



MASTER THESIS

# The impact of greenwashing on consumers' brand attitude.

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## **Abstract**

As a result of increasingly sustainability-oriented markets and governments, greenwashing (GW) has become a widespread corporate practice throughout recent years. Besides harming the environment and consumers, GW also hurts sustainable companies by creating trust issues and general skepticism. Despite the undeniable nature of GW as a global economic problem, researchers' and practitioners' understanding of how GW influences consumers is still limited. The majority of existing studies view GW as a one-dimensional condition that represents all forms of corporate deception about environmental performance and either exists or does not exist. This prevalent concept of GW does not differentiate between varying forms of GW and assumes that consumers react the same way to different types of GW. Our study aims to test this common assumption and contribute to a better understanding of GW by asking the research question, "How do different greenwashing practices influence consumers' brand attitudes?". To answer our research question, based on a review of existing classifications of GW, we introduce a two-dimensional typology of greenwashing practices (GWPs) that differentiates between the claim-type of a GWP (false, vague or hidden-information) and its macro-level of initiation (product-level and firm-level). With the help of this classification, we are able to differentiate between six distinct forms of GW. On the basis of this typology, we introduce 315 German participants to six different GW scenarios in an online survey and measure their resulting brand attitudes towards the respective companies. Our findings reveal that consumers react significantly different to most GWPs, depending on their claim-type and macro-level of initiation. While false GW has the most negative effect on consumers' brand attitude, hidden-information GW has a significantly less negative impact, and vague GW positively affects brand attitude in many cases. Firm-level GW affects brand attitude more negatively than product-level GW, except for the case of false claims. Our data suggest that the easier a GWP is recognizable as betrayal or lying by respondents, the more negatively it tends to affect their attitude towards the respective firm. However, our results also show that when a GWP is not recognized as deception, it can have strong positive effects on consumers' brand attitudes by suggesting a false image of sustainability. The main theoretical implication of our study is that greenwashing is a more nuanced and complex problem than the majority of existing studies assume, which is why future research is recommended to work with typologies that differentiate between different forms of GW. For companies, our findings particularly underline the danger and negative consequences of engaging in any type of communication that can be interpreted as false GW by consumers. To avoid the reputational damage related to GW, based on our findings, companies need to ensure that all environmental claims made by their marketing- and PR departments are transparent, specific and based on factual evidence. This type of claim management plays a critical role in communication because our results show that many consumers react stronger to the credibility- and type of claim that a company makes than to its actual environmental performance. Our findings indicate that from the perspective of consumers, GW is predominantly an issue of trust and ethics rather than environmental performance. For the German government and agency of consumer protection, our findings are alarming: The majority of our respondents react positively to vague GW and lack the knowledge and expertise to recognize vague- and hidden-information GW as the deceptive mechanisms that they are. To protect consumers from corporate deception and manipulation, stricter regulation of environmental claims or better information of consumers is needed.

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## 1. Introduction

The hype of “green” products and sustainability in developed countries throughout recent years is undeniable (The Economist Intelligence Unit, 2021). Google searches for sustainable products worldwide have increased by 71 % since 2016 (ibidem). Based on current estimates, more than a third of Germans are willing to pay a higher price for a product if it is environmentally friendly (Statista, 2021). Even fossil fuel companies are advertising for the sustainability of their products (Shell, 2021). The emergence of green products, companies and markets worldwide was followed by an emergence of greenwashing (GW) that created a trust problem on the consumer side (de Freitas Netto et al., 2020). A famous example of this is the Volkswagen scandal from 2015, where cars advertised as having low emissions turned out to produce up to 40 times more emissions in reality than advertised because of manipulated test results (BBC, 2015). As a business practice, GW has become a major problem of modern economy that misleads consumers, causes damage to the environment and hurts companies. A study conducted in the US and Canada looks at close to 5300 products that communicated a green image and found that more than 95% of these products were greenwashed (Terrachoice, 2010). GW significantly damages consumer attitudes towards brands and advertisements (Schmuck et al., 2018), affects consumer happiness (Szabo and Webster, 2020) and leads to customers’ inability to recognize the effects of their buying behavior and differentiate between legitimate- and deceptive claims (Horiuchi et al., 2009). Needless to say, that reputational damage and scandals related to GW also hurt companies by resulting in a negative image and ultimately lower sales (Akturan, 2018; Chen et al., 2020; Martinez et al., 2020; Newell et al., 1998). High levels of perceived deception result in lower levels of perceived corporate credibility, lower favorable attitudes towards the brand and lower buying intentions (Newell et al., 1998). GW makes consumers skeptical about sustainable initiatives in general, and this way forms a barrier to green marketing strategies (Chen and Chang, 2013), a problem referred to as green skepticism in literature. Aji and Sutkino (2015) and Akturan and Tezcan (2019) found empirical evidence that GW leads to green skepticism. Green skepticism lowers consumers’ intentions to buy green products (Goh and Balaji, 2016) and leads to negative word of mouth (Leonidou and Skarmeas, 2017). As a result of these effects, greenwashing is a problem that harms consumers, the environment, companies that engage in it and truly “green” companies which suffer from green skepticism as a result of GW scandals.

Our understanding of the problem of GW to date is limited and un-nuanced. Despite the existence of more than 15 distinct greenwashing practices (GWPs) in theoretic literature, the majority of academic literature analyzing the effects of GW on consumers treats “greenwashing” as one static, unidimensional umbrella term for all GWPs. In this approach, GW is either existing or not existing in an experiment (without differentiating between different GWPs when analyzing their effects on consumers). Recent literature in the field of GW urges future researchers to fill this research gap by extending the existing, limited, GW typologies with additional levels of differentiation between GWPs (De Jong et al., 2020; Torelli et al., 2020). The core premise of this thesis is that different kinds of GW have different effects on consumers. This research is one of the first studies to take a more differentiated approach to this topic by introducing a new typology that distinguishes between three different claim-types and two different macro-levels of GW, resulting in six distinct categories of GWPs.

The goal of this research is to achieve a deeper understanding of how GW influences consumers by analyzing how different kinds of GW affect the brand attitude of consumers. Based on the research goal, the research question this study attempts to answer is: “How do different greenwashing practices influence consumers’ brand attitudes?”. By answering this research question, we attempt to contribute to a better understanding of the problem of GW in general.

As a theoretical framework for studying our research question, we develop a typology of GWPs primarily based on the integration of the frameworks from Delmas and Burbano (2011), Schmuck et al. (2018) and the addition of a new claim-type (hidden-information claims). The purpose of this typology is to create a tool for differentiating GWPs that enables us to compare the effects different kinds of GW have on consumers. Concrete examples for these types of GW (that are used to construct example scenarios for our survey questionnaire) are extracted from “The seven sins of greenwashing” by Terrachoice (2010), Scanlans (2017) “New sins of greenwashing” and Bruno (1992) & Berrone’s (2016) framework of “Five firm-level transgressions”.

On the practical side, similar to researchers, companies lack in-depth insight into how consumers evaluate and react to different GWPs. Companies have a strong interest in avoiding the impression- and act of GW since, besides the reputational damages caused by GW scandals, this impression lowers consumers’ brand attitudes and purchase intentions toward their brand and thus ultimately results in lower profits (Szabo and Webster, 2020). A deeper knowledge of how consumers process and evaluate information related to GW can help companies avoid GW. Based on a profound understanding of GW, companies can adjust their product development, marketing strategies and processes in ways that reduce the risk of triggering strongly negative cognitive responses, negative word of mouth (WOM) and boycotts from potential customers. Additional helpful insights for companies can be derived from the comparison of different customer segments regarding their reaction to GW that takes place in this study.

The structure of the thesis is designed as follows. Section 2 establishes the theoretical framework of the thesis. The section begins by reviewing key concepts and existing frameworks related to GW and defining relevant key terms for this study. In addition to this review, a systematic literature review is conducted to identify related work and summarize the results of comparable studies that analyze the effects of GW on consumers. A set of hypotheses is formulated based on existing literature to guide the study of our research question. Furthermore, based on the findings of the literature review and existing studies, a typology of GWPs is developed. In Section 3, based on our theoretical framework, the methodology for our online survey is developed. Section 4 shows the analysis of the survey results, and Section 5 presents the conclusion and discussion of our results.

## **2. Theoretical Framework**

### **2.1 Key concepts**

#### **2.1.1 Greenwashing**

The expression “greenwashing” is derived from the term “whitewashing”, which indicates covering something up and was first used in 1986 by American environmentalist Jay Westerveld (Akturan, 2018). Westerveld criticizes the hotel industry for asking guests to re-use their towels and promoting it as an environmental initiative while hiding their financial incentive behind this initiative and neglecting issues of significantly higher environmental importance like waste recycling (Pearson, 2010). He accused hotels of greenwashing by communicating their efforts of cost reduction as environmentally motivated while masking their deficits in areas of higher environmental impact (ibidem). Greenwashing practices are “a kind of ‘creative reputation management’, in which companies try to hide deviance” (Akturan, 2018, p. 811). The verb greenwash is defined as “The act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service” (Terrachoice, 2007, p. 1).

The (according to Google Scholar) most cited paper in the field of GW defines greenwashing as “the intersection of two firm behaviors: poor environmental performance and positive communication about environmental performance” (Delmas and Burbano, 2011, p. 65). For the term greenwashing, from here on this study will adopt the definition provided by Delmas and Burbano (*ibidem*).

### 2.1.2 Green consumers and green claims

In general, a green consumer is defined as a consumer who “adopts environmentally friendly behaviors and/or who purchases green products over the standard alternatives” (Boztepe, 2012, p. 7). These behaviors can range from reducing consumption behavior in general, recycling, consuming less meat and using public transportation to purchasing fair-trade products, second-hand products, locally grown foods, organic products and products with lowered environmental impacts (McCarthy and Liu, 2017). From a sustainability perspective, the market generally consists of two different consumer segments: green consumers and traditional consumers (Lin et al., 2020). “Green consumers differ from traditional consumers in that green consumers value a product’s resource conservation in addition to its consumption utility” (*ibidem*, p. 1182). Green consumers believe that the individual consumer plays an effective role in protecting the environment (Boztepe, 2012).

We conceptualize green claims by adopting Banerjee et al.’s (1995) definition of green ads. According to this definition, a green ad is an advertisement (in our context a claim) that fulfills at least one of three criteria: “1. Explicitly or implicitly addresses the relationship between a product/service and the biophysical environment. 2. Promotes a green lifestyle with or without highlighting a product/service. 3. Presents a corporate image of environmental responsibility” (*ibidem*, p. 22).

### 2.1.3 Brand attitude

The (according to Google Scholar) most cited article concerning the concept of brand attitude is written by Mitchell and Olson (1981) and describes brand attitude as the overall evaluation of a consumer regarding a specific brand. Brand attitudes are relatively enduring, one-dimensional summarizing evaluations of brands that energize consumer behavior (Spears and Singh, 2004) and represent how likable/ unlikable and favorable/ unfavorable consumers perceive a brand (De Pelsmacker et al., 2007). Brand attitudes are not fixed and permanent, the brand attitude of a customer regarding any given brand is liable to change (*ibidem*). A positive brand attitude is a key component regarding the effectiveness of marketing and communications (Zarantonello and Schmitt, 2013) and positively influences purchase intention (Close et al., 2006).

## **2.2 Greenwashing classifications**

While the majority of existing literature views greenwashing as a unidimensional concept that summarizes all kinds of corporate deception using green claims while hiding poor environmental performance under one umbrella term, a small number of studies take a different approach. In recent years several researchers have come up with concepts and frameworks that differentiate between various forms of GW. De Freitas Netto et al. (2020) conduct a large-scale literature review on different classifications of GW, which is partially used as an orientation for this section.



### 2.2.1 Product-level GW and firm-level GW

Delmas and Burbano (2011) make a fundamental but essential differentiation by pointing out that GWPs can be categorized into firm-level GW and product-/ service-level GW. Based on the previously stated definition of greenwash from Terrachoice (2007), they define the two categories as “misleading consumers regarding the environmental practices of a company (firm-level greenwashing) or the environmental benefits of a product or service (product-level greenwashing)” (Delmas and Burbano, 2011, p. 66).

### 2.2.2 Five firm-level transgressions

The five firm-level transgressions are a typology of firm-level GW. In the “Greenpeace book of greenwash”, Bruno (1992) states four different firm-level transgressions, namely “dirty business”, “ad bluster”, “political spin” and “it’s the law stupid!”. Berrone (2016) builds on this framework by adding “fuzzy reporting” as the fifth transgression. Figure 1 provides an overview and explanation of the five firm-level transgressions.

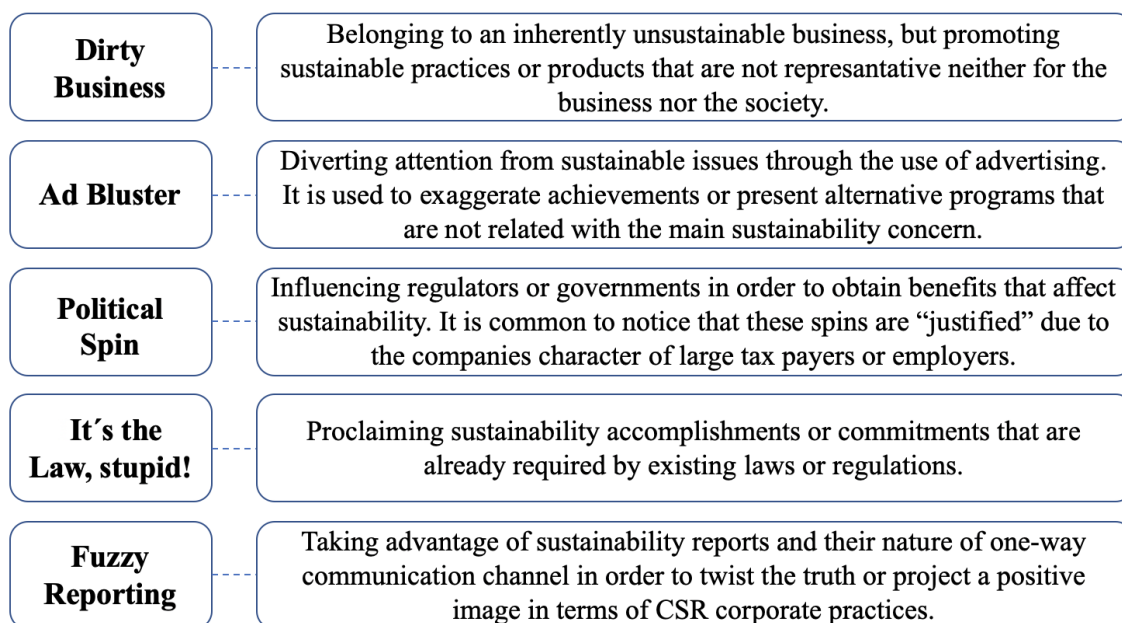


Fig. 1 Five firm-level transgressions. Adapted from Contreras-Pacheco and Claasen, 2017, p. 527

### 2.2.3 The seven sins of greenwashing

A typology of product-level GWPs commonly referred to in the academic literature are “the seven sins of greenwashing”. The seven sins of GW, developed by environmental marketing firm Terrachoice (2010), are “hidden trade-off”, “no proof”, “vagueness”, “worshipping false labels”, “irrelevance”, “lesser of two evils” and “fibbing”. In the respective study conducted by Terrachoice (ibidem), out of 5300 reviewed, self-proclaimed “green” products, they find that more than 95% of these products commit at least one of the seven sins of GW.

The sin of the hidden trade-off is perpetrated through suggesting a green character of a product based on an unsubstantial set of characteristics while leaving out important environmental issues. For instance, when an e-scooter rental service advertises their scooters as green means of transportation, this does not necessarily make them environmentally friendly. If the same company, for financial reasons, disposes the scooters after a short period of time and replaces them with new ones instead of recycling/ repairing/ upcycling them, this creates large amounts

of battery waste, plastic waste and other externalities related to the constant reproduction of these scooters. When the firm communicates its scooters as green but ignores these issues and chooses not to communicate them, it commits the sin of the hidden trade-off.

The sin of no proof entails making an environmental claim about a product that is not confirmed by easily accessible information or third-party certification (ibidem). An example of a firm committing the sin of no proof is a food company that claims to support a particular sustainable cause with a contribution for every product they sell, while at the same time not specifying their exact contributions, partner organizations or providing any possibility for customers to verify this claim.

The sin of vagueness is a GWP committed through a green claim that is inadequately defined or vague to an extent where it is likely to be misunderstood by customers, “all natural” is such a claim because uranium and arsenic are natural as well, despite being poisonous (ibidem).

Making an environmental claim that might be true but not important or not helpful for customers intending to make a green purchase is referred to as the sin of irrelevance (ibidem). An example of this GWP is a nut-selling company printing a vegan logo on the packaging of their salted almonds because nuts are always vegan.

The sin of lesser of two evils applies for claims that might be truthful inside a specific product category but risk distracting customers from greater environmental consequences of the category itself (ibidem). Examples for this GWP are gasoline & diesel products marketed as more environmentally friendly than regular gasoline/ diesel from competitors due to minor differences in production processes.

An environmental claim that is outright false is referred to as the sin of fibbing (ibidem). The sin of fibbing occurs when, e.g., a car manufacturer markets a specific model as green by fabricating false data about the emissions produced by its engine (like in the Volkswagen scandal from 2015).

The last of the seven sins of GW is the sin of worshipping false labels, which applies when a firm creates an impression of third-party endorsement without the existence of actual third-party endorsements by using words or images that can be understood as a label (ibidem). Figure 2 provides an overview of these seven ways of product-level GW.

<b>Hidden trade-off</b>	Environmental claim based on an unsubstantial set of characteristics while leaving out important environmental issues.
<b>No proof</b>	Environmental claim that is not confirmed by easily accessible information or third-party certification.
<b>Vagueness</b>	Environmental claim that is inadequately defined or vague to an extent where it is likely to be misunderstood.
<b>Irrelevance</b>	Environmental claim that might be true but not important for customers intending to make a green purchase.
<b>Lesser of two evils</b>	Environmental claim that might be truthful inside a specific product category, but risks distracting customers from greater environmental consequences of the category itself.
<b>Fibbing</b>	Environmental claim that is false.
<b>Worshipping false labels</b>	Use of words/ images that can be understood as a label, without the actual existence of third-party endorsement.

Fig. 2 The seven sins of greenwashing. Adapted from Terrachoice, 2010, p. 10

#### 2.2.4 Scanlan's additional sins of greenwashing

Based on the seven sins of greenwashing by Terrachoice, Scanlan (2017) examined the phenomenon of GW in the oil and gas industry. Drawing from his observations in the oil and gas industry, Scanlan (ibidem) builds on the framework of the seven sins of GW by adding six new GWP to it, namely the sins of “false hopes”, “fearmongering”, “broken promises”, “injustice”, “hazardous consequences”, and “profits over people and the environment”. Whereas the five firm-level transgressions only describe firm-level GWPs and the seven sins of GW only describe product-level GWPs, Scanlan's additional sins of GW include GWPs from both categories. The following section explaining his typology is based on Scanlan (2017).

Self-explanatory, the sin of “false hopes” refers to environmental claims that create unattainable hopes on the consumer side. An example of this GWP is making a green claim related to fracking, a process used in the oil and gas industry that, according to critics, is not possible to modernize in an ecological manner.

Fearmongering refers to manufacturing a false association of fear related to not buying or not supporting a certain product/ service. The oil and gas industry does this by not talking about the environmental risks of fracking while instead communicating the real risk to be a stagnant economy, energy dependency, unemployment and geopolitical instability – which according to them, can all be prevented by supporting fracking.

The exploitation of people's hope and trust without delivering on assurances that were made refers to the sin of “broken promises”. An example for the sin of broken promises is convincing residents of a particular region to support the building of a coal-fired power plant in their area by promising them economic advantages as a result – when in reality, the majority of the population only gets to share the negative externalities of the facility but not the economic benefits.

The example about the coal-fired power plant also illustrates another GWP by Scanlan (ibidem), the sin of “injustice”. When such pursuit of profits is organized in a way where the communities affected by the negative consequences do not participate in the positive outcomes, while individuals not affected by the negative externalities (in this example the owners of the power plant, if they do not live in the same area) benefit from it, the sin of injustice applies.

The sin of “hazardous consequences” refers to GWPs that hide risks and dangers associated with a product/ service/ project from the ones who are affected by them. In the power plant example, this would mean, for instance, communicating hypothetical benefits of the plant to residents while leaving out the fact that externalities like air pollution that come with the plant pose severe risks for the environment and the health of local communities.

Scanlan's last, and according to him, the potentially greatest GW sin of all is “profits over people and the environment”, which occurs when the corporate bottom line is prioritized over everything else, regardless of risks to people or the environment. An example of profits over people and environment is a sneaker manufacturer who produces his shoes using child labor and not properly disposing waste and polluted water for the sole purpose of profit maximization. Figure 3 presents an overview of Scanlan's additional sins of greenwashing.

