon-12, Acrylates Copolymer, Paraffin, Oxybenzone or Ethylhexylpalm oil are harmful for the environment requires considerably more background knowledge. Consequently, the question arises as to how consumers deal with the information available to them and its level of detail in order to judge the trustworthiness of green advertising.

The remarkable thing about this aspect, whether claims are expressed concrete or generalised, is that it is already inherent in many definitions of greenwashing. For a number of those definitions, unspecific claims would be categorised as greenwashing (Y.-S. Chen & Chang, 2013a; Segev et al., 2016). Without intending to contradict such a statement, the question must be allowed as to whether this is also reflected in the subjective perception of consumers. Alternatively, one could raise the thesis that vague and general statements at least cannot be directly refuted and thus cannot be declared as false statements, which could possibly lead to such claims not being perceived as greenwashing. For example, studies by Schmuck, Matthes, and Naderer (2018) show that while false claims strengthen perceptions of greenwashing and damage attitudes towards brand and advertising, vague claims do not, and this effect is further found to be independent from the environmental knowledge or concern of the consumers. Therefore, the next section will take a look at the current state of research in this area.

In the first step, an overview will be made of the types of claims that can be generally distinguished. Carlson et al. (1993) differentiate between four categories of environmental claims. According to these, the environmental claim in an advertisement can refer to (1) the product attributes, (2) the production process, (3) the corporate image or (4) the stating of environmental facts. Further studies, which took up these claim types, could determine that the different types are differently effective, whereby in particular substantive claims provided for a positive effect on the green brand associations (Kostan & Salendu, 2020).

Within each of these categories of environmental claims, however, there is also the possibility of formulating the claim very broadly and generally or, alternatively, of linking it to very specific statements. Whereas specific claims contain rich information that describe concrete and tangible environmental attributes and benefits of the product, vague claims are abstract, unspecific or ambiguous phrases with no evidence to back them up (Alniacik & Yilmaz, 2012). However, which of these approaches works better is discussed very controversial. On the one hand, studies show that specificity helps to reduce the information asymmetry between brand and stakeholders (Berrone et al., 2017), creates more credibility and trust as well as positive attitudes towards the product (Atkinson & Rosenthal, 2014; Ganz &

Grimes, 2018). On the other hand, it has been shown that CSR messages that are strategically vague and ambiguous are more effective (Scandelius & Cohen, 2016) and help to reduce stakeholder tension (Dickinson-Delaporte et al., 2010).

The studies on this topic show a very mixed picture. For example, a study by Hur et al. (2020) showed that concrete (as opposed to abstract) appeals lead to greater purchase intentions and improved curiosity and price acceptance, and explained this by the fact that the information was easier to verify. Studies by Alniacik and Yilmaz (2012), on the other hand, showed that the specificity of a green claim did not have a significant impact on the evaluation of product advertisements with high relevance, but that the communication effectiveness of specific green claims was found to be higher, when products were of low environmental relevance. Further studies suggest that the effect of specificity depends on other influences and brought, for example, brand competence level and brand warmth into play as determining factors (Janssen et al., 2022). In order to conclude the whole picture, it is worth mentioning a study by Atkinson and Rosenthal (2014), which found an influence of claim specificity on the attitude towards the advertised product, but no effect on the purchase intention.

The picture that emerges regarding the effects of claim specificity is therefore quite varied. Accordingly, in the course of this study, specificity refers to: the degree of providing detailed and concrete information about the environmental characteristics of a product. Specific claims include tangible information supported by evidence, whereas vague claims are non-specific and ambiguous.

Even though a number of other influencing factors were introduced into the discussion, a preference for specific messages emerges in the majority of studies, especially when it comes to the credibility of the advertising. However, it is still unclear whether there is a direct influence of specificity on GWP that would justify its inclusion in the definition of greenwashing. Even though hardly any significant effect of specificity on purchasing behaviour has been found so far, the perception of advertising could be affected, especially when it comes to low-involvement products, which are subject of the present study. It is therefore assumed that unspecific claims lead to a higher GWP:

H5: Environmental advertisements containing vague claims will lead to a higher greenwashing perception compared to specific claims.

2.4.3 Influential Factors of Consumer Characteristics

As already mentioned, the perception of green advertising depends on a range of factors. In addition to the conceptualisation of the advertising itself, the characteristics of the consumers also play a role in how they perceive the advertising. While the focus of this study is clearly on the aspects of advertising that can be directly influenced by advertisers, it cannot disregard the target audience to which advertisers can direct their advertising to be most successful. Since there are some findings indicating that consumer attitudes can have a significant influence, these will be presented in the following to control possible advertising effects for these. In particular, the increased ecological awareness of consumers is a decisive driver about the distrust of green marketing practices (Chatterjee, 2009; Hesse, 2022; Iglesias et al., 2020), which is why the findings on this will be examined in more detail.

2.4.3.1 Environmental Concern

To provide a description of the recipients of green advertising, several links can be identified that serve as the basis for delineating their characteristics. There are socio-demographic characteristics such as gender, age or income on the one hand, and psychographic characteristics such as altruism, liberalism or EC on the other. Akehurst et al. (2012) have taken up this multitude of potential characteristics in order to identify the decisive determinants of environmentally conscious consumer behaviour in a comprehensive study. In their analysis, they examined a green consumer profile and were able to determine that the psychographic variables are more relevant for explaining sustainable consumer behaviour than the socio-demographic variables.

The basis for this lies in the theory of planned behaviour, which states that behavioural decisions are usually not made spontaneously but are the result of a rational process. According to this, consumer behaviour is influenced by attitudes, norms and the perception of control (Ajzen, 1985; Kalafatis et al., 1999). Following this notion, pro-environmental attitudes should lead to green environmental behaviour and also green purchasing decisions. A look at the research, however, cannot fundamentally confirm this. For example, a study by Finisterra do Paço and Reis (2012), which investigated whether consumers who care about the environment, save resources and have environmentally friendly buying habits, shows that more environmentally conscious people were also more sceptical about green statements on

packaging or in advertising and their attitudes had no significant effect on environmental protection behaviour or buying behaviour.

Therefore, the first thing to consider is which trait one would like to use to define the green consumer in the first place. Under the title green traits, Hartmann et al. (2016) listed a number of scales that can be used to describe green consumerism. These included various constructs and concepts that had previously been established by other researchers, such as environmental awareness (Dunlap & Jones, 2002; Dunlap et al., 2000), the nature relatedness (Nisbet et al., 2009), biospheric values (Schwartz, 1994) and measures of environmentally friendly consumer behaviour (Roberts & Bacon, 1997). In addition to the concepts mentioned here, there are several other concepts, of which only those will be explored below for which there are already revealing findings in connection to the perception of green advertising or greenwashing.

One factor that is repeatedly mentioned in this context is *environmental knowledge*, which describes the individual's ability to recognise environmental concepts, symbols and behaviours associated with environmentally friendly goods and services (Ahmad & Thyagaraj, 2015). In this regard, a study by Adetola et al. (2021) investigated the extent to which consumers' perceived consumption values had an influence on their intention to visit green hotels and found a positive influence of environmental knowledge. Other studies were able to confirm this relationship and show that knowledge correlated positively with green consumption behaviour (Delistavrou & Tilikidou, 2006; Pagiaslis & Krontalis, 2014; Tanner & Wölfing Kast, 2003). In contrast, however, studies by Schmuck, Matthes, and Naderer (2018) indicate that knowledge has little influence or at least no moderating effect on the relationship between environmental claims and perceived greenwashing.

Another concept in this context is the *environmental involvement*. Matthes et al. (2014) describes this as the degree to which a person perceives an attitude object, in this case in connection with environmentally related brand-relevant topics such as green products, packaging, eco-labels or advertising, as personally relevant. However, the results on this issue differ once again. On the one hand, studies have shown that consumers who are more involved in environmental issues also have more confidence in green advertising and evaluate it better than low-involved consumers (D'Souza & Taghian, 2005; Shin et al., 2017) and that the involvement also acts as a reinforcing moderator in the effect of green advertising on purchase intention (Schmuck, Matthes, Naderer, & Beaufort, 2018). Studies by Hesse et al. (2022), on the other hand, confirmed the positive correlation between involvement and perception of green products, but also found a higher level of scepticism among high-involved consumers.

Finally, the concept of *environmental concern* is the most common in research on green advertising and greenwashing. It refers to a person's belief, position and level of concern about the environment (Fontes et al., 2021), whereby Dunlap and Jones (2002) emphasise that it is a combination of awareness of environmental problems themselves with the additional willingness to be part of the solution. Consequently, consumer behaviour-specific beliefs also play a role in the emergence of the intention to use or buy environmental products (Alniacik & Yilmaz, 2012). First of all, it can be stated that consumers today are very concerned about the environment and that this also affects their everyday consumption preferences (Akehurst et al., 2012; National Geographic & GlobeScan, 2009). At the same time, there are demographic differences in concern, with Pagiaslis and Krontalis (2014) finding that levels of concern and knowledge are highest for middle-aged, upper white-collar, university-educated and relatively high-income consumers, or in other words, upper-middle class consumers.

A comprehensive body of research has shown that EC has a number of positive outcomes (Pagiaslis & Krontalis, 2014). Among other things, the concern has a positive influence on the willingness to pay (Bang et al., 2000; Laroche et al., 2001), the intention to purchase environmentally friendly products (Albayrak et al., 2013; Kalafatis et al., 1999) and environmentally friendly behaviours (Adetola et al., 2021; Delistavrou & Tilikidou, 2006; Roberts & Bacon, 1997). However, controversy is again reflected here, as it has also been shown that Millenials, for example, who would not be expected to do so, have turned out to be less environmentally friendly (Bonera et al., 2020) and that consumers who have stronger concerns do not necessarily behave in a more environmentally friendly way (Shabbir et al., 2020). Studies by Schmuck, Matthes, and Naderer (2018) also indicate that concern has no influence on the perception of green advertising claims, but mention that this could be due to the fact that they only tested low involvement products in their study.

According to studies by Fontes et al. (2021), there is indeed a relationship between EC and green purchasing behaviour, with EC, environmental attitude, environmental behaviour and purchase intention being good predictors of green purchasing behaviour. In addition to such direct effects of EC, it was also found that this factor has proven to be a decisive moderator in the effectiveness of various advertising elements. For example, Magnier and Schoormans (2015) showed that low EC consumers were sensitive to the incongruence between visual appearance and verbal sustainability claims, whereas high concern consumers were not. Furthermore, green concern reinforced the negative relationship between perceptions of greenwashing and intentions to purchase environmentally friendly (Zhang et al., 2018). Summarising this discordant research picture, Albayrak et al. (2013) argue that much of the

research on the effects of green concern on environmentally responsible behaviour is mostly non-significant or has had very low to moderate effects.

This shows that consumer-related characteristics such as environmental consciousness result in very different outcomes. On the one hand, green consumers seem to be more open to green advertising messages, but on the other hand they are also more sceptical about them, and the environmentally conscious attitude of consumers alone does not automatically lead to corresponding purchasing behaviour. In the context of this study, therefore, the question is not how EC affects behaviour or behavioural intentions but is rather interested in the influence it has on consumers' advertising perceptions. In this sense, environmental concern is understood in this research as: a person's knowledge, position and concern about the environment.

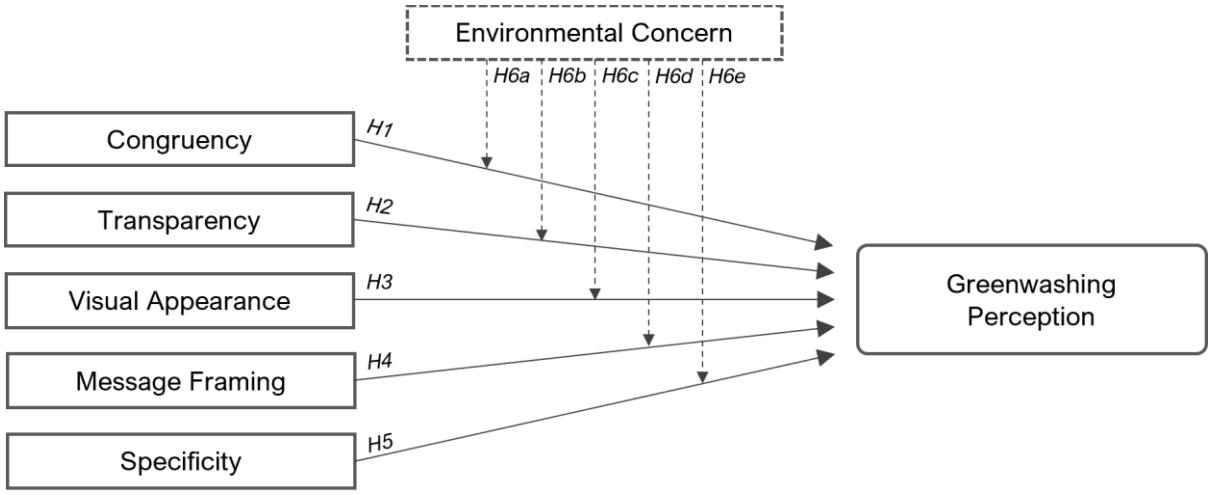
It is still debatable whether this characteristic makes consumers more critical of green advertising and thus have a stronger GWP, or whether, on the contrary, they are more open to green advertising messages and less inclined to suspect greenwashing. However, the research described above suggests that concern has at least some influence on the perception of the different advertising factors, although it remains unclear in which direction, therefore it is introduced that:

H6: Environmental concern will moderate the effect of (a) congruency, (b) transparency, (c) visual appearance, (d) message framing and (e) specificity on the greenwashing perception.

2.5 Conceptual Framework

This study aims to investigate the influence of different factors in the composition of green advertising on the perception of greenwashing. Five different determinants are being considered. The conceptual framework is presented in Figure 2.**1** and summarises the research approach. Congruency (H1), transparency (H2), visual appearance (H3), message framing (H4) and specificity (H5) are considered as antecedents of GWP. Furthermore, a moderating effect of EC on the respective relationships is assumed (H6a - H6e).

