The influence of consumer personality on sustainable consumption intention in respect of clothing with eco-labels on the German market

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Abstract

Title: The influence of consumer personality on their sustainable consumption intention in respect of clothing with eco-labels on the German market.

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The use of eco-labels in the fashion industry has been in the focus of science and practice for several years due to the increasing sustainable awareness of society and the significant contribution to global environmental pollution of this industry. However, it is still unclear how companies can use these labels in a target group-specific way. This dissertation investigates the influence of consumers' personality traits on their preference for purchasing eco-labelled clothing in the German market. For this purpose, the preference of eco-labels is measured using a choice experiment together with the moderation of the big five personality traits. The results from applied t-tests and repeated measure ANCOVAs ($N = 129$) indicate that there is a significant preference for eco-labels when consumers choose between clothes with eco-labels and no labels. Moreover, this preference is still present for equally priced products with eco-labels and labels with the term sustainability. Furthermore, it could be examined that only the personality trait openness has a significant influence on the preference for eco-labelled clothing when people have the choice between eco-labels and no label. This preference is even present among open-minded people when they have the choice between clothing with eco-labels having a sustainable price surcharge and a label with the term sustainability. Therefore, companies should focus on open-minded people to encourage them to demand eco-labeled clothing.

Sumário

Título: A influência da personalidade do consumidor na sua intenção de consumo sustentável no reapreciação do vestuário com rótulos ecológicos no mercado alemão.

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A utilização de etiquetas ecológicas na indústria da moda tem estado no centro da ciência e da prática durante vários anos devido à crescente consciência sustentável da sociedade e à contribuição significativa desta indústria para a poluição ambiental global. Porém, ainda não é claro como as empresas podem utilizar estas etiquetas de forma específica para cada grupo-alvo. Esta dissertação investiga a influência dos traços de personalidade dos consumidores na sua preferência pela compra de vestuário com etiquetas ecológicas no mercado alemão. Para tal, a preferência pelas etiquetas ecológicas é medida numa experiência de escolha juntamente com a moderação dos cinco grandes traços de personalidade. Os resultados dos testes-t aplicados e das ANCOVAs de medidas repetidas ($N = 129$) indicam que existe uma preferência significativa por etiquetas ecológicas quando os consumidores escolhem entre vestuário com e sem etiquetas ecológicas. Além disso, esta preferência ainda está presente para produtos de preço igual com etiquetas ecológicas e etiquetas com o termo sustentabilidade. Além disso, poder-se-ia notar que apenas o traço de personalidade abertura à experiência tem uma influência significativa na preferência por roupa com etiqueta ecológica quando as pessoas têm a escolha entre etiquetas ecológicas e sem etiqueta. Esta preferência está presente nas pessoas abertas à experiência mesmo quando têm a escolha entre uma roupa com etiquetas ecológicas com uma sobretaxa de preço sustentável e uma etiqueta com o termo sustentabilidade. Por conseguinte, as empresas devem concentrar-se nas pessoas com abertura à experiência para encorajar a exigência de vestuário com etiquetas ecológicas.

Palavras-chave: Rótulos ecológicos, Comportamento de consumo sustentável, Personalidade, Tomada de decisão do consumidor, Indústria da moda, Decisão de compra

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List of Abbreviations

α	Cronbach's Alpha, index of reliability
ANCOVA	Analysis of covariance
β	Standardized regression coefficient
CI	Confidence Interval
CSR	Corporate social responsibility
df	Degrees of freedom
Eb	Eco-label with base price
Es	Eco-label with base price plus sustainability surcharge
F	F distribution
H	Hypothesis
M	Mean value
N	Number of participants
N/A	No answer
Nb	No label with base price
NEO-FFI	NEO Five-Factor Inventory
η^2_p	Partial eta squared
p	p-value, Statistical significance level
r	Pearson correlation coefficient
Sb	Sustainable label with base price
SCB	Sustainable consumption behavior
SD	Standard deviations
SE	Standard error
Ss	Sustainable label with base price plus sustainability surcharge
t	T- test

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1   Introduction

In recent years, the topic of sustainable clothing has been regularly discussed under various aspects (Caniato et al., 2012; Islam & Khan, 2014; Radunski, 2013; van de Pol, 2018). Among these aspects, the focus is often on the use of toxic chemicals in textile manufacturing processes or inhumane working conditions (de Brito et al., 2008; Parveen, 2012; Santen et al., 2016). The large media presence can be justified by the fact that the fashion and textile industry, with its enormous consumption of resources, is one of the largest industries worldwide (Greenpeace, 2017; Martin, 2013). However, the entire fashion market has recently faced a major challenge: the fashion industry is becoming increasingly fast-paced a phenomenon called "fast fashion", which causes a variety of social and economic problems (Gardemin & Kleinhückelkotten, 2017; Niinimäki et al., 2020).

Simultaneously with fast fashion, there is a growing sensitivity in our society for sustainability and thus also for sustainable clothing (Rahmi et al., 2017). An increasing number of consumers are demanding more sustainable products, also within the fashion industry (Bruhn et al., 2007; Gellrich, 2021; Moisander & Pesonen, 2002; Thøgersen, 2000). As public pressure increases, the demand for fashion companies to be socially and environmentally responsible also grows (Moisander & Pesonen, 2002; Sigit et al., 2017). This new sales potential has been recognized by retailers and industry, resulting in a growing number of clothes with social and/or environmental aspects appearing in the markets (Fifka, 2018; Sung & Woo, 2019).

However, before making the final purchase decision, consumers have to search for information about the item in order to compare product alternatives (Stieß et al., 2013). Unfortunately, it is difficult for consumers to understand the working conditions or the chemicals and resources involved in a given textile's production (Fiebrig, 2018). An approach that is gaining importance in this context is the use of eco-labels. In recent years, various labels have been developed to provide guidance to consumers and thus enable them to recognize sustainable end products (Rohlfing, 2010; Schaus, 2016; Wahidi, 2018). These eco-labels are intended to promote sustainable products and mitigate the environmental impact of consumer behavior (Zaman et al., 2010). Fashion companies are increasingly considering using eco-labels as a communication or even a positioning strategy to increase their customer base (Taufique et al., 2019). Recent research already confirms that eco-labels can have a positive impact on consumers' sustainable consumption behavior (SCB) (Gam et al., 2014; Thøgersen, 2000). Yet, at this point, it is still unclear which consumer segments are more likely to follow this sustainable eco-label

strategy and which characteristics lead them to align their purchase decisions accordingly (Sung & Woo, 2019).

1.1 Problem Statement

Due to the increasing relevance of sustainable clothing among consumers and in line with the immense damage caused by the fashion industry, it is essential to intensify research on eco-labels and sustainable fashion consumption (Mukendi et al., 2020). In this regard, a major approach is the consumer group-specific marketing strategies of fashion companies for sustainable clothing, which have become more important than ever before (Jin Gam, 2011; Kang et al., 2013). Therefore, companies should see if there is an eco-label preference among consumers and which consumer groups can be influenced by eco-labels to make a sustainable purchase decision. In this way, companies can use eco-labels in a targeted manner and thus contribute to sustainable purchasing decisions (Delmas et al., 2013; Kearney, 2014).