<b>False hopes</b>	Environmental claims that create unattainable hopes.
<b>Fearmongering</b>	Manufacturing a false association of fear related to not buying or not supporting a product/ service/ project.
<b>Broken Promises</b>	Exploiting people's hope and trust without keeping the assurances made.
<b>Injustice</b>	People affected by harmful externalities of a product/ service/ project do not participate in the positive outcomes while individuals not affected by them benefit from it.
<b>Hazardous consequences</b>	GWPs that hide risks and dangers of a product/ service/ project from the people affected by them.
<b>Profits over people and the environment</b>	Corporate bottom line is prioritized over everything else, regardless of risks to people or the environment.

Fig. 3 Scanlan's additional sins of greenwashing. Adapted from Scanlan, 2017

### 2.2.5 Vague claims and false claims

Schmuck et al. (2018) distinguish between different GWPs by differentiating between their claim-type. Namely, they categorize GW claims into false claims and vague claims. A false claim is an explicit claim that is "demonstrably false on the basis of objective evidence" (Olson and Dover, 1978, p. 29). Vague claims are defined as "overly broad or poorly defined claims that create an incorrect impression" (Schmuck et al., 2018, p. 128).

The reviewed classifications of GW can be distinguished into two types of classifications: The rather concrete classifications that present and define explicit GWPs (The seven sins of GW, five firm-level transgressions, Scanlan's additional sins of GW) and the rather categorical classifications that differentiate between the level or claim-type of GW (firm-level/ product-level and vague claims/ false claims). The first type of GW classification is helpful because it provides clear and explicit examples of GWPs. These examples demonstrate the differences and nuances within the concept of GW and provide examples that we can use for our survey. However, this type of classification is less suitable for distinctively categorizing GWPs in order to analyze and compare their effects. This is the main advantage of more general classifications that differentiate between GWPs based on distinct claim-types or levels of GW. Therefore, we will use the second type, of rather general classifications, to develop our typology so it can be effectively applied in our methodology and analysis.

## 2.3 Related work

We conduct a systematic literature review to identify related studies investigating GW's effects on consumers. The review protocol, including review objectives, review questions, search strategy, study selection criteria, study quality assessment criteria and our data extraction strategy, can be found in Appendix I. Since the majority of studies analyzing the effects of GW on consumers do not specifically focus on the concept of brand attitude, we include studies that use similar constructs of corporate reputation (such as "brand credibility", "brand image" and "WOM"). Furthermore, since all reviewed studies that look at brand attitude and purchase interest simultaneously find a positive correlation between the two concepts (Akturan, 2018; Chen et al., 2020; Newell et al., 1998; Szabo & Webster, 2020), we also look at studies that investigate the effects of GW on purchase interest. Based on the findings of our literature review, we group the identified literature that meets our selection criteria into two categories:

Unidimensional studies and multidimensional studies. Unidimensional studies use either only one type of GW or use greenwashing as an umbrella term that summarizes all types of GW without differentiating between different GWPs. Multidimensional studies differentiate between different kinds of GW in their research design and investigate the differences between the categories of GWPs that they use.

### 2.3.1 Unidimensional studies

Ahmad and Zhang (2020) find that GW has a negative impact on green purchase intention, green WOM, green trust and green perceived value. Findings of Akturan (2018) show that GW negatively influences green brand associations and brand credibility, which indirectly influences purchase intention and green brand equity. Braga Junior et al. (2019) discover that consumer attitude and belief is influenced by perceived loyalty, satisfaction and benefits that consumers relate to a product, and that when consumers recognize GW, all of these factors decrease, as well as causing confusion of consumption. Chen et al. (2020) demonstrate that GW negatively influences green brand image and green brand loyalty, as well as green purchase behavior. Correa et al. (2017) observe that when consumers perceive GW, it negatively affects their beliefs, attitudes and perceived benefits for green products, and in addition to that, leads them to stop believing in the product and credibility of the respective company. The findings of Martinez et al. (2020) support these observations by illustrating that, to consumers, GW companies lose trust and credibility regarding their product and firm when deceiving customers. The same study points out that the confusion caused by GW becomes a burden in consumers' decision-making, and even if consumers purchase the respective product, they do not experience benefit, loyalty or satisfaction from the purchase due to skepticism. Newell et al. (1998) find that higher levels of perceived deception in an advertisement are related to lower levels of perceived corporate credibility, less favorable attitudes towards the advertised brand, and lower purchase intentions towards the advertised product. Their findings also show that the perception of deception is enough to trigger negative feelings towards an advertisement, regardless of whether the ad was objectively misleading or not. Nguyen et al.'s (2019) findings build on previously identified relationships between GW and consumer behavior by showing that GW is negatively related to green purchase intention. Nyilasy et al. (2012) observe that green advertising, compared to general positive corporate messaging, can positively influence brand attitude when it is substantiated by positive (environmental) firm performance. However, the same study shows that the combination of negative firm performance and green advertising leads to significantly lower brand attitudes compared to negative firm performance and general corporate messaging. Related to this observation, in a different study, Parguel et al. (2011) find that corporate social responsibility communication has a negative effect on brand evaluation when respondents are presented with negative independent sustainability ratings concerning the same firm. Another study conducted by Nyilasy et al. (2014) confirms these findings and points out that the negative effect of corporate low environmental performance on brand attitude is stronger when accompanied by green advertising compared to general advertising and no advertising. Rahman et al. (2015) study consequences of GW in the hotel industry. They discover that when there is an ulterior motive to an environmental claim (in the case of their experiment a linen reuse program), it evokes consumer skepticism and consequently negatively impacts consumer intentions to participate in the linen reuse program, as well as their intention of revisiting the hotel. By conducting interviews and examining consumer interaction with a company website, Szabo and Webster (2020) confirm that GW is negatively related to brand attitude and purchase intention. The findings of this study go a step further than previous studies by showing that GW also negatively impacts consumers' happiness while interacting with the website. Wang et al. (2019) observe how GW behavior of one company influences respondents' purchase intention towards other companies in the same industry and find that GW by a given

brand even negatively affects consumers' purchase intentions towards other companies. This finding illustrates that GW can also hurt environmentally friendly companies that do not engage in GW. Zhang et al. (2018) demonstrate that GW perceptions of consumers not only harm their green purchase interests but also lead to negative green WOM. De Jong et al. (2018) analyze the effects of GW on respondent's perception of environmental claims, integrity of communication, environmental performance and purchase interest. Their experiment introduces participants to four types of firms: Silent green companies, vocal green companies, silent brown companies (companies with low environmental performance that do not advertise themselves as sustainable), and greenwashing companies. GW companies receive the most negative judgments regarding the integrity of their communication. On the other hand, respondents rate GW firms higher in environmental performance than silent brown companies. Their findings show that GW can potentially positively influence consumer evaluations of a companies' environmental claim and performance. GW companies perform similarly to silent brown companies in terms of purchase intention, while both score significantly lower than silent green companies and vocal green companies. Another finding of the study shows that, when rating the communicative integrity of a company, respondents are indifferent towards green companies that communicate accordingly, green companies that do not communicate their environmental performance and companies that have a bad environmental performance and do not communicate about it (ibidem).

In terms of research design, all studies mentioned in the last paragraph use GW as one static concept that functions as an umbrella term for every GWP without further differentiation. Out of the 21 publications studying GW's effects on consumers identified in the systematic literature review of this thesis, 17 publications use this approach in their research design. The premise of this method to measure, analyze and discuss the effects of GW implicates that consumers are indifferent about which particular GWP they are exposed to as long as it falls under the category of GW, and that the effects remain similar regardless of differences between GWPs. Four recent quantitative studies from the last three years started to take the first step towards a novel approach of measuring the effects of GW on consumers by differentiating between different kinds of GW in their research design. Similar to rather specific typologies of GWPs, like the seven sins of GW, their approaches attempt to differentiate between different types of GW. However, unlike specific GW typologies, not in a pursuit to define and illustrate particular GWPs, but to effectively categorize types of GW based on their claim-type or the macro-level on which they are initiated. Although these categorizations tend to be broader and less revealing about specific GWPs, they represent more effective attempts to attribute for the differences among GWPs by enabling the researcher to categorize GWPs into different groups within the methodology, analysis and discussion of quantitative results. This novel approach of differentiating between different claim-types or macro-levels of GW (instead of just using the conditions "GW" and "not GW") allows researchers to compare different GWPs and analyze the differences between them in terms of how they affect consumers. Therefore, the following four papers form the key points of orientation for this study.

### 2.3.2 Multidimensional studies

In a 3 x 2 experimental design with 160 Dutch participants, De Jong et al. (2020) compare the effects of six different types of GW on financial performance, product- and service quality, and environmental performance as constructs of corporate reputation. Their classification of GW involves the categories "vocal green", "partial" GW (also referred to as "half-lies"), "full" GW (also referred to as "lies"), "taking credit for following legal obligations" and "acting on own initiative". Their findings show that half-lies and lies have similar negative effects on reputation in comparison to true green behavior. Taking credit for following legal obligations (referred to as "it's the law stupid" in the five firm-level transgressions) has no significant effect on the

chosen constructs of reputation. Only undeservedly taking credit in the case of true green behavior affects reputation negatively.

Schmuck et al. (2018) examine how GW affects consumers' perceptions of GW and the resulting perceptions of brands and ads. They differentiate between vague claims and false claims (see Section 2.2.5) and different images used in advertisements. They then compare these claims to nondeceptive claims using data from two experimental studies conducted in Germany (N=300) and the United States (N=486). Their findings show that vague claims do not increase consumers' perception of GW, regardless of their environmental involvement: "Vague claims can even benefit consumers' attitudes towards brands" (ibidem, p. 136). This finding is in line with the previously mentioned finding of De Jong et al. (2018). On the other hand, false claims significantly enhance respondents' perception of GW and consequently negatively affect consumer attitudes towards the respective brands and ads. Although vague- and false claims are compared to each other in terms of their effect on perceived GW, the research design does not compare their direct effects on brand perception or ad perception. It assumes that changes in these two dependent variables are a result of the level of "perceived GW" and the "virtual nature experience" (the extent to which images used in an advertisement evoke feelings or sensations of being in nature). They find that associating GW claims with images of nature positively influences consumers' evaluation of brands and ads. This effect on the dependent variables is stronger than the effect of perceived GW on brand perception and ad perception.

Musgrove et al. (2018) analyze the effect of substantive- vs. posturing green marketing claims on different types of consumer perceptual variables in a scenario-based experimental design with 449 American consumers. Their six dependent variables are attitude toward the company, retail interest, patronage intentions, positive word of mouth, consumer skepticism, and expected service quality. Independent variables are likability, claim-type and trustworthiness, and the design of the experiment is 2 x 2 x 2 (substantive/ posturing green marketing claim, high/ low trustworthiness of the company, high/ low likability of the company). Their methodology differentiates between two categories of green marketing claims: substantive- and posturing green marketing claims. "[...] claims of actual changes in environmental behavior, be grouped as 'substantive', while image and environmental fact-based claims be grouped as 'posturing', since they do not require actual modification or 'real change' of the company's behavior. Substantive claims are more objective in nature, while posturing claims are more subjective" (ibidem, p. 280). Their findings indicate that substantive green marketing claims produce less skepticism, higher levels of patronage intent, retailer interest and more positive attitudes towards the respective firm compared to posturing claims. The effects on WOM and expected service quality were not significant when comparing both claim-types.

Torelli et al. (2020) criticize that previous literature analyzing the effects of GW only considers product-level GW or company-level GW. Based on this critique, in their experiment they test and compare product-level GW to firm-level GW while introducing two new levels of GW: Strategic-level GW and Dark-level GW. Strategic-level GW is defined as "misleading environmental communication concerning aspects related to the future firm's strategies (i.e., strategic public communication, corporate medium-long-term goals, strategic plan for improvement or implementation of technology/processes, report communication, and targeted extraordinary operations)" (ibidem, p. 409). Dark-level GW entails "misleading environmental communication finalized to hidden illegal activities (i.e., money laundering, criminal and/or mafia collusion, corruption, and investments with hidden aims)" (ibidem, p. 409). In their experiment, the authors measure the effects of these four different levels of GW on consumers' perceptions of corporate environmental responsibility and corporate greenwashing, as well as the intensity of consumers' reactions to an environmental scandal. The research design is a 4 x 2 experiment with 128 students from Italy that further differentiates between environmentally sensitive industries (ESIs) and non-ESIs. Results for the first dependent variable (consumer

perception of corporate environmental responsibility) show that the four chosen categories of GW have significantly different influences. For both ESIs and non-ESIs, corporate-level GW results in the highest levels of perceived responsibility, followed by strategic-level GW. In ESIs product-level GW results in the lowest level of perceived responsibility, while in non-ESIs dark-level GW leads to the lowest level of perceived responsibility by consumers. Regarding consumers' perception of corporate GW, product-level GW in ESIs leads to the highest perception of GW, while in non-ESIs dark-level GW leads to the highest perception of GW. Furthermore, the findings also reveal that the intensity of reaction to an environmental scandal differs based on the level of GW that the scandal is related to. For both ESIs and non-ESIs, dark-level GW triggered the strongest level of reactions from respondents while corporate-level GW triggered the weakest level of reaction.

### 2.3.3 Conclusion on related work

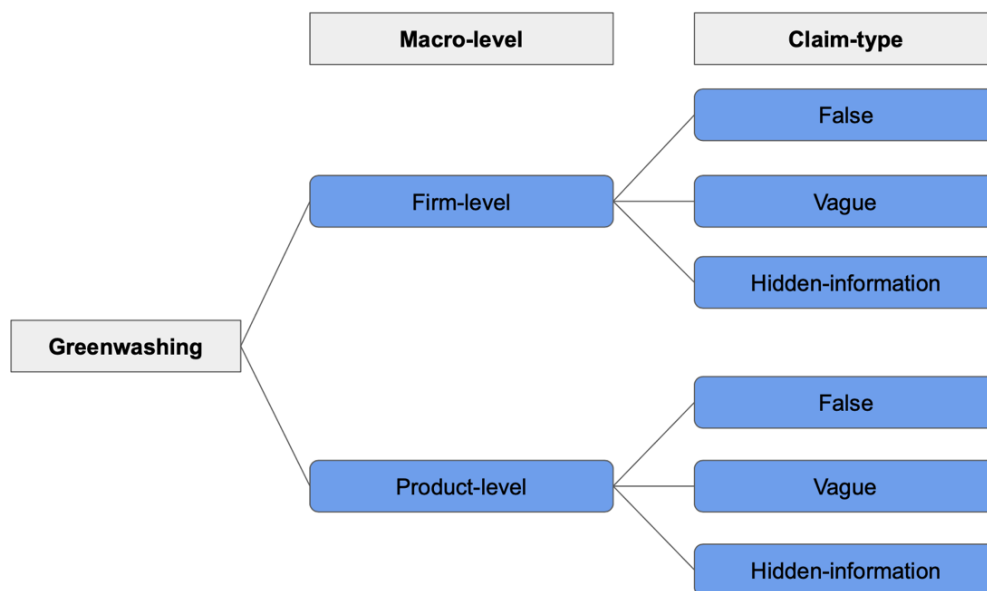
Our literature review shows that although plenty of research has been conducted on the effects of GW, the majority of literature treats GW as a unidimensional, static condition that either exists or does not exist, ignoring any potential differences in effects that might emerge from different types of GW. In the last three years, four studies were conducted that started to take a first step towards a novel approach by differentiating either between the type of green claim, company, or macro-level that GW is initiated on when looking at its effects on consumers. From these four studies, Musgrove et al. (2018) are the only researchers looking at the direct effects that two different types of GW (substantive claims and posturing claims) have on consumers' brand attitudes. Although their research design demonstrates a more differentiated approach than previous studies, a major limitation of their study is that they only use two broad categories based on claim-type and ignore which macro-level GWPs are initiated on. We conclude our literature review by noting that existing studies analyzing the effects of GW on consumers fail to effectively differentiate between different types of GWPs in their research design, which limits the explanatory power of their results. De Jong et al. (2020) and Torelli et al. (2020) confirm this deficit by urging future researchers to extend existing GW typologies with additional levels of differentiation. This thesis addresses the identified research gap by introducing a new typology for greenwashing practices that differentiates GWPs based on their claim-type and macro-level of initiation. By doing so, we attempt to create a framework that is specific enough to account for differences between GWPs, yet categorical enough so that most concrete GWPs defined in theoretical literature (like "the seven sins of greenwashing") can be distinctively assigned to one of the categories. Using this typology of GWPs for the methodology and analysis, this thesis aims to be the first study exploring how different GWPs affect consumers' brand attitudes, that takes into consideration different claim-types and macro-levels of GWPs.

## 2.4 Greenwashing typology

Existing classifications of GW are limited in the extent of differentiation they offer. The main obstacle with existing GW typologies is that they are either too specific to conceptualize different types of GW (e.g., the seven sins of GW) or too broad to effectively resemble differences between concrete GWPs (e.g., only differentiating between product- and firm-level). To address our research question and gain specific insights about different GWPs that can be generalized, a typology is needed that is categorical yet specific enough to resemble differences between GWPs effectively. To develop a greenwashing typology that meets the described demands, we integrate the classification of product-level/ firm-level (Delmas and Burbano, 2011) to model the macro-level that a GWP is related to. To differentiate GWPs based on their claim-type, we integrate the classification of vague GW/ false GW (Schmuck et al.,



2018) into our typology. An observation from reviewing existing GW classifications in the earlier part of the thesis is that certain GWPs neither categorize as vague claims nor as false claims. Earlier explored GWPs like “Dark-level” GW (Torelli et al., 2020), “The sin of lesser of two evils” (Terrachoice, 2010), “Dirty business” (Bruno, 1992) and “political spin” (ibidem) are deceiving consumers through hiding important information from them, rather than making a vague/ false claim about the facts they are hiding. However, according to the GW definition provided by Delmas and Burbano (2011), these practices still classify as greenwashing, as long as the company engages in any kind of positive communication about their environmental performance in general (even if entirely unrelated to the hidden information). To resolve this dilemma and represent this type of GWPs in our typology, we introduce “hidden-information” as the third claim-type next to false and vague. By integrating previous approaches by Delmas and Burbano (2011), Schmuck et al. (2018) and the introduction of hidden-information as a third claim-type, we can effectively categorize the majority of existing GWPs into six distinct types of GW. This classification enables us to compare and analyze the different effects that various kinds of GWPs have on consumers. Figure 4 presents the proposed typology for GWPs.



**Fig. 4** Typology of greenwashing practices

The resulting six types of GW differentiated in our typology are false GW on firm-level (F-FL), vague GW on firm-level (V-FL), hidden-information GW on firm level (HI-FL), false GW on product-level (F-PL), vague GW on product-level (V-PL) and hidden-information GW on product-level (HI-PL).

## 2.5 Hypotheses

To guide and specify the study of our research question, we derive seven hypotheses from our literature review that we will test with our methodology.

Schmuck et al. (2018) find that vague claims do not enhance consumers’ perception of greenwashing, while false claims significantly enhance GW perception. This finding indicates that consumers perceive and evaluate different kinds of GWPs in different ways. Musgrove et al.’s (2018) findings, showing that substantive green marketing claims lead to lower skepticism and affect consumers’ brand attitudes more positively than posturing green claims, are a further indicator that different GWPs have different effects on consumers’ brand attitudes. Torelli et al.’s (2020) recent finding, that the macro-level on which GW is initiated significantly

influences how consumers react to an environmental scandal, points in the same direction as the two previously mentioned studies. Based on the implications of these previous findings, the first hypothesis this research tests is:

*H1: Different GWPs have significantly different effects on consumer brand attitudes*

Schmuck et al.'s (2018) findings show that consumers in their study tend to identify false claims as GW, while vague claims do not increase participants' perceived GW and consequently lead to a lower score of perceived GW. Assuming that their finding is correct, and that perceived GW is potentially directly related to brand attitude in this case, hypothesis number two is:

*H2: False greenwashing affects brand attitude more negatively than vague greenwashing*

Torelli et al. (ibidem) also find that "dark-level" GW (misguiding environmental claims paired with hidden activities) have a stronger negative impact on consumer reactions to environmental scandals than GW on a corporate level. For non-environmentally sensitive industries, dark-level GW leads to the lowest perception of corporate environmental responsibility from all categories of GW tested in their study. Based on these two findings, we hypothesize that:

*H3: Hidden-information GW affects brand attitude more negatively than vague- and false GW*

In both types of industries tested by Torelli et al. (2020), product-level GW leads to lower levels of "perception of corporate environmental responsibility" than firm-level GW. Assuming that perception of corporate environmental responsibility is potentially related to brand attitude, hypothesis number four is:

*H4: Product-level GWPs affect brand attitude more negatively than firm-level GWPs*

Hypotheses 1-4 test the differences between varying claim-types and macro-levels of GWPs in regard to how they affect consumers' brand attitudes. When analyzing the underlying dynamics of how GW affects consumers, it also seems promising to investigate how the background of consumers influences their evaluation of GWPs. Therefore H5-H7 will analyze how consumers' belonging to a specific customer segment influences their perception and assessment of GW.