Figure 2.1: Conceptual framework



3 Methodology

In the following, the development of the empirical study is described, with particular emphasis on the design of the study, the generation of the test materials, and the implementation and evaluation of the survey.

3.1 Research Method

In order to test the hypotheses, a between-subjects experiment was developed with five independent variables. Each variable had two levels. Accordingly, a 2 x 2 x 2 x 2 x 2 study design was employed. The independent variables that were manipulated are congruency (high vs. low), transparency (high vs. low), visual appearance (green vs. neutral), message framing (positive vs. negative) and specificity (specific vs. vague).

Therefore, 32 experimental groups were investigated in an online survey. Since the interest of the study was not to determine any interaction effects, but to record the direct influences of each independent variable on the GWP of consumers, the independent variables were considered and evaluated independently of each other. Thus, in each experimental group, participants went through a sequential examination of the five variables with only one variable being manipulated at a time, instead of crossing all variables within one condition.

3.2 Stimuli

For the experimental manipulation of the five independent variables, advertising materials were self-created. This involved a total of 10 different poster advertisements (5 variables x 2 levels) for fictional sustainable soap brands. For each of the variables, two advertisements were created, which differed from each other in terms of text and visual design. For the 'message framing' variable (positive vs. negative), for example, firstly one stimulus was created that builds up a positive scenario. Subjects who were assigned to this positive message framing condition saw an advertisement in which expressions such as "Revive the planet with 100 % recycled soap bottles!" were used. In contrast, the second stimulus for participants in the other condition emphasised negative aspects using phrases such as "Plastic soap bottles are destroying our planet!". Likewise, stimuli were developed for all five variables (see Appendix A1).

When it came to choosing the type of advertising, the decision was made in favour of a poster ad for the following reasons. Firstly, this medium allows the integration of graphic as well as textual elements. Secondly, it remains neutral with regard to placement in the context, and thus a preference of the context can be excluded as a confounding variable. Moreover, this advertising format has proven to be an effective tool in previous studies (Kostan & Salendu, 2020; Nyilasy et al., 2014; Schmuck, Matthes, & Naderer, 2018).

Furthermore, the brands were of an apparent fictional nature (Alpha Soap, Beta Soap, Gamma Soap, Delta Soap, Epsilon Soap). Similar to a number of other studies, a fictional brand was selected to avoid any effects of brand familiarity or brand liking (Nyilasy et al., 2014; Parguel et al., 2011; Schmuck, Matthes, & Naderer, 2018; Szabo & Webster, 2021), because these could have an influence on the advertising responses (Kent & Allen, 1994). The participants' evaluations were thus based exclusively on that information about the environmental commitment of the fictional brands, which were contained in the advertising.

In all the ads, the advertised product was an environmentally friendly soap. For the selection of the product category, it was considered that it should be a low-involvement product and that it does not belong to an intrinsically controversial category such as alcohol or tobacco. For such types of products, effects can occur that inconsistently strengthen consumer suspicion (Parguel et al., 2011) and could thus interfere with the GWP. Besides that, various studies show that product involvement directly interacts with the processing and appraisal of information (Petty & Cacioppo, 1984). While consumers in high-involvement situations take a closer look at the specific advertising arguments, they tend to form their opinions in low-involvement situations based on weaker signals and heuristics (Atkinson & Rosenthal, 2014; Pelsmacker et al., 2002; Segev et al., 2015), and identifying the latter constitutes the aim of the present study.

Moreover, the choice of a product from a non-environmentally sensitive industry was deliberately made. Hand soap appears to be neither an inherently green product nor an inherently environmentally harmful product. On the contrary, in environmentally sensitive industries such as the oil or fast fashion industry, it was found that the scepticism towards green advertising attempts is induced by the industry itself (Rathee & Milfeld, 2024; Torelli et al., 2020). In the context of this study, the avoidance of such industries allows the perception of advertising to be inferred from the manipulated factors and excludes influences by the industry. Compared to this, soap represents a common daily necessity that is not inherently environmentally sensitive, but for which there are still sustainable alternatives existing for green consumption.

3.2.1 Stimulus Development

For the actual creation of the advertising material, a multi-step process has been undertaken following the approach of Nyilasy et al. (2014). The stimulus development process comprised the following steps.

(1) First of all, a wide variety of product ads were reviewed in different magazines and publications (e.g. *The New York Times, Wall Street Journal, The Economist, Der Spiegel, Handelsblatt, Süddeutsche Zeitung*).

(2) Based on this, a first draft of the structure and components of the advertising material was sketched. Accordingly, the choice was made for a graphic background, a product image, company name, call-to-action and three text modules.

(3) For the content elaboration of the stimuli according to the intended manipulation, previous studies on related topics from the literature served as the basis (Atkinson & Rosenthal, 2014; Forehand & Grier, 2003; Hartmann et al., 2014; Hartmann et al., 2005; Kostan & Salendu, 2020; Lim et al., 2020; Nyilasy et al., 2014; Pittman et al., 2021; Schmuck, Matthes, & Naderer, 2018; Schmuck, Matthes, Naderer, & Beaufort, 2018; Schwartz, 1994; Shin & Ki, 2019; Shin et al., 2017; Vries et al., 2015). The texts and graphics used in similar studies were adapted according to the study concept presented here. If one takes the example of 'visual appearance', previous studies have used photographs of a lake surrounded by mountains and forests for the implementation of a natural design (Hartmann et al., 2005; Matthes et al., 2014; Schmuck, Matthes, Naderer, & Beaufort, 2018), which is why the same type of picture was used in this study. In order to enable a realistic adaptation of the arguments to the product soap, practical examples were also incorporated. Sales arguments and text parts from websites and advertising campaigns of sustainable soap products on the market served as inspiration (*Marcel's Green Soap, Hopery, Ethique, Jungle Culture, Blueland, Dropps*).

(4) Finally, the resulting designs were visually realised using the graphic design platform ‘Canva’. In the design, emphasis was placed on clear communication and a realistic look.

(5) Finally, the ads were tested by a small sample, to ensure that the ads and scenarios clearly conveyed the intended message.

3.3 Prestudy of Stimulus Material

The stimuli were created on the basis of other studies and advertising materials from practice. However, since the stimuli were self-created, it was necessary to carry out a quantitative

manipulation check to determine the effectiveness of the manipulation in the experimental design. In order to prevent invalid results in the main study, this check was conducted in a preliminary study. This procedure is also known from other studies with self-composed stimulus material (Nyilasy et al., 2014; Schmuck, Matthes, & Naderer, 2018), in order to ensure that the intended manipulation of the variables is also perceived as such by the participants.

For this purpose, an online survey with a sample size of $N = 23$ was conducted, whereby the sample was independent from the main study. The questionnaire assessed the socio-demographic characteristics in the first part (see Appendix B1), and the stimuli were tested in the second part and an open question was posed in the third part. The procedure and the questions were identical for all participants (see Appendix A2).

In order to test the stimuli, the participants were presented with each advertisement and their corresponding variable definition. The test persons were then asked to rate the extent to which the advertisement matches the intended characteristics using a 7-point Likert scale. Taking the example of the variable 'transparency', the participants were shown the previously established definition "Transparency describes the degree of openness in the communication of green advertising messages. High transparency refers to a two-sided communication, where weaknesses and failures are acknowledged in addition to successes, low transparency refers to a one-sided communication, where only positive positions are put forward" and were instructed to rate the advertising material (1 = low transparency; 7 = high transparency). This procedure was repeated by each participant for all 10 stimuli. The last part consisted of an open question: "When you think of the term "greenwashing", how would you describe it or what do you think 'greenwashing' is?" in order to find out whether there could be further explanations or aspects in the stimulus design that might have an effect on the main study.

To test how participants perceived the two advertisements of each corresponding variable, paired-samples t-tests were conducted to compare the mean values. The results revealed that for all five variables the advertising materials significantly differed (see Appendix B2). Respondents rated the high congruency ad ($M = 5.83$, $SD = 1.07$) to be more ‘congruent’ than the low congruency ad ($M = 2.96$, $SD = 1.80$, $p < .001$). Likewise, respondents perceived a greater correspondence between the ‘transparency’ definition and the high transparency ad ($M = 6.43$, $SD = .66$), compared to the low transparency ad ($M = 3.48$, $SD = 1.90$, $p < .001$). The advertisement, which was to represent a green visual appearance ($M = 6.26$, $SD = 1.01$) was also found to be ‘greener’ than the neutral appearing ad ($M = 2.39$, $SD = 1.20$, $p < .001$). Similarly, the positive framed ad ($M = 5.52$, $SD = 1.41$) was more strongly perceived as a ‘positive message’, than the negative framed ad ($M = 2.26$, $SD = 1.60$, $p < .001$). And last but

not least, the data shows that the respondents rated the specific ad (M = 5.87, SD = 1.36) as more 'specific' than the vague ad (M = 1.70, SD = 1.02, $p < .001$). Accordingly, the results of the t-tests revealed, that each of the advertising stimuli is actually found to be associated with the intended condition.

The free responses to the open question about the understanding of greenwashing were examined by performing a qualitative content analysis. For this purpose, categories were extracted inductively, and the answers were coded manually (see Appendix B3). This revealed that the majority of participants considered greenwashing to be a manipulative marketing strategy (60 %). In addition, more than half of respondents associated greenwashing with false statements or exaggerations about the sustainability of the company (55 %). The understanding of greenwashing thus corresponds substantially to the further operationalization of the construct for the main study, and the responses did not provide any indications of other potentially confounding influencing factors.

Following these results, it can be concluded that the content validity of the designed stimuli is sufficiently high. The designed ads and scenarios clearly communicated the intended messages and were therefore suitable for application in the main study.

3.4 Measurement of the Constructs

The items used in the questionnaire have been adopted from previous studies. Thus, scales were applied that have already been tested and validated numerously. All items were rated on a 7-point Likert scale (1 = Strongly disagree; 7 = Strongly agree). GWP was assessed with a battery of 3 items, EC with a battery of 11 items.

Greenwashing Perception. A number of papers devoted to the topic of green marketing make a valuable contribution to the greenwashing literature. However, it must be noted that, under strict distinction of greenwashing and GWP, many of the scales do not measure the actual perception (Y.-S. Chen & Chang, 2013a; Nyilasy et al., 2014; Parguel et al., 2011; Rahman et al., 2015). One of the most cited and well-known scales in the field is that of Y.-S. Chen and Chang (2013a) on which a number of other research models are built up. Despite the fact that this scale was developed for greenwashing (not greenwashing perception), many articles dealing with perceived greenwashing nonetheless refer to the just mentioned scale (Schmuck, Matthes, & Naderer, 2018; Yongbo Sun & Shi, 2022; Szabo & Webster, 2021; Zhang et al., 2018). However, the items used in the scale already focus on the advertising components, such as the use of vague claims. In the present study, however, this would lead to a circular reasoning.

The same problem occurs with adapted scales such as those form Zhang et al. (2018) or Yongbo Sun and Shi (2022), which is why all of these scales are unsuitable for the present study despite their popularity. Consequently, a scale that allows a clear separation and is limited to the perception of the advertised brand alone was used instead. For this, the items from the 'Perceived Corporate Greenwashing' scale by Vries et al. (2015) were taken over and adapted (see Appendix B4).

Environmental Concern. For the assessment of EC, an 11-item scale was operationalised on the basis of Dunlap et al. (2000). In a recent comprehensive study, Cruz and Manata (2020) reviewed a large number of different scales for eliciting EC and examined their structural validity. They identified the scale by Dunlap et al. (2000) as one of the most popular ones and confirmed its suitability for measuring the construct of EC. This scale was chosen despite the partial superiority of alternative scales because it focuses on attitudes rather than behaviours, as consumers tend to overestimate their own green behaviour due to social desirability (Culiberg & Elgaaied-Gambier, 2016). Cruz and Manata (2020) also showed that an improved model fit and reliability could be achieved by excluding some items and restructuring the factors, which is why their proposed adaptation of the original scale was used in this study, resulting in 11 items representing three factors of the latent construct EC (see Appendix B4).

Socio-demographic Measures. Five key demographic variables were collected. These included country of residence, gender, age, education, income and current situation. The selection of the corresponding scales and categories was based on previous studies and theses (Brinda et al., 2022; Como, 2021; Kaur et al., 2022; Yongbo Sun & Shi, 2022).

To ensure that only seriously completed questionnaires are included in the analysis, an attention check was integrated in the survey (see Appendix A3).

3.5 Data Collection and Sample

Due to the fact that the unit of analysis in this research is at the consumer level, a questionnaire was selected for the investigation in reference to previous works (Y.-S. Chen, 2010; Y.-S. Chen & Chang, 2013b; Zhang et al., 2018). For the collection and implementation of the study, the online questionnaire was developed in English language (see Appendix A3). This survey consisted of three different consecutive parts: the assessment of the stimuli (1), the measurement of EC (2), and the collection of socio-demographic characteristics (3).

At the beginning of the questionnaire, the participants were informed about the aim of the study and that their participation was voluntary, could be terminated at any time and that their

data would be treated anonymously and confidentially. As soon as they granted their informed consent, they were automatically and randomly assigned to one of the 32 experimental groups according to the research design (2 x 2 x 2 x 2 x 2). (1) To evaluate the advertising materials, each participant was shown the five stimuli corresponding to their experimental group one after another and rated them in terms of their GWP. To inhibit any sequence effects, the stimuli were presented in randomised order. Each participant thus rated one of the two advertising stimuli per independent variable. (2) Next, the EC of each participant was assessed. (3) The last part consisted of questions about the socio-demographic profile of the participants in order to be able to characterise the sample.

In total, completion took 12 minutes on avarage (M = 12.13 min, SE = 13.05). The participants were recruited over a period of 40 days via various online social networks across multiple countries. Participation was accessible via desktop (28.97 %) as well as via mobile devices (71.03 %). The questionnaire was forwarded to friends and acquaintances randomly and with no specific requirements, meaning it was a convenience sample. All persons who did not pass the attention check (N = 12), were under 18 years old (N = 0), had already participated in the prestudy (N = 16) or did not complete the full survey (N = 367) were excluded. This resulted in a sample of 145 valid questionnaires out of 540 questionnaires received, which were included in the analysis. Thus, the effective response rate was 26.85 %. The online survey tool Tivian │Unipark (EFS survey by Tivian, Tivian XI GmbH, Cologne, Germany) was used to create the questionnaire as well as for data collection and monitoring of the study.