In terms of the preference for purchasing eco-labeled products, the role of the Big Five personality types of consumers is one moderator that has not yet been explored extensively. Despite the obvious importance of understanding the psychological factors behind SCB for a sustainable future, knowledge about decision making in this regard is still very sparse in contrast to other areas of consumer psychology (Trudel, 2018). Hirsh (2010) and Tennert (2019) have found evidence that certain individual personality traits such as agreeableness and openness positively influence sustainable purchase decisions. Meta-analytic results also confirm that different purchase decisions tend to be associated with personality traits (Winter & Grebitus, 2019). Based on empirical evidence, I thus hypothesize that eco-labels have an impact on clothing purchase decisions and that consumer personality influences preference for eco-labeled clothing.

This paper therefore addresses the following research questions:
1. Is there a preference for eco-labels when consumers have a choice between eco-labeled and no labeled clothing during their purchase decision?
2. Do the Big Five personality traits moderate the preference for eco-labeled clothing?

1.2   Relevance

By answering these research questions, I aim to generate more attention to the increasingly important topic of eco-labels in the apparel industry. Despite meta-analytic findings that eco-labels can lead to a SCB (Ma et al., 2017; Taufique et al., 2019; Teisl et al., 2002; Thøgersen, 2000), the primary goal of this research is to add an experimental perspective to the literature by demonstrating a cause-effect relationship of eco-labels on a SCB. Furthermore, this study contributes to the literature by examining how the Big Five personality traits act as moderators in the relationship between eco-labels and the preference for them. Such information can on the one hand be integrated in the decision to introduce eco-labels at fashion companies. On the other hand, the results of the study can be used for the development of tailor-made marketing strategies for sustainable clothing and thus support efficient and effective targeted advertising measures of fashion companies.

Given that Germany is one of the most important sales markets for fashion and clothing worldwide, this research only refers to consumers in Germany (Müller & BMZ, 2019; Wahidi, 2018). With an average annual consumption of 12kg of clothing per person, Germans are among the largest clothing consumers (Neugebauer & Schewe, 2014). Within Germany the textile and clothing industry itself represents one of the most crucial consumer goods sectors, with over 1200 companies and more than 400.000 employees. Moreover, the country has the longest tradition and experience for eco-labels worldwide (Fiebrig, 2018; Merker, 2017; Spiesecke, 2014). Therefore, Germany is of particularly great interest in this research topic and will be this dissertation's focus.

1.3   Methodology and structure

To achieve the objectives of this thesis, an appropriate approach is required, which is divided into seven chapters as follows. First, Chapter 2 gives an overview of the motivations and the importance of eco-labels in the fashion industry and explains with greater detail in this context, the sustainable consumption behavior and the personality of consumers. Subsequently, Chapter 3 provides a precise description of the quantitative research design and its online survey, as well as the applied analysis method. Chapter 4 then presents the results of the study. In Chapter 5, the findings' relevance for researchers and practitioners is discussed and both the paper's limitations and the opportunities for future research are explained. Finally, the work is critically summarized in the last Chapter 6.

2 Theoretical Background

2.1 A change in socio-ecological awareness in society

For more than a decade, studies dealing with the effects of global climate change have been published on an almost weekly basis. Politicians, companies and, above all, the public have been engaged in a process of change for some time now. The current ecological, economic and social challenges are becoming increasingly influential in shaping society's awareness and behavior (Bruhn et al., 2007; Sung & Woo, 2019). Recent studies show that despite the pandemic, the importance of environmental and climate protection has increased remarkably in recent years and is one of the most important social issues (Gellrich, 2021). Sobuj, Khan, Habib, and Islam (2021) even note that the pandemic has increased consumers' concern about the environmental impact of their fashion related purchasing habits.

These changes in people's awareness call for the formation of new consumption patterns (Esch et al., 2019; Niinimäki et al., 2020). Consumers have realized that both personal consumption and industrial production can have a negative impact on the environment (Bruhn et al., 2007; Sobuj et al., 2021). The so-called megatrends, such as LOHAS (Lifestyle of Health and Sustainability) or neo-ecology (new attitude towards ecological issues), have been held responsible for the social movements that have formed in recent years from this realization (Sung & Woo, 2019). With this socio-ecological awareness established in society, there is now increasing pressure for companies to be socially and environmentally responsible (Bungard, 2018; Caniato et al., 2012; Heinrich, 2018). The advance of integrating these aspects into corporate culture is provided by the proactive management discipline corporate social responsibility (CSR; Choi & Li, 2015). CSR is the responsibility of an organization regarding the impact of its decisions and activities on society and the environment through transparent and ethical behavior (Schneider & Schmidpeter, 2015). Research also confirms an increasing importance of sustainable trends such as fair trade and CSR among the German population in recent years (IfD, 2019). Additionally, consumers increasingly judge a company by its CSR attitude and would pay more for products and services of such companies (Dr. Grierger & Cie., 2016). Furthermore, research shows an increased focus on buying products from socially and environmentally responsible manufacturers even when it comes to fashion (AWA, 2018; Lehmann et al., 2019).

Thus, a change in society is clearly visible. We are evolving from a pure consumer society to a society with a strong environmental awareness and a sense of humanity (Pechlaner, 2019). To further contribute to this important social change, this thesis focuses on the sustainable consumption behavior of consumers in terms of eco-label preference in the fashion industry and the influence of personality in this respect. Therefore, in the following chapters, sustainability in the fashion industry, sustainable consumer behavior, eco-labels and consumer personality will be examined in more detail.

2.2   Sustainability in the fashion industry

One of the most widely used definitions of sustainability was published by the World Commission on Environment and Development (WCED) in its report "Our Common Future" (Kropp, 2019). According to this report, "sustainability means being able to satisfy current needs without compromising the possibility for future generations to meet their own needs" (WCED, 1987, p. 43). To achieve this goal, a balance must be accomplished between three dimensions: economy, ecology and social (known as the triple bottom line; Elkington, 1997). Sustainability in the fashion industry therefore means that neither people nor the environment are harmed in the development and use of a product or process (Christov et al., 2018). Furthermore, the well-being of people and the environment interacting with the product or process should be improved (Bansal, 2002; Gardetti & Torres, 2013; Lamming & Hampson, 1996).

Since the early 1990s, there has been a discourse on sustainability in the fashion industry, which has become an important topic with increasing attention in recent years (Caniato et al., 2012; van de Pol, 2018; Weller, 2001). The reason is that the fashion industry is one of the most resource-intensive industries, contributing to a significant amount of global pollution (Caniato et al., 2012; Greenpeace, 2017; Martin, 2013; Smith, 2003). The impacts of this industry include, for example, over 92 million tons of waste (Quantis, 2018) and 79 trillion liters of water consumption per year (Kerr & Landry, 2017). Thus, a multitude of social or environmental problem areas can be identified in the textile value chain nowadays, which burden the fashion industry (de Brito et al., 2008; Martin, 2013; Weller, 2019). Since the fashion supply chain is characterized by globally distributed process steps that usually include low-wage countries due to competitive advantages, it involves increased complexity with less transparency, as can be seen in Figure 1 (Karaosman et al., 2020). The environmental impact of this supply chain ranges from high resource, energy and water consumption during raw material extraction to heavy chemical use for finishing the textiles followed by high packaging and transport volumes

(Bilharz, 2019; Lakhal et al., 2008; Niinimäki et al., 2020; Somarathna et al., 2019). However, it is not only ecological burdens that arise, especially in production. Social realities in the fashion industry, such as a lack of standards in labor protection conditions or fair wages, also pose significant problems (Hendriksz, 2017; Lenz, 2018; Norton, 2014; Wahidi, 2018).