Haws et al. (2014) find that level of education is positively related to green consumerism. Torelli et al. (2020, p. 408 & 411) state that university students are "very aware, informed, and receptive to issues related to the environment and environmental communication [...] Furthermore, as frequent and expert users of the Web, students are particularly affected by true and false environmental communications". Nyilasy et al. (2014), who investigate the effects of green advertising and corporate environmental performance on brand attitude, name only using university students in their sample as a limitation to their research design. According to the authors, this limitation could have influenced their results, as a pure student sample could be more aware of environmental issues than other samples. Therefore, Nyilasy et al. (ibidem) suggest that future researchers compare student samples to different categories of consumers. Torelli et al. (2020) state the same limitation regarding their research design. H5 will address both limitations by comparing university students to non-students:

*H5: University students react more critical to GWPs than non-student consumers*

Shrum et al. (1995) conduct an extensive survey on buyer characteristics of green consumers and conclude that green consumers are careful- and information-seeking shoppers who are

skeptical of advertising. Zinkhan and Carlson (1995) confirm their findings, stating that green consumers tend to hold anti-corporate biases and negative attitudes towards business and advertisement. Based on these findings, we hypothesize that:

*H6: Green Consumers react more critical to GWPs than traditional consumers*

Finally, consumers' gender could potentially also affect how they perceive and evaluate GW. In a survey with 1503 participants from the US, Roberts (1993) finds that women show more concern for society and others in their consumption-behavior and decision-making. Analyzing a survey sample of 3111 respondents from Norway, Olli et al. (2001, p. 200) find that "women exhibit more environmentally friendly behavior than men". McCright (2010) analyzes eight samples of telephone surveys with US Americans and finds that female participants show slightly higher levels of climate change knowledge and concern about climate change than men in the study. Based on these findings, hypothesis seven is:

*H7: Women react more critical to GWPs than men*

Table 1 provides an overview of all hypotheses that are tested within this study.

**Table 1** Hypotheses

H1	Different GWPs have significantly different effects on consumer brand attitudes.
H2	False greenwashing affects brand attitude more negatively than vague greenwashing.
H3	Product-level GWPs affect brand attitude more negatively than firm-level GWPs.
H4	Hidden-information GW affects brand attitude more negatively than vague- and false GW.
H5	University students react more critical to GWPs than non-student consumers.
H6	Green Consumers react more critical to GWPs than traditional consumers.
H7	Women react more critical to GWPs than men.

### **3. Methodology**

#### **3.1 Research Design**

This thesis addresses the research question: "How do different greenwashing practices influence consumers' brand attitudes?". Therefore, the methodology of this study aims to explore how consumers perceive and evaluate brands as a result of being exposed to different GWPs. A suitable tool for capturing perceptions, opinions, and attitudes are surveys (Queirós, 2017; Gray, 2019). If construction and validation are conducted properly, survey results can be used to make conclusions regarding opinions, behaviors, and perceptions of respondents (Queirós, 2017) as well as cause-effect relations (Gray, 2013). Therefore, survey research seems like an appropriate methodology to study our research question and test the stated hypotheses based on the survey results.

With the help of an anonymous online survey, we expose respondents to the six different scenarios of GW identified in the typology established earlier (Figure 4) as independent variables. The measurement instruments are designed to measure the effect of specific GWPs on respondents' brand attitude as the dependent variable. Through a set of questions, we group participants into the categories "Green consumer/ traditional consumer", "Student/ non-student", and "male/ female", which enables us to compare different groups of respondents.

### 3.2 Selection

Our research aims to investigate the perception of consumers living in Germany. To ensure that no data from participants outside of this group is collected, we ask a control question at the beginning about the residence of respondents and screen out participants who do not qualify as consumers on the German market. To avoid collecting responses from participants who randomly click through the questionnaire, we ask a question that tests whether respondents are reading the questions attentively towards the middle of the survey. Respondents who fail to answer this test question are screened out and excluded from the results. To approximate the diversity within the target group of consumers (which technically entails every German resident that enters a supermarket or makes any kind of purchase in Germany), we sample participants from different sources, including students, non-students, green consumers and traditional consumers. Also, this approach is the basis to draw comparisons among different subgroups in the analysis later, which addresses a limitation of earlier related studies that worked with pure student samples (Nyilasy et al., 2014; Torelli et al., 2020).

### 3.3 Sample

151 participants are gathered through social media, friends, and family members. 238 participants are gathered through a German sample provider. Overall, we collected data from 389 respondents. After screening out respondents who do not live in Germany, incomplete responses, and respondents who failed the test question, our sample counts 315 valid- and complete responses (80.9% of the original sample). 57.7% of respondents are female, 42.3% are male. The degree of similarity in terms of male and female percentages seems reasonable to our target population, considering that approximately 50.6 % of German residents are female and 49.3 % are male (Statistisches Bundesamt, 2021). Since none of the survey participants identified themselves as diverse in the questionnaire, we do not use other categories than male and female from here on. 20.9% of participants are current university students, 79.1% are not current university students. Since in Germany currently matriculated university students make up 3.5% of the whole population (Statista, 2021), our sample has a considerably larger percentage of currently matriculated students than our target population. However, the difficulty with comparing the percentages of university students and non-students is timing: Many participants who currently classify as non-students have been university students in the past. 55.8% of Germans become university students at some point in their lives (Statista, 2022). By adopting two measurement items from the “GREEN” scale developed by Haws et al. (2014), we identified 34.2% of respondents as green consumers and 65.8% as traditional consumers. This distribution resembles the percentage of 39.7 % green consumers in our target population (Statista, 2021).

### 3.4 Measurement

To measure respondents' reactions to different GWP, we develop a survey questionnaire that informs participants about the activities of six different greenwashing companies. For each category of GW identified in our typology, we present respondents with one fictive scenario that resembles the respective type of GW. The main advantages of presenting the cases of GW to respondents in this way are that respondents are not biased towards the companies (since they never encountered the brands in their own life) and that we most likely are able to measure their reaction to the actual information of GW (whereas if we would use video or images, the measured reactions could be caused by visual- or auditory stimuli).

### 3.4.1 Reliability and validity of measurement instruments

Fowler (2013, p. 75) emphasizes the importance of designing measurement items for a survey reliably and valid: “Good questions are reliable (providing consistent measures in comparable situations) and valid (answers correspond to what they are intended to measure)”. To ensure high reliability and validity of the questionnaire, several steps are taken prior to pretesting.

There are several ways to increase the reliability of survey questions. Fowler (2013) recommends ensuring reliability of questions by entirely scripting the question-and-answer process from the researcher’s side. This approach adequately prepares respondents to answer and consistently communicates the kinds of adequate responses to all respondents. To ensure the questionnaire meets these two criteria, the majority of questions are standardized closed questions that provide the same answer possibilities to all respondents (thereby giving respondents a similar perception of the type of answer that is expected from them). Furthermore, the answers to closed questions are quantifiable and can be interpreted more reliably than answers to open questions (*ibidem*). However, Fowler (*ibidem*) points out that there are also advantages to open questions, such as being able to obtain unanticipated answers and answers that describe the real views of respondents more closely. In addition, respondents like the opportunity to answer a question using their own wording, as solely being able to answer through provided responses can become a frustrating experience (*ibidem*). Therefore, to complement the quantitative data gathered through the closed multiple-choice questions, respondents will be asked additional open questions when choosing the positive- or negative extreme of a possible answer. When selecting the most positive or negative answer possible as a reaction to a GWP, it indicates that the respective GWP triggers a strong reaction from the respondent. Following up with an open-ended why question at this point might provide valuable insights into the way consumers evaluate GWPs and their reasoning behind it. Another important aspect of reliability is that respondents correctly understand questions and have a similar understanding of them (*ibidem*). To ensure that respondents understand questions correctly, the survey uses simple, short, and concrete formulation, and provides practical examples of GWPs (instead of using scientific terminology or theoretic names of GWPs). As not all participants in the sample speak German as their mother tongue, the questionnaire is made available to respondents in German and English. In addition to that, the scales that measure brand attitude are explained to respondents prior to answering, to ensure they are understood correctly and consistently.

For increasing the validity of questions, Fowler (*ibidem*) suggests designing questions as reliable as possible and providing differentiated spectrums of answering possibilities. In the context of multiple-choice questions, Fowler (*ibidem*) also emphasizes that response alternatives should be designed in a one-dimensional form (concerning only one specific topic) and monotonic (in order). To provide differentiated spectrums of monotonous, one-dimensional answering possibilities, the survey mainly uses seven-point Likert scales. An additional benefit of using this type of scale is that it enables reliable measuring, comparison, and interpretation of responses. To further improve the validity of the measurement process, Fowler (*ibidem*) suggests asking multiple questions that measure the same subjective state but use different question forms. In order to do so, we use two different items for measuring green consumerism and two different items for measuring brand attitude.

Another critical factor in collecting truthful answers from respondents for this particular survey is minimizing social desirability bias. The phenomenon this research proposes to analyze is of sensitive nature since being a responsible and environmentally-oriented consumer, who is against GW, is a socially desirable image. As respondents might not want to see themselves as/ or be seen by others as environmentally irresponsible and supportive of GW, there is a potential for social desirability bias leading to respondents misrepresenting the truth. As this particular bias poses a major threat to the validity of answers and results in this specific survey, we

implement several measures to reduce the potential for social desirability bias. Fowler (ibidem) emphasizes that it is critical to minimize a sense of judgment in the introduction and use of vocabulary to not give respondents the impression that certain kinds of answers are valued/judged more by the researcher than others. Based on this, instead of informing respondents upfront that the questionnaire is about GW (which could potentially prime them to interpret and read examples of GWPs more critically and suspiciously), the specific context and topic of the study are revealed at the end of the questionnaire. In addition, the survey is titled “Consumption and perception” to not raise avoidable suspicions. Furthermore, instead of introducing the different GWPs to respondents using their theoretical names or definitions, all GWPs will be presented to respondents in the form of practical examples in neutral language (without mentioning the term greenwashing). All participants are asked to answer truthfully and are explicitly reminded that there are no right or wrong answers prior to their participation. Finally, to confirm the reliability and validity of the measurement instruments, the survey is pretested (Section 3.4.5), and the gathered data are analyzed with statistical tests (Section 3.6).

### 3.4.2 Measuring brand attitude

In the questionnaire, we measure brand attitude in the form of ordinal data using two seven-point bipolar scaled items. The first item is adopted from Muehling and Lacniak (1988) and uses ‘negative’-‘positive’ as endpoints. The second item is adopted from Schmuck et al. (2018) and uses ‘not likable’-‘likable’ as endpoints. We adjust both items for our survey by naming the endpoints ‘extremely unlikable’/ ‘extremely likable’ and ‘extremely negative’/ ‘extremely positive’. Our reason for this adjustment is that we want to avoid encouraging respondents to repeatedly choose the endpoints of the original scale to express attitudes that might slightly differ in reality. Intuitively, the barrier to answering a question with ‘extremely unlikable’ is higher than answering it with ‘unlikable’, while ‘unlikable’ seems like a relatively mild term to express the worst possible attitude someone can have. To offer a more nuanced spectrum of answering possibilities that allows respondents to express their brand attitudes more specific, and to avoid the excessive use of endpoints of the original scales, we decide to adopt the items from Muehling and Lacniak (1988) and Schmuck et al. (2018) with the described adjustment. Although both items are commonly used in quantitative research to measure brand attitude, the ‘negative/ positive’ item tends to represent a slightly more ethical and rational evaluation of a brand in regard to society. In contrast, ‘not likable/ likable’ tends to reveal a respondent’s assessment of a brand from a more subjective and emotional standpoint. Therefore, the combination of both scale items seems promising for measuring respondents’ overall brand attitudes in a way that captures their emotional - as well as their rational evaluation of a brand. Questions measuring brand attitude are designed so that respondents first get introduced to a brand (and the GWP it is engaging in) through a fictive case example. Following the GW example, based on Muehling and Lacniak’s (1988) questions measuring brand attitude, respondents are provided with two answering scales for each scenario. The two scales follow the structure “My attitude toward this brand is (one answering scale for ‘extremely negative’ – ‘extremely positive’, one answering scale for ‘extremely unlikable’ – ‘extremely likable’)”. Similar to Muehling and Lacniak’s (ibidem) approach, the responses to both items are treated as interval data, summed, and averaged to calculate the brand attitude score for each GWP. The resulting brand attitude score is our interval scaled dependent variable that indicates respondents’ brand attitudes towards the companies depicted in our example scenarios. According to this variable, the highest (positive) possible brand attitude score a company can receive is seven and the lowest (negative) brand attitude score possible is one.

### 3.4.3 Collecting open answers

As pointed out in Section 3.4.1, there are several benefits to collecting open answers in addition to the quantitative data we obtain from our Likert scales. Therefore, every time respondents select the extreme of a brand attitude scale, they are presented with an open follow-up question asking “You answered that you perceive this brand as extremely [selected adjective]. With 1-3 sentences in your own words, why is that?”. The gathered open answers are labeled and categorized according to the main reason respondents indicate regarding their choice of brand attitude. This categorization allows us to quantify and compare the reasons that respondents provide for their expressed brand attitudes as a supplement to the brand attitude scores.

### 3.4.4 Measuring green consumerism

Since being a green consumer is a socially desirable image and respondents might feel judged admitting that they do not fall under this category, social desirability bias is a potential obstacle to identifying green consumers within the sample. To determine green consumers within the sample therefore, instead of asking respondents directly whether they identify as green consumers, the survey adopts two items from an existing scale for green consumer values.

Haws et al. (2014) developed the ‘GREEN’ scale, which captures green consumption values and predicts consumers’ preferences for environmentally friendly products. The results of their study confirm that the GREEN scale is a reliable predictor of preference for environmentally friendly products (respondents’ scores on the green consumption values are significantly positively related to their preference for environmentally friendly products). To indirectly identify and categorize green consumers, the survey adopts the measurement items “It is important to me that the products I use do not harm the environment” and “I consider the potential environmental impact of my actions when making many of my decisions” from Haws et al. (2014, p. 339). We measure the two adopted items using seven-point Likert scales with ‘strongly disagree’ and ‘strongly agree’ as endpoints. To be categorized as a green consumer in this study, respondents need to choose at least ‘agree’ (or strongly agree) for both questions. Participants who do not select at least ‘agree’ for both answering scales are categorized as traditional consumers.

### 3.4.5 Scenario construction for GWPs

To construct specific GW scenarios for the questionnaire, we derive one exemplary GWP from existing theoretical literature for each of the six categories identified in our typology. This procedure ensures selecting and classifying GWPs in a way that is repeatable and in line with previous theoretical work. In order to present examples of products and company types that all respondents are likely to relate to in a similar way, highly gender-specific products (i.e., beauty products or female hygiene products), as well as highly lifestyle specific products (i.e., animal products or fitness supplements) are avoided. Instead, generic examples that all consumers are likely to purchase themselves, like shower gel, toothpaste, and basic groceries, are chosen to ensure that respondents relate to presented products in a similar way (a 45-year-old working male fan of the formula one is likely to relate to sportscars differently than an 18-year-old female student who is a green consumer).

To construct product-level GWPs, one false GWP, one vague GWP, and one hidden-information GWP are necessary. Product-level false GWPs in literature are represented through the ‘Sin of fibbing’ from the seven sins of GW and are defined as “environmental claims that are simply false” (Terrachoice, 2010, p. 10). Based on this definition, in the questionnaire a vegetable product (onions) will be introduced to respondents that makes a false claim about being organic. Respondents are also provided with the information that the respective onions

are in reality not different from non-organic products of competitors. Vague GWP are defined by Terrachoice (ibidem, p.10) under the sin of vagueness as “every claim that is so poorly defined or broad that it’s real meaning is likely to be misunderstood by the consumer”. To resemble a vague product-level GWP in the survey, we introduce a shower gel that states “natural ingredients” (ultimately all ingredients, including harmful substances, are to some extent, directly or indirectly extracted from nature, see Section 2.2.3). An appropriate representation of hidden-information GWP on product-level is the ‘Sin of lesser of two evils’ which is “committed by claims that may be true within the product category, but that risk distracting the consumer from the greater environmental impacts of the category as a whole” (ibidem, p. 10). An example of this GWP is advertising a one-time usage coffee mug of a particular brand as a green alternative to their competitors because they produce their lids using recycled plastic. Although this claim might be true inside this specific product category, it hides the fact that, from an environmental standpoint, the real problem is not the amount of recycled plastics in one-time usage mugs. In this case, the real problem is rather the fact that if whole populations use one-time mugs on a daily basis instead of reusable mugs, it leads to large amounts of avoidable paper consumption and plastic waste, which both lead to further negative environmental consequences.

Following the construction of three example cases for product-level GW, we construct three cases of firm-level GW. A representative GWP for false claims on a firm-level is the ‘Sin of broken promises’ from Scanlan (2017, p. 1327), which refers to GWPs “exploiting the hopes and trust” of consumers. A practical example for this GWP is a beverage company that promises customers to donate one liter of water to communities in need for every beverage sold but does not fulfill that promise. ‘Fuzzy reporting’ from the five firm-level transgressions is an example of vague GWP on firm-level. It refers to „taking advantage of sustainability reports and their nature of one-way communication channel in order to twist the truth or project a positive image in terms of CSR corporate practices” (Contreras-Pacheco and Claasen, 2017, p. 527). The concrete example for the questionnaire is a textile company that, within their sustainability reporting, makes the claim “We stand for fair treatment of workers and enabling communities” while paying their employees minimum wage. Since ‘fair’ and ‘enablement’ are both highly vague terms, hiring a person and paying minimum wage can also be interpreted as fair and enabling if that is what other local companies in the area are doing. A suitable representative GWP of hidden-information GW on firm-level is being a ‘Dirty business’, which implies “belonging to an inherently unsustainable business, but promoting sustainable practices or products that are not representative neither for the business nor the society” (ibidem, p. 527). An example for the questionnaire that derives from this GWP is a coffee brand that advertises itself as being more sustainable and fair than competitors because of paying higher wages and using more environmentally friendly harvesting methods. Although their claim is true in the example, they are a direct subsidiary of one of the biggest coffee producers with a reputation for polluting the environment and exploiting workers. They just use another brand name. While projecting through their communication that consumers support the environment and do ‘good’ by purchasing their coffee, in reality, consumers also support the environmentally harmful parent company, which classifies this scenario as a case of GW. Figure 5 illustrates the examples of GWP extracted from literature to represent the six categories of GW from our typology in the survey questionnaire.



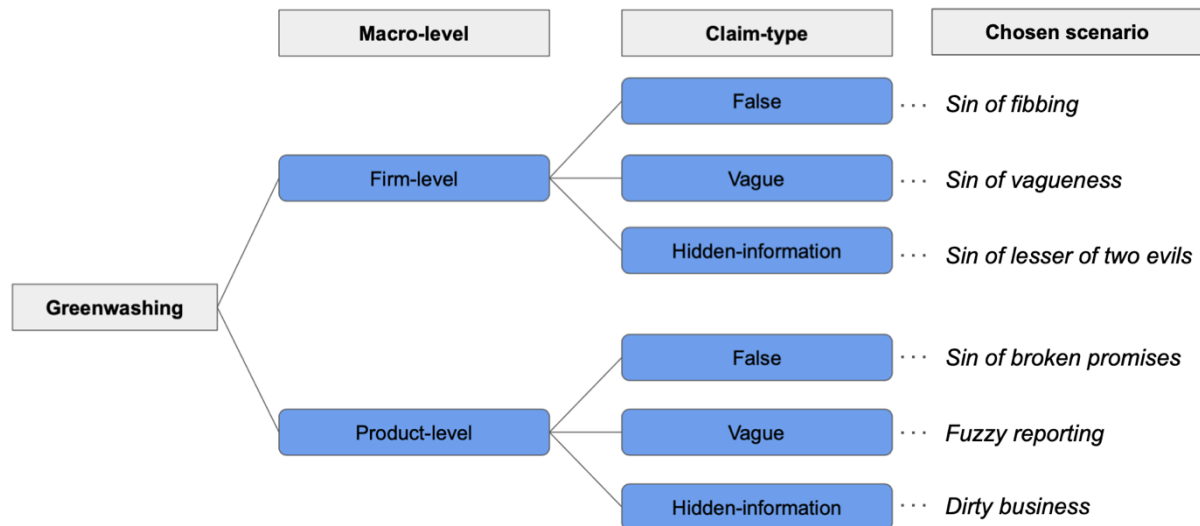


Fig. 5 Scenario construction of GWPs

### 3.4.6 Pretest

To discover potential weaknesses and confirm that participants understand the questions correctly, we run a pretest of the questionnaire with seven students, observe their answers and ask them for feedback afterward. In the feedback to the first version of the questionnaire, two students indicated difficulties understanding the difference between the ‘positive/negative’ scale and the ‘likable/unlikable’ scale. Even though the difference was communicated in the introductory text of the survey, the two test participants seemed to have skipped through the introduction part and forgot the explanation until the point of the questionnaire where the GW scenarios were introduced. To address this issue, the explanation of the scales was reformulated using less- and simpler words and is repeated in the survey. The shortened and simplified explanation is displayed in bold letters at the beginning of the survey and directly before the GW scenarios, making it easier to read and remember. Further criticism from test participants was directed at the length of the introduction and a typing mistake of the German version. After the introduction part was shortened and the typing mistake removed, the last three participants who took the modified version of the questionnaire gave positive feedback and described the survey as understandable. Positive comments were directed at the “interesting ending” (when respondents are told that the study is analyzing the effects of GW on consumers) and the visual confirmation that indicated a 50% completion rate of the survey. Furthermore, all test respondents tend to give differentiated ratings to the different GW scenarios, which indicates that they feel encouraged and capable to consider the scenarios and express their reactions in detail (instead of just choosing the positive or negative ends of the scales repeatedly).