Table 3.1 provides an overview of the socio-demographic characteristics of the sample. The majority of respondents were from Germany 55.86 % (N = 81) compared to 25.52 % (N = 37) of respondents who were from Portugal and respondents from other countries (18.62 %, N = 27). Significantly more women than men (N = 37) took part in the survey with a percentage of 74.31 % (N = 107). The respondents were on average 27.03 years old (SD = 8.30). The sample showed a tendency towards a higher level of education, with 78.87 % of the participants (N = 112) having attained a Bachelor's degree or higher qualification. 22.30 % (N = 31) of the respondents had an average net income of less than 500 € per month, 46.76 % (N = 65) had an income of 500 - 1499 €, while 30.94 % (N = 43) had 1500 € or more at their disposal. Although the sample proved to be heterogeneous with regard to the current situation, most participants were either studying or working students with a share of 69.65 % (N = 101).

Table 3.1 *Sociodemographic characteristics of the sample*

	n	%	*M*	*SD*
Age			27.08	8.30
Gender				
Female	107	74.31		
Male	37	25.69		
Divers	0	0.00		
Education				
No schooling completed	0	0.00		
Basic education (9th grade)	1	0.70		
High school (12th grade)	29	20.42		
Bachelor's degree	63	44.37		
Post-graduation	7	4.93		
Master's degree	35	24.65		
PhD	7	4.93		
Income				
0 - 249 €	22	15.83		
250 - 499 €	9	6.47		
500 - 999 €	36	25.90		
1000 - 1499 €	29	20.86		
1500 - 1999 €	11	7.91		
2000 - 2499 €	6	4.32		
2500 - 2999 €	12	8.63		
3000 € or more	14	10.07		
Current situation				
Student	56	38.62		
Working student	45	31.03		
Worker	41	28.28		
Unemployed	2	1.38		
Retired	1	0.69		
Country of residence				
Portugal	37	25.52		
Germany	81	55.86		
Other country	27	18.62		

Notes. N = 145. Differences in the sample size arise due to missing values.

3.6 Data Analysis

In order to answer the theoretical questions, a hypothesis-driven approach was followed, which was characterised by a multi-stage procedure. In addition, the influence of EC on the relationship between independent variables and GWP was examined using moderation analyses. All analyses were carried out with the statistical programme SPSS (IBM SPSS Statistics Version 28).

4 Results

4.1 Reliability and Validity of the Scales

A reliability analysis with Cronbach's alpha was used to assess the internal consistency of the scales used. As shown in Appendix B5, the alpha coefficient of the EC scale reached α=.71, which according to Blanz (2021) indicates a sufficient reliability. However, three of the eleven items correlated at under .3 with the corresponding scale. However, removing the items would have resulted in only a slight improvement of the alpha coefficient from .71 to .72, which is why this can be categorised as negligible according to Blanz (2021). Despite the low discriminatory power of these three items, all items of the scale were therefore retained for further analysis. Studies by Cruz and Manata (2020), which presented an overview of existing scales for measuring EC and tested their structural validity, were also able to show on the basis of a larger sample that the α coefficients of the three subscales ranged from .68 to .81 and thus had acceptable reliability according to conventional standards. In addition, they concluded in their review that research should use proven scales such as the one used here rather than modifying ad hoc instruments for a specific study.

The mean and standard deviation of the EC items are shown in Appendix B6. In comparison with the reference statistics from Cruz and Manata (2020), it should be noted that the mean values have considerably higher values. It can therefore be seen that the majority of participants in this study had a substantially higher average level of environmental awareness than it would normally be expected in the population.

Cronbach's alpha was also calculated for the second scale used, for GWP, in order to determine internal consistency. For the calculation, the 10 separate measurements of the GWP (5 variables x 2 conditions) were averaged to form total values. The corresponding mean values and standard deviations of the items are shown in Appendix B7.

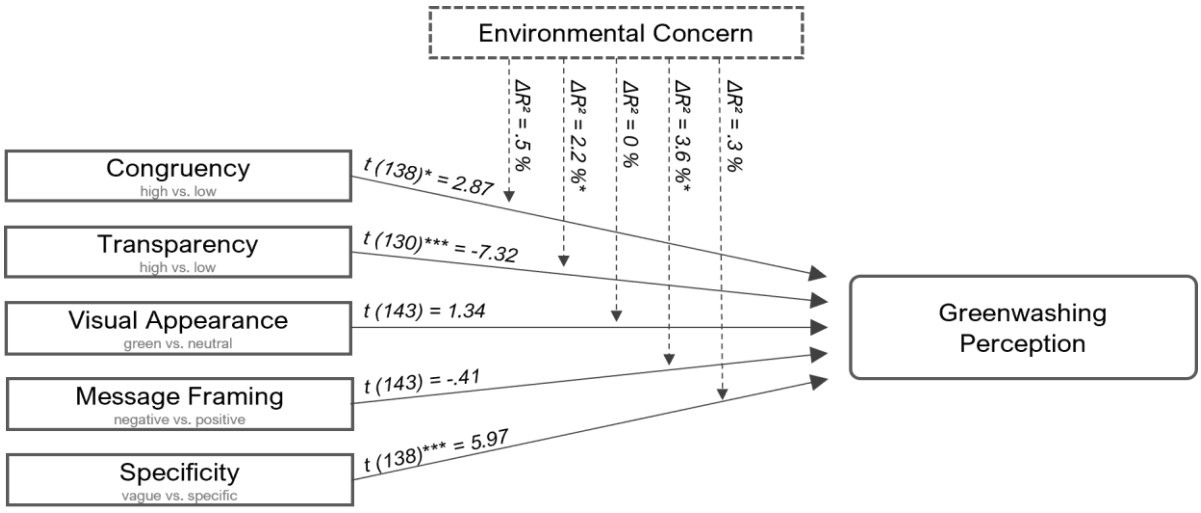
With a value of α=.64, a sufficiently high internal consistency was indicated for the GWP scale (Blanz, 2021), as can be seen in Appendix B5. With the exception of the first item, the items all correlated with the respective scale by at least .5 and thus showed good discriminatory power. Despite a potentially improved alpha coefficient of .64 to .85, elimination of the first item could not be justified in terms of content. The first item, which aims at reputation gain through greenwashing, thus captures a unique aspect of the construct to be measured that would not be covered by the other items. Retaining the item therefore helps to paint a more

comprehensive picture of the construct. In a manipulated design, such as the present one, which aims to capture context-specific differences, the item in question might be more sensitive in particular contexts and therefore help to improve measurement accuracy in these contexts. A balanced consideration between statistical concerns and theoretical relevance therefore led to the decision not to remove any of the items from further analysis.

4.2 Effects of the Advertising Factors

The following analysis steps deal with the effects of the various experimental factors on the participants' GWP. For this purpose, the mean values between the respective experimental conditions were compared using an independent samples t-test as part of the analysis. Figure 4.1 shows a summary of the main results according to the hypotheses, that were proposed in the research framework.

Figure 4.1: Conceptual framework - results



4.2.1 Verification of the Assumptions

The first step prior to the actual statistical analysis was to check whether the necessary conditions for carrying out a t-test were met, which were not automatically ensured by the study design. A check of the normal distribution was not carried out, as with a sufficiently large sample ($n > 30$ for each of the two groups) the sample distribution will be approximately normally distributed according to the central limit theorem (Bortz & Schuster, 2016; Herzog et al., 2019) and current studies show that regression models, which also include the t-test, are robust to a violation of the normal distribution (Nürnberg & Rasch, 1984; Wilcox, 2012).

As can be seen in the boxplots (see Appendix C1-C5), there were some outliers in the data set. Due to extreme values, all participants whose data values were more than 1.5 times the interquartile range were excluded from the corresponding data analysis.

Variance homogeneity was checked using the Levene test. As can be seen (see Appendix B8), the equality of variances could be assumed for all five variables. Therefore, this assumption could be accepted, and the regular t-test could be proceeded with.

4.2.2 Independent Samples t-Test

The mean values and standard deviations for the perceived greenwashing were recorded for the different test conditions (see Table 4.1) in order to be able to compare the respective conditions of each advertising factors with one another.

Table 4.1 *Mean scores of GWP in different conditions*

Variable		*M*	*SD*	*n*
V1 - Congruency	high	4.72	1.26	71
	low	4.13	1.18	69
V2 - Transparency	high	3.29	1.10	59
	low	4.75	1.16	73
V3 - Visual Appearance	green	4.72	1.30	71
	neutral	4.45	1.15	74
V4 - Message Framing	negative	4.61	1.12	76
	positive	4.69	1.13	69
V5 - Specificity	vague	5.04	1.17	72
	specific	3.78	1.32	68

Notes. Differences in the sample size arise due to excluded outliers. Scale ranges from (1) to (7).

Congruency. There was a statistically significant difference in GWP values between the groups that rated advertising media with high (M = 4.72, SD = 1.26) and low congruency (M = 4.13, SD = 1. 18), whereby the GWP was on average .59 (SE = .21) higher (95 % - CI [0.18, 1.00]) for advertising with high congruency, t (138) = 2.87, p < .05, d = .48. According to Cohen (2013), this constitutes a small to medium effect. Consequently, hypothesis 1 must be rejected (H1). Contrary to the assumption that environmental advertising with low congruency leads to a stronger GWP than high congruency, the results indicate the opposite effect.

Transparency. The GWP was -1.46 (*SE* = .20) lower on average for the high transparency condition than for the low transparency condition (95 % - *CI* [-1.85, -1.06]), *t* (130) = -7.32, *p* < .001, *d* = -1.28, which reflects a very large effect. Advertising materials with high transparency (*M* = 3.29, *SD* = 1.10) are therefore perceived significantly different than those with low transparency (*M* = 4.75, *SD* = 1.16). This confirms hypothesis 2 which states that one-sided messages in green adverts result in a higher GWP than two-sided messages (H2).

Visual appearance. The comparison of the mean values of GWP between the different conditions of the experimental factor "Visual Appearance" revealed no significant differences (*t* (143) = 1.34, *p* = .18) between green (*M* = 4.72, *SD* = 1.30) and neutral (*M* = 4.45, *SD* = 1.15) visual appeal. Therefore, the hypothesis that colour and imagery would affect the GWP of green ads must be rejected (H3).

Message framing. No significant difference (*t* (143) = -.41, *p* = .68) in the average GWP between negative (*M* = 4.61, *SD* = 1.12) and positive (*M* = 4.69; *SD* = 1.13) messages was found. Hypothesis 4 must therefore also be rejected, as no differences in GWP were found between positive and negative appeals, as it was expected originally (H4).

Specificity. The average GWP of adverts with vague claims (*M* = 5.04, *SD* = 1.17) is higher than that of adverts with specific claims (*M* = 3.78, *SD* = 1.32). For this difference of 1.26 (*SE* = .21), a very large effect with high statistical significance (95 % - *CI* [.84, 1.67]) was found, *t* (138) = 5.97, *p* < .001, *d* = 1.01. The results thus confirm that, as hypothesised, environmental advertisements containing vague claims lead to a higher GWP compared to specific claims (H5).

To sum up, it can be said that at the disaggregated level, the independent t-tests showed significant group differences for three of the five advertising factors (see Table 4.2).

Table 4.2 *t-test for equality of means for GWP*

Variable	Difference					95 % *CI*		
	M	*SE*	*t*	*df*	*p**	LL	UL	Cohen's *d*
Congruency	**.59**	.21	2.87	138	<.05	.18	1.00	.48
Transparency	**-1.46**	.20	-7.32	130	<.001	-1.85	-1.06	-1.28
Visual appeal	.27	.20	1.34	143	.18	-.13	.68	.22
Message framing	-.08	.19	-.41	143	.68	-.45	.29	-.07
Specificity	**1.26**	.21	5.97	138	<.001	.84	1.67	1.01

Notes. *N* = 145. Scale ranges from (1) to (7). Significant differences are highlighted bold.

* α = .05.

4.3 Moderating Effect of Environmental Concern

In the second stage, it was necessary to check whether the relationships just described between advertising factors and GWP also depend on another variable, the EC.

4.3.1 Verification of the Assumptions

In order to be subsequently able to carry out the intended moderation analyses, it was again required to check the statistical prerequisites of the procedure.

Robust methods were used for the calculation in order to prevent any difficulties. The use of bootstrapping ensured that there were no conditions regarding the distribution properties (number of bootstrap samples for percentage bootstrap confidence intervals: 5000). The use of robust standard errors (HC3: Davidson-MacKinnon) also excluded the possibility of heteroscedasticity negatively affecting the estimation errors.

While the binary-coded predictors already fulfil the linearity assumption by definition, scatter plots were created for the moderation, which plotted the studentised residuals against the unstandardised new predicted variable (see Appendix C6-C10). An approximate distribution of the points around the baseline (y=0) indicates a linear distribution. Visual inspection of the scatter plots revealed that the relationships between all variables involved in the moderation analyses were approximately linear.

As there is no natural zero point for the moderator (EC), the variable was centred for better interpretability of the results, which also reduces multicollinearity. A further test of multicollinearity also indicated that the explanatory variables did not correlate with each other. (see Appendix B9). Furthermore, the independence of the residuals was checked. According to the Durbin-Watson statistic, it was found that there was no autocorrelation in the residuals for any of the analyses (see Appendix B9).

As there were no outliers more than three standard deviations apart from the values in any of the analyses, no data cases were removed from the data set for the following calculations.

4.3.2 Moderation Analyses

The moderation analyses were carried out using the PROCESS macro from Hayes (2018: PROCESS v3.5 for SPSS). The results of these are outlined in Table 4.3.