Especially in Germany, with over 1200 companies, more than 400.000 employees and a leading global consumption with an average of 12kg per year and capita, the textile and apparel industry plays an important role as one of the largest consumer goods industries (Neugebauer & Schewe, 2014; Spiesecke, 2014). This enormous clothing production and consumption is mainly stimulated by the fast fashion trend (Gardemin & Kleinhückelkotten, 2017; Niinimäki et al., 2020). Due to the changing awareness of society and the increasing presence of problem areas in fashion companies, the desire for more natural and fair products is increasing (Meyer, 2001; Niinimäki et al., 2020). The new type of consumer, whose requirements now go beyond price, style and quality and include the sustainability aspect of products in their purchasing decisions. That opens new sales potential of so-called green fashion for fashion companies, which offers companies a competitive advantage in the embattled fashion market (Forman & Jorgensen, 2004; Kogg, 2003; Nishat Faisal, 2010). To survive in the global competition, however, companies must react as quickly as possible to the changing consumer needs (Rahmi et al., 2017).

Figure 1

The main stages of the fashion supply chain for apparel manufacturing, with their geographic location and extensive environmental impacts
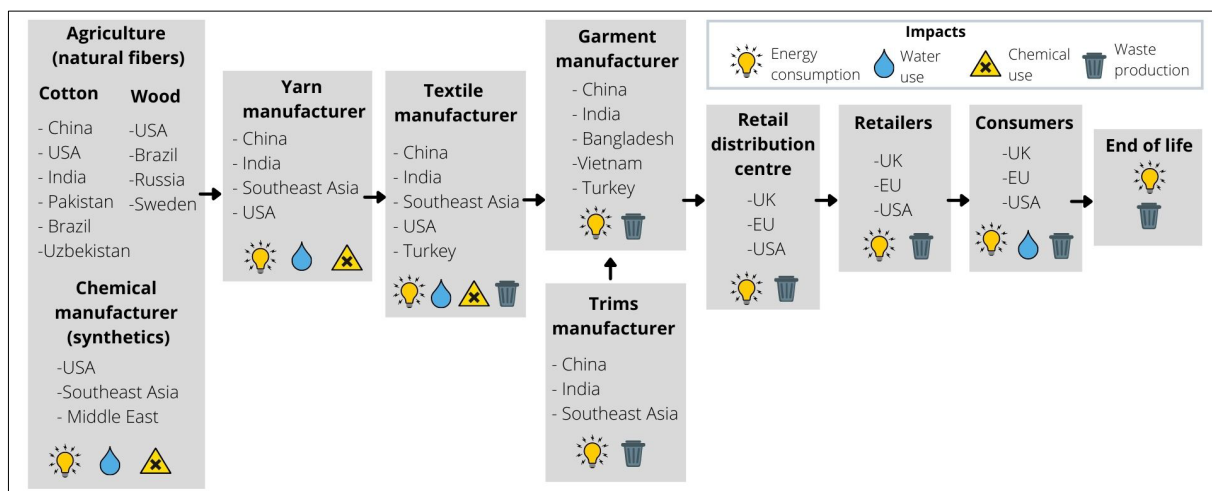
Note. Based on Niinimäki (2020)

As a result, various sustainable approaches, like secondhand, upcycling or fair and ethical producing, have emerged in fashion companies over the past few years as innovative business strategies to address socio-environmental deficiencies (Brisma, 2016; Caniato et al., 2012; Choi & Li, 2015; de Brito et al., 2008). Particularly for newly produced goods, great success can be achieved through various measures that contribute to a more sustainable product. The success story of several ethically and socially producing clothing brands, such as Patagonia, supports this and also provides evidence of a strength in consumer demand for these products (Brooks, 2015). Even fast fashion brands are operating now with some sustainable and environmentally conscious approaches (Li et al., 2014). But especially for newly produced sustainable clothing, it is important for potential consumers to be able to find out about the origin of the textiles (Fiebrig, 2018). For this purpose, labels and certifications have been used as quality marks in the textile industry for quite some time now (Errichiello & Zschiesche, 2017; Henninger, 2015). Due to the enormous impact of the textile industry on the socio-economic environment, this paper focuses on the fashion industry, more specifically on sustainable consumption behavior in terms of apparel purchase. Therefore, sustainable consumption behavior is examined in more detail in the following section.

2.3 Sustainable consumption behavior

Human behavior can have both positive and negative impacts on the global ecology and society. Consequently, every purchase, consumption and disposal decision can contribute to a more or less sustainable consumption pattern (Trudel, 2018; Young et al., 2009). Hence, many of the environmental problems visible today are direct consequences of human actions and can therefore be mitigated through behavioral solutions such as sustainable consumption behavior (SCB; Fraj & Martinez, 2006; Gattuso et al., 2014; Oskamp, 2000; Saunders, 2003).

The term SCB is an umbrella term first defined in the 1994 Oslo Symposium, encompassing aspects such as improved quality of life, increased resource efficiency, and waste reduction (Baker, 1996; Dong et al., 2018). Nowadays SCB is increasingly popular and aims to counteract and replace consumerism, which has been strongly present in society since the second half of the 20th century (Miles, 1998). Thus, SCB is characterized by long-term use of products, more rational purchasing decisions, and a willingness to pay a justified price premium for sustainably produced products (Barr & Gilg, 2006; Peattie & Collins, 2009). In the literature, various definitions of this type of behavior exist and while some of these refer only to social aspects or only to environmental aspects, some include both (Fraj & Martinez, 2006; Luchs & Mooradian, 2012). In this study, SCB is considered as consumer behavior that involves

consumers who are concerned about social and/or environmental issues and make decisions with the intention of conserving the environment and limiting their impact (Fraj & Martinez, 2006; Stern, 2000). Individuals who engage in sustainable consumption are therefore faced with increasingly complex choices (Nguyen et al., 2017; Young et al., 2009).

Important to note in this context is the existing attitude-behavior gap experienced by SCB (Taufique, 2020). Some research shows that a positive attitude toward SCB will not equal the corresponding behavior (Taufique, 2020; Taufique et al., 2017). Nevertheless, research shows that these two aspects are clearly linked, meaning that the perceived importance of consuming sustainably has a positive impact on the purchase decision and thus predicts it (Amoako et al., 2020; Cheung & To, 2019; Luchs & Mooradian, 2012).

For understanding SCB, most previous studies have investigated the relationship with environmental attitudes, finding very different results (Taufique, 2020). Some studies reported a positive influence of environmental attitudes on SCB (Amoako et al., 2020; Cheung & To, 2019; Taufique et al., 2017), while others found a negative correlation between the two (Dagher & Itani, 2012; Samarasinghe, 2012). Such contrasting results suggest that other variables are involved in the prediction of SCB and may allow better prediction (Lee, 2009). Recently, there has been a significant debate about whether personality traits can be a more suitable indicator of individual SCB, particularly using the Big Five taxonomy (Fraj & Martinez, 2006; Hirsh, 2010; Hirsh & Dolderman, 2007; Luchs & Mooradian, 2012).

Thus, it would be interesting to see whether the integration of additional factors, such as eco-labels and consumer personality, would improve the prediction of SCB. SCB therefore represents the phenomenon of interest in this study and is equated with the preference for eco-labels based on the relevant research, as will be discussed in more detail below.