### 3.5 Procedure

After testing, the survey is distributed to our sample via social media (using LinkedIn, Facebook and Whatsapp) and through the platform of our sample provider (“Splendid Research”). The questionnaire is edited and hosted on Qualtrics.com.

Based on the automated nature of self-administered online surveys, data are collected using the Qualtrics software. We collect no sensitive data that would enable the personal identification of respondents. All data are collected anonymously in compliance with article 13 of EU-regulation number 679/2016 from the 27th of April 2016. The questionnaire design does not allow respondents to proceed until the next screen before answering all questions or go back to previous screens. The purpose of this measure is to avoid missing responses and disable respondents who can not answer the test question from going back to look up the correct answer.

In the introduction, respondents are informed about the collection and use of their data, the voluntary nature of their participation, potential risks and a contact. To not prime respondents negatively by framing the survey as a study on unethical companies, we summarize the purpose of the survey as an attempt to achieve a better understanding of consumer perception in the introduction. The introduction is followed by a disclaimer, explaining the two brand attitude scales to respondents, asking participants to answer honestly, and stating that all presented company examples are fictive. The first three questions ask respondents for their gender, residence and (potential) student status. Respondents who indicate that they are not German residents are screened out and receive a screen-out notification. Questions four and five are the items adopted from Haws et al. (2014) intended to measure green consumerism. After measuring green consumerism, the survey presents a clarification about the two BA scales (likable/not likable and positive/negative). Following the clarification, we expose participants to the six different GW scenarios constructed on the basis of our typology. The scenarios include basic information about the name and activity of the company, as well as information about its claims and environmental performance. Every GW scenario is presented to respondents separately and asks participants to indicate their brand attitude towards the respective company on both BA scales on the same page. After the second GW scenario, respondents are asked a test question regarding the content of the previous survey question to control whether participants are attentively reading the questions or randomly skipping through the survey. Respondents who answer the test question wrong are screened out and receive a screen-out notification. Respondents who pass the test question are presented with visual feedback, stating, “You completed 50% of the survey, good job!”. After completing the questionnaire, respondents are presented with an “End of survey” message that thanks them for their efforts, informs them about the thesis’s title, topic, and research goal, and provides an email address for questions and comments. The complete questionnaire can be found in Appendix II.

### 3.6 Data analyses

To test the internal reliability and validity of our data, we run a series of statistical tests in SPSS. Table 2 shows the results of our initial data analyses. Values indicating statistical significance are displayed in bold font.

**Table 2** Initial data analysis

Question	<i>p</i>	Cronbach’s $\alpha$
Green consumerism (scale 1)	<b>&lt;.001***</b>	.850
Green consumerism (scale 2)	<b>&lt;.001***</b>	
Hidden-information, product-level (likable/unlikable)	<b>&lt;.001***</b>	.916
Hidden-information, product-level (positive/negative)	<b>&lt;.001***</b>	
Vague, product-level (likable/unlikable)	<b>&lt;.001***</b>	.911
Vague, product-level (positive/negative)	<b>&lt;.001***</b>	
False, product-level (likable/unlikable)	<b>&lt;.001***</b>	.912
False, product-level (positive/negative)	<b>&lt;.001***</b>	
Hidden-information, firm-level (likable/unlikable)	<b>&lt;.001***</b>	.922
Hidden-information, firm-level (positive/negative)	<b>&lt;.001***</b>	
Vague, firm-level (likable/unlikable)	<b>&lt;.001***</b>	.933
Vague, firm-level (positive/negative)	<b>&lt;.001***</b>	
False, firm-level (likable/unlikable)	<b>&lt;.001***</b>	.928
False, firm-level (positive/negative)	<b>&lt;.001***</b>	

\*\*\* statistical significance  $p < .001$

The question column indicates the GW scenario that the questions are part of, including the scale used for the particular question in brackets. The  $p$  column shows the significance values, and the last column shows Cronbach's  $\alpha$  values. We begin by testing the data for normality of distribution, using the Shapiro-Wilk test, for every question measuring respondents' brand attitudes and the items of the green consumer construct. We use an  $\alpha=.05$  and assume that our data is normally distributed if the significance, resulting from the Shapiro-Wilk test, is greater than  $\alpha$ . Results of the Shapiro-Wilk tests show a significance of  $p<.001$  for all measurement instruments. Since all results are significantly smaller than  $\alpha$ , we conclude that our data does not follow a normal distribution. Nevertheless, since our sample is substantially larger than 30 respondents, we can assume a normal distribution of our data for hypotheses testing according to the central limit theorem (Kwak and Kim, 2017).

To test the two items that we use for measuring brand attitude (positive/negative and likable/not likable) for internal consistency and reliability, we calculate Cronbach's  $\alpha$  using a reliability analysis for the answers to all six GW scenarios. For all six scenarios, the reliability analysis results reveal a Cronbach's  $\alpha>.900$ , which represents an excellent internal consistency according to George and Mallery (2003). The results indicate that both chosen scales are strongly related and therefore reliable- and consistent measures of the same construct.

We conduct the same reliability analysis for both items we adopted from the "GREEN" scale to identify green consumers. The result of this analysis shows a Cronbach's  $\alpha$  of .850, which represents a good internal consistency according to George and Mallery (ibidem). This result indicates that both items from the green consumer scale are reliable and consistent measures of the same construct.

### 3.6.1 Hypotheses testing

To test H1 (Different GWPs have significantly different effects on consumer brand attitudes), we require a dependency analysis that reveals whether brand attitude scores resulting from different GWPs differ significantly from each other. According to University of Zurich (2021), the appropriate test for a related sample with more than two repeated measurements and an interval scaled outcome variable is the repeated measures ANOVA. To adjust the results of this model for multiple comparisons, we conduct a Bonferroni post-hoc test.

For testing H2-H4, we require a dependency analysis that compares the effects different GWPs have on brand attitude based on their claim-type (vague, false, hidden-information) and macro-level of initiation (product-level/ firm-level). Since, in this case, we have an interval scaled dependent variable and more than two independent variables, the appropriate test for H2, H3 and H4 is a two-way repeated-measures ANOVA according to University of Zurich (ibidem). Similar to H1, we use a Bonferroni post-hoc test to adjust the resulting significance values.

H5-H7 require a comparison of different groups of respondents in terms of how GW affects their brand attitudes. To test H5-H7, we conduct Mann-Whitney U tests, which allows us to compare different populations of respondents to each other for every GW scenario separately. To take into consideration the resulting  $\alpha$  error accumulation of this approach, we use a Bonferroni-Holm adjustment for the significance values.

## 4. Results

### *H1: Different GWPs have significantly different effects on consumer brand attitudes*

Table 3 shows the average brand attitude scores and their standard deviation for every GW scenario respondents are exposed to within the survey.

**Table 3** Brand attitude scores for GW scenarios

Greenwashing practice	Brand attitude score	Std. deviation
Hidden-information, product-level	4.171	1.439
Hidden-information, firm-level	3.807	1.608
Vague, product-level	4.757	1.009
Vague, firm-level	4.236	1.444
False, product-level	1.942	1.176
False, firm-level	2.012	1.198

We calculate the brand attitude score by attaching values from 1-7 to both Likert scale items used for measuring brand attitude (1= extremely negative/ extremely unlikable; 7= extremely positive/ extremely likable) and calculating the average of both scales for each GWP measured. To determine the final brand attitude score, we then combine the averages of both items into one coefficient by calculating their mean. According to this score, seven is the highest (positive) brand attitude possible, while one represents the lowest (negative) brand attitude possible. A brand attitude score of four is neutral (neither positive nor negative attitude towards the brand). Results show that false GW on product-level has the most negative impact on brand attitude. Vague, product-level GW on average has a slight positive effect on consumers' brand attitudes. In terms of claim-type, false GW leads to the most negative brand attitudes among consumers, vague GW has the least negative impact on consumer brand attitudes, and hidden-information is in the middle. With a mean difference of 2.815 between the highest- and lowest brand attitude, all six GWPs lead consumers to form different brand attitudes about the respective companies when exposed to them.

The one-factorial repeated measures ANOVA shows that our model explains a significant amount of variance ( $F(4.214, 1323.187)=309.392, p<.001, \eta^2=.496$ ). Results indicate a large effect ( $f=.99$ ) of the GW scenarios on brand attitude, according to Cohen (1992). Table 4 shows a pairwise comparison of BA Scores with Bonferroni adjustment. Every brand attitude score is compared pairwise to all five other brand attitude scores regarding statistically significant differences. We assume that a statistically significant difference between two brand attitude scores exists if  $p_{adj}<.05$ . The second column uses abbreviations of GWPs instead of their full name (HI-PL=hidden-information, product-level GW, V-PL=vague, product-level GW, V-FL=vague, firm-level GW, HI-FL=hidden-information, firm-level GW, F-PL=false, product-level GW, F-FL=false, firm-level GW). The column  $\Delta M$  shows the mean differences, and the column  $p_{adj}$  shows the significance values with Bonferroni adjustment. Pairs of GWPs with significantly different influences on brand attitude are highlighted in yellow.

**Table 4** Brand attitude score differences for GW scenarios

BA Score 1	BA Score 2	$\Delta M$	$p_{adj.}$
<b>Hidden-information, product-level</b>	V-PL	.586	<.001***
	V-FL	.065	1.000
	HI-FL	.363	.017*
	F-PL	2.229	<.001***
	F-FL	2.159	<.001***
<b>Vague, product-level</b>	HI-PL	.586	<.001***
	V-FL	.521	<.001***
	HI-FL	.949	<.001***
	F-PL	2.814	<.001***
	F-FL	2.744	<.001***
<b>Vague, firm-level</b>	HI-PL	.065	1.000
	V-PL	.521	<.001***
	HI-FL	.429	.004**
	F-PL	2.294	<.001***
	F-FL	2.224	<.001***
<b>Hidden-information, firm-level</b>	HI-PL	.363	.017*
	V-PL	.949	<.001***
	V-FL	.429	.004**
	F-PL	1.865	<.001***
	F-FL	1.795	<.001***
<b>False, product-level</b>	HI-PL	2.229	<.001***
	V-PL	2.814	<.001***
	V-FL	2.294	<.001***
	HI-FL	1.865	<.001***
	F-FL	.070	1.000
<b>False, firm-level</b>	HI-PL	2.159	<.001***
	V-PL	2.744	<.001***
	V-FL	2.224	<.001***
	HI-FL	1.795	<.001***
	F-PL	.070	1.000

\* statistical significance  $p < .05$ , \*\* statistical significance  $p < .01$ , \*\*\* statistical significance  $p < .001$

Results show that except for two pairs (HI-PL & V-FL; F-PL & F-FL), all GWPs presented to respondents in the survey lead to significantly different brand attitudes. In total, out of the 15 distinct pairwise comparisons conducted in Table 4, 13 comparisons show a significant difference while two pairs show a numeric difference but no statistically significant difference. We therefore accept H1 with the exception that there is no statistically significant difference between false GW on product- and firm-level, and HI-PL & V-FL in terms of their effect on brand attitude.

### H2: False greenwashing affects brand attitude more negatively than vague greenwashing

To investigate the effect of false- and vague GW on brand attitude, we observe the four respective scenarios presented in the survey that measure these types of GW: V-FL, V-PL, F-FL and F-PL. Table 5 compares all six GW scenarios in terms of participants' answer percentages for the question "My attitude toward this brand is ..." with answer possibilities ranging from 'extremely negative' to 'extremely positive'. Furthermore, Table 5 shows the

brand attitude (BA) score for each GWP and the average BA scores for the claim-types hidden-information GW, vague GW and false GW.

**Table 5** Hidden-information GW, vague GW and false GW

GWP	Extr. neg.	Mod. neg.	Sl. neg.	Neither neg. nor pos.	Sl. pos	Mod. pos.	Extr. pos.	BA score	Avg. BA score
HI-FL	9.2%	14.6%	20%	20%	19.4%	11.7%	5.1%	3.807	<b>3.989<sup>***</sup></b>
HI-PL	3.5%	11.1%	11.1%	35.2%	19.7%	14.3%	5.1%	4.171	
V-FL	2.2%	11.1%	14.3%	25.7%	26%	15.6%	5.1%	4.236	<b>4.496<sup>***</sup></b>
V-PL	0.3%	1%	5.1%	39.7%	32.4%	15.9%	5.7%	4.757	
F-FL	45.1%	27.3%	13%	8.9%	3.8%	1.6%	0.3%	2.012	<b>1.977<sup>***</sup></b>
F-PL	49.2%	24.8%	11.4%	10.2%	2.9%	1.3%	0.3%	1.942	

<sup>\*\*\*</sup> statistical significance  $p < .001$

For testing H2 and H3, we compare the brand attitude scores for false GW (mean of F-FL and F-PL), vague GW (mean of V-FL and V-PL) and hidden-information GW (mean of HI-PL and HI-FL). Results of the repeated measures ANOVA show that there are significant differences between vague-, false- and hidden-information GW ( $F(2, 628) = 582.433, p < .001, \eta^2 = .650$ ) in terms of their effect on consumer brand attitude. Table 6 illustrates the pairwise comparison of the three claim-types with Bonferroni adjustment. The column for the second BA score in Table 6 uses abbreviations for the claim-type that is being compared (F= false, V= vague, HI= hidden-information).

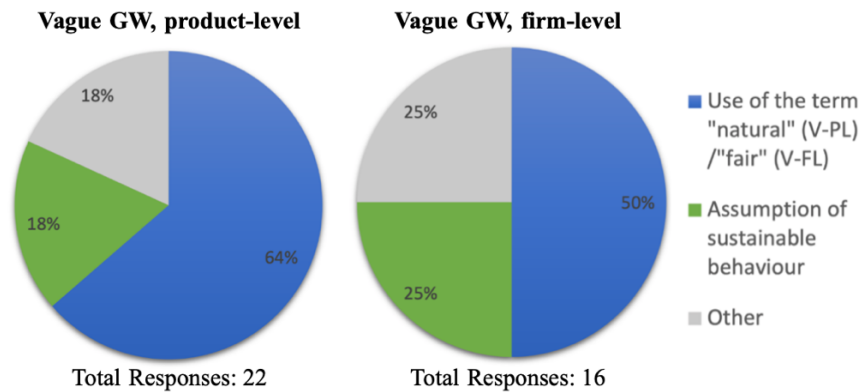
**Table 6** Hidden-information GW, vague GW and false GW differences

BA score 1	BA score 2	$\Delta M$	$p_{adj.}$
<b>False GW</b>	V	2.519	<b>&lt;.001<sup>***</sup></b>
	HI	2.012	<b>&lt;.001<sup>***</sup></b>
<b>Vague GW</b>	F	2.519	<b>&lt;.001<sup>***</sup></b>
	HI	.507	<b>&lt;.001<sup>***</sup></b>
<b>Hidden-information GW</b>	F	2.012	<b>&lt;.001<sup>***</sup></b>
	V	.507	<b>&lt;.001<sup>***</sup></b>

<sup>\*\*\*</sup> statistical significance  $p < .001$

The post-hoc test with Bonferroni adjustment suggests that there are strongly significant differences between hidden-information GW, vague GW and false GW. Furthermore, there is an observable interaction effect between claim-type and macro-level ( $F(1.803, 566.264) = 582.433, p < .001, \eta^2 = .037$ ). The BA scores of false GW and vague GW show a significant mean difference of 2.519. Considering that the BA score ranges from 1 to 7, this is a major difference, which indicates that respondents make large differences in their judgement depending on the claim-type of a GWP. Results from Table 5 show that participants rate false GWPs (BA score=1.977) significantly lower in terms of brand attitude compared to vague GWPs (BA score=4.496). Both F-PL and F-FL score significantly lower than V-PL and V-FL, and the average BA scores for both claim-types reflect this difference. 49.2% of participants ranked their brand attitude towards the fictive company that engaged in false, product-level GW as 'extremely negative'. In comparison, only 0.3% of participants gave the same rating to the fictive company that engaged in vague, product-level GW. Therefore, according to these observations and the result of the repeated measures ANOVA, H2 is supported.

The open follow-up questions that participants are asked every time they choose the extreme of a scale provide additional insights about potential reasons for why false GW scores significantly lower than vague GW in terms of brand attitude. The concrete example scenarios for all GWPs presented to our sample can be found in Appendix II. Figure 6 illustrates the reasons respondents provide for rating the two companies engaging in vague GW as ‘extremely likable’.



**Fig. 6** Reasons for ‘Extremely likable’ responses, vague GWPs

The explanations provided by respondents indicate that many participants do not recognize vague GW as GW or deceit. Instead, in these two scenarios, the unsubstantiated verbal claim “natural” (V-PL scenario) or “fair” (V-FL scenario) was enough to influence the brand attitude of many respondents positively. Also, a substantial amount of respondents who rate these two companies as ‘extremely likable’ assume a sustainable behavior of the companies solely based on the use of terminology like “natural” or “fair” (without being presented with concrete information or evidence about these claims). The detailed definitions of the chosen answer clusters from the analysis of open answers are provided in Appendix III, together with example quotes from respondents for each answer cluster. Figure 7 compares respondents’ reasons for rating the companies engaging in vague- and false GW as ‘extremely unlikable’.

Results show that both false GWPs receive substantially more ‘extremely unlikable’ responses than vague GWPs. The reasons provided by participants show that the majority of these negative responses to false GW result from respondents feeling lied-to or betrayed by the GW company. Many respondents also state a “broken promise” as the reason for their judgment. The cluster “deception” represents respondents who perceive the brand as extremely unlikable because they think that the company is purposefully deceiving consumers. Vague GWPs, however, are not perceived as lying/ betrayal/ a broken promise by respondents. The results indicate that respondents react significantly more negatively to false GW because false GW is identified more easily, more often and more clearly as moral misconduct (broken promise/ lie/ betrayal/ deceit/ greenwashing) than vague GW.

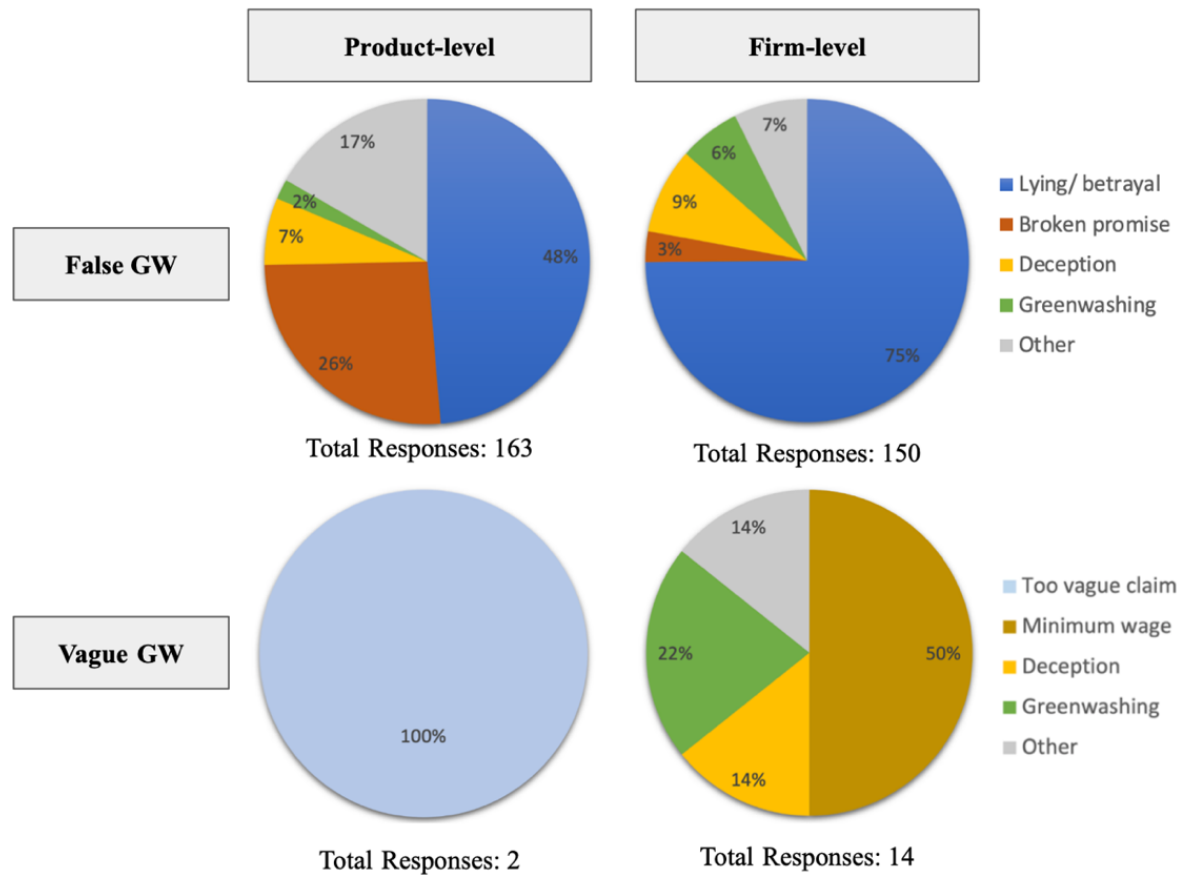


Fig. 7 Reasons for ‘Extremely unlikable’ responses, vague & false GWPs

H3: Hidden-information GW affects brand attitude more negatively than vague- and false GW

In testing H2, by conducting a two-way repeated-measures ANOVA, we established that there are significant differences between the brand attitudes expressed by respondents as a consequence of being exposed to false GW, vague GW and hidden-information GW. The results in Table 5 show that false GWPs (F-FL and F-PL) have the most ‘extremely negative’ ratings (45.1 % and 49.2%), the lowest BA scores (2.012 and 1.942) and the lowest average BA score for the category of false GW in general (1.977). Hidden-information GW (BA score=3.989) has a significantly ( $p_{adj} < .001$ ) less negative impact on brand attitude than false GW (BA score=1.977). Vague GW (BA score=4.496) has the least negative effect on brand attitude, with more positive than negative ratings. Based on both false GWPs being rated significantly lower in terms of brand attitude than any other GWP in the study, while hidden-information GW is in between false- and vague GW in terms of brand attitude, we reject H3. Potential reasons of consumers for not rating hidden-information GW as negatively as false GW can be derived from analyzing their answers to open questions that followed rating hidden-information GW as ‘extremely likable’ (Fig. 8).