Table 4.3 *Moderation analyses – moderation estimates*

Model		β	*SE*	*t*	95 % *CI*		*p**
					LL	UL	
1	Intercept	8.63	2.91	2.97	2.88	14.37	<.05
	Congruency[a]	-2.29	1.74	-1.31	-5.73	1.16	.19
	EC	-.56	.51	-1.08	-1.57	.46	.28
	Congruency x EC	.27	.31	.86	-.35	.88	.39
2	Intercept	2.23	.37	6.05	1.50	2.96	<.001
	Transparency[b]	1.24	.22	5.63	.81	1.68	<.001
	EC	-1.03	.51	-2.01	-2.05	-.02	<.05
	Transparency x EC	.61	.30	2.04	.02	1.21	**<.05**
3	Intercept	4.99	.34	14.60	4.31	5.66	<.001
	Visual appearance[c]	-.27	.21	-1.30	-.68	.14	.20
	EC	.16	.47	.34	-.76	1.08	.73
	Visual appearance x EC	-.06	.30	-.18	-.66	.55	.86
4	Intercept	4.52	.29	15.75	3.95	5.08	<.001
	Message framing[d]	.08	.19	.41	-.29	.44	.68
	EC	.94	.43	2.18	.09	1.79	<.05
	Message framing x EC	-.62	.27	-2.31	-1.15	-.09	**<.05**
5	Intercept	6.33	.33	19.02	5.67	6.98	<.001
	Specificity[e]	-1.28	.23	-5.65	-1.73	-.83	<.001
	EC	.32	.48	.66	-.62	1.26	.51
	Specificity x EC	-.22	.33	-.67	-.87	.43	.50

Notes. N = 145. Scale ranges from (1) to (7). Significant interaction effects are highlighted bold.

[a] 1 = high congruency, 2 = low congruency. [b] 1 = high transparency, 2 = low transparency. [c] 1 = green, 2 = neutral. *d* 1 = negative, 2 = positive. [e] 1 = vague, 2 = specific.

* α = .05.

Congruency. A first moderation analysis (model 1) was conducted to determine whether the interaction between congruency and EC significantly predicted GWP. The overall model was significant ($F(3, 141) = 4.67$, $p < .05$) with a variance explanation of 9.40 %. However, the results show that EC does not significantly moderate the effect between congruency and GWP, $\Delta R^2 = .5$ %, $F(1, 141) = .74$, $p = .39$, 95 % *CI*[-.35, .88], therefore hypothesis H6a must be rejected.

Transparency. In determining whether the interaction between transparency and EC significantly predicted GWP (model 2), it was found that the overall model was significant ($F(3, 141) = 12.91$, $p < .001$, $R^2 = 21.00$ %). The results show that EC significantly moderates the

effect between transparency and GWP, ΔR^2 = 2.20 %, $F(1, 141) = 4.18$, $p < .05$, 95 % *CI*[.02, 1.21]. As hypothesised, a moderation effect between these variables could therefore be observed (H6b), meaning that the assumption can be accepted.

As shown in Table 4.3, there is a significant main effect of transparency on GWP, and this effect is stronger for people with high EC (see Table 4.4). The study found that individuals with above-average EC experienced a stronger effect of transparency on GWP (β = 1.68, $t = 5.77$, *CI*[1.10, 2.25], $p < .001$) when compared to average or below-average levels of EC (β = 1.24, $t = 5.68$, *CI*[.81, 1.68], $p < .001$; β = .81, $t = 2.51$, *CI*[.17, 1.44], $p < .05$). Figure 4.2 shows a graphical representation of the Johnson-Neymann interval, which shows for which values of the moderator the effect of the predictor on the response is significant. From this it can be concluded that the effect of transparency on GWP is significantly moderated starting from an EC value of -.87 SD, whereby the effect is a positive amplification of the original effect.

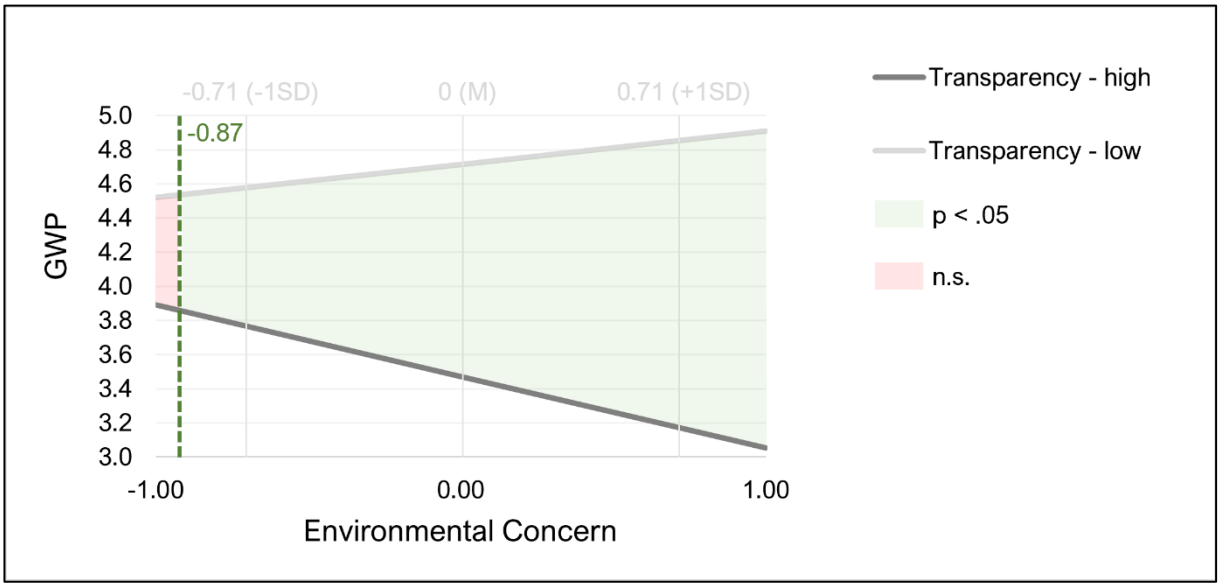
Table 4.4 *Simple slope estimates - conditional effects of the focal predictor at values of the moderator*

Model		EC	*β*	*SE*	*t*	95 % *CI*		*p**
						LL	UL	
2	Low (- 1*SD*)	-.71	.81	.32	2.51	.17	1.44	**<.05**
	Avarage	.00	1.24	.22	5.63	.81	1.68	**<.001**
	High (+ 1*SD*)	.71	1.68	.29	5.77	1.10	2.25	**<.001**
4	Low (- 1*SD*)	-.71	.52	.25	2.05	.02	1.01	**<.05**
	Avarage	.00	.08	.19	.41	-.29	.44	.68
	High (+ 1*SD*)	.71	-.36	.28	-1.30	-.91	.19	.20

Notes. N = 145. Significant effects are highlighted bold. Shows the effect of the predictor (model 2: transparency, model 4: message framing) on the dependent variable (GWP) at different levels of the moderator (EC)

* α = .05.

Figure 4.2: Johnson-Neyman plot: moderating influence of EC on the transparency effect



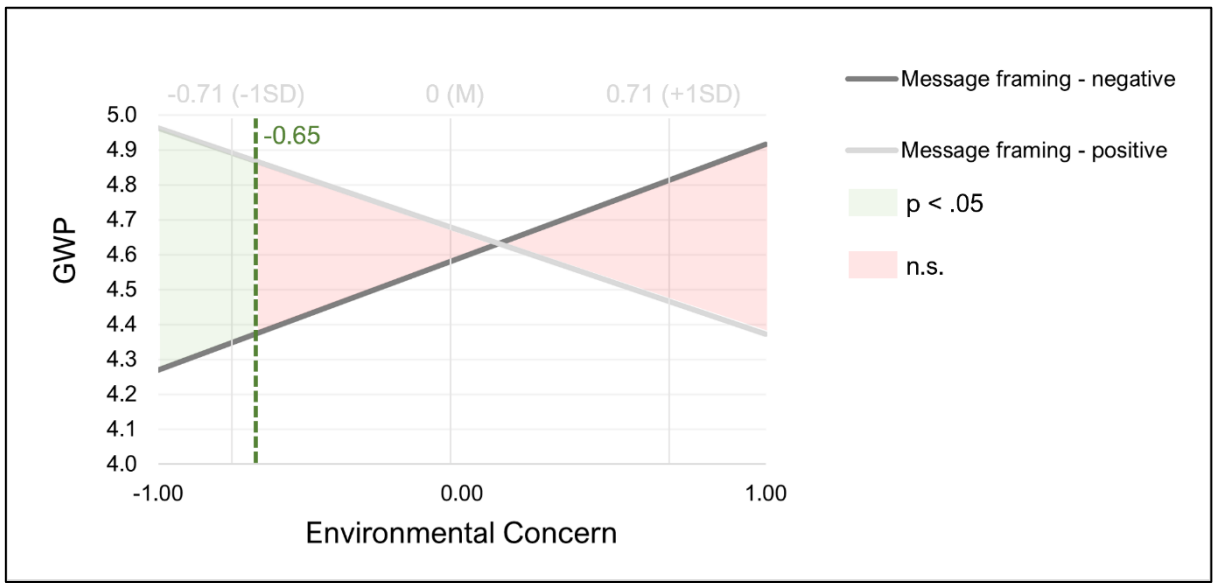
Visual appearance. For visual appearance (model 3), it was already established in the previous section that the different experimental factors do not show significant differences in terms of GWP. In line with these results, the overall model is in this case also not significant ($F(3, 141) = .61$, $p = .61$, $R^2 = 1.50$ %) and no moderation of the EC on the effect between visual appearance and GWP could be determined, $\Delta R^2 = 0.00$ %, $F(1, 141) = .03$, $p = .86$, 95 % *CI*[-.66, .55]. Consequently, hypothesis 6c must be rejected.

Message framing. For message framing (model 4), GWP also did not differ significantly with regard to the different attributes, which is why the overall model in the moderation analysis of EC on the effect between framing and GWP also turned out to be non-significant ($F(3, 141) = 1.92$, $p = .13$, $R^2 = 3.90$ %). However, a look at the interaction term reveals that EC significantly moderates the effect between message framing and GWP, $\Delta R^2 = 3.60$ %, $F(1, 141) = 5.34$, $p < .05$, 95 % *CI*[-1.15, -.09]. Hypothesis 6d can therefore be accepted.

In the case of message framing, no significant main effect on GWP was found (see Table 4.3). However, as shown in Table 4.4 it can be demonstrated that there is a significant influence for participants with below-average EC ($\beta = .52$, $t = 2.05$, *CI*[.02, 1.01], $p < .05$). While a non-significant negative trend of message framing on GWP is recognisable with above-average EC ($\beta = -.36$, $t = -1.30$, *CI* [-.91, .19], $p = .20$), this effect is significantly reversed with low EC. Figure 4.3 provides a graphical representation of this effect. This shows that message framing has a different effect on GWP depending on the level of EC. Message framing only has a

significant influence on GWP with below-average EC up to a level of -.65 SD, whereby the effect is reversed compared to high EC.

Figure 4.3: Johnson-Neyman plot: moderating influence of EC on the message framing effect



Specificity. Finally, a moderation analysis was performed to determine whether the interaction between specificity and EC significantly predicts GWP (model 5). With a variance explanation of 19.10 %, the overall model was significant, $F(3, 141) = 5.36$, $p < .001$. However, the results could not identify a moderation effect of EC on the relationship between specificity and GWP, $\Delta R^2 = .30$ %, $F(1, 141) = .46$, $p = .50$, 95 % *CI*[-.87, .43]. Contrary to expectations, the hypothesis that EC would moderate the influence of specificity on GWP is therefore rejected (H6e).

5 Discussion

5.1 Key Findings

The aim of this study was to identify advertising-related factors that lead to the perception of products, which are marketed as environmentally friendly, to be greenwashing. In doing so, this study takes an innovative and novel research approach in order to enrich previous research. Firstly, the focus is on advertising composition and thus on a company-internal influencing factor. Secondly, the GWP is considered as a dependent variable, which enables a shift in the object of investigation from effects on actual consumer behaviour to the origins of this very perception. Furthermore, the study differs from the majority of previous literature in that it does not look at actual greenwashing, but rather at the perception of consumers as such. This focus enables a deeper insight into the underlying processes that lead to the formation of perceptions and thus contributes to a more comprehensive understanding.

5.1.1 Advertising Factors Contributing to a Greenwashing Perception

To achieve this, five different variables were analysed, which can be taken into account in the development of advertising materials: congruency, transparency, visual appearance, message framing and specificity. The research interest was therefore to gain an initial overview of the fundamental characteristics that exert a substantial influence on the perception of greenwashing by consumers and can therefore act as a starting point for further research initiatives. The results, which are summarized in Table 5.1, showed that significant effects were found for three of the variables analysed (congruency, transparency, specificity), while no statistically significant differences in GWP were found for the remaining two (visual appearance, message framing).

Contrary to the previous hypothesis, it was shown for congruency that green advertising with high congruency leads to a significantly higher GWP than low congruency. This result contradicts the findings of previous research, which emphasised the importance of congruence in various contexts (Basil & Herr, 2006; Brammer & Pavelin, 2006; Jong & van der Meer, 2017). According to those, advertising messages are most effective when they are congruent with the advertised product category and the brand positioning (Da Vilasanti Luz et al., 2020; K. Kim et al., 2019).

Table 5.1 *Summary of results for hypotheses testing*

Hypothesis	Relationship	Result
H1	Environmental advertisements with low congruency (product-unrelated) will lead to a higher greenwashing perception compared to those with high congruency (product-related).	Rejected
H2	Environmental advertisements with low transparency (one-sided message) will lead to a higher greenwashing perception compared to those with high transparency (two-sided message).	**Accepted**
H3	Environmental advertisements containing neutral colour and imagery will lead to a higher greenwashing perception compared to green colour and nature imagery.	Rejected
H4	Environmental advertisements containing negative (threat) appeals will lead to a higher greenwashing perception compared to positive (gain) appeals.	Rejected
H5	Environmental advertisements containing vague claims will lead to a higher greenwashing perception compared to specific claims.	**Accepted**
H6a	Environmental concern will moderate the effect of congruency on the greenwashing perception.	Rejected
H6b	Environmental concern will moderate the effect of transparency on the greenwashing perception.	**Accepted**
H6c	Environmental concern will moderate the effect of visual appearance on the greenwashing perception.	Rejected
H6d	Environmental concern will moderate the effect of message framing on the greenwashing perception.	**Accepted**
H6e	Environmental concern will moderate the effect of specificity on the greenwashing perception.	Rejected

Notes. Accepted hypotheses are highlighted bold.