2.4 Eco-labels

In this context, the term eco-label is used for labels or certifications representing certain quality standards in textile production (Rohlfing, 2010).

2.4.1 Eco-labels in the fashion industry

In Germany, textile labels exist since the 1970s, when a trend was set by the introduction of the first textile label *Blauer Engel* in 1978 (Sucky et al., 2021). Since then, equally to the heterogeneity of sustainability-related activities in the textile industry, a multitude of labels of different seriousness have developed (Thøgersen, 2000). Consequently, and in contrast to the

food sector, there is no single eco-label for labeling social and/or ecological clothing products (Rohlfing, 2010). Depending on the quality assurance or certification systems, eco-labels are awarded according to different criteria and requirements. Thus, the labels can differ in their focus on social and/or ecological aspects, the different process stages of the supply chain or their introducing institutions (Brandl, 2018; Rohlfing, 2010; Schaus, 2016). However, these eco-labels all have one thing in common: they aim to minimize the negative impacts of the apparel industry and contribute to sustainable development (Rettie et al., 2012). Furthermore, eco-labels are expected to make environmentally friendly purchasing becoming the norm (Rettie et al., 2012). A small sample into the world of eco-labels in the German clothing industry is provided by the following Table 1.

Table 1

Well-known eco-labels for sustainable clothing in the german fashion industry

Label Logo	Label name	Main focus	Label provider
	Global Organic Textile Standard (GOTS) (2006)	Strict requirements for the ecological and social conditions of ecologically produced raw materials along the entire textile supply chain	International Working Group
	Blauer Engel (1977)	Ensures a particularly environmentally friendly production of textiles, whereby no chemicals hazardous to health may be used and guarantees a particularly high-quality production.	German Federal Ministry
	MADE IN GREEN by OEKO-TEX® (2014)	Guarantees that textile products are free of harmful substances and are certified according to the Standard 100 by OEKO TEX and ensures that products are manufactured with high social and ecological requirements.	OEKO-TEX® (8 independent research and testing institutes)
	Fair Wear Foundation (FWF) (1999)	Improved social conditions in textile companies worldwide, with a focus on working conditions in sewing factories.	Dutch foundation „Fair Wear Foundation"

	bluesign® product (2000)	Ensures the safe production and processing of synthetic and natural fibers	bluesign technologies AG

Note. Based on Almeida, 2015, pp. 188–191; Amutha, 2017, p. 95; Brockmann & Hemmelskamp, 1995; Christov et al., 2018, p. 387; Henkel, 2017; Jastram & Schneider, 2015, p. 207; Schaus, 2016, p. 44; Siegelklarheit.de, 2019

2.4.2 Eco-labels and their impact

Given their long-standing use in the textile and clothing industry, eco-labels are not a new concept for most of the German population (Sucky et al., 2021, p. 211). Consumers have been able to perceive and recognize them objectively on products for some time now, and they therefore offer consumers the opportunity to better recognize sustainable end products that comply with specified requirements at various points in the product supply chain (Balzer, 2003; Sucky et al., 2021). Non-visible product characteristics along the supply chain can thus be signaled to the consumer at a glance, even without expert knowledge (Bleda & Valente, 2009; Hartlieb & Jones, 2009). This is advantageous, as conventional clothing without an eco-label usually only gives an overview of the fibers processed, the care instructions and the country of production (Greenpeace, 2018).

Hence, these labels are intended to provide consumers with orientation as well as to simplify their purchase decision (Schaus, 2016). Thøgersen (2002) has also shown in his study that consumers actually use these labels to inform themselves about the details of the products. Eco-labels thus not only increase awareness of the product that is about to be purchased, they also affect the level of information consumers consider in their minds during their purchase decision (Sheoran & Kumar, 2020). Recent studies also assume that responsible consumer purchasing decisions are influenced by labeling on clothing with textile labels (Ma et al., 2017; Taufique et al., 2019; Teisl et al., 2002; Thøgersen, 2000). Thus, they represent an effective purchasing argument for many consumers (Leitherer, 2019; Rettie et al., 2012; Schaus, 2016).

However, eco-labels can also be beneficial for companies, not only for consumers. Thus, it is possible for companies to differentiate themselves from their market competitors by using eco-labels as a green marketing strategy and thereby gain competitive advantage as well (Delmas et al., 2013; Kearney, 2014). Through certain factors such as the length of market existence or targeted marketing campaigns, a momentum can also be created to increase awareness of labels (Gross et al., 2016; Taufique et al., 2019; Testa et al., 2015). In addition, eco-labels can enhance the credibility of a company's environmental activities and increase consumer trust and confidence in the brand and its product (Atkinson & Rosenthal, 2014). This

aspect is not entirely unimportant for companies. According to a study by the Edelman Institute, it is important to 90% of consumers worldwide that they can trust the brands they buy (Glasgow, 2019). Eco-labels are thus fundamentally capable of triggering a strategic effect, which is an important finding for companies (Sucky et al., 2021). In this context, we can clearly see that eco-labels can contribute to a positive purchase intention. Based on this, I hypothesized the following:

H1: There is a general preference for purchasing eco-labels when consumers have a choice between eco-labeled and no labeled clothing .

However, in contrast to the food industry, for instance, the fashion industry is rather underdeveloped with regard to the use of eco-labels (Friedel & Spindler, 2016; Henninger, 2015). One reason for this could be the insufficient knowledge about which consumers prefer eco-labels in their purchase decisions. Thereby, research mostly refers to dimensions of a response hierarchy or stage model of decision making, where stages mostly include consumer knowledge and trust, as well as label design, visibility, persuasiveness, clarity of information, or private benefit (Peter et al., 1999; Taufique et al., 2014). Why consumers are aware of, perceive, and use labels is answered sporadically (Thøgersen, 2000). Companies have no clear indication of which persona to target to increase demand of products with eco-labels. Publications show that consumers' personality play an important role in their purchase decisions (Kvasova, 2015; Luchs & Mooradian, 2012). Based on these facts, eco-labels represent a crucial factor when it comes to SCB and are examined as an independent variable in this study. In addition, this thesis takes a closer look at consumers' personality as an influencing factor on the preference for choosing eco-labels during their purchase decision. Therefore, personality will be examined in more detail in the next section.

2.5 Personality and the Big Five Model

The term personality refers to the predisposition of individuals (thought patterns, feelings, attitudes, and behaviors) that cause them to behave in different ways (Cervone & Pervin, 2016; Funder, 2009; McKenna & Bargh, 2000). Human personality includes mental dispositions that describe personality and are referred to as personality traits. These traits describe a person's consistent and cross-situational characteristic of thinking, feeling, and behaving in a particular way (Digman, 1990; McCrae, 2009). In the literature, there are several models used to assess personality traits (Eysenck, 1952; Goldberg, 1993; Pittenger, 1993). However, there

is a clear consensus on which is the most popular model: the Big Five model of McCrae (Costa et al., 2017; Digman, 1990; McCrae & Costa, 1987; Mowen, 2000). McCrae and John (1992) describe the Big Five as the most comprehensive explanation of personality. The Big Five model assesses each individual personality by indicating how a person scores on five major traits. These five traits are openness, conscientiousness, extroversion, agreeableness, and neuroticism (see Figure 2; Riaz et al., 2012; Ul Islam et al., 2017; Yoo & Gretzel, 2011).