Similar to vague GWPs, many respondents do not recognize GW/ deceit when presented with hidden-information GW. Instead, the majority of these respondents tend to assume sustainable- and ethical behavior of the respective companies, solely based on verbal claims made by these firms (instead of questioning the credibility, and environmental-/ ethical consequences of those claims).



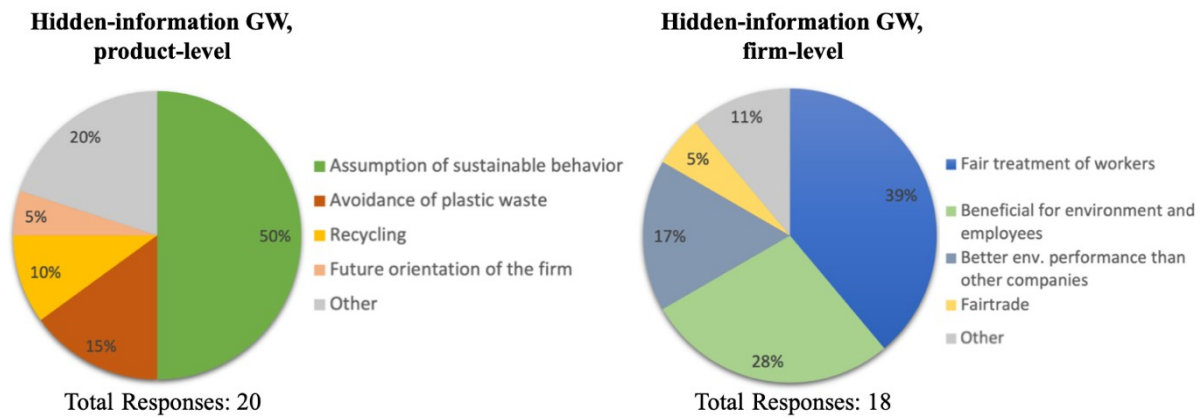


Fig. 8 Reasons for ‘Extremely likable’ responses, hidden-information GWPs

*H4: Product-level GWPs affect brand attitude more negatively than firm-level GWPs*

To investigate the difference between product-level GW and firm-level GW, in Table 7, all six GWPs from the classification are compared: hidden-information GW, vague GW and false GW; each on firm-level and product-level. Table 7 furthermore shows the BA scores for every GWP and the average BA scores for the categories firm-level GW and product-level GW.

Table 7 Product-level GW and firm-level GW

GWP	Extr. neg.	Mod. neg.	Sl. neg.	Neither neg. nor pos.	Sl. pos	Mod. pos.	Extr. pos.	BA score	Avg. BA score
HI-FL	9.2%	14.6%	20%	20%	19.4%	11.7%	5.1%	3.807	3.351***
V-FL	2.2%	11.1%	14.3%	25.7%	26%	15.6%	5.1%	4.236	
F-FL	45.1%	27.3%	13%	8.9%	3.8%	1.6%	0.3%	2.012	
HI-PL	3.5%	11.1%	11.1%	35.2%	19.7%	14.3%	5.1%	4.171	3.623***
V-PL	0.3%	1%	5.1%	39.7%	32.4%	15.9%	5.7%	4.757	
F-PL	49.2%	24.8%	11.4%	10.2%	2.9%	1.3%	0.3%	1.942	

\*\*\* statistical significance  $p < .001$

Similar to H2 and H3, we test H4 using the two-way repeated-measures ANOVA with Bonferroni adjustment. To test H4, we compare the brand attitude score resulting from firm-level GW (mean of HI-FL, V-FL, F-FL) to the brand attitude score resulting from product-level GW (mean of HI-PL, V-PL, F-PL). Results of the repeated measures ANOVA show a significant difference between the brand attitude scores for firm-level GW and product-level GW ( $F(1, 314) = 29.339, p < .001, \eta^2 = .085$ ).

The BA scores for HI-FL and V-FL are significantly lower than the BA scores of their product-level counterparts HI-PL and V-PL. Even though F-FL and F-PL do not show a significant difference (which appears to be the only exception when comparing both categories), the average BA score resulting from firm-level GW (3.351) is significantly lower than the average BA score resulting from product-level GW (3.623,  $\Delta M = .272, p_{adj} < .001$ ). Based on the result of the repeated measures ANOVA and the comparison of means, we reject H4 by concluding that, on average, firm-level GW affects brand attitude more negatively than product-level GW. Also, we acknowledge that in the case of false GW, there is only a minor difference between product-level and firm-level in regards to the brand attitudes expressed by consumers. In this exception, F-PL has a slightly more negative (but overall similar) effect on BA compared to F-FL (BA score F-PL=1.942; BA score F-FL=2.012).

Figure 9 provides insights on why respondents rate firm-level GWPs more negatively than product-level GWPs in the cases of vague- and hidden-information GW.

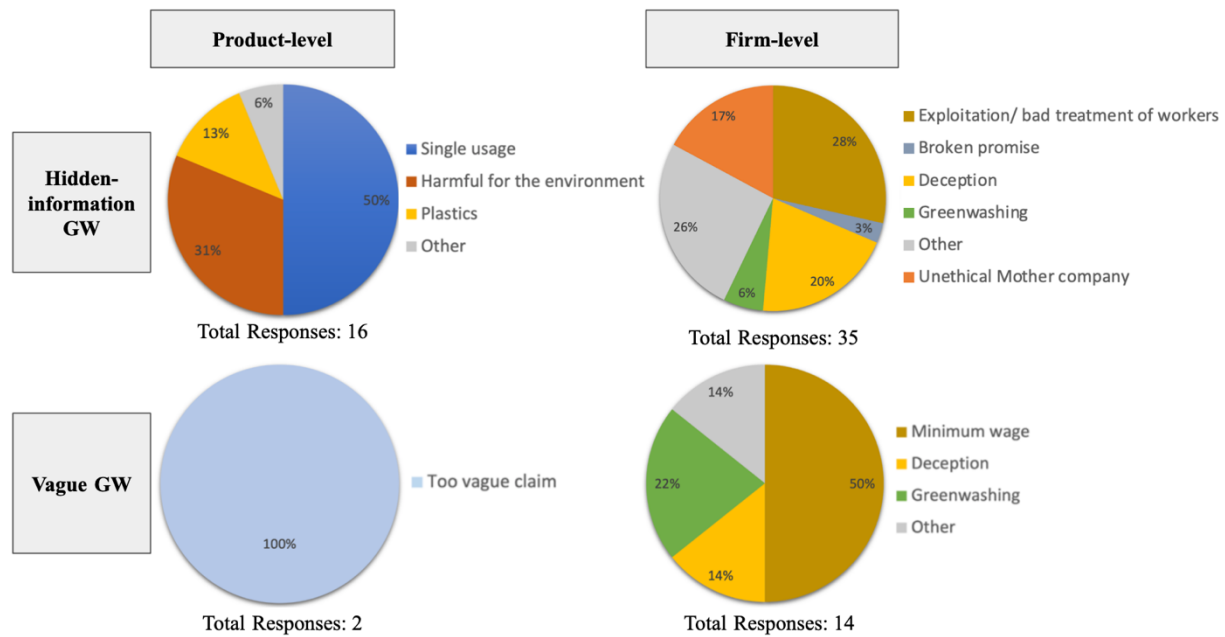


Fig. 9 Reasons for ‘Extremely unlikable’ responses, firm-level and product-level

In the case of firm-level GW, many respondents state betrayal/ deceit/ GW and exploitation as the reasons for their responses. These reasons, judging the moral conduct of the respective firms, are not mentioned in the responses to product-level GW. This result indicates that respondents rate firm-level GW more negative than product-level GW because they expect firms to act socially responsible and conduct themselves ethically. GW on product-level on the other side is not being judged by these standards, which indicates that respondents have higher expectations of a firm as a whole institution than of a single product (and what its packaging/ advertisement claims).

Figure 10 graphically illustrates the interaction of claim-type (false, vague, hidden-information) and macro-level of initiation (product-level, firm-level) in regard to brand attitude.

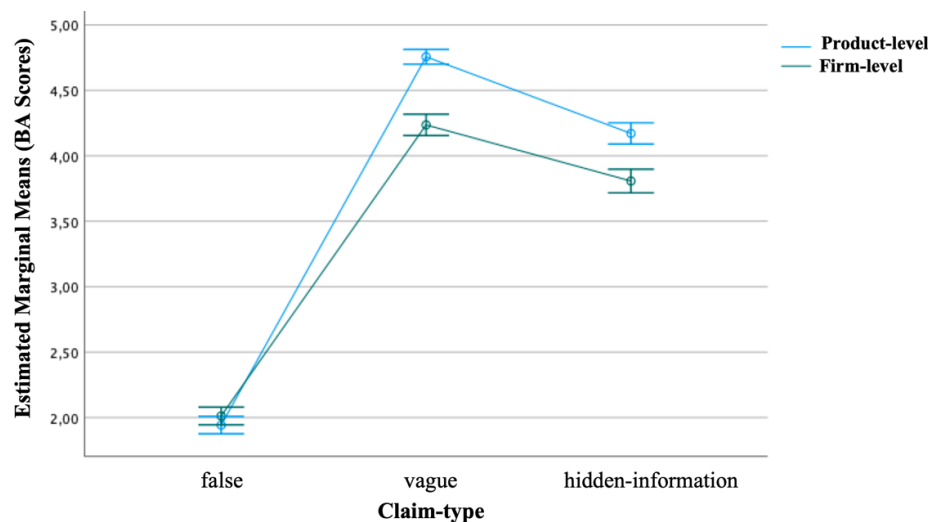


Fig. 10 Interaction of claim-type and macro-level of initiation

As the graph in Figure 10 confirms, false claims have the most negative impact on brand attitude, regardless of the macro-level of initiation. For both vague- and hidden-information GW, the effect on brand attitude is stronger negative if they are initiated on firm-level.

*H5: University students react more critical to GWPs than non-student consumers*

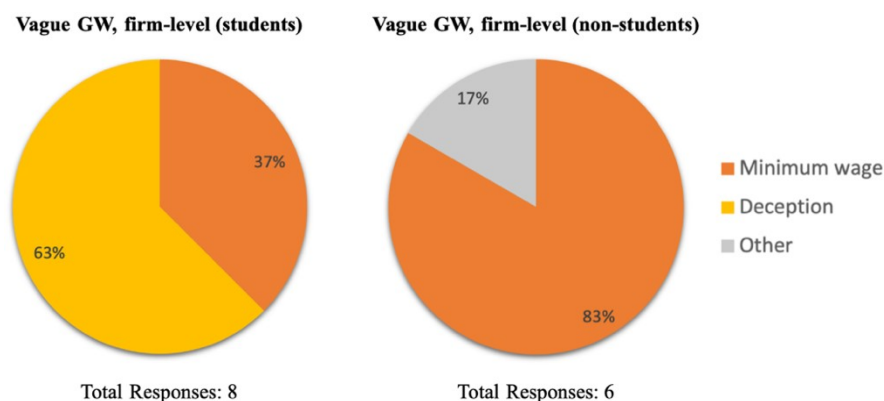
To test H5-H7 we conduct separate Mann-Whitney U tests with Bonferroni-Holm adjustment and compare different populations within our sample. Table 8 illustrates the BA scores (*M*), standard deviations (*SD*), medians (*Mdn*), mean differences ( $\Delta M$ ), the U-values (*U*) & Bonferroni-Holm adjusted significances (*p<sub>adj.</sub>*) resulting from the Mann-Whitney U test, and the effect sizes (*r*) for each GWP. GWPs that both groups of respondents have significantly different brand attitudes towards are highlighted in yellow.

**Table 8** Students and non-students

GWP	Students			Non-Students			$\Delta M$	<i>U</i>	<i>p<sub>adj.</sub></i>	<i>r</i>
	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>				
HI-FL	3.590	1.580	3.500	3.865	1.614	4.000	.275	7313.500	.501	.08
HI-PL	4.197	1.389	4.000	4.164	1.454	4.000	.033	8107.000	1.000	.01
V-FL	3.416	1.458	3.250	4.453	1.362	4.500	1.043	4996.500	<.001***	.28
V-PL	4.409	1.052	4.500	4.849	.979	5.000	0.44	6604.500	.060	.14
F-FL	1.939	1.121	1.500	2.032	1.219	2.000	.093	8056.000	1.000	.01
F-PL	1.681	1.072	1.000	2.012	1.194	2.000	.331	6868.500	.120	.12

\*\*\* statistical significance  $p < .001$

The results show significant differences between students and non-students in the case of V-FL. According to Cohen (1992), the effect size ( $r = .28$ ) for this case indicates that being a student has a small (negative) effect on respondents' brand attitude when presented with vague GW on firm-level. Based on our test results, V-FL is the only GWP to which students react significantly more critically than non-students. Because the mean differences between students and non-students for all five remaining GW scenarios are insignificant, we reject H5. Figure 11 illustrates the reasons students and non-students provide for rating vague GW on firm-level as extremely unlikable.



**Fig. 11** Reasons for 'Extremely unlikable' responses, V-FL

The explanations provided by respondents indicate that students recognize deceit in the presented GW scenario more easily- and often than non-students.

*H6: Green consumers react more critical to GWPs than traditional consumers*

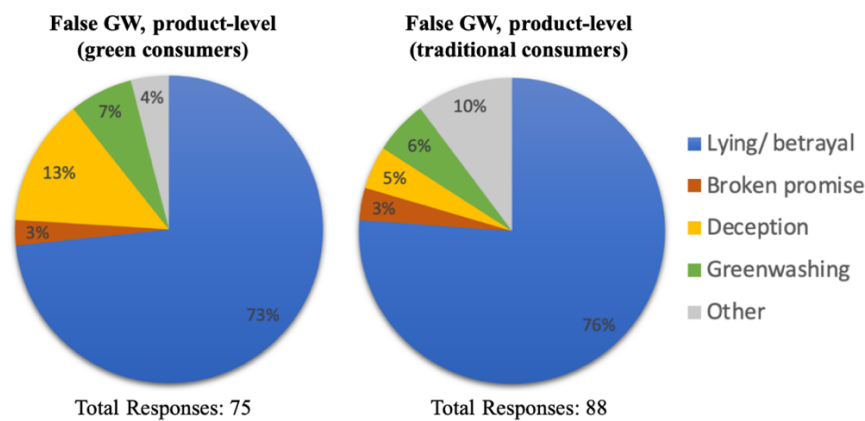
To test H6, we compare the brand attitude scores of green consumers to those of traditional consumers. Table 9 shows the respective results for both groups.

**Table 9** Green consumers and traditional consumers

GWP	Green Cons.			Traditional Cons.			$\Delta M$	$U$	$p_{adj}$	$r$
	$M$	$SD$	$Mdn$	$M$	$SD$	$Mdn$				
HI-FL	3.555	1.838	3.500	3.939	1.462	4.000	.384	9635.000	.172	.11
HI-PL	4.000	1.607	4.000	4.260	1.338	4.000	.260	10183.000	.382	.07
V-FL	4.338	1.654	4.500	4.183	1.322	4.000	.155	10381.500	.382	.06
V-PL	4.916	1.142	5.000	4.673	.924	4.500	.243	9729.000	.172	.11
F-FL	1.800	1.034	1.500	2.123	1.263	2.000	.323	9611.000	.165	.12
F-PL	1.606	.954	1.000	2.118	1.243	2.000	.512	8436.000	<.001***	.21

\*\*\* statistical significance  $p < .001$

Our results show that green consumers react significantly more critical to false GW on product-level than traditional consumers. According to Cohen (1992), the corresponding effect size ( $r = .21$ ) indicates that being a green consumer has a small (negative) effect on brand attitude in the case of F-PL. For all five remaining GWPs, results show no significant differences between the brand attitudes expressed by both groups. Thus, we reject H6. Figure 12 illustrates the reasons green consumers and traditional consumers provide for rating false GW on product-level as extremely unlikable.



**Fig. 12** Reasons for 'Extremely unlikable' responses, F-PL

The open answers indicate that green consumers in our sample tend to recognize deception and GW more often- and easily than traditional consumers. This difference between both groups could potentially contribute to explaining why green consumers show a more negative reaction to the company presented in the survey questionnaire.

*H7: Women react more critical to GWPs than men*

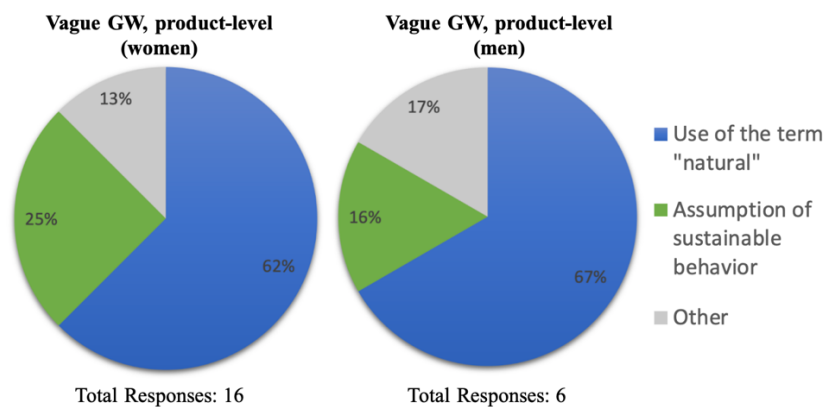
Similar to H5 and H6, to test H7 we conduct separate Mann-Whitney U tests with Bonferroni-Holm adjustment and compare female respondents to male respondents. Table 10 illustrates the comparison of male consumers to female consumers.

**Table 10** Female consumers and male consumers

GWP	Women			Men			$\Delta M$	$U$	$p_{adj}$	$r$
	$M$	$SD$	$Mdn$	$M$	$SD$	$Mdn$				
HI-FL	3.804	1.606	4.000	3.812	1.617	4.000	.008	12052.000	1.000	.04
HI-PL	4.159	1.419	4.000	4.188	1.470	4.000	.029	11861.500	1.000	.02
V-FL	4.283	1.492	4.000	4.172	1.379	4.000	.111	11558.500	1.000	.04
V-PL	4.909	1.059	5.000	4.548	.900	4.500	.361	9461.000	<b>.004**</b>	.19
F-FL	1.884	1.113	1.500	2.188	1.288	2.000	.304	10542.500	.165	.11
F-PL	1.774	.984	1.500	2.172	1.367	2.000	.401	10496.000	.165	.12

\*\* statistical significance  $p < .01$

For vague GW on product-level, the results show significant differences between female- and male consumers. According to Cohen (1992), the corresponding effect size ( $r = .19$ ) indicates that being female has a small (positive) effect on brand attitude when being presented with V-PL. Overall, according to our test results, male- and female consumers rate GWPs similar, regardless of their gender. Only in the case of V-PL, male respondents react significantly more critical to GW than female respondents. Therefore, we reject H7. Figure 13 illustrates the reasons both groups provide for rating the company engaging in V-PL as extremely likable.

**Fig. 13** Reasons for 'Extremely likable' responses, V-PL

The analysis of open answers to the V-PL scenario indicates, that female respondents in our sample show a stronger tendency to assume sustainable behavior of a company based on a verbal, unsubstantiated claim than male respondents. Table 11 summarizes the hypotheses of this study, together with the respective results of our analysis.

**Table 11** Results

Hypothesis	Result
H1: Different GWPs have significantly different effects on consumer brand attitudes	Supported*
H2: False greenwashing affects brand attitude more negatively than vague greenwashing	Supported
H3: Hidden-information GW affects brand attitude more negatively than vague- and false GW	Rejected
H4: Product-level GWPs affect brand attitude more negatively than firm-level GWPs	Rejected
H5: University students react more critical to GWPs than non-student consumers	Rejected
H6: Green consumers react more critical to GWPs than traditional consumers	Rejected
H7: Women react more critical to GWPs than men	Rejected

\*Only exceptions: F-PL – F-FL, and HI-PL – V-FL

## 5. Discussion and conclusion

### 5.1 Main findings

Table 12 summarizes our main findings from each of the hypothesis tests.