In the present study, congruency was operationalised by comparing product-related environmental information with compensation services (carbon offsetting). Following the rationale of Du et al. (2010), who demonstrated that environmental communication should be consistent with the company's actual core business, it would have been expected that offsetting services would be perceived more as greenwashing. A possible explanation for the fact that the opposite effect was found can be derived from studies by Alniacik and Yilmaz (2012) and R. Chen et al. (2014), which showed that congruency is only then of importance if the brand and product itself are perceived as critical to the environment. As the soaps advertised in this study might not be considered environmentally sensitive, the superiority of non-product-congruent compensation payments may have been shown here. Another explanation could lie in the current overrepresentation of green advertising and greenwashing (Akehurst et al., 2012; Segev et al., 2016; Tarabieh, 2021). According to research by Akhondzadeh and Monfared (2021), experiences are directly linked to consumer scepticism. In other words, those who have consumed more products in the past that ultimately did not live up to their environmental

promises may be more sceptical of product-related environmental arguments. In this respect, product-incongruent compensation services could also be perceived as the more valid, verifiable and concrete arguments and as such lead to a lower perception of greenwashing (Hur et al., 2020). At any rate, the results of the current study show that integrating these carbon offsetting services into the communication proves to be advantageous.

For the effect of transparency, it was confirmed that two-sided messages, which reveal both positive and negative information, create less of a GWP than one-sided messages in green advertising. The results thus fit in with the findings of previous studies. While previous literature has already shown that exclusively positive environmental reports lead to increased scepticism towards advertising (Forehand & Grier, 2003; Lyon & Maxwell, 2011), whereas two-sided messages strengthen the perceived objectivity (Hacket, 2008), the present study was able to confirm and extend these findings to the point that transparent communication can also avert a GWP. A significant effect was found that high transparency leads to lower GWP. It can therefore be concluded that the advertising factor of transparency is used as an indicator of the authenticity of green advertising and that businesses have no reason to fear negative consequences from the disclosure of unfavourable information.

Particularly the colour and imagery constitute one of the main tools of communication in green advertising. Contrary to the assumption that these would therefore also have an impact on the GWP, no significant effect was found for this factor. In this respect, there was no difference between green advertising with pictures of nature compared to neutral advertising design. In the light of previous research, this result is quite surprising. Particularly in consideration of the fact that visual presentation has repeatedly proven to be superior to verbal messages in advertising in the past (Kostan & Salendu, 2020; Magnier & Schoormans, 2015). This assumption cannot be supported by the present study. A number of studies have shown that green colour and nature imagery have a positive effect on emotional responses, ad attitudes, brand attitudes and purchase intention (Chowdhury et al., 2008; Colarelli & Dettmann, 2003; Frumkin, 2003; Hartmann et al., 2016; Schmuck, Matthes, Naderer, & Beaufort, 2018). Nonetheless, what has not yet been investigated is whether visual appearance could also have an impact on GWP in addition to the points mentioned. However, the results indicate that this is not the case. Despite the positive influence of green colour and image design on purchasing behaviour, the results show that it does not contribute to reducing the GWP. A quite reasonable explanation for this finding is that the colour green is used excessively in the context of sustainability communication. It would therefore be plausible that a green and nature-rich visual presentation is indeed associated with environmental practices (Y.-S. Chen, 2010; Choi et al.,

2019), but is not used as an indication of the authenticity or credibility of green advertising due to its widespread usage. Hartmann et al. (2016), for example, postulate that design effects are undermined, especially for consumers who are very familiar with the topic of the environment. Further studies by Lim et al. (2020) also showed that visual aspects take a lower role in the assessment, especially when consumers already feel manipulated. In this respect, the present study was able to provide a valuable addition by showing that visual appearance is not important for consumers' judgement of whether an advertisement constitutes greenwashing.

A similar conclusion can be drawn with regard to message framing. No significant difference was found in this study between positive and negative appeals with regard to GWP. While the prior literature tends to indicate that positive frames also tend to elicit positive reactions (Loroz, 2007; Segev et al., 2015), this correlation apparently cannot be transferred to the GWP of advertising. However, much of the research conducted so far on message framing has primarily focused on the behavioural effects, such as the fostering of risky and cautious behaviour or initiating rapid behavioural changes (Hartmann et al., 2014; Rothman & Salovey, 1997) and less on consumer perceptions. The limited research that existed in this area, however, showed that fear appeals have a negative effect on attitudes towards advertising and advertised products (Moore & Harris, 1996; Shin et al., 2017). In this study, by contrast, a new point was investigated as to whether the same applies to the perception of advertising as greenwashing, which could not be confirmed. Instead, the results indicate that framing plays no role in the perception of green advertising as greenwashing. It can therefore be assumed that message framing may indeed be relevant in the context of consumer behaviour, but not in the perception and assessment of the reliability of green advertising messages.

With regard to the last of the advertising factors investigated, the main objective was to confirm whether the assumption in the common greenwashing literature that unspecific claims are inherently categorised as greenwashing is also reflected in consumer perception (Y.-S. Chen & Chang, 2013a; Segev et al., 2016). As the results of this study show, this assumption can be supported, as specific claims resulted in a significantly lower GWP than vague claims. Among the five factors analysed, specificity was found to have the strongest effect, making it the most important aspect in the conceptualisation of green advertising. The results are in line with previous literature, which has already shown that specificity supports credibility, trust, positive attitudes and purchasing behaviour (Atkinson & Rosenthal, 2014; Berrone et al., 2017; Ganz & Grimes, 2018). Particularly in the case of low environmentally sensitive products, as investigated here, this factor has already been shown to be important (Alniacik & Yilmaz, 2012). Nevertheless, it had not yet been validated whether this distinction of greenwashing by

definition would also be reflected in consumer perception, which could now be confirmed by the present study. Hur et al. (2020) provided a possible explanation for this and made clear that specificity would lead to positive effects in consumption because the information would be easier to verify, whereas vague claims would be perceived as evasive manoeuvres.

5.1.2 Moderating Role of Environmental Concern

A further aim of the study was to examine whether the effects just described were influenced by consumers' EC. It was found that EC only partially and only to a very small extent influences the relationship between advertising factors and GWP, which suggests that the importance of consumer characteristics such as EC may have been overestimated in the past.

For the factors that have a significant influence on GWP (congruency, transparency, specificity), either no moderation was found or, in the case of transparency, only a slight amplification of the effect was observed with higher EC. For these aspects of advertising design, the EC is therefore barely relevant and neither requires an alternative approach nor the need to adapt advertising materials in accordance with consumers' EC.

For the advertising factors for which no significant difference in GWP was found (visual apprearance, message framing), the picture looks slightly different. While both high and low EC consumers placed no relevance on the assessment of visual appearance for GWP, a moderation effect was found for message framing. For participants with below-average EC, it was found that positive frames resulted in a higher GWP than negative frames. Accordingly, these people considered the negative message frames to be more authentic and suspected less greenwashing behind them. This links in with the findings of Alniacik and Yilmaz (2012) that EC plays a role particularly in the development of usage and purchase intentions for environmentally friendly products, which are indeed influenced by message framing as described above. Thus, it can be explained why a moderating influence of the EC on the effect of message framing on GWP was found here. A further explanation is provided by Hartmann et al. (2014), who postulate that threat appeals can engage pro-environmental behaviours by providing possible coping strategies, as it is presented in the given case. This could be particularly convincing for people with low EC and have an influence on GWP, as these persons do not have an intrinsic pro-environmental attitude. It could also be postulated that threat appeals might have a more emotional power than gain appeals. Studies by Pittman et al. (2021) have shown that emotional appeals are particularly effective for non-green consumers (vs. green consumers), which would explain why adverts with these appeals are less likely to be

considered greenwashing for consumer with a low EC. Nevertheless, it should be noted here that this moderating influence was of marginal effect size. While message framing had no influence on GWP for the majority of participants, a slight reduction in GWP through the use of negative frames was observed only for below-average EC individuals.

While part of the literature has so far been convinced that EC would play a major role in the perception of green advertising, the results of the present study are more in line with such findings, which indicate that the effects of EC are predominantly non-significant or with very small effects (Albayrak et al., 2013; Schmuck, Matthes, & Naderer, 2018). Accordingly, the results of this study support, that EC has little influence on consumer perception. However, it might be a more promising concept when exploring issues of consumer behaviour (Adetola et al., 2021; Albayrak et al., 2013; Delistavrou & Tilikidou, 2006; Fontes et al., 2021).

5.2 Practical and Theoretical Implications

The present findings contribute substantially to academic research by adding depth to several aspects and providing new perspectives in research on greenwashing and consumer perceptions. Firstly, the treatment of GWP as a dependent variable instead of an independent variable marks a paradigm shift. Instead of already established effects on purchasing behaviour, such as purchase intent, the results reveal an understanding of the initial formation of perceptions and show that the development of GWP also depends decisively on the design of advertisements.

Secondly, the investigation of ad materials and advertising factors itself is a novelty in greenwashing research. By developing a framework and summarizing a wide set of components that could potentially have an influence on GWP, a company-internal dimension is examined for the first time. The present results show that specificity, transparency and congruency of ads in particular can drive GWP in environmental communication, whereas visual appearance and message framing can be neglected.

Thirdly, the focus on perception as opposed to actual greenwashing recognises the crucial issue that the consequences of both practices are almost identical. This allowed existing definitions of greenwashing, which already included the factor of specificity, to be validated and expanded. Thus, the present study strengthens the theoretical basis of greenwashing research and also enables a more precise categorization of environmental messages.

Fourthly, the results have direct implications for consumer protection. The difficulty of detecting greenwashing, which results largely from the lack of regulations or legal bases in the area of green advertising, can be counteracted by this study. Raising awareness about potential

misinterpretations by consumers, for example in connection with congruency, can help to improve consumers' ability to assess environmental advertising. For example, there is a need to educate consumers about the fact that compensation payments usually represent more of an indication of greenwashing than product-congruent environmental information.

Furthermore, the findings of this research also offer valuable impulses for practice and, more specifically, for corporate marketing. Firstly, the results serve as clear and simple guidelines for an authentic advertising concept in order to avoid being misinterpreted as greenwashing. Non-greenwashing brands can use the outlined findings to establish themselves credibly in the green advertising market.

Secondly, the research results enable new approaches for the design of advertising materials and highlight the brand's own influence on the perception of greenwashing through communication tools. In order to specifically address consumer expectations and concerns, sustainable companies are advised to integrate solid facts, a clear and specific formulation of environmental arguments as well as the integration of offsetting services as a positive addition to their communication strategy. Furthermore, companies should not hesitate to communicate negative issues transparently, as this is perceived as more sincere and can prevent a negative backlash, which would otherwise risk occurring with a high GWP.

Thirdly, the findings provide new insights into the field of target group segmentation. It turns out that the target audience's level of EC hardly makes a difference when it comes to ensuring that green advertising is not perceived as greenwashing. This suggests that different strategies for those different customer segments may not be necessary. Nonetheless, campaigns using negative or threatening appeals to attract new customer segments with low environmental awareness may be perceived by these customers as slightly more credible than positive gain appeals and would therefore be less likely to be seen as greenwashing. However, this recommendation should be taken with caution, as there are other behavioural consequences of negative message framing to consider in addition to the points identified here.

5.3 Limitations

The present study provides insightful findings in the field of green advertising. Despite the significant contributions and insights gained from this study, it is important to note some limitations that may affect the generalizability of the results. Indeed, the interpretative scope is limited by the restricted industry and product coverage as well as the limitation to print ads for

a low involvement product. Therefore, the results cannot be applied to the entire green market, as other advertising formats and product categories may elicit different responses.

With regard to the study design, it should be noted that in the experimental conditions each participant was exposed to more than one advertising material in consecutive order. Although randomization was performed to rule out sequence effects, it would still be advisable to replicate the study with a larger sample in which each participant is only presented with one advertisement. In addition, the five variables were not crossed, which means that no statements can be made about possible interaction effects and the interplay of several advertising factors simultaneously.

Furthermore, there are limitations with regard to the measurement criteria, particularly for the GWP scale. The inclusion of all three items of the scale was chosen as a compromise between content and discriminatory power. Future research could benefit from using another scale to measure GWP to further improve validity.

Another point concerns the manipulation of the advertising materials. The decision not to set a minimum exposure duration within the questionnaire was made as this scenario more authentically reflects the reality of advertising consumption. However, it bears the possibility that not all participants viewed and read the advertisement completely. This could be seen positively, as it better reflects real consumption, but it could also mean that the manipulated content was not fully grasped.

Finally, it should be noted that the sample consisted mainly of students with a predominantly high level of education and a high level of EC. Therefore, the sample is not representative of the general population and could produce skewed results. A look at previous research shows that students are particularly affected by true (vs. false) environmental communication (Nyilasy et al., 2014) and the use of samples consisting predominantly of students is also employed by many other studies in the field (Adetola et al., 2021; Choi et al., 2019; Torelli et al., 2020; Vries et al., 2015). However, future studies should include a more diverse and representative sample in order to strengthen external validity and better capture possible moderation effects in relation to EC.

5.4 Future Research

The following recommendations for future research are based on the findings and discussions presented in the sections above. Based on the previously identified limitations of the interpretive scope of this study, there are a number of suggestions for further research in the field of green

advertising. The following points outline possible research directions that can help to deepen the understanding of the complexity of advertising impact on GWPs.

Building on the advertising factors identified as relevant in this paper, it is possible to expand further on these findings and implement a crossed research design to investigate the potential interaction effects between the variables. This would provide a deeper insight into the interconnectedness of these factors and shed light on the realistic complexity of advertisement influencing GWPs.

Furthermore, future studies should focus on different product types and industries, especially those with high involvement and in environmentally sensitive industries. By doing so, the applicability of the results to different contexts could be verified. Following on from this, the investigation of different media and advertising types should also be considered. Today's advertising landscape is diverse, and it would be interesting to find out how the identified advertising factors act in different channels.

Longitudinal studies could also be used to research the long-term effects of green advertising in order to understand the development of brand perceptions over time. This would help to evaluate the suitability of advertising strategies over longer periods of time.