Figure 2

The Big Five Model
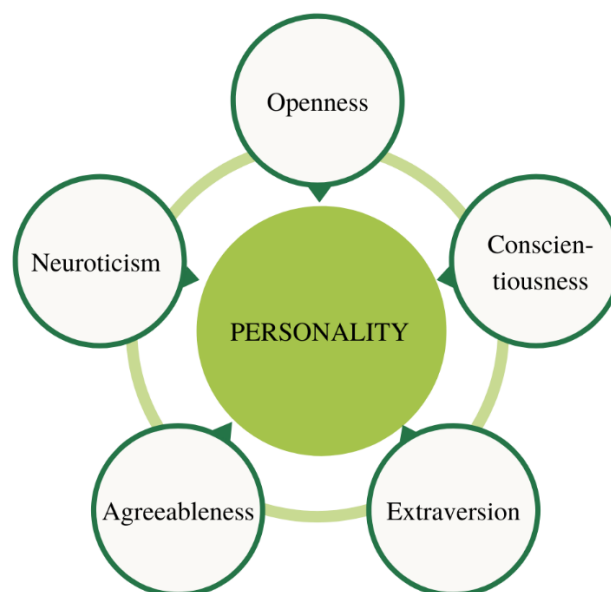
Note. Model based on McCrae & Costa (1999)

The trait **openness** to experience describes people who prefer the new to the conventional (Jani & Han, 2014). People who are open to experience are creative, imaginative, innovative, and flexible in their ideas and feelings (Almlund et al., 2011; John & Srivastava, 1999). A high level of openness, on the one hand, can seem thirsty for knowledge and discovery, but on the other hand, can also seem unpredictable and lose focus (Liu et al., 2017; Wang & Yang, 2007). A personality with a low level of openness exhibits strong persistence, is pragmatic, and prefers facts (Goldberg, 1992; John, 1990).

Conscientiousness describes a person's sense of responsibility and reliability and indicates how detail-oriented and perfectionistic they are (Ross et al., 2009). The more conscientious a person is, the more disciplined and goal-oriented they behave (Jani & Han, 2014). Low

conscientiousness is therefore often associated with flexibility as well as spontaneity and, consequently, can appear somewhat careless and unreliable (Almlund et al., 2011).

Extroversion shows how outgoing or socially active a person is (Almlund et al., 2011; Jani & Han, 2014). Extroverts like to be the center of attention and are characterized by warmth, sociability, assertiveness, activism, and positive emotions (McCrae & Costa, 1990). Excessive extraversion is often described as egocentric and dominant behavior. Low extraversion, on the other hand, is reflected in reticence and in a certain aloofness (Liu et al., 2017).

A person's **agreeableness** is directly related to their empathy (Mowen, 2000). It indicates how friendly and compassionate a person behaves toward others (Ul Islam et al., 2017). Agreeable individuals are warm, caring, and cooperative (Almlund et al., 2011). High levels of agreeableness may be reflected in the form of submissiveness. Individuals with low agreeableness tend to be competitive. In addition, this trait can be used to measure how balanced the personality actually is (Liu et al., 2017; Yoo & Gretzel, 2011).

Finally, **neuroticism** informs how emotionally stable a person is (John & Srivastava, 1999). Accordingly, the trait states how individuals can handle their own emotions (Almlund et al., 2011). Neurotic individuals can often appear stressed and nervous, which, when particularly severe, is reflected in poor physical well-being (Mowen, 2000). Individuals with low neurotic scores tend to exhibit more insecure and unstable behavior (Digman, 1990; John & Srivastava, 1999).

The five-factor model of personality has been empirically tested in several countries and reported in many languages (Cabrera et al., 2006; McCrae & Costa, 1997; Veisson, 2001; Yang & Bond, 1990). It represents a very stable model, as confirmed by the 45-year longitudinal study by Soldz and Vaillant (1999). The personality traits can be identified through self- and third-party assessment using measurement instruments, such as questionnaires, across the lifespan regardless of language or culture (John et al., 2008; McCrae, 2009). Thus, predictions of specific behaviors and value orientations can be made using these trait dimensions (McCrae, 2009; Roccas et al., 2002). In this study, these five traits are used to collect data on consumers' personalities to establish a relationship with their sustainable purchasing decisions of eco-labelled clothing.

Previous literature has offered many explanations for why eco-labels impact sustainable consumer behavior, but none have focused on consumer personality as an influencing factor for ecolabel preference (cf. Section 2.3). A crucial factor for eco-labels to be considered at all is

the SCB of consumers (Thøgersen, 2000). Recent studies have shown that variations in sustainable consumption behavior can to some extent be explained by personality differences (Bosnjak et al., 2007; Fraj & Martinez, 2006; Hirsh, 2010). Using data from a large longitudinal study of the Socio-Economic Panel in Germany, Hirsh (2010) identified a significant positive impact of the personality traits agreeableness and openness on consumers' sustainable attitudes and behaviors. Paetz (2021) as well as Pavalache-Ilie and Cazan (2018) similarly revealed in their studies that sustainable consumers tend to be highly agreeable and open and thus these personality traits can predict environmental behavior. Given these facts, and because agreeable people usually behave compassionately and consequently it is assumed that they do not want to harm the environment, I hypothesized the following:

H2: A higher level of agreeableness has a positive influence on consumers' preferences for eco-labeled clothing.

Considering the literature just mentioned about the positive impact of openness on SCB and because open people prefer the new to the conventional and are thirsty for new approaches such as a sustainable consumption behavior using eco-labels, I additionally formulated the following hypothesis:

H3: A higher level of openness has a positive influence on consumers' preferences for eco-labeled clothing.

Concerning the personality trait extraversion, Hirsh (2010) could not find a significant effect on SCB. Further research shows that extraversion does not have a strong impact on environmental commitment (Markowitz et al., 2012; Milfont & Sibley, 2012; Soutter et al., 2020). However, Winter and Grebitus (2019) argue that, since extroverts are very sociable and outgoing, they are more likely to interact with sustainably oriented people and thus take a social risk by not behaving sustainably. Besides this, Paetz (2021) revealed in her study that extroverted individuals show a higher preference to buy products with a fair trade logo. Based on these facts, I formulated the following hypothesis:

H4: A higher level of extraversion has a positive influence on consumers' preferences for eco-labeled clothing.

For individuals with a high conscientiousness level, Hirsch (2010) found a weak significant positive relationship with SCB in his study. Markowitz (2012) examined that the trait conscientiousness was inconsistently related to pro-environmental behavior. Soutter and collaborators (2020) revealed that conscientiousness is associated with environmental attitudes and behaviors. In addition, Aaker (1997) and Dikcius et al. (2013) identified a positive relationship between conscientiousness and brand personality sincerity. Whereby this sincerity can be elicited in consumers' mind by eco-labels for instance. Due to these facts, and because conscientiousness people are responsible, reliable and detail oriented and therefore might have an eye for eco-labels and appreciate their sustainable intention, I formulated the following hypothesis:

H5: A higher level of conscientiousness has a positive influence on consumers' preferences for eco-labeled clothing.