**Table 12** Main findings

Test	Main findings
H1	Different GWPs have significantly different effects on consumer brand attitudes depending on their claim-type and macro-level of initiation.
H2&H3	False GWPs have the most negative influence on brand attitude. Vague GWPs have the least negative influence on brand attitude and in many cases positively influence brand attitude. Hidden-information GW is in the middle of false- and vague GW in terms of its effect on brand attitude.
H4	Except for false claims, firm-level GW affects brand attitude more negatively than product-level GW.
H5	Students react more critically to V-FL than non-students. For the remaining five GW scenarios, both groups do not differ significantly.
H6	Green consumers show a more negative reaction to F-PL than traditional consumers. Other than F-PL there are no significant differences between both groups.
H7	Male respondents react more critical to V-PL than female respondents. Except for V-PL there are no significant differences between both groups.

The central finding of this study is that different greenwashing practices have significantly different impacts on consumers, depending on two dimensions of greenwashing practices: Their claim-type and the macro-level they are initiated on (H1). This finding seems logical and is in line with related studies conducted by Musgrove et al. (2018), Schmuck et al. (2018) and Torelli et al. (2020), who use different dependent variables and simpler GW typologies. Our finding

questions the generalizability of the majority of existing studies in this area, which analyze the effects of GW on consumers without differentiating between different kinds of greenwashing (see Section 2.3.1). More importantly, our results raise the question of whether this type of research should continue to view GW as a one-dimensional umbrella term for all GWPs. If different GWPs have different effects on consumers, which is the case according to our results, researchers need to differentiate between GWPs accordingly when investigating their effects on consumers. Out of the 15 pairs of GWPs that we compare, only two pairs do not show a statistically significant difference (HI-PL & V-FL; F-PL & F-FL). In the case of false GW (F-PL & F-FL), this observation seems plausible as both example scenarios show extreme, deliberate and obvious forms of consumer betrayal through clear lies and broken promises. A potential explanation for this result is that when a case of GW is extreme, deliberate and obvious, it affects brand attitude so negatively that respondents do not further differentiate between product-level and firm-level in their judgment. In the case of HI-PL and V-FL, we can not definitively explain why this particular pair does not show a statistically significant difference. However, considering that many respondents are unable to recognize vague GW and hidden-information GW as GW/ deception, this result might reflect a lack of knowledge and expertise by the same group of respondents to differentiate between HI-PL and V-FL effectively. Also, this result can be caused by our choice of example scenarios, as the two example scenarios we constructed for HI-PL and V-FL might be perceived too similarly by participants.

We also find that false GW affects consumers' brand attitudes significantly more negatively than vague GW (H2). This finding is in line with Schmuck et al.'s (2018) result and is not in line with De Jong et al. (2020), who find that "half-lies" and "lies" have similar effects on corporate reputation. This contradiction might be due to definitional differences between vague GW & false GW compared to half-lies & lies and further differences in research design, including choice of variables and sampling. A counter-intuitive observation regarding this hypothesis is that many respondents perceive and evaluate the presented examples of vague greenwashing as positive (both example companies engaging in vague GW receive more positive than negative ratings). De Jong et al. (2018) and Schmuck et al. (2018) make a similar observation, finding that vague claims can positively influence consumers. The answers respondents provide in the open questions suggest an explanation for the large difference in terms of consumers' brand attitudes between false- and vague GW: Vague claims (even without any kind of evidence about the company's environmental performance) trigger a positive reaction from many consumers by using words like "fair" or "natural". An unsubstantiated vague green claim of a company alone seems to be sufficient for many consumers to assume that the company has a high environmental performance. Participants in this study and the studies of De Jong et al. (2018) and Schmuck et al. (2018) seem to have difficulties recognizing vague GWPs as greenwashing. With false GW, the cases are more obvious and explicit. Answers to additional open questions regarding false GWPs indicate that the strongly negative reactions they trigger in consumers are due to respondents feeling betrayed and lied-to, some participants even explicitly identify these cases as greenwashing. Although both vague- and false GW involve deception, this deception tends to be more apparent and easier to recognize as moral misconduct in the case of false GW, which is a potential explanation for why consumers react significantly more negatively to false GW. Our findings indicate that most consumers have difficulties recognizing vague GW. The more obvious and explicit a GWP within our survey can be interpreted as betrayal and lying to consumers, the more negatively it tends to affect brand attitude. This finding is in line with Newell et al. (1998), who find that higher levels of perceived deception in advertisements lead to less favorable brand attitudes towards the advertised brand. Another observation deriving from the responses is that most open answers to the scenarios of vague GW and false GW focus on the credibility- and appeal of the claim made by the company instead of their environmental performance. This

finding suggests that in many cases, the truthfulness- and type of green claim chosen by a company affect consumers' brand attitude stronger than actual environmental performance. This observation is in line with De Jong et al. (2018). They find that respondents in their experiment rate GW companies differently than silent brown companies (despite identical environmental performance) and are indifferent between vocal green companies and silent brown companies when rating their communicative integrity.

Further findings of this study show that in terms of different claim-types, false GW has the most negative influence on consumers' brand attitude, followed by hidden-information GW and lastly vague GW with the least negative effect on brand attitude (H3). This finding seems surprising as it is not in line with Torelli et al. (2020), who find that "dark-level" GW (misguiding environmental claims paired with hidden activities) leads to the lowest perception of corporate environmental responsibility from all levels of GW tested in their study. Apart from previously pointed-out differences in their research design, a potential explanation for this discrepancy is that they conceptualize hidden activities in their experiment with corporate linkages to the mafia and organized crime. Both being sensitive political topics in Italy, the examples chosen for hidden-information GW in this thesis seem culturally and ethically significantly less sensitive and explicit. Respondents' open answers indicate that, compared to false GW, subjects tend to recognize hidden-information GW as greenwashing/ deceit/ moral misconduct less often.

After investigating the effects of different claim-types in GW, we analyze the effects caused by different macro-levels of initiation (product-level and firm-level GW). Except for false GWPs (which lead to almost identically low brand attitudes regardless of their execution on product-level or firm-level), our findings demonstrate that firm-level GWPs, on average, lead to more negative brand attitudes than product-level GWPs (H4). This finding is not in line with Torelli et al. (2020), who in their study find that product-level GW leads to lower levels of "perception of corporate environmental responsibility" than company-level GW. Taking into consideration that Torelli et al. (ibidem) use a different dependent variable than brand attitude, other examples for GW in their survey, do not differentiate between different types of GW claims, and conduct their research with a sample of Italian consumers, this contradiction might be due to differences in research design. Consumers reacting more negatively to firm-level GW than product-level GW seems intuitive, assuming that, in general, GW related to an entire firm could potentially have broader consequences than GW that is only associated with a single product. Respondents' explanations indicate that they expect companies to act and communicate ethically and feel betrayed and disappointed if these expectations are not met. However, according to our data, GWPs related to a single product (instead of an entire firm) are not being judged by these standards, which could explain why their negative impact on brand attitude is lower.

After investigating the effect of claim-type and macro-level of initiation of GWPs, we compare different groups of respondents to each other in terms of how they react to GWPs. Students within the sample react significantly more critical to vague GW on firm-level than non-students (H5) which seems intuitive and quantitatively supports previous statements made by Haws et al. (2014), Nyilasy et al. (2014) and Torelli et al. (2020) about students being more aware of environmental issues than non-students. Respondents' open answers indicate that in the case of vague GW on product-level, students recognize corporate deceit more often and more easily than non-students. However, this is not true for all five remaining GWPs in our study, as there are no significant differences between both groups for these scenarios. This finding seems counter-intuitive given Haws et al.'s (2014), Nyilasy et al.'s (2014) and Torelli et al.'s (2020) assumption of students to be more environmentally aware than non-students. As our results show, in many cases, respondents' criteria and reasons for evaluating GWPs revolve around considerations of communicative integrity, ethics and corporate responsibility rather than factual environmental performance and environmental consequences. Considering this, it seems plausible that while students might be more environmentally aware, both groups have



similar moral expectations of companies and hence show similar reactions to corporate deception for the cases of V-PL, F-PL, F-FL, HI-PL and HI-FL.

H6 compares green consumers to traditional consumers. In the case of false GW on product-level, as hypothesized, green consumers react more critically than traditional consumers within the sample. Based on respondents' open answers, this intuitive result is likely due to green consumers recognizing deceit and identifying GW more often in this scenario. However, there are no significant differences between the brand attitudes of green- and traditional consumers for all five remaining GWPs. This finding seems surprising regarding previous statements by Shrum et al. (1995) and Zinkhan and Carlson (1995), portraying green consumers as anti-corporate bias holding-, skeptical- and information-seeking customers compared to traditional consumers. The 26 years' time difference between the studies (and the ways the economy and advertising changed since then) and cultural differences between the German sample in this study and the US American perspectives expressed in the other two studies might be responsible for this discrepancy. Our findings also indicate however, that except for F-PL, green consumers are as prone to corporate deception as traditional consumers and, contrary to the assumptions of Shrum et al. (1995) and Zinkhan and Carlson (1995), not more skeptical when presented with green claims.

H7 compares female respondents to male respondents in terms of their expressed brand attitudes towards GW companies. Our results show that, unexpectedly, men in our study react significantly more negatively to vague GW on product-level than women. Respondents' open answers to this scenario indicate that men in our study are less likely to assume a high environmental performance purely based on a vague corporate green claim than women. However, our results show no significant differences between male- and female participants for the five remaining scenarios V-FL, F-FL, F-PL, HI-PL and HI-FL. Our findings are not in line with earlier findings by McCright (2010), Olli et al. (2001) and Roberts (1993), which indicate that women are more concerned and informed regarding the environment than men. However, considering that these studies were conducted in different countries, at different times, using entirely different research designs and without exposing respondents to specific GWPs, there are plenty of potential reasons for this discrepancy. All in all, it does seem intuitive that consumers' evaluations of GW cases are stronger related to ethical- and environmental considerations than to their gender or student status.

To answer our research question, we conclude that different greenwashing practices have significantly different effects on consumer brand attitudes based on the claim-type they use and the macro-level they are initiated on. False GWPs, in general, have the strongest negative effect on brand attitude, while vague GWPs have the least negative effect and can potentially have a positive effect. Hidden-information GW and vague GW are less obvious and more difficult to recognize for most respondents, which is a potential explanation for why they affect brand attitude less negatively (partially even positive) than false GW. Our findings indicate that the more obvious and explicit a GWP is recognizable as betrayal and lying to consumers, the more negatively it tends to affect brand attitude. Also, except for false GW, GWPs related to an entire firm are evaluated more negatively than GWPs associated with a single product. In terms of brand attitude, in many cases, respondents are more affected by the truthfulness- and type of green claim used by a company than their actual environmental performance. The specific background of a consumer can play a role in how V-PL, V-FL and F-PL are perceived and evaluated in some instances. However, HI-PL, HI-FL and F-FL seem to be assessed by our respondents similarly regardless of their gender, student status and green-consumerism.

## 5.2 Theoretical & practical implications

The majority of previously conducted research views greenwashing as a one-dimensional condition that either exists or does not exist, without differentiating between different types of GW. In the last three years, four studies (De Jong et al., 2020; Musgrove et al. 2018; Schmuck et al., 2018; Torelli et al. 2020) started to move towards a more nuanced approach by using a small number of categories to differentiate between either claim-type, type of organization, or the level GW is executed on. However, even the mentioned studies mostly use a small amount of broad categories and only focus on one dimension of GW. To address the identified research gap, based on existing theoretical literature, we developed a new typology of greenwashing practices that differentiates between three types of claims and two levels of GW simultaneously, resulting in six distinct types of GW. This typology enabled us to fill the targeted research gap by conducting the first study that analyzes the effects of GW on consumers while differentiating between claim-type and macro-level of initiation. Our results demonstrate that claim-type and macro-level of initiation are two important dimensions of GWPs that significantly influence the way consumers evaluate the GW company. By including and comparing different consumer segments like students and non-students in the sample, we were able to address limitations of previous studies (Nyilasy et al., 2014; Torelli et al., 2020) and analyze differences between distinct groups of consumers. Sampling 315 valid and complete responses for our questionnaire, we conducted the largest study, looking at the effects of different types of GW on European consumers to this day. Our typology and results contribute to a more nuanced understanding of GW and the differences between GWPs from the perspective of consumers. A key theoretical implication of our findings is that GW research needs to differentiate between different GWPs when investigating their effects on consumers, if it seeks to achieve a more in-depth understanding of the problem of greenwashing.

From a practical perspective, our findings offer companies and governmental entities new insights into how consumers perceive and evaluate different types of greenwashing. Based on these insights, our findings provide potential directions for avoiding GW and the negative consequences of being perceived as a GW company. Our results show that most respondents expect companies to fulfill made promises, communicate transparently- and honestly, and refrain from deception. If companies fail to meet this expectation, they risk being perceived as a GW business and consequently risk severely damaging their (potential) customers' brand attitudes with further adverse effects on brand image and sales (Akturan, 2018; Chen et al., 2020; Martinez et al., 2020; Newell et al., 1998; Szabo and Webster, 2020).

Hence, for companies who use green claims in their communication, it is an important priority to avoid GW/ the perception of GW. Our findings suggest that in many cases, the credibility- and type of a company's green claim affect consumers' brand attitude stronger than the firm's actual environmental performance. Results indicate that strongly negative brand attitudes in this study are caused mainly by consumers feeling betrayed and lied-to, rather than poor environmental performance alone. This finding is in line with the theoretical concept of GW to not be equivalent to poor environmental performance alone, but low environmental performance coupled with claims indicating high environmental performance (Delmas and Burbano, 2011). Based on the importance of the claim element in GW, companies that use green claims in their marketing need to be especially careful in how these claims are communicated. A discrepancy between a company's claim about their environmental performance and their actual environmental performance puts the company at risk of being perceived as engaging in greenwashing. Companies particularly need to prioritize avoiding any type of communication that could potentially be interpreted as false GW (product-level and firm-level) since this type of GW inflicts significantly more damage on consumers' brand attitudes than any other type of GW. Firms can reduce the risk of greenwashing scandals and the reputational damage related to them by integrating their sustainability & product

departments into marketing- and public relations activities to ensure that all claims they communicate regarding sustainable product features and processes are transparent, specific, and supported by evidence. This procedure of managing green claims is even more important for firms that make green claims related to their entire organization because, on average, the perception of firm-level GW affects consumers more negatively than when this perception is related to a single product. Our results show that in some cases, there is an interaction between the group a consumer belongs to (green consumer, traditional consumer, student, non-student, male, female) and the way they react to GW. When managing green claims and planning marketing initiatives, companies can consider our findings showing that green consumers react more critically to F-PL than traditional consumers, students respond more critically to V-FL than non-students, and male respondents react more negative to V-PL than female respondents. According to these findings, particularly companies with primarily male- and studying target audiences need to be careful with the use of vague claims, as both groups react significantly more negatively to vague claims than other groups of consumers. Apart from the three explained cases, participants in our sample tend to perceive and evaluate GWP's similarly, regardless of their affiliation to one of the depicted groups of consumers. All in all, our results indicate that GW is predominantly an issue of trust and ethics. Therefore, companies who want to increase their customers' brand attitude and avoid GW/ the perception of GW are well-advised to thoroughly manage their green claims for specificity, truthfulness and transparency, and gain consumers' trust through ethical behavior.

On the government side, our findings are alarming for the German agency of consumer protection. The majority of respondents in our sample react positively (partially extremely positively) to firms engaging in vague greenwashing practices that make broad and unsubstantiated green claims without actually acting sustainably. As a primary goal of the agency of consumer protection and government regulation is to protect customers, this goal should extend to protecting them from corporate deception and manipulation. Our findings show that most consumers lack the information and expertise to recognize vague GW and hidden-information GW as greenwashing. This is especially problematic since previous research indicates that, in practice, greenwashing firms use vague- and hidden-information claims substantially more often than false claims (Terrachoice, 2007). The government needs to either educate consumers better or regulate unsubstantiated green claims by companies more strictly in order to address this issue. We therefore support the call for stricter regulation of green marketing made by Schmuck et al. (2018). Terms like "bio" (organic) and "fairtrade" are already certified and protected terms on the German market, this type of regulation could be extended to further claims to avoid deception of consumers via vague GW. NGOs, organizations or the government could potentially also consider a labeling/ certification system for corporate sustainability (Schmuck et al., 2018), bound by clear and measurable criteria, to signal the factual environmental performance of brands and thereby avoid the deceit of consumers through GWP's.

### **5.3 Limitations and call for future research**

Our results, and comparisons to existing studies, indicate that the scenario researchers choose to illustrate a specific GWP influences how consumers react to the company. The probably most significant limitation of this study is that we choose one scenario to illustrate each type of GW. Future research could extend our research design by using more example scenarios to represent each GWP and analyzing how the choice of example affects consumer reactions.

Furthermore, the examples of GW presented to respondents in the questionnaire are fictive and all information regarding the company and its practices is provided in one text. Since consumers do not have any own previous experiences with- or information about the fictive companies, an artificial setting like this might influence the way respondents evaluate companies' actions

(Musgrove et al., 2018). Future research could address this limitation by exposing respondents to existing companies and using videos and real advertisements by these companies to create a more realistic setting (*ibidem*). However, the challenge with this approach is ensuring that the measured responses are caused by the GWP witnessed and not due to auditory/ visual effects of the medium or previously existing biases of participants towards the company depicted in an example.

Our findings are also limited in regard to the reasons that make respondents rate certain GWPs more negatively than others. In our study, open answers explaining respondents' reasoning behind a choice are only gathered from participants who choose the positive- or negative extreme of an answering scale. This circumstance biases our results because reasons are only collected from respondents who have strong opinions on a GW scenario. To facilitate a better comparison between participants, it seems necessary to gather this type of open answers from all participants regardless of their answers. The main focus of this study is to investigate the quantitative effects different GWPs have on consumers' brand attitudes. Researching respondents' reasonings for forming these attitudes in depth requires a different theoretical framework and a qualitative methodology, which are both beyond the scope of this research design. Nevertheless, the qualitative answers we gathered provide initial helpful insights and suggestions regarding consumers' reasoning that future researchers can use to investigate why consumers react to certain GWPs the way they do. We recommend future studies that aim to explore this topic in more depth to use our findings as a starting point and apply a theoretical framework and methodology that are more suitable for qualitative research (i.e., a theory conceptualizing the way consumers form opinions/ evaluate events in combination with guided in-depth interviews).

Another limitation of our findings is that we used relatively few different categories of consumers (male, female, student, non-student, green consumer, traditional consumer). Future research could extend our research design by differentiating between more segments of consumers (i.e., by age, interests, lifestyle, profession...).

Also, this study was conducted with consumers living in Germany. Until our findings are replicated with samples from other countries, the generalizability of our results is limited. 20.9% of our respondents are students, while in Germany, students only make up 3.5% of the entire population (Statista, 2021). Therefore, conclusions that we draw from the whole sample (without further differentiating between different groups of consumers) might be partially too reflective of students. Future research could address this problem by selecting a sample that resembles the German population more precisely.

Finally, by showing that different types of greenwashing have significantly different effects on consumers, we demonstrate that greenwashing is a problem that is more complex and nuanced than the majority of existing studies assume. To reflect and accurately resemble this complexity, future research on the effects of greenwashing is well advised to use a typology of GWPs that differentiates between claim-type and macro-level of initiation.

Overall, previous studies and our own results demonstrate that GW is an apparent problem in industrialized economies that harms the environment, consumers, truly "green" companies and GW companies themselves. The larger goal of our research was to contribute to a better understanding of this problem as a first step towards the direction of solving it. While problem-oriented studies like ours contribute to a better understanding of the issue, we also need solution-oriented approaches that build on this knowledge by investigating potential solving mechanisms. Therefore, we encourage future studies to also adopt solution-oriented approaches that focus on ways of effectively addressing the problem of greenwashing (e.g., through education, regulation or certification).