The limitations of this study also suggest that the use of a different scale to measure GWP could be valuable in the future. With regard to the sample, future research could focus more on cross-cultural differences and employ a non-student sample in order to include a broader and more representative selection. In addition, it would also be worth to examine the potential influence of further moderators, such as personal purchasing experiences or knowledge about environmental advertising and greenwashing.

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Appendix

Appendix A

Appendix A1: Stimulus material

Congruency - high

Congruency - low

Transparency - high

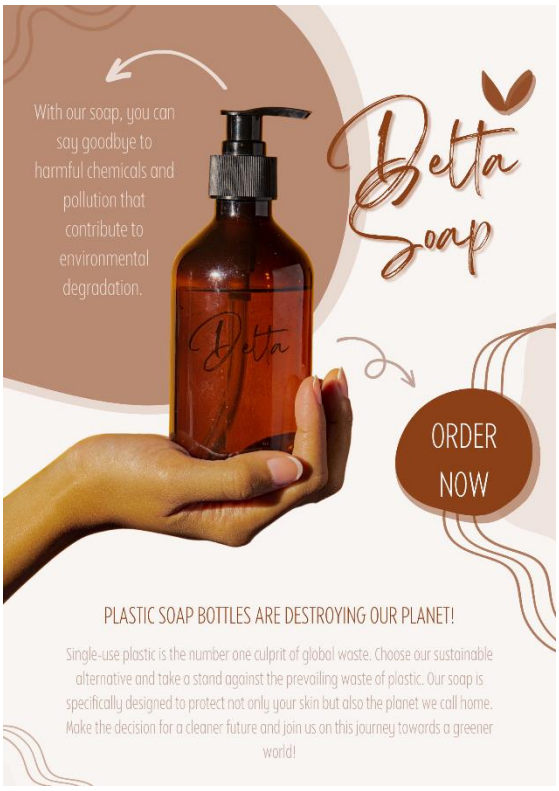
Transparency - low

Visual appearance - green

Visual appearance - neutral

Message framing - positive

Message framing - negative



Specificity - specific

Specificity - vague

Appendix A2: Questionnaire prestudy

Dear participant,

My name is Ani, I study at the ISCTE University of Lisbon and I am currently writing my master's thesis. This survey is part of the PRE STUDY for my final thesis, which is why I am very happy about your participation! The survey will only take about 5 minutes, so please take the time to read each question thoroughly.

Please note the following:

There are no right or wrong answers, only your personal opinions and experiences count. All data will be stored and analysed completely anonymously. They cannot be attributed to you personally and will be treated with strict confidentiality. Please answer all questions as spontaneously and honestly as possible. If you have any questions or comments, please contact by e-mail: aycaa@iscte-iul.pt

Thank you very much for taking part in this survey!

Declaration of consent

In order to comply with the guidelines of empirical research, your consent is required.

Voluntary: Your participation in this study is voluntary. You are free to withdraw from the study at any time without any disadvantage to you.

Anonymity: Your data will be treated confidentially, only evaluated in anonymous form and will not be passed on to third parties. Demographic data such as age or gender will not be used to identify you.

Question 1: I hereby confirm that I have read and understood the declaration of consent.

Yes	
No (do not participate in the study)	

To begin with, a few questions about yourself!

You do not need to worry that the data could be traced back to you, but if you would still like to keep some information to yourself, please use the option "do not specify".

Question 2: Which gender do you feel you belong to?

Female	
Male	
Divers	
Do not specify	

Question 3: How old are you?

	years

Question 4: What level of education do you have?

Please select the highest qualification you have achieved so far.

No schooling completed	
Basic Education (9th grade)	
High School (12th grade)	
Bachelor's Degree	
Post-Graduation	
Master's Degree	
PhD	
Other qualification, namely	
Do not specify	

Question 5: What is your approximate monthly net income?

This means the amount you have available each month (*after deduction of taxes and social insurance) for your living expenses, regardless of whether you receive the money through employment/ from relatives/...*

I have no income of my own	
0 - 249 €	
250 - 499 €	
500 - 999 €	
1000 - 1499 €	
1500 - 1999 €	
2000 - 2499 €	
2500 - 2999 €	

3000 € or more	
Do not specify	

Question 6: What best describes your current situation?

Student	
Working Student	
Worker	
Unemployed	
Retired	
Other situation, namely	
Do not specify	

This pre study is about your individual assessment. In the following, you will be shown ten **different variants of an advertisement** for environmentally friendly soap brands ("Alpha Soap", "Beta Soap", "Gamma Soap", "Delta Soap", "Epsilon Soap"). You will be shown a definition of a characteristic for each one, based on which you will be asked to evaluate the advertisements.

This is NOT about how you rate the soap brands, but only about the extent to which the **advertisement meets the respective characteristics**.

[show stimulus material: congruency - high]

Question 7: How do you rate the congruency of this advertisement?

Congruency describes the fit between the sustainability argument and the advertised product. A high degree of congruence is present if the sustainability argument is directly related to the product being advertised or its attributes, a low degree of congruency is present if the sustainability argument is product-unrelated and refers to compensatory offsetting services by the company instead of the product itself.

1 – low congruency	2	3	4	5	6	7 – high congruency

[show stimulus material: congruency - low]

Question 8: How do you rate the congruency of this advertisement?

Congruency describes the fit between the sustainability argument and the advertised product. A high degree of congruence is present if the sustainability argument is directly related to the product being advertised or its attributes, a low degree of congruency is present if the sustainability argument is product-unrelated and refers to compensatory offsetting services by the company instead of the product itself.

1 – low congruency	2	3	4	5	6	7 – high congruency

[show stimulus material: transparency - high]

Question 9: How do you rate the transparency of this advertisement?

Transparency describes the degree of openness in the communication of green advertising messages. High transparency refers to a two-sided communication, where weaknesses and failures are acknowledged in addition to successes, low transparency refers to a one-sided communication, where only positive positions are put forward.

1 – low transparency	2	3	4	5	6	7 – high transparenycy

[show stimulus material: transparency - low]

Question 10: How do you rate the transparency of this advertisement?

Transparency describes the degree of openness in the communication of green advertising messages. High transparency refers to a two-sided communication, where weaknesses and failures are acknowledged in addition to successes, low transparency refers to a one-sided communication, where only positive positions are put forward.

1 – low transparency	2	3	4	5	6	7 – high transparency

[show stimulus material: visual appearance - green]

Question 11: How do you rate the visual appearance of this advertisement?

Visual appearance is understood as the visual elements and design aspects of an advertisement that are used to convey a message. In addition to the colour scheme, it also includes the imagery of the ad.

1 – neutral colors and pictures	2	3	4	5	6	7 – green colors and pictures

[show stimulus material: visual appearance - neutral]

Question 12: How do you rate the visual appearance of this advertisement?

Visual appearance is understood as the visual elements and design aspects of an advertisement that are used to convey a message. In addition to the colour scheme, it also includes the imagery of the ad.

1 – neutral colors and pictures	2	3	4	5	6	7 – green colors and pictures

[show stimulus material: message framing - negative]

Question 13: How do you rate the message framing of this advertisement?

Message framing is understood as the thematic embedding in which information is presented. Positive appeals highlight the potential gains and benefits from the advertised product, while negative appeals aim to emphasise potential losses if the decision is made otherwise or to incite threat.

1 – negative	2	3	4	5	6	7 – positive

[show stimulus material: message framing - positive]

Question 14: How do you rate the message framing of this advertisement?

Message framing is understood as the thematic embedding in which information is presented. Positive appeals highlight the potential gains and benefits from the advertised product, while negative appeals aim to emphasise potential losses if the decision is made otherwise or to incite threat.

1 – negative	2	3	4	5	6	7 – positive

[show stimulus material: specificity - specific]

Question 15: How do you rate the specificity of this advertisement?

Message framing is understood as the thematic embedding in which information is presented. Positive appeals highlight the potential gains and benefits from the advertised product, while negative appeals aim to emphasise potential losses if the decision is made otherwise or to incite threat.

1 – vague	2	3	4	5	6	7 – specific

[show stimulus material: specificity - vague]

Question 16: How do you rate the specificity of this advertisement?

Message framing is understood as the thematic embedding in which information is presented. Positive appeals highlight the potential gains and benefits from the advertised product, while

negative appeals aim to emphasise potential losses if the decision is made otherwise or to incite threat.

1 – vague	2	3	4	5	6	7 – specific

Question 17: Last but not least, a general question. When you think of the term "greenwashing", how would you describe it or what do you think "greenwashing" is?

Thank you for your participation!

Your answers have been saved, you can now close the browser window.

Appendix A3: Questionnaire main study

Dear participant,

My name is Anita Chenga, I study at the ISCTE University of Lisbon and I am currently writing my master's thesis. This survey is part of the study for my final thesis, which is why I am very happy about your participation!

Please note the following:

The survey will only take about **5 minutes**, so please take the time to read each question carefully. There are no right or wrong answers, only your personal opinions and experiences count. Please answer all questions as spontaneous and honest as possible. If you have any questions or comments, please contact me by e-mail: aycaa@iscte-iul.pt

Thank you very much for taking part in this survey!

Declaration of consent

In order to comply with the guidelines of empirical research, your consent is required.

Voluntary: Your participation in this study is voluntary. You are free to withdraw from the study at any time without any disadvantage to you.

Anonymity: Your data will be treated confidentially, only evaluated in anonymous form and will not be passed on to third parties. Demographic data such as age or gender will not be used to identify you.

Question 1: I hereby confirm that I have read and understood the declaration of consent.

Yes	
No (do not participate in the study)	

Question 2: I hereby confirm that I DID NOT take part in the pre study.

Yes	
No (do not participate in the study)	

In the following you will be shown five advertisements for soaps. Please imagine that these advertisements are from **five different brands**, even though the advertised product and layout seem quite similar. Based on these advertisements, you will be asked to **rate each brand independently** ("Alpha Soap", "Beta Soap", "Gamma Soap", "Delta Soap", "Epsilon Soap").

This study is only about your individual assessment. There are no right or wrong answers.

[Randomized loop (5x): show stimulus material according to test group design]

Question 3: I think 'BRAND NAME' aims to improve its reputation by presenting itself as an environmentally friendly organization.

'Environmentally friendly' describes companies and products that protect the natural environment as best as possible and do little to no harm to it.

1 – totally disagree	2	3	4	5	6	7 – totally agree

Question 4: To what extent do you think 'BRAND NAME' has a hidden agenda?

‚Hidden agenda' describes a secret or ulterior motive for doing something, while outwardly presenting the appearance of accomplishing something different.

1 – not at all	2	3	4	5	6	7 – very much

Question 5: I think 'BRAND NAME' pretends to be more environmentally friendly than it actually is.

1 – totally disagree	2	3	4	5	6	7 – totally agree

The second part is about your personal attitudes and beliefs.

Question 6: Listed below are statements about the relationship between humans and the environment.

For each one, please indicate how far you agree with them.

	1 totally disagree	2	3	4	5	6	7 totally agree
We are approaching the limit of the number of people the earth can support.							
The earth is like a spaceship with very limited room and resources.							
Humans have the right to modify nature to suit their needs.							
Human ingenuity will ensure that we do NOT make the earth unliveable.							
The balance of nature is strong enough to cope with the impacts of modern industrial nations.							
The so-called ecological crisis facing humankind has been greatly exaggerated.							
Humans were meant to rule over the rest of nature.							
Please select 'totally agree' to show that you are paying attention to this question. (Attention Check)							
When humans interfere with nature it often produces disastrous consequences.							
Humans are severely abusing the environment.							
Despite our special abilities, humans are still subject to the laws of nature.							
If things continue on their present course, we will soon experience a major ecological catastrophe.							

Last but not least, a few questions about yourself!

You do not need to worry that the data could be traced back to you, but if you would still like to keep some information to yourself, please use the option "do not specify".

Question 7: What is your current country of residence?

Portugal	
Germany	
Other, namely	
Do not specify	

Question 8: Which gender do you feel you belong to?

Female	
Male	
Divers	
Do not specify	

Question 9: How old are you?

	years

Question 10: What level of education do you have?

Please select the highest qualification you have achieved so far.

No schooling completed	
Basic Education (9th grade)	
High School (12th grade)	
Bachelor's Degree	
Post-Graduation	
Master's Degree	
PhD	
Other qualification, namely	
Do not specify	

Question 11: What best describes your current situation?

Student	
Working Student	
Worker	
Unemployed	
Retired	
Other situation, namely	
Do not specify	

Question 12: What is your approximate monthly net income?

This means the amount you have available each month (*after deduction of taxes and social insurance) for your living expenses, regardless of whether you receive the money through employment/ from relatives/...*

I have no income of my own	
0 - 249 €	

250 - 499 €	
500 - 999 €	
1000 - 1499 €	
1500 - 1999 €	
2000 - 2499 €	
2500 - 2999 €	
3000 € or more	
Do not specify	

Thank you for your participation!

Your answers have been saved, you can now close the browser window.

Appendix B

Table B1 *Sociodemographic characteristics of the prestudy sample*

	n	%	*M*	*SD*
Age			26	10
Gender				
Female	17	73.9		
Male	6	26.1		
Divers	0	0.0		
Education				
No schooling completed	0	0.0		
Basic education (9th grade)	1	4.3		
High school (12th grade)	4	17.4		
Bachelor's degree	10	43.5		
Post-dgaduation	2	8.7		
Master's degree	6	26.1		
PhD	0	0.0		
Income				
0 - 249 €	5	21.7		
250 - 499 €	2	8.7		
500 - 999 €	1	4.3		
1000 - 1499 €	8	34.8		
1500 - 1999 €	3	13		
2000 - 2499 €	1	4.3		
2500 - 2999 €	2	8.7		
3000 € or more	1	4.3		
Current situation				
Student	8	34.8		
Working student	5	21.7		
Worker	7	30.4		
Unemployed	2	8.7		
Retired	1	4.3		

Notes. $N = 23$. Differences in the sample size arise due to missing values.