Regarding the trait neuroticism, Milfont and Sibley (2012) found that a higher environmental score was significantly associated with a lower level of neuroticism. Hirsch (2010) could find a significant but weak relationship between neuroticism and SCB. Besides this, Soutter and collaborators (2020) could conclude from their study that neuroticism had no significant association with pro-environmental behavior or attitudes. In contrast, neurotic persons showed a high preference for fair trade labels in the study of Paetz (2021). In addition, Dhir et al. (2021) observed a positive relationship between people who tend to have a neurotic personality and the preference for labeled products that helped them to recognize sustainable products more easily. His findings were supported by Kvasova's (2015) assumption that neurotic individuals are stressed by environmental problems and therefore want to engage in environmental protection. Based on this contradictory literature, the following hypothesis was formulated:

H6: A higher level of neuroticism has an influence on consumers' preferences for eco-labeled clothing.

2.6 Conceptual Model

Figure 3

The general Research Model
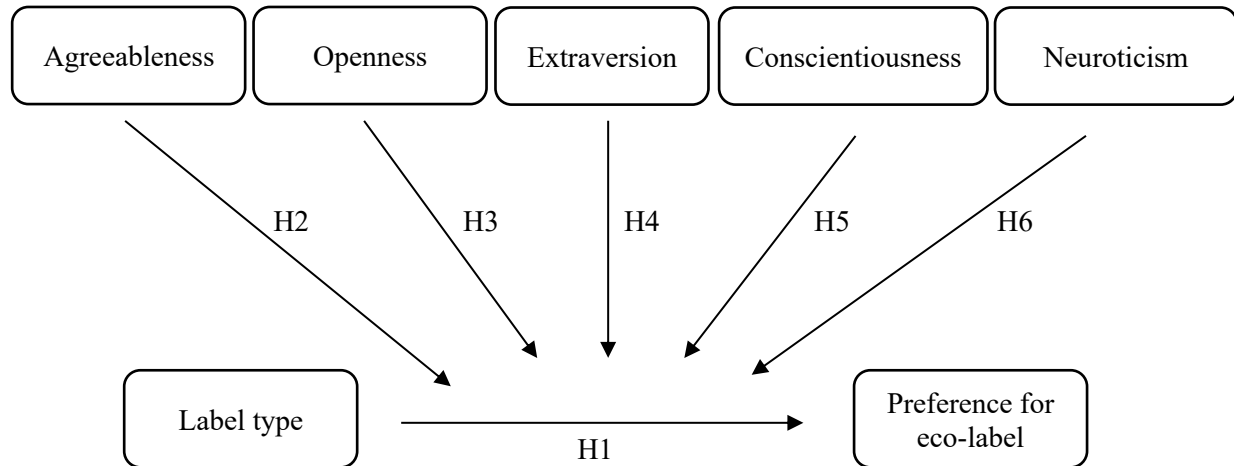
3 Methodology

3.1 Research Strategy and Design

The purpose of this dissertation is to investigate the impact of personality on consumers' preference for eco-labeled clothing. An experiment was designed where the type of label (eco-label, sustainable label and no label) on clothing is the independent variable, preference for eco-labels is the dependent variable and personality traits are the moderators. Due to the already existing broad knowledge about personality, SCB and eco-label, as well as the established relationship between eco-labels and SCB (see Section 2.5), a quantitative research approach was chosen for this study. With this type of approach, objective data collection was possible, and a deductive procedure was used to quantitatively test the hypotheses derived from the literature (cf. Section 2.5) using statistical methods. Thus, by collecting numerical values of a sample with subsequent statistical evaluations and extrapolations, this method can provide insight into real conditions (Bortz, 1984; Raithel, 2008; Reinders, 2011). The evaluation of the data, as well as the collection of the values, was done without interpretation of the researcher. Accordingly, the research results obtained are objective in this sense and the study can be replicated (Schwaiger & Zimmermann, 2009).

The research was designed as a one-time cross-sectional study using a partially standardized online questionnaire with a within-subject design. Using this design, each respondent simultaneously represents his or her own control person, and person-related confounding variables thus have no influence on the dependent variable (Charness et al., 2012). Furthermore, the existing residual variance is relatively low within this approach (Bröder, 2011; Pyka & Furchheim, 2017). A questionnaire is used for this research, as its the object can be verbalized and specific statements of individuals can be recorded by targeted questions (Reinecke, 2014). In addition, the online survey is one of the most useful and important survey instruments in attitude and opinion research. Due to its comprehensive and economical applicability, it is much more cost- and time-efficient than a laboratory study (Reinders, 2011). Furthermore, respondents from all over Germany can participate in an online survey without major obstacles. It is assumed that this study's participants have internet access and thus problems in reaching potential respondents can be reduced (Scholl, 2018). In line with ethical principles of empirical research, this study design can also ensure that social pressure, stress, anxiety, and charm are reduced. Respondents can take the time and privacy they need to complete the questionnaire without an interviewer and in their chosen environment. In addition, the data is immediately available on the server (Wagner & Hering, 2014).

The survey's construction and execution were implemented with the help of the web-based survey tool Qualtrics. In particular, the survey consisted of 43 questions and divided into four parts: (1) introduction; (2) preference for eco-labeled clothing, i.e., measuring the independent variable type and dependent variable preference; (3) Big Five personality test, i.e., examining the individual differences of the moderator personality; and (4) demographic data, i.e., examining the control variables. During the introduction part, the participants were already selected by a demographic question regarding their main residence. Meaning, only participants with a German main residence were admitted to the actual questions. Since the study only examines consumer behavior on the German market, this pre-selection avoided a later exclusion and probands did not have to fill out the questionnaire "in vain". In addition, questions were presented in a manner that required respondents to answer them before moving forward to the next question. This avoided the emergence of missing values as no questions could be skipped. Furthermore, the six questions at the second part of the survey were randomized to reduce order bias and increase the quality of data. To monitor whether participants read the questions thoroughly, an attention check was also included in the third part. There, respondents were told which answer they had to tick for the question to assess random clicking. In the construction of

the questionnaire, I tried to create the best possible basis for the study by aiming for simplicity and comprehensibility of the individual questions to avoid erroneous surveys due to misunderstandings (Glantz & Michael, 2014). Furthermore, the appropriate technical implementation of the online questionnaire was secured by a number of self-tests I collected in advance (Reinecke, 2014; Weichbold, 2014). The complete questionnaire is provided in Appendix A.

3.2 Measures

In the context of the survey, the aim is to measure facts as accurately and unbiased as possible in measurable quantities. An important factor influencing the quality of the obtained data and the resulting research findings is the use of suitable measurement scales. However, since it is difficult to make behavioral or psychological states directly measurable by using a single question, the development and application of suitable measurement instruments is necessary (Schwaiger & Zimmermann, 2009). Simple quantifiable variables, such as the age, can generate a completely measurable statement through single targeted questions. In contrast, latent variables, such as the personality of consumers, must be operationalized. Thus, for variables that are not directly measurable, suitable indicators (manifest variables) were created to enable measurement (Ebert & Raithel, 2009). Furthermore, to obtain an error-free measurement of the object of interest, three quality criteria must be fulfilled: (1) objectivity, (2) validity and (3) reliability. The objectivity of this study is given by the quantitative analysis of the data. To ensure the highest possible reliability and validity of the measurement, reputable and proven scales were used for the operationalization. These scales have been frequently cited in other works on similar topics and have always demonstrated high validity and reliability.