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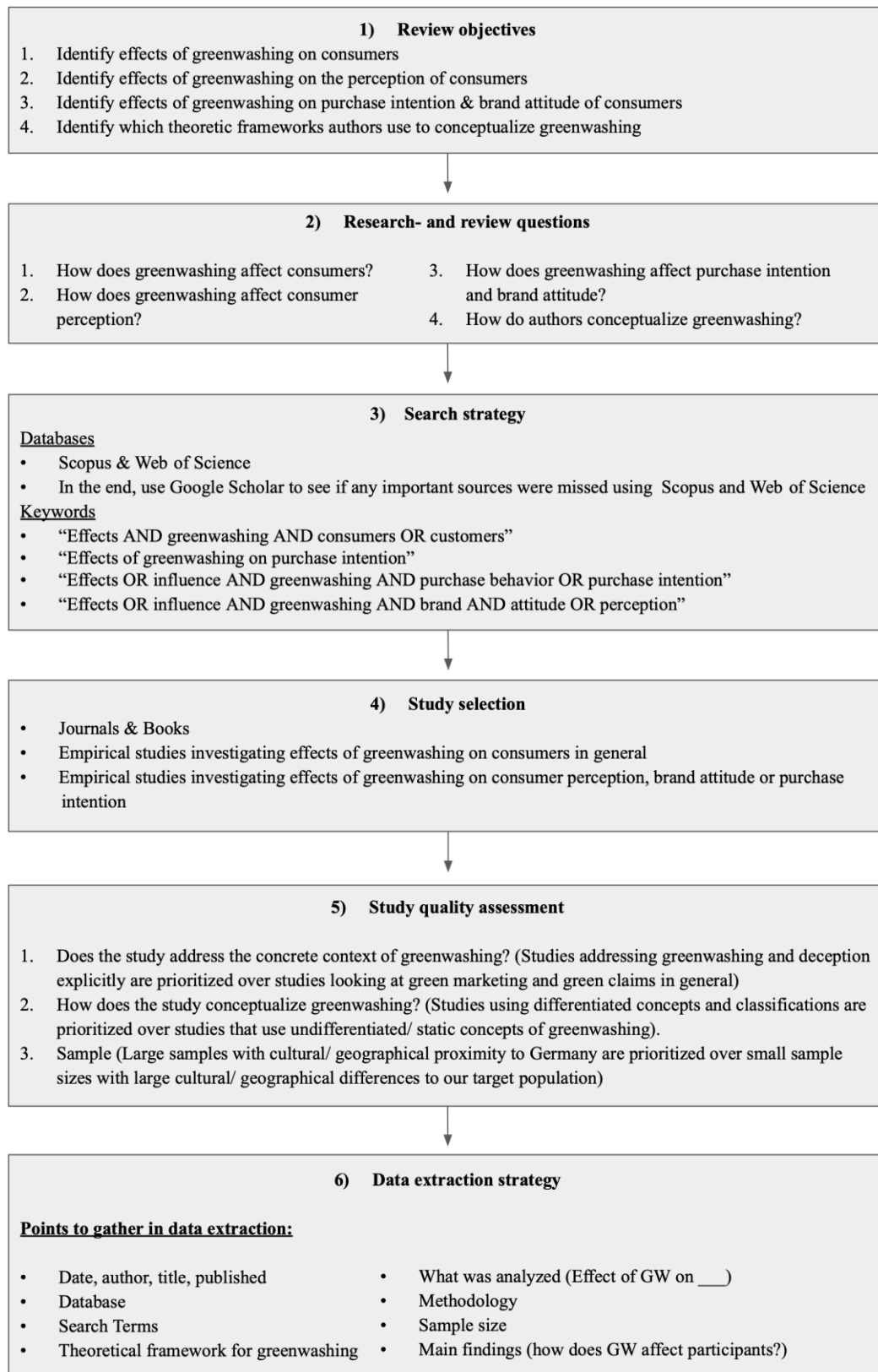
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## Appendices

### I. Systematic literature review

#### a) Review Protocol



b) Data extraction sheet

Date	Data base	Search Terms	Author(s)	Published	Title	What was analyzed	Theoretic framework for GW	Methodology	Sample Size	Main Findings
22.02.21	Scopus	Effects AND greenwashing AND consumers OR customers	Banares et al.	2021	Green but ignored? The irrelevance of television advertisements on energy sustainability in Spain and its impact on consumer perceptions	Purchase intention factors of consumers	Static „many companies, while actively promoting a responsible corporate image regarding the environment, refuse to fundamentally change their production processes that continue to harm our planet. This is known as greenwashing“	Interviews	1004 (Spanish)	Looking at purchase intention factors the authors find, that price is the most important one. „Aspects that refer to the environment and renewable sources of energy production play a minor role. 11.5% first consider the company’s respect for the environment and climate change and 8% consider whether the energy supplied comes from renewable sources“ „consumers are sensitive to the commitment of companies who protect the environment even though the contracting decision is based on tariff prices“ „The exception to this trend are young people under the age of 34 years. According to Roynne et al. [39], this predisposition of younger consumers could be explained by them having greater environmental awareness and by the connection between consumption habits being a form of self-expression.“
22.02.21	Scopus	Effects AND greenwashing AND consumers OR customers	Ahmad and Zhang	2020	Green purchase intention: Effects of electronic service quality and customer green psychology	Effects of green word of mouth, green trust, GW, CSR, green perceived value on green online purchase intention	Static: “Greenwashing is an intentionally deceptive tactic used by a firm to make misleading statements about its actions in support of the environment in order to create a favorable public image (Marquis et al., 2016)”	Survey	1002 (Chinese)	“Consumer social responsibility, green trust, and green perceived value have significant positive impacts, while greenwashing has a negative influence on green purchase intention”
22.02.21	Scopus	Effects AND greenwashing AND consumers OR customers	De Jong et al.	2018	Making Green Stuff? Effects of Corporate Greenwashing on Consumers	Effects of GW on perceived environmental performance, perceived integrity and purchase interest. differentiating between gw, silent brown, vocal green and silent green organizations	4 Dimension Typology of environmental strategies (Delmas & Burbano, 2011)	Survey	250 (Dutch)	„Compared to the silent brown organizations, participants rated greenwashing organizations more highly regarding environmental performance.“ “greenwashing has a positive effect on the perceived environmental performance” “For consumers, greenwashing companies are in the same league as silent brown companies” “greenwashing has a negative effect on perceived communicative integrity” „greenwashing does not affect consumers’ purchase interests“
22.02.21	Scopus	Effects AND greenwashing AND consumers OR customers	Zhang et al.	2018	The influence of greenwashing perception on green purchasing intentions: The mediating role of green word-of-mouth and moderating role of green concern	Effects of GW perception on Green Purchase Intention	4 Dimension Typology of environmental strategies (Delmas & Burbano, 2011) for theory part, static for analysis	Survey	553 (Chinese)	“consumers’ greenwashing perceptions not only have a direct negative impact on green purchasing intentions, but also have indirect negative effects via green WOM”
22.02.21	Scopus	Effects AND greenwashing AND consumers OR customers	De Jong et al.	2020	Different Shades of Greenwashing: Consumers’ Reactions to Environmental Lies, Half-Lies, and Organizations Taking Credit for Following Legal Obligations	Effects of GW on reputation constructs: environmental performance, product and service quality, and financial performance	behavioral-claim greenwashing (an organization telling the truth vs. its telling lies or half-lies) and motive greenwashing (an organization acting on its own initiative vs. its taking credit for following legal obligations)	Survey	160 (Dutch?)	“Compared to true green behavior, lies and half-lies had similar negative effects on reputation. Taking credit for following legal obligations had no main effect. Only in the case of true green behavior did undeservedly taking credit affect reputation negatively. Overall, the findings suggest that only true green behavior will have the desired positive effects on reputation.”
23.02.21	Scopus	“Effects of greenwashing on purchase intention”	Szabo and Webster	2020	Perceived Greenwashing: The Effects of Green Marketing on Environmental and Product Perceptions	Effect of perceived GW on Brand Attitude and Purchase Intention (H4 and H5)	Static, “the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service” (TerraChoice 2010)	Examination of consumers incl. observing them interacting with a website, interviews & questionnaires	166 students from NA	“Perceived greenwashing associated positively with green risk and negatively to green value, brand attitudes, and purchase intentions (H4 and H5)”
23.02.21	Scopus	“Effects of greenwashing on purchase intention”	Braga Junior et al.	2019	Greenwashing effect, attitudes, and beliefs in green consumption	Effect of perceived GW on purchase intention, attitudes and belief of green products	Static, “a form of misleading advertisement to promote the product’s, goals, or policies of an organization and thus increase the aggregate benefits of the product” (Kahle & Gurel-Atay, 2015; Mayrand & Trotter, 2011)”	Survey	880 consumers (Brazilian)	“when greenwashing is identified in the product, it loses the aspects of loyalty, satisfaction and benefits, as well as becoming a product that causes confusion of consumption. For companies, this study showed that identifying a product as misleading can damage the image and lower the sales volume, market share, and financial results” Note: In their hypothesis the weak with perceived risk, green consumption confusion, perceived benefit and differentiate different factors of purchase intention”
23.02.21	Scopus	“Effects of greenwashing on purchase intention”	Wang et al.	2019	The spillover effect of greenwashing behaviours: an experimental approach	“impact of greenwashing behaviour of one brand on purchase intention of green products from other brands”	Static, Some brands even intentionally misguide or deceive consumers by conducting false propaganda on brands’ environmental behaviour in order to restore their public reputation or to shape a more responsible image (Delmas and Burbano, 2011).	Survey and Interviews	377 (Chinese Students)	“the spillover effect of greenwashing does exist: a single brand’s greenwashing behaviour is strong enough to negatively affect purchase intention of other green brands. “
23.02.21	Scopus	“Effects of greenwashing on purchase intention”	Akturan	2018	How does greenwashing affect green branding equity and purchase intention? An empirical research	“relationship among greenwashing, green brand equity, brand credibility, green brand associations and purchase intention”	Differentiation into Claim greenwashing and executional greenwashing in theory part, static in methodology and results	Survey	500 (Turkish consumers)	“Moreover, greenwashing negatively affects ( $\beta_{high-inv} = -0.664 p=0.000$ ; $\beta_{low-inv} = -0.152 p=0.009$ ) green brand associations and ( $\beta_{high-inv} = -0.727 p=0.000$ ; $\beta_{low-inv} = -0.336 p=0.000$ ) brand credibility. Therefore, it has a negative, indirect effect on green brand equity and purchase intention.”
23.02.21	Scopus	“Effects of greenwashing on purchase intention”	Nyilasy	2014	Perceived Greenwashing: The Interactive Effects of Green Advertising and Corporate Environmental Performance on Consumer Reactions	“effects of green advertising and a corporation’s environmental performance on brand attitudes and purchase intentions.”	Static, “Greenwashing is defined as intentionally misleading or deceiving consumers with false claims about a firm’s environmental practices and impact (TerraChoice 2010).”	Survey	302 (US Students)	„Results indicate that the negative effect of a firm’s low [environmental] performance on brand attitudes becomes stronger in the presence of green advertising compared to general corporate advertising and no advertising. Further, when the firm’s environmental performance is high, both green and general corporate advertising result in more unfavorable brand attitudes than no advertising.“
24.02.21	Web of Sciences	Effects OR influence AND greenwashing AND purchase behavior OR purchase intention	Martinez et al.	2020	Fuzzy inference system to study the behavior of the green consumer facing the perception of greenwashing	Effects of perceived GW on consumer behavior and perception.	Static, “The practice of disclosure of false or incomplete information by an organization to present an environmentally responsible public image is called “Greenwashing” (Furlow, 2010)”	Survey	506 (Brazilian consumers)	„When consumers realize that they are being deceived because of greenwashing with the product they are consuming, risk and confusion become a relevant factor in their decision-making process. Consequently, consumers will stop buying and consuming the product that has been identified (perceived) as misleading. Even so, if the consumer decides to consume the product, he will purchase it without a prospect of benefit and satisfaction and loyalty.“ „The data revealed that consumers only distrust and lose credibility in the product and the company when they realize that they are at risk or are being deceived in the purchase of a product that in practice shows features that they do not have and are qualified as a greenwashed product. Therefore, consumers tend not to consume a product when they discover the practice of greenwashing.“
24.02.21	Found in LR for research proposal	-	Newell et al.	1998	The Effect of Misleading Environmental Claims on Consumer Perceptions of Advertisements	Effects of perceived deception on perceived corporate credibility, brand attitudes and purchase intentions	Static, GW not mentioned or conceptualized, instead “perceived deception”	Survey	203 (US students)	“higher levels of perceived deception were associated with lower levels of perceived corporate credibility, less favorable attitudes toward the ad, less favorable attitudes toward the advertised brand, and decreased purchase intentions toward the product in the ad.”

24.02.21	Found in LR for Research Proposal	-	Schmuck et al.	2018	Misleading Consumers with Green Advertising? An Affect-Reason-Involvement Account of Greenwashing Effects in Environmental Advertising	Effects of GW on consumer perception of ads and brands	Non-deceptive claims are compared to vague claims and false claims. (compares 2 different kinds of GW)	Survey	"data from two experimental studies with quota-based samples in the US and Germany	486 (US general population); 300 (Germany general population)	"False claims in green advertising enhance consumers perceived greenwashing more than non-deceptive claims do" (US & GER) "Perceives greenwashing in green advertising negatively influences consumers' attitudes toward brands [...]" (US & GER) "Results indicate that while vague claims do not enhance consumers' perceived greenwashing regardless of their environmental knowledge or concern, false claims do, which consequently harms consumers' attitudes toward those ads and brands" "Moreover, associating greenwashing claims with nature-evoking images activates an affective persuasive mechanism that appeals to consumers' affinity for nature, which not only positively influences their evaluations of ads and brands but also influences their attitudes toward ads and brands more strongly than perceived greenwashing"
24.02.21	Scopus	"Effects of greenwashing on perception"	Musgrove et al.	2018	Consumer Perceptions of Green Marketing Claims: An Examination of the Relationships with Type of Claim and Corporate Credibility	(a) how different types of green marketing claims affect consumer skepticism and marketing performance outcomes, (b) how corporate credibility affects consumer skepticism and marketing performance outcomes, and (c) how green marketing claim types interact with corporate credibility in influencing consumer skepticism	No typology of GW but differentiation of claims made by companies. Posturing green marketing claims and substantive green marketing claims. Posturing claims: Image and environmental fact-based claims. Substantive claims: Product and Process claims	Survey		449 (US Students and their friend family members)	"As opposed to posturing green marketing claims, substantive green marketing claims significantly reduced consumer skepticism [...], and improved retail interest [...] patronage intentions [...] and attitude toward the company [...]. However, green marketing claim types did not produce significant effects on positive WOM [...] and expected service quality [...]. Although the above two tests did not reach the 5% significance level, their p-values are close to the threshold level and their directions are consistent with H1."
24.02.21	Scopus	"Effects OR influence AND greenwashing AND perception"	Torelli et al.	2020	Greenwashing and environmental communication: Effects on stakeholders' perceptions	"influences that various types of misleading communications about environmental issues have on stakeholders' perceptions of corporate environmental responsibility and greenwashing."	Corporate-level GW, Strategic-level GW, Dark-level GW, Product-level GW + Categorization into ESI and non-ESI (environmentally sensitive industries)	Survey		128 (Italian Students)	"company-level greenwashing is characterised by the highest degree of perceptions of corporate environmental responsibility whereas the level of darkness demonstrates the lowest." "Misleading company communications have a significantly different influence on stakeholder perceptions of corporate environmental responsibility depending on which level they belong to." "Depending on the level of greenwashing, a company's misleading environmental communications have significantly different influences on stakeholders' perceptions of greenwashing"
25.02.21	Scopus	"Effects OR influence AND greenwashing AND perception"	Rahman et al.	2015	Consequences of "greenwashing": Consumers' reactions to hotels' green initiatives	"consumers' reactions to the phenomenon of "greenwashing" in the lodging industry"	static	quasi-experimental design		638 (US university staff members)	"The results of this study revealed that an ulterior motive of hotels' environmental claims evoked consumer skepticism, which, in turn, negatively influenced consumers' intention to participate in the linen reuse program and intention to revisit the hotel"
25.02.21	Scopus	Effects OR influence AND greenwashing AND brand AND attitude OR perception	Nyilasy et al.	2012	Greenwashing: A consumer perspective	"effects of green corporate advertising and corporate environmental performance." on brand attitudes	Static, "intentional misrepresentation of a firm's environmental efforts (or the lack of it) is ever expanding (Alves, 2009; Delmas and Burbano, 2011; Furlow, 2010; Gillespie, 2008; Greer and Bruno, 1996; Paladino and Pandit, 2012; Ramus and Montiel, 2005; TerraChoice, 2010)."	experiment		305 (US students)	"under positive firm performance green advertising results in slightly higher attitudes toward the brand than general positive corporate messaging, under negative firm performance green advertising results in significantly lower brand attitudes than when a general corporate message is used."
25.02.21	Google Scholar	Effects OR influence AND greenwashing AND Brand AND attitude OR perception	Correa et al.	2017	The Social Control Exerted by Advertising: A Study on the Perception of Greenwashing in Green Products at Retail	"influence of the perception of greenwashing in the beliefs, attitudes and the perceived benefits by consumers to green products at retail"	Static, Greenwashing: "the dissemination of false or incomplete information by an organization to present an environmentally responsible public image [12]"	survey		359 (Brazilian consumers)	"when the greenwashing is perceived, the consumer stops to believe, to have a positive attitude and to realize the benefits of green product. This reinforces the assertion that a greenwashing practice causes the consumer rejection of a product or brand that calls itself green and is not."
25.02.21	Google Scholar	Effects OR influence AND greenwashing AND brand AND attitude OR perception	Chen et al.	2020	Greenwash and green purchase behaviour: the mediation of green brand image and green brand loyalty	"influence of firms' greenwash on their consumers' green purchase behaviour and explores the mediation roles of their green brand image and their consumers' green brand loyalty"	This research refers to Chen and Chang (2013) to measure greenwash and its measurement includes five items: (1) The brand deceives me by means of words in its environmental features; (2) The brand deceives me by means of visuals or graphics in its environmental features; (3) The brand deceives me by means of green claims that are unclear; (4) The brand exaggerates or overstates its green functionality; (5)	Survey		261 (Taiwanese consumers)	"results demonstrate that firms' greenwash negatively influences their consumers' green purchase behavior" "firms' greenwash is negatively related to both their green brand image and their consumers' green brand loyalty that would positively affect their consumers' green purchase behavior" "firms' greenwash does not only have a direct negative effect on their consumers' green purchase behaviour, but also has an indirect negative effect on it via their green brand image and their consumers' green brand loyalty"
	Google Scholar	Found in Chen et al. 2020	Paraguel et al.	2011	How Sustainability Ratings Might Deter "Greenwashing": A Closer Look at Ethical Corporate Communication	"the role of independent sustainability ratings on consumers' responses to companies' CSR communication"	Static, GW: "tactics that mislead" consumers regarding the environmental practices of a company or the environmental benefits of a product or service' (www.terrachoice.com)"	Survey		122 (French consumers)	"results indicate the negative effect of a poor sustainability rating for corporate brand evaluations in the case of CSR communication, because consumers infer less intrinsic motives by the brand"
02.03.21	Google Scholar	"seven sins" AND effect AND purchase intention OR brand attitude	Nguyen et al.	2019	Greenwash and Green Purchase Intention: The Mediating Role of Green Skepticism	Effect of GW on green skepticism and green purchase intention	Static, GW: "pretending to be green"	Survey		419 (Vietnamese Consumers)	"Multivariate data analysis demonstrated that greenwash was negatively associated with green purchase intentions"
02.03.21	Springer Link	"Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk"	Chen and Chang	2013	Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk	"The paper explores the influence of greenwash on green trust and discusses the mediation roles of green consumer confusion and green perceived risk."	Static, Paper introduces five different ways of GW in the theory part, put differences between GWPs do not get addressed in methodology, results or contribution	Survey		252 (Taiwanese Consumers)	"results show that greenwash is negatively related to green trust. Therefore, this study suggests that companies must reduce their greenwash behaviors to enhance their consumers' green trust. In addition, this study finds out that green consumer confusion and green perceived risk mediate the negative relationship between greenwash and green trust. The results also demonstrate that greenwash is positively associated with green consumer confusion and green perceived risk which would negatively affect green trust. It means that greenwash does not only negatively affect green trust directly but also negatively influence it via green consumer confusion and green perceived risk indirectly."

## II. Survey questionnaire

### Introductory message

You are invited to participate in a research study that is part of a master thesis. This study is executed/performed by Daniel Bladt from the Faculty of Behavioural, Management and Social Sciences at the University of Twente. The purpose of this research is to achieve a better understanding of consumer perception. Further information on the study is provided at the end of the questionnaire. Your participation in this study is entirely voluntary and you can withdraw at any time. There are no severe risks for participation in this study. Your data will be stored and analyzed anonymously, only used for the purpose of this scientific research, and to the best of our ability, your answers in this study will remain confidential. No sensitive data, or any kind of data that would enable someone to personally identify you are collected from you. All data are collected in compliance with article 13 of EU-regulation number 679/2016 from the 27th of April 2016. All collected data will be deleted three months after completion of the Master Thesis that this survey is part of.

Thank you for participating in this survey.

### Disclaimer

The survey will ask you to indicate your attitudes on two scales (positive/negative and likable/not likable). Please keep in mind that although both scales are related, they are not the exact same thing.

*positive/ negative:* Your rather rational evaluation from a societal/ ethical standpoint

*likable/ not likable:* Rather a matter of personal preference and emotional judgment.

Please answer honestly, there are no right or wrong answers. All presented examples are completely fictitious, any possible similarities to existing companies, products and brand names are purely coincidental.

### Question 1 (identifying students)

Are you currently a student at a university?

Possible answers: yes/ no

### Question 2 (identifying gender)

Please indicate your gender

Possible answers: female, male, divers

### Question 3 (identifying residence)

Are you living in Germany?

Possible answers: yes/ no

### Question 4 (identifying green consumers item 1)

Please indicate the extent to which you agree with this statement: It is important to me that the products I use do not harm the environment.

Possible answers: Strongly disagree – Strongly agree; 7-point Likert scale

### Question 5 (identifying green consumers item 2)

Please indicate the extent to which you agree with this statement: I consider the potential environmental impact of my actions when making many of my decisions.