Table B2 *Paired samples t-test for the prestudy*

	Paired Differences							
				95 % *CI*				
	M	*SD*	*SE*	LL	UL	*t*	*df*	*p**
Pair congruency	2.87	1.87	.39	2.06	3.68	7.38	22	**<.001**
Pair transparency	2.96	2.18	.46	2.01	3.90	6.49	22	**<.001**
Pair visual appearance	3.87	1.74	.36	3.12	4.62	1.67	22	**<.001**
Pair message framing	-3.26	2.28	.48	-4.25	-2.28	-6.86	22	**<.001**
Pair specificity	4.17	2.15	.45	3.25	5.10	9.33	22	**<.001**

Notes. N = 23. Scale ranges from (1) to (7). α = .05. Significant differences are highlighted bold.

* α = .05.

Table B3 *Categories for the perception of greenwashing*

	n	%
Brands / scandals associated with greenwashing	3	15
Exaggerations / false statements about sustainability	11	55
Manipulative marketing technique	12	6
Use of misleading labels or symbols	3	15

Note. N = 20.

Table B4 *Items for the measurement of the constructs*

	Item	References
Greenwashing Perception		
GWP 1	I think *'Brand Name'* aims to improve its reputation by presenting itself as an environmentally friendly organization	Vries et al. (2015)
GWP 2	To what extent do you think *'Brand Name'* has a hidden agenda?	
GWP 3	I think *'Brand Name'* pretends to be more environmentally friendly than it actually is.	
Environmental Concern		
EC 1	We are approaching the limit of the number of people the earth can support. (*Factor 1: Limits to growth)*	Dunlap et al. (2000); Cruz & Manata (2020)
EC 2	The earth is like a spaceship with very limited room and resources. (*Factor 1: Limits to growth)*	
EC 3*	Humans have the right to modify nature to suit their needs. (*Factor 2: Anti-anthropocentrism)*	
EC 4*	Human ingenuity will ensure that we do NOT make the earth unliveable. (*Factor 2: Anti-anthropocentrism)*	
EC 5*	The balance of nature is strong enough to cope with the impacts of modern industrial nations. (*Factor 2: Anti-anthropocentrism)*	
EC 6*	The so-called ecological crisis facing humankind has been greatly exaggerated. (*Factor 2: Anti-anthropocentrism)*	
EC 7*	Humans were meant to rule over the rest of nature. (*Factor 2: Anti-anthropocentrism)*	
EC 8	When humans interfere with nature it often produces disastrous consequences. (*Factor 3: Concern about ecological damage)*	
EC 9	Humans are severely abusing the environment. (*Factor 3: Concern about ecological damage)*	
EC 10	Despite our special abilities, humans are still subject to the laws of nature. (*Factor 3: Concern about ecological damage)*	
EC 11	If things continue on their present course, we will soon experience a major ecological catastrophe. (*Factor 3: Concern about ecological damage)*	

Note. Reverse coded items are indicated with an asterisk (*)

Table B5 *Item discrimination and reliability statistics of the scales*

Scales and items	Cronbach‘s alpha	Item-total correlation	Cronbach's alpha if item deleted
Environmental concern	.71		
EC 1		.19	.72
EC 2		.26	.71
EC 3*		.42	.68
EC 4*		.27	.71
EC 5*		.38	.69
EC 6*		.45	.68
EC 7*		.43	.68
EC 8		.31	.70
EC 9		.48	.68
EC 10		.33	.70
EC 11		.55	.67
Greenwashing perception	.64		
GWP 1		.22	.85
GWP 2		.61	.32
GWP 3		.57	.37

Note. $N = 145$. Reverse coded items are indicated with an asterisk (*).

Table B6 *EC of the sample*

Item	Sample		Reference sample 1[a]		Reference sample 2[b]	
	M	*SD*	*M*	*SD*	*M*	*SD*
EC 1	5.32	1.64	3.54	1.05	3.33	1.19
EC 2	5.37	1.51	3.47	1.14	3.67	1.13
EC 3*	5.36	1.41	2.97	1.24	3.37	1.12
EC 4*	4.68	1.40	2.70	1.03	3.16	1.10
EC 5*	5.61	1.57	2.84	1.17	3.63	1.15
EC 6*	5.70	1.56	2.88	1.22	3.65	1.27
EC 7*	5.83	1.53	2.97	1.28	3.35	1.35
EC 8	5.46	1.20	3.81	.98	3.83	.96
EC 9	6.23	1.03	3.94	.02	3.97	1.01
EC 10	5.77	1.21	3.98	.86	4.26	.79
EC 11	6.14	1.15	3.91	.99	3.68	1.12

Notes. $N = 145$. Scale ranges from (1) to (7). Reverse coded items are indicated with an asterisk (*).

[a] Source: Cruz and Manata (2020). Study 1. $N = 399$.
[b] Source: Cruz and Manata (2020). Study 2. $N = 326$.

Table B7 *GWP of the sample*

	M	*SD*
GWP 1	5.28	1.29
GWP 2	3.83	1.15
GWP 3	4.12	1.19

Notes. $N = 145$. Scale ranges from (1) to (7).

Tabelle B8 *Test of homogeneity of variances for GWP*

Variable	Levene's test	
	F	*p**
Congruency	1.59	.21
Transparency	1.30	.26
Visual appeal	3.01	.09
Message framing	.06	.80
Specificity	.00	.98

Notes. $N = 145$.

*$\alpha = .05$.

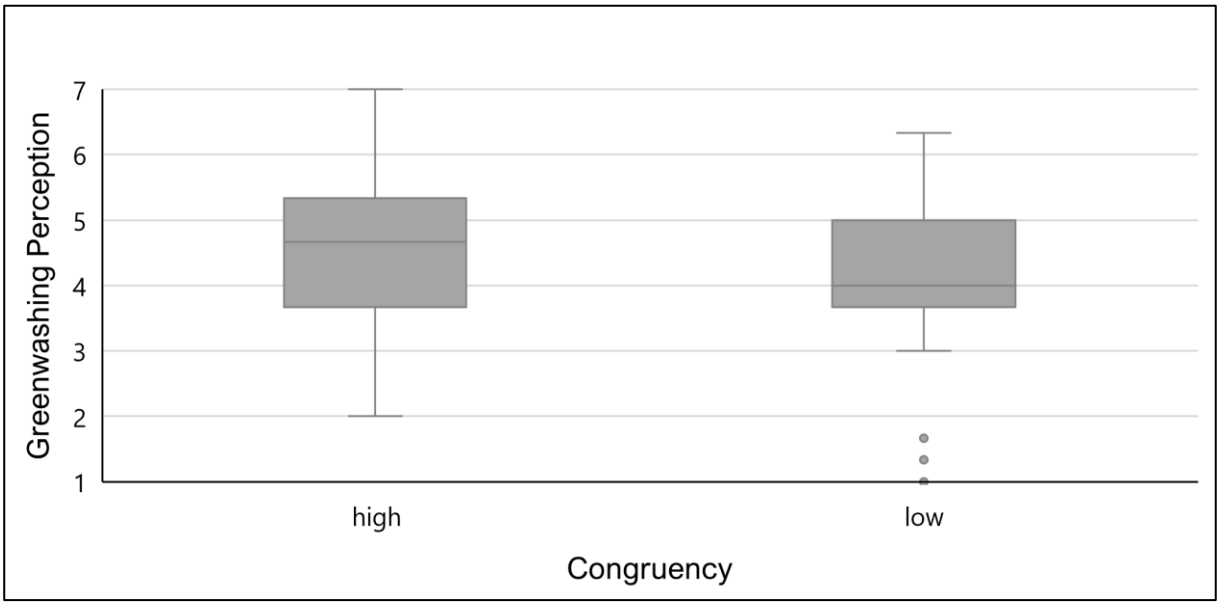
Table B9 *Collinearity and independence of residuals for moderation analysis*

Model		Collinearity statistics		Independence of the residues
		Tolerance	VIF	Durbin-Watson
1				2.26
	EC	1.000	1.000	
	Congruency	1.000	1.000	
2				1.69
	EC	1.000	1.000	
	Transparency	1.000	1.000	
3				1.82
	EC	.999	1.001	
	Visual Appearance	.999	1.001	
4				1.64
	EC	.994	1.006	
	Message Framing	.994	1.006	
5				1.90
	EC	1.000	1.000	
	Specificity	1.000	1.000	

Note. $N = 145$.

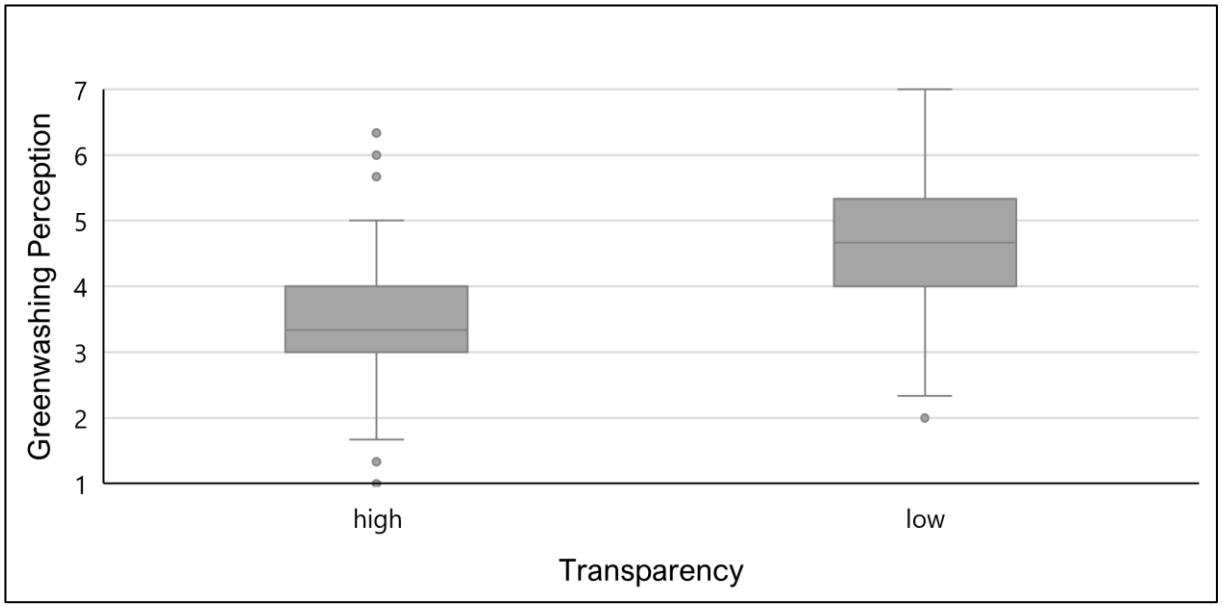
Appendix C

Figure C1: Boxplot - distribution of GWP by congruency



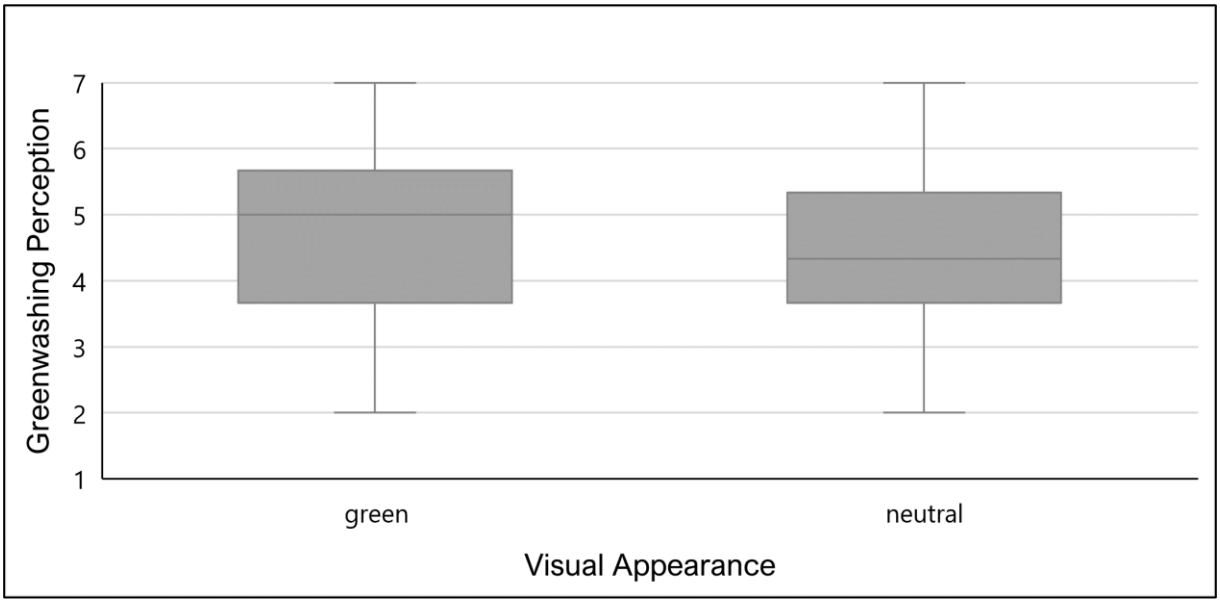
Note. Exclusion of 5 outliers in the data set whose data values exceed 1.5 times the interquartile range.