3.2.1 Dependent and independent variable
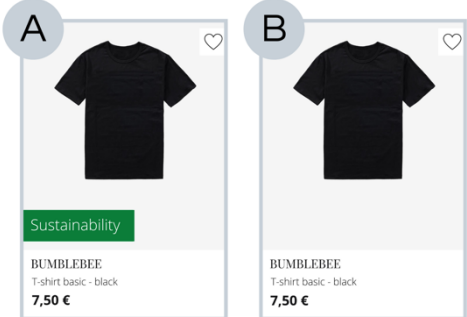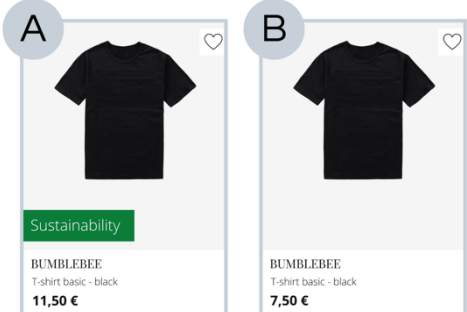
To analyze consumer preference for eco-labeled clothing and thus the effect of the independent variable label type (eco-label, sustainable label, no label) on the dependent variable preference, an online-based choice experiment was designed. In this experiment, a t-shirt purchase decision was simulated to analyze the relative influence of eco-labels on the consumer's choice when purchasing a t-shirt. As a research object, a black cotton t-shirt was used, since this is offered as a standard product appealing to men and women of all ages. More specifically, it was explored how influential the label type is in the purchase decision when the consumer must choose between the following two: label type (eco-label, sustainable label, no label) and price. The literature reports that consumers primarily consider these attributes when making sustainable purchasing decisions (Brach et al., 2018; Meis-Harris et al., 2021).

To evaluate the importance of label type and price, the respondents were asked to select their most preferred option in six trials. For this purpose, respondents used a scale with five preferences: "I would certainly prefer A", "I would probably prefer A", "I would be undecided between A and B", "I would probably prefer B" and "I would certainly prefer B". A and B referred to a picture respondents could see of two visually identical black cotton t-shirts, as mentioned above. These two t-shirts varied only with respect to two attributes: (1) label type (the GOTS label which represents eco-labels, the sustainable label which represents the labelling with the term "sustainability", or no label) and (2) the price (base price or base price plus sustainability surcharge).

The eco-label GOTS was chosen as an exemplary label, as it is the best-known eco-label for clothing among German consumers (Utopia, 2019). The term sustainability was also investigated, as many fashion companies, such as the largest online fashion retailer in Germany, Zalando, only advertise with this term (Rösch, 2021). The inclusion of this attribute is intended to determine whether consumers really prefer eco-labels in their decisions, or whether a label that simply bears the term "sustainability" is sufficient for them. In terms of price, the t-shirts differed by a sustainability surcharge of 4€. The base price is 7.50€ which represents the average price for a cotton t-shirt in Germany (Handfield et al., 2020). The base price plus the sustainability surcharge is therefore 11.50€. The reason for including a sustainability surcharge and the associated price difference is the more expensive pricing of sustainable products, whereby German consumers would pay an average price surcharge of 4€ for a sustainable t-shirt (Arnett, 2020). In addition, a sustainability price surcharge can also have a negative influence on consumers' SCB thus the inclusion of the price premium can reveal whether this could also be decisive for the preference for eco-labelled clothing (Bălan, 2020). A total of six choices were created, which can be seen in Table 2.

Table 2

The six choices in the Choice Experiment

Trial number and description	Pictures presentet to participants
1. Option A: eco label with base price Option B: no label with base price	
2. Option A: eco-label with base price plus sustainability surcharge Option B: no label with base price	
3. Option A: sustainable with base price Option B: no label with base price	
4. Option A: sustainable label with base price plus sustainability surcharge Option B: no label with base price	

5. Option A: eco label with base price

    Option B: sustainable label with base price
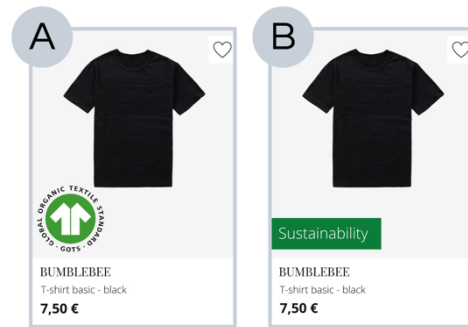
6. Option A: eco-label with base price plus sustainability surcharge

    Option B: sustainable label with base price
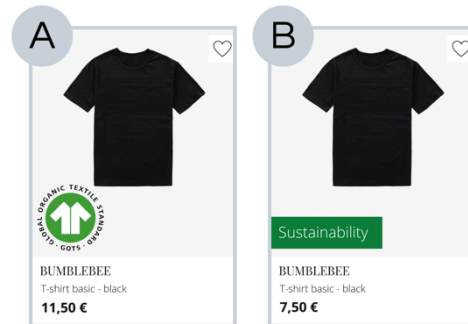
Note. Based on Folkvord et al. (2020)

The six choices were presented randomly to the respondents to avoid bias due to sequence effects. Additionally, the eco-label GOTS and the meaning of the term "sustainability" were not explained to the respondents to avoid experimental bias and priming problems. Furthermore, a fictitious brand name "Bumblebee" was used to exclude distortions regarding brand affinities. The illustration of the t-shirts and their attributes were based on the Zalando online store to create a realistic choice during a purchasing situation. Using econometric analyses of the choice decisions between the t-shirts with different "sustainability profiles", it can be estimated to what extent the presence of an attribute or the price to be paid leads the participants to a stronger or weaker preference for eco-labeled clothing and their marginal willingness to pay. For the analyses, numerical values for the preference's tendency towards option A or option B are first defined. Thus, values were assigned from 1 ("I would certainly prefer A") to 5 ("I would certainly prefer B"). The value 3 codes the neutral answer "I would be undecided between A and B".

3.2.2 Moderator variable

To measure consumer's personality traits, the NEO Five-Factor Inventory 30 (NEO-FFI-30) questionnaire by Körner (2008) was used. This questionnaire represents an abbreviated version based on the NEO Five-Factor Inventory (NEO-FFI) by Costa and McCrae (1989). The

NEO-FFI is a globally recognized procedure for assessing the five Big Five personality traits: neuroticism, extraversion, openness, agreeableness and conscientiousness. The NEO-FFI measure, which is based on a robust and at the same time differentiated factor model, was also able to establish itself quickly in German-speaking countries after its translation within only a few years (Borkenau & Ostendorf, 1993; Körner et al., 2008). However, an investigation based on a German population sample ($N = 1908$) revealed problems with the use of the original version by Costa and McCrae (Körner et al., 2002). Insufficient characteristic values as well as partly unsatisfactory scale values and an uneconomical handling due to the length of the questionnaire demanded a more economical short version with better psychometric properties (Körner et al., 2008). The original version of the questionnaire with a total of 60 items and 12 items for each of the five personality traits was consequently shortened (Borkenau & Ostendorf, 1993).

The short version NEO-FFI-30 consists of only 30 items, with 6 items assigned to each subscale (personality traits). The items are formulated as statements and participants rated their degree of agreement on a five-point Likert scale from 1 ("strongly disagree") to 5 ("strongly agree"). Some sample items of the individual subscales are shown in the following: neuroticism: "I often feel tense and nervous", extraversion: "I like to have a lot of people around me", openness: "I am inspired by the motifs I find in art and nature", agreeableness: "I try to act considerately and sensitively", and conscientiousness containing the item: "When I make a commitment, I can definitely be relied on". Thus, the short version NEO-FFI-30 seemed appropriate for this dissertation because it forms a measurement instrument that is even more suitable as a broadband diagnostic than the original version. In addition, the shortening of the questionnaire length also promotes motivation to participate as the time to conduct the test is considerably reduced (Körner et al., 2008).