Possible answers: Strongly disagree – Strongly agree; 7-point Likert scale

### Clarification

Please answer the following questions honestly and keep in mind:

*likable/ not likable*: Rather a matter of your personal preference and emotional judgment  
*positive/ negative*: Your rather rational evaluation from a societal/ ethical standpoint

**Question 6 & 7** (measuring the effect of product-level, hidden-information greenwashing on brand attitude)

The company “Happy Earth Mugs” produces one-time-usage coffee mugs with lids made from recycled plastic. My attitude toward this brand is:

Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Question 8 & 9** (measuring the effect of product-level, vague greenwashing on brand attitude)

The firm Liquido sells a shower gel that states “natural ingredients”. My attitude toward this brand is:

Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Question 10** (Controlling if respondents are attentively reading the questions)

Which statement about the previous question is correct?

Possible answers:

The question was about a deodorant that stated it would use recycled material for its packaging;

The question was about a shower gel that claims to use natural ingredients

### Visual notification

You completed half of the survey, good job!



**Question 11 & 12** (measuring the effect of firm-level, vague greenwashing on brand attitude)

“Social Clothes” is a textile company. In the sustainability section of their annual report, they state that “We stand for fair treatment of workers and enabling communities”. According to the financial part of the report, they pay employees the legally required minimum wage.

Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Question 13 & 14** (measuring the effect of firm-level, hidden-information greenwashing on brand attitude)

The company “Nice Coffee” pays employees and farmers higher wages and uses more environmentally friendly processes than the majority of their competitors. “Nice Coffee” is a direct subsidiary of a parent company that has a reputation for paying employees and farmers less than the regional average and was involved in multiple environmental pollution scandals due to their processes in recent years. Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Question 15 & 16** (measuring the effect of product-level, false greenwashing on brand attitude)

The brand “Greenion” is selling onions and claims to grow their onions locally and organic. An investigation of the firm reveals that Greenion onions are not organic and not different from onions of non-organic discounter brands. Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Question 17 & 18** (measuring the effect of firm-level, false greenwashing on brand attitude)

The company “Justice Drinks” sells different beverages and promises customers to donate 1l of drinking water to people in need for every bottle sold. An independent investigation into the firms’ processes reveals that Justice Water did not donate 1l of water to people in need for every bottle they sold. Possible answers:

Item 1: Extremely unlikable – Extremely likable; 7-point Likert scale

Item 2: Extremely negative – Extremely positive; 7-point Likert scale

**Open follow-up question** (appears every time respondents choose the extreme of a scale when indicating their brand attitude)

You answered that you perceive this brand as extremely \_\_\_\_\_. With 1-3 sentences in your own words, why is that?

**End of survey message**

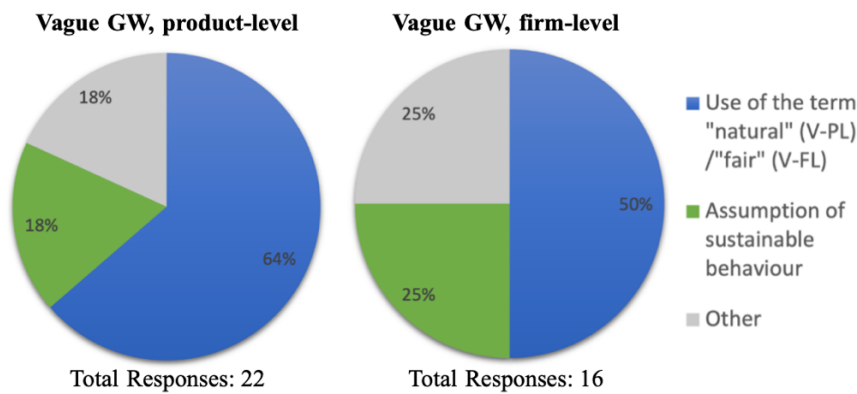
Thank you for your participation! The survey you just completed is part of my master thesis “The impact of greenwashing on consumer brand attitude” There are more than six different ways that companies can engage in the practice of greenwashing (which in general refers to poor environmental performance coupled with positive communication about this performance). Although we know a lot about the general effects of greenwashing, to this date, little is known about the differences between specific greenwashing practices from the eyes of consumers. By answering the questionnaire, you provided a set of responses that will help me explore this phenomenon.



### III. Open answers

This appendix details the open answer clusters presented in Section 4. Formed categories are explained in more detail and example quotes from the actual responses to the specific GW scenarios are presented for each category. Since most participants answered the open questions in German, quotes are translated into English for this section. Appendix II helps to understand the specific GW scenarios, that the answers were given to.

**Figure 6**



**Fig. 6** Reasons for 'Extremely likable' responses, vague GWPs

Response category	Definition	Example quote from responses
Use of the term "natural" (V-PL)/ "fair" (V-FL)	Respondent indicates that they perceive the brand as extremely likable because they like that the product is "natural" or produced under "fair" conditions	"I like that natural ingredients are included. Many skin types can not endure all these chemical ingredients."  "Fair compensation."
Assumption of sustainable behavior	Respondent indicates that they perceive the brand as extremely likable because they assume that the company is acting sustainable based on their claim.	"The brand offers a shower gel with natural ingredients. The ingredients are not manufactured chemically which also preserves the environment."

Figure 7

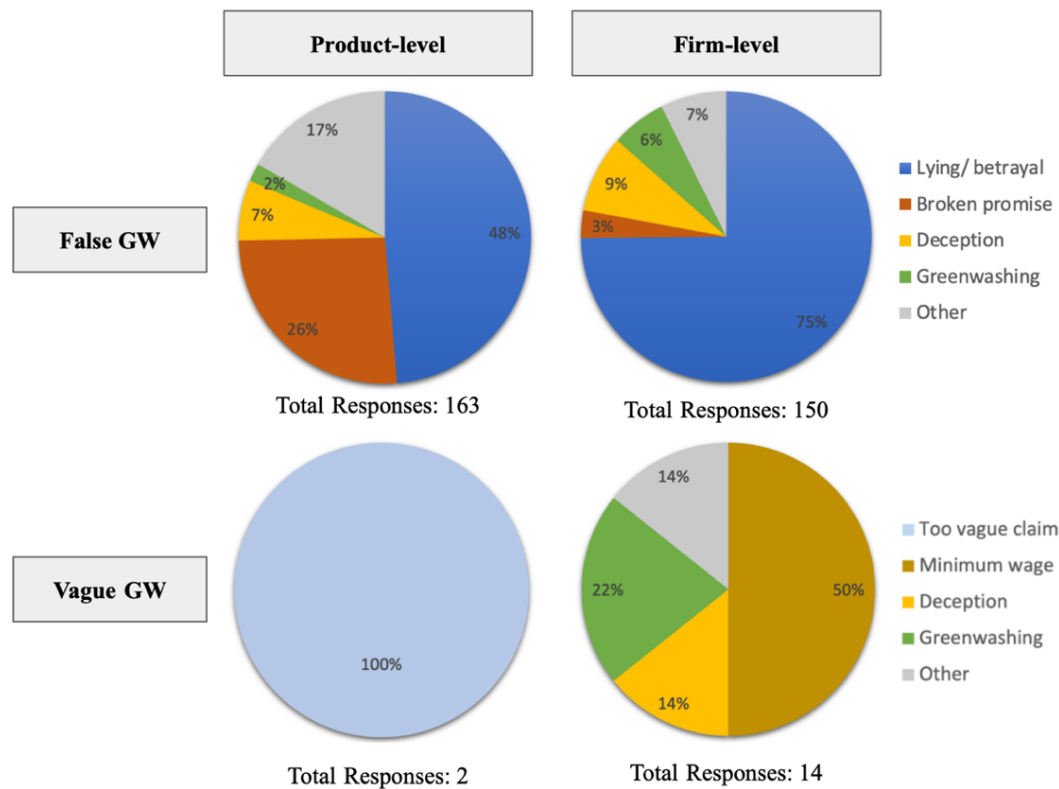


Fig. 7 Reasons for 'Extremely unlikable' responses, vague & false GWPs

Response category	Definition	Example quote from responses
Lying/ betrayal	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is purposefully lying to- or betraying consumers.	“Because they are betraying and lying with their statements.”
Broken promise	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is not keeping made promises.	”The company does not keep it’s promise, just wants to make profits.”
Deception	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is purposefully deceiving consumers.	“The product information is not correct, this is deception of consumers.”
Greenwashing	Respondent indicates that they perceive the brand as extremely unlikable because they interpret the company’s behavior as greenwashing.	“They are greenwashing.”
Too vague claim	Respondent indicates that they perceive the brand as extremely unlikable because the company is using too vague claims.	“Natural ingredients can mean anything. The shower gel surely also contains harmful ingredients.”
Minimum wage	Respondent indicates that they perceive the act of paying minimum wage as extremely unlikable.	“How can you advertise fair [labor] conditions and only pay minimum wage?!”

Figure 8

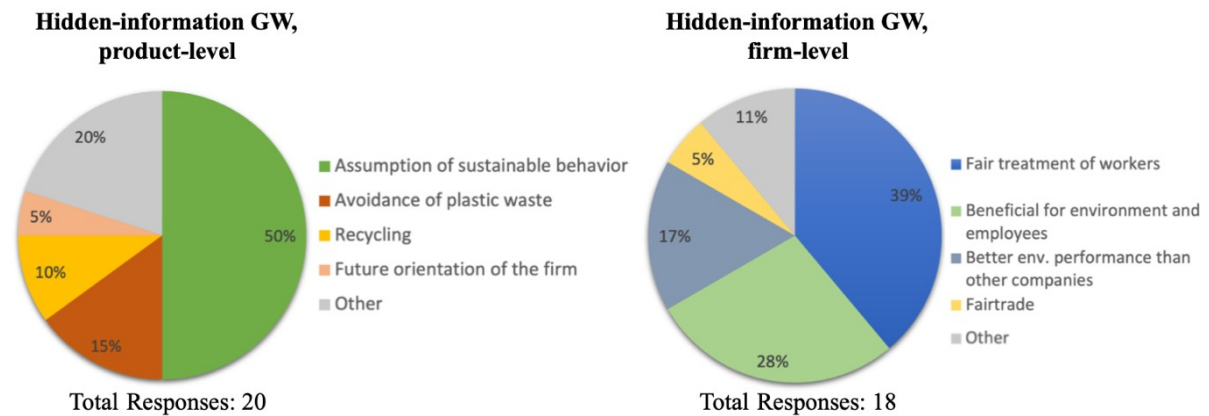


Fig. 8 Reasons for ‘Extremely likable’ responses, hidden-information GWPs

Response category	Definition	Example quote from responses
Assumption of sustainable behavior	Respondent indicates that they perceive the brand as extremely likable because they assume that the company is acting sustainable based on their claim.	“[The company] stands up for the environment.”
Avoidance of plastic waste	Respondent indicates that they perceive the brand as extremely likable because it avoids plastic waste.	“[They] think about ways to save plastic.”
Recycling	Respondent indicates that they perceive the brand as extremely likable because they are fond of recycling.	“Because they produce coffee mugs from recycled plastics.”
Future orientation of the firm	Respondent indicates that they perceive the brand as extremely likable because they interpret the company’s claim as the company being future oriented.	“They think about the future.”
Fair treatment of workers	Respondent indicates that they perceive the brand as extremely likable because they view the way the company is treating their workers as fair.	“[The company] pays fair wages.”
Beneficial for environment and employees	Respondent indicates that they perceive the brand as extremely likable because they view the company’s behavior as beneficial for environment and employees.	“[The company] takes care of people and the environment.”
Better environmental performance than other companies	Respondent indicates that they perceive the brand as extremely likable because it has a higher environmental performance than comparable companies.	“Because they pay higher wages and use more environmentally friendly processes than others, even though the mother [company] is not like this.”
Fairtrade	Respondent indicates that they perceive the brand as extremely likable because they think that the company is committing to Fairtrade.	“Fairtrade is important.”

Figure 9

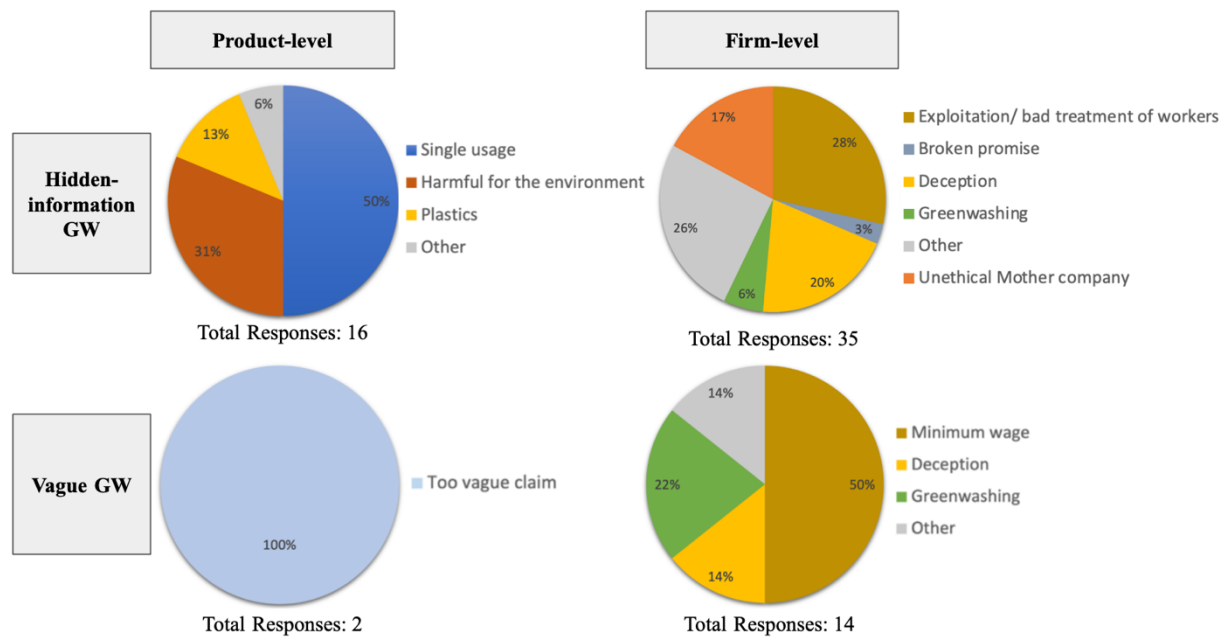
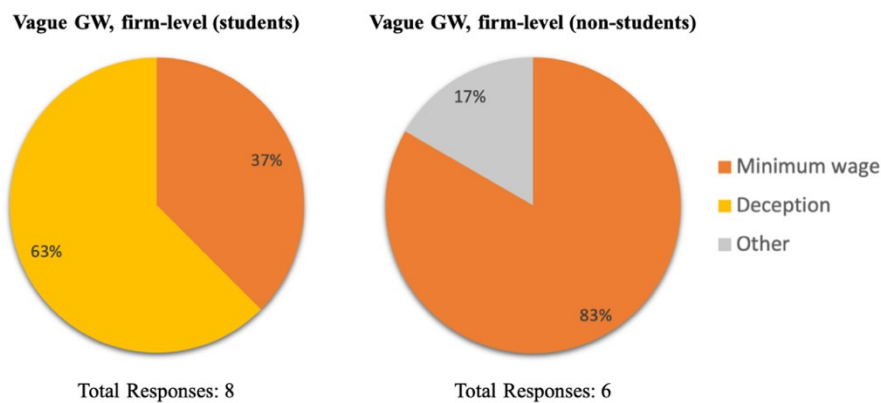


Fig. 9 Reasons for 'Extremely unlikable' responses, firm-level and product-level

Response category	Definition	Example quote from responses
Single usage	Respondent indicates that they perceive the brand as extremely unlikable because they view single usage products as unsustainable.	“Considering the fact that we have absolutely littered this planet already, it is insanity to still sell single usage coffee mugs. Hence it does not help to offer plastic lids from recycled plastic.”
Harmful for the environment	Respondent indicates that they perceive the brand as extremely unlikable because they view the company’s actions as harmful for the environment.	“What this company is manufacturing contributes to environmental pollution.”
Plastics	Respondent indicates that they perceive the brand as extremely unlikable because the company uses plastics for manufacturing their products.	“Plastics harm the environment, water and animals are also affected by it.”
Too vague claim	Respondent indicates that they perceive the brand as extremely unlikable because the company is using too vague claims.	“Natural ingredients sounds to me like wanting to sound environmentally friendly, but actually all ingredients are natural. Except maybe radioactive materials etc.”
Exploitation/ bad treatment of workers	Respondent indicates that they perceive the brand as extremely unlikable because they view the company’s actions as either exploitation- or bad treatment of workers.	“Exploitation.” “Bad treatment of workers and low wages”
Broken promise	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is not keeping made promises.	“The promise to consumers was broken.”
Deception	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is purposefully deceiving consumers.	“The intention to deceive is more than clear and the company is trying to polish up their image.”

Greenwashing	Respondent indicates that they perceive the brand as extremely unlikable because they interpret the company’s behavior as greenwashing.	“I have the impression that this is a kind of green- and socialwashing.”
Unethical mother company	Respondent indicates that they perceive the brand as extremely unlikable because of unethical actions by the mother company.	“It does not matter whether they pay fair wages and are environmentally friendly. As part/ daughter company they are part of the ‘evil’. So they are directly related to the exploitation and environmental pollution.”
Minimum wage	Respondent indicates that they perceive the act of paying minimum wage as extremely unlikable.	“Minimum wage, that is weak.”

**Figure 11**



**Fig. 11** Reasons for ‘Extremely unlikable’ responses, V-FL

Response category	Definition	Example quote from responses
Minimum wage	Respondent indicates that they perceive the act of paying minimum wage as extremely unlikable.	“Paying the minimum wage is not enough.”
Deception	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is purposefully deceiving consumers.	“They present themselves better than they really are.”

Figure 12

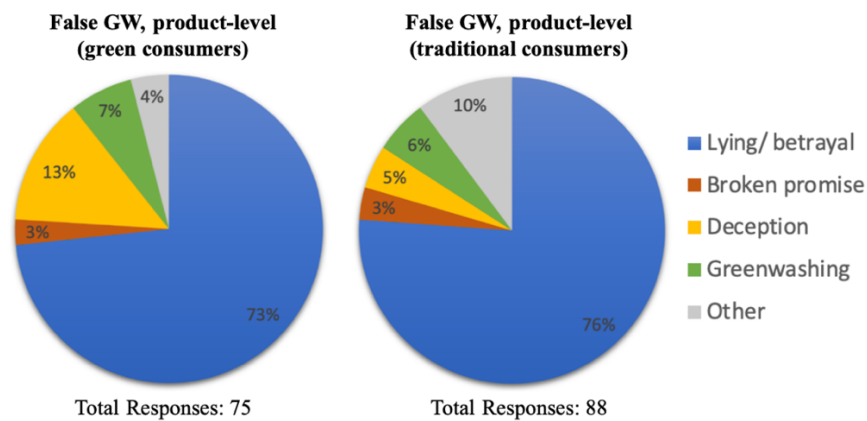
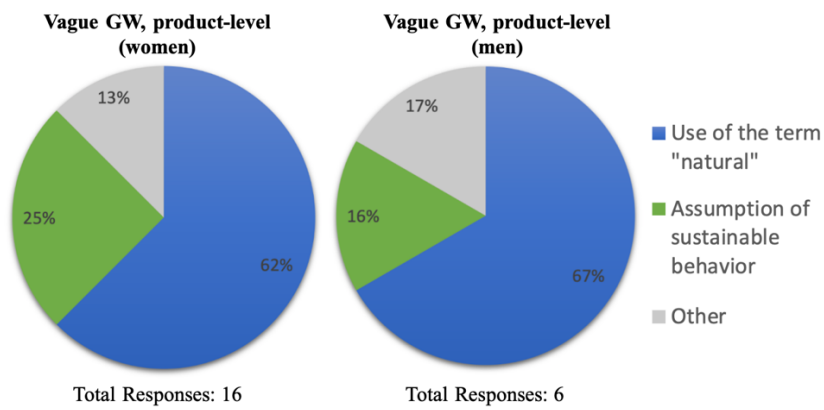


Fig. 12 Reasons for ‘Extremely unlikable’ responses, F-PL

Response category	Definition	Example quote from responses
Lying/ betrayal	Respondent indicates that they perceive the brand as extremely unlikable because they think that the brand is purposefully lying to- or betraying consumers.	“Lie.” “For me this is betrayal and should be punished.”
Broken promise	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is not keeping made promises.	“A company should keep what they promise.”
Deception	Respondent indicates that they perceive the brand as extremely unlikable because they think that the company is purposefully deceiving consumers.	“Customers are being deceived... Con.”
Greenwashing	Respondent indicates that they perceive the brand as extremely unlikable because they interpret the company’s behavior as greenwashing.	“The firm is committing greenwashing.”

**Figure 13**



**Fig. 13** Reasons for 'Extremely likable' responses, V-PL

<b>Response category</b>	<b>Definition</b>	<b>Example quote from responses</b>
Use of the term "natural"	Respondent indicates that they perceive the brand as extremely likable because they like that the product is "natural".	"Natural ingredients are very good."
Assumption of sustainable behavior	Respondent indicates that they perceive the brand as extremely likable because they assume that the company is acting sustainable based on their claim.	"Sustainable, ecological and good for the environment."