Figure C2: Boxplot - distribution of GWP by transparency



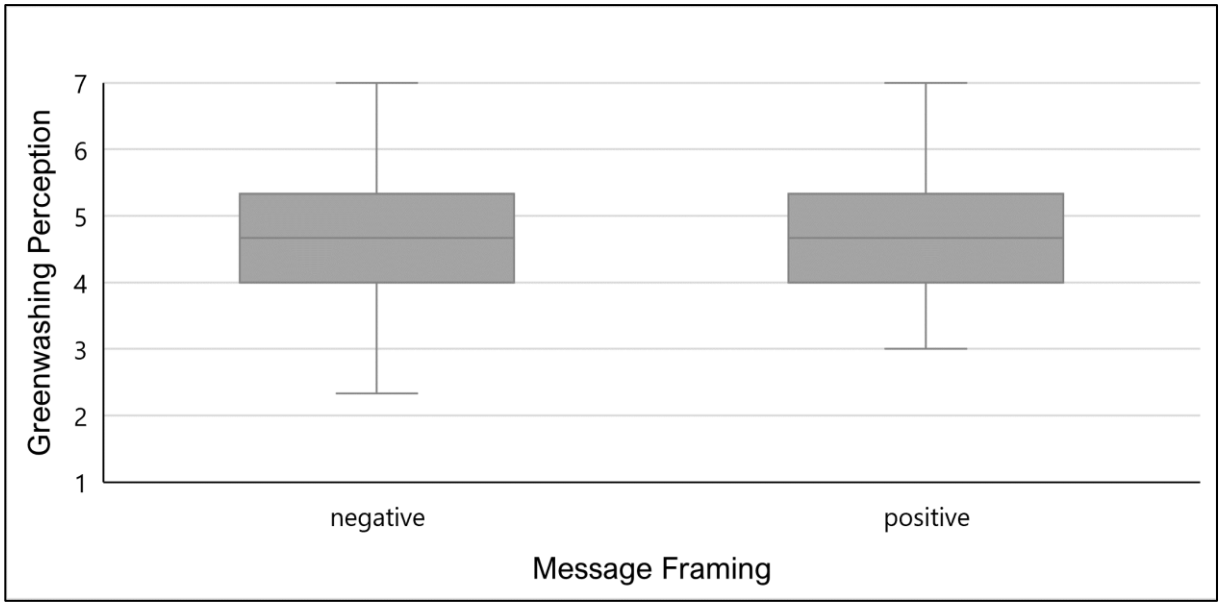
Note. Exclusion of 13 outliers in the data set whose data values exceed 1.5 times the interquartile range.

Figure C3: Boxplot - distribution of GWP by visual appearance



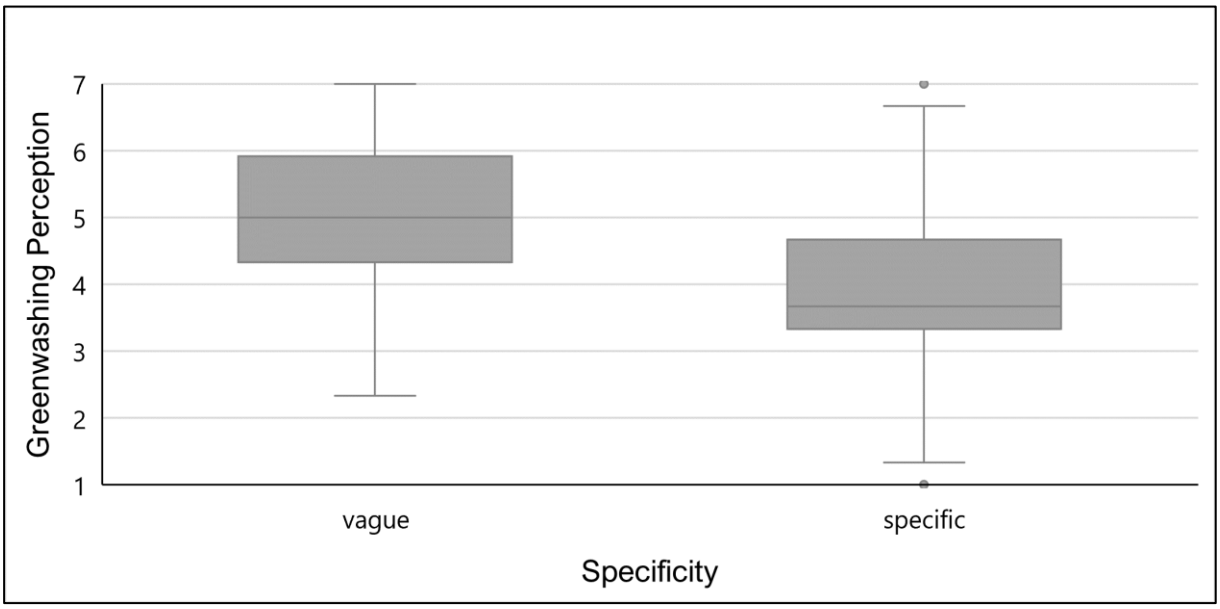
Note. Exclusion of 0 outliers in the data set whose data values exceed 1.5 times the interquartile range.

Figure C4: Boxplot - distribution of GWP by message framing



Note. Exclusion of 0 outliers in the data set whose data values exceed 1.5 times the interquartile range.

Figure C5: Boxplot - distribution of GWP by specificity



Note. Exclusion of 5 outliers in the data set whose data values exceed 1.5 times the interquartile range.

Figure C6: Scatterplot - relationship between EC and transparency

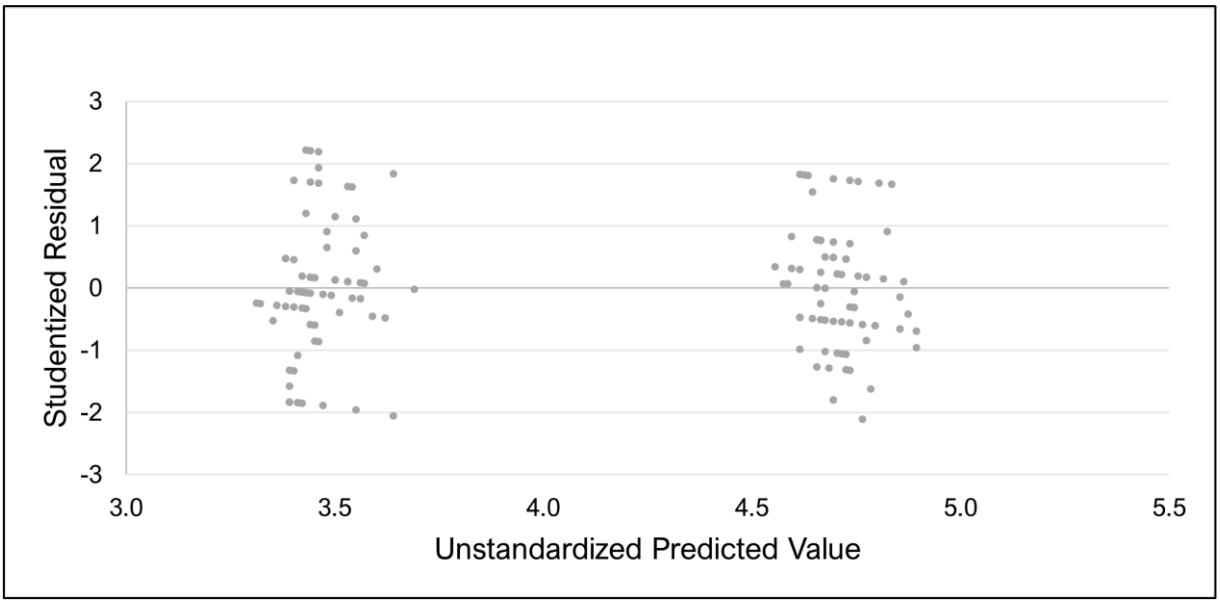


Figure C7: Scatterplot - relationship between EC and congruency

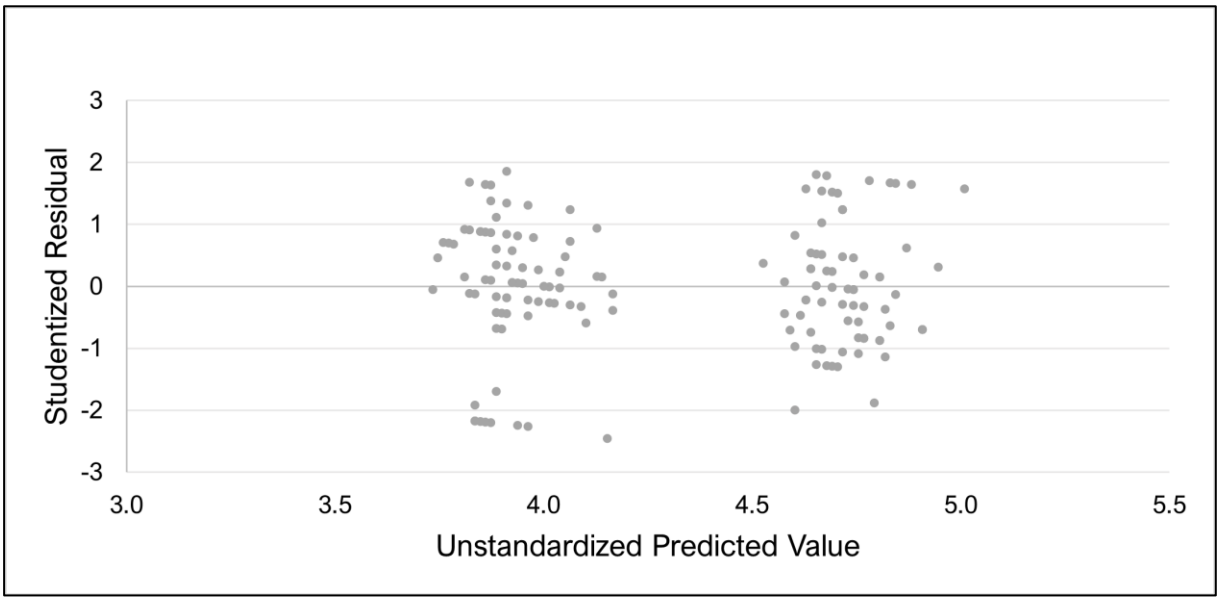


Figure C8: Scatterplot - relationship between EC and visual appearance

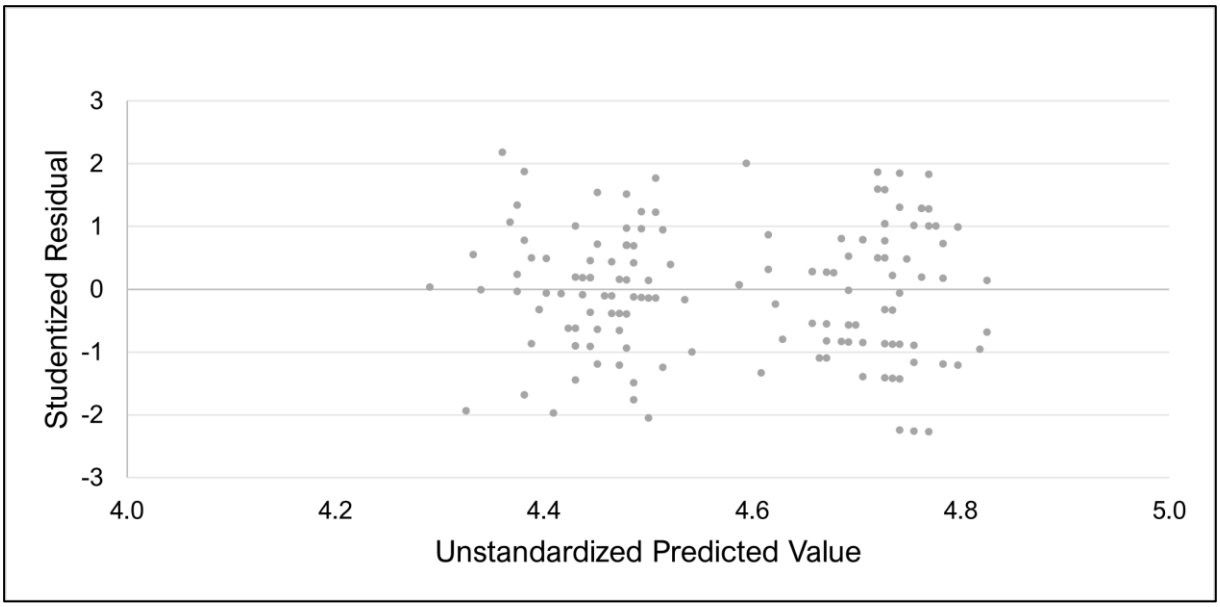


Figure C9: Scatterplot - relationship between EC and message framing

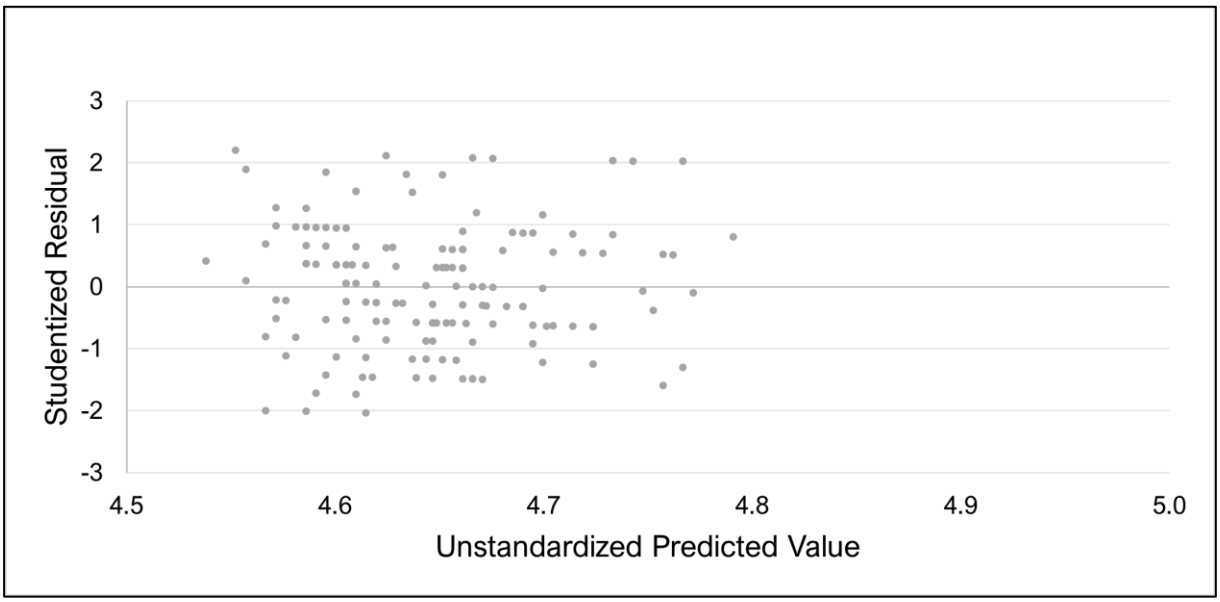


Figure C10: Scatterplot - relationship between EC and specificity