The Big Five personality traits are then calculated by first assigning the numerical values to the level of agreement, from 1 ("strongly disagree") to 5 ("strongly agree"). The value 3 encodes a neutral response. For items with the opposite polarity, such on the agreeableness item "Some people think I am selfish and complacent", the numerical value is reversed. Subsequently, the mean value for each item is calculated, then the items relating to the respective personality trait are summed and divided by the number of items belonging to the corresponding trait. This method is the most widely used in the personality literature and has the advantage of characterizing consumer personality in five clearly identifiable traits (Körner et al., 2008). The NEO-FFI-30 also shows high and good reliability values with an internal consistency of $\alpha = .81$ for neuroticism, $\alpha = .72$ for extraversion, $\alpha = .67$ for openness, $\alpha = .75$ for agreeableness and $\alpha = .78$ for conscientiousness (Körner et al., 2008). Equally good scale reliabilities could be

obtained in this study with α = .79 for neuroticism, α = .75 for extraversion, α = .73 for openness, α= .73 for agreeableness and α = .78 for conscientiousness.

3.2.3 Control variables

In this study, the following control variables were selected: age, gender, highest level of education and income. According to researchers such as Debast et al. (2014), Bulut, Cimrin, and Dogan (2017) and Jensen (2015), these control variables were included because they could influence the dependent variable preference and the moderating variable personality.

Age: Literature shows that age has an influence on both SCB and personality. According to Debast et al. (2014), the expression of personality traits such as neuroticism, extraversion and openness seems to decrease with age, while agreeableness and conscientiousness tend to be more expressed at older ages. Bulut, Cimrin and Dogan (2017) also discovered that consumers from the Baby Boomer generation demonstrated a higher level of SCB than Generation Z. To measure the age variable, participants could choose between the following age ranges: (1) "under 18", (2) "between 18 and 24", (3) "between 25 and 40", (4) "between 41 and 56", (5) "between 57 and 76", (6) "76 and older", and (7) "N/A" (no answer). Since in practice marketers like to assign their customers to segments respective to the different generations, to deal with their customers more uniformly and clearly (Gillian, 2011), the participants were assigned to the following generations: (1) Generation Z: 1997-2012, (2) Generation Y: 1981-1996, (3) Generation X: 1965-1980, (4) Generation (Baby) Boomer: 1946-1964 und (5) Generation Silent: 1928-1945 (Dimock, 2019).

Gender: The variable gender is measured categorically. Participants could choose between four possible expressions: (1) "female," (2) "male," (3) "diverse," and (4) "N/A". Studies show that gender has an influence on SCB, with females having a higher tendency to SCB than males. Furthermore, it has been identified that gender has an influence on personality, with females having a higher tendency to be agreeableness than males (Luchs & Mooradian, 2012).

Educational level: The highest educational level could be selected by the participants from five alternatives: (1) "High school diploma", (2) "apprenticeship", (3) "university degree", (4) "doctoral degree", and (5) "N/A". This variable was included because the personality traits openness and conscientiousness can be related to educational attainment according to researchers such as Jensen (2015).

Income: Income is measured per month and in the following categories: (1) "less than 1050€", (2) "between 1050€ and 1410€", (3) "between 1420€ and 2640€", (4) "between 2650€ and 4400€", (5) "more than 4400€" and (6) "N/A". This grouping of income was adopted from the 2017 study "The Middle Class in Germany" by the Institution of the German Economy (Niehues, 2017). Income was examined as a control variable, since Chekima et al. (2016) claim that income does not affect SCB, whereas Brach (2018) argues that price is a barrier to SCB.

3.3 Pretest

To identify and eliminate any difficulties that might arise before the actual data collection, a pretest was conducted (Baur & Blasius, 2014). The pretest ensured the quality of the questionnaire and minimized the dropout rate (Jackob et al., 2009). More precisely, the clarity and comprehensibility of the questions and answer options were tested and it was examined whether all possible answers were covered (Palmieri, 2017). The technical implementation, as well as the intended analyses, was also tested for optimal performance (Weichbold, 2014). The pretest was conducted in two phases: (1) cognitive interviews ($N = 10$, 50% female and 50% male; M age = 37.2 years; SD = 16.5) and (2) implementation under the planned conditions ($N = 20$; 65% female and 35% male, M age = 36.45 years; SD = 17.2). For both phases only German participants were recruited via social networks. In phase one (1), the think-aloud method was applied, and additional questions were asked regarding the understanding and interpretation of the questions, the estimated duration of the questionnaire, their motivation to complete it and the logic of the entire survey. During the second phase (2), respondents filled out the questionnaire truthfully and reported any difficulties or misunderstandings they noticed during the process.

Based on the pretest, the required time to complete the questionnaire and the comprehensibility of the questions could be confirmed. A reality check question regarding the choice experiment showed that the presentation of the t-shirt during an online purchase was realistic and understandable. Additionally, technical implementation difficulties, such as the size of the attributes on the t-shirt images were revealed and improved on the different end devices. To avoid unnecessary breakoffs due to selecting the wrong target group, some comprehensibility adjustments were made. Therefore, information about the target group (consumers on the German market) was added at the survey instruction.

3.4 Procedure

After the pretest, the field phase took place, in which the participants completed the questionnaire under real conditions in the defined time interval from March 12, 2022 to March 21, 2022. Before the recruitment of the sample could occur, a target population had to be defined first (Jackob et al., 2009). The research question of this thesis refers to the entire German population with purchasing power. Accordingly, it is assumed that every participant who has access to this survey belongs to the population with purchasing power. In selecting a sample for this target group, care was taken to recruit a relatively large number of participants to draw a valid conclusion from the data. Due to limited resources, this study is a non-representative convenience sample. Despite this, an attempt was made to cover a broad spectrum of German shoppers to obtain a wide socio-demographic variance. Participants were recruited via different distribution channels such as WhatsApp, Facebook, via email, etc. To reach a broad mass, the online survey was sent to fellow students, friends, relatives, and work colleagues. Due to the anonymity of this survey, the respondents received a universal link to participate in the questionnaire.

After opening the link, the participants received instructions about the study, the associated behavioral and data protection regulations. At the end of the instruction, the respondents had to accept a declaration of consent to begin with the actual study. The questionnaire was then completed by the participants as described in Section 4.1. The study ended with an acknowledgement of the recorded responses, a thanks to the participants for their contribution, and the researcher's contact information for any questions or suggestions. The completion of the questionnaire took the participants about six minutes on average. All data collected was analyzed using SPSS IBM version 28 to test the hypotheses. For meaningful analysis, the data were prepared by cleaning the data set, reversing negatively worded items, and calculating overall means for the scales of interest.

3.5 Sample

Within the specified time interval of ten days, a total of 129 participants validly completed the questionnaire with a completion rate of 94.5%. In terms of gender distribution, female participation was stronger with 58.9% female and 41.1% male participants. The participants were all older than 18 years. Most respondents belong to Generation Y (1981-1996) with 55.8%, followed by Generation Z (1997-2012) with 18.6%, as well as Generation Baby Boomer (1946-1964) with 14% and Generation X (1965-1980) at 10.9%. Only a very small percentage

represented the Silent generation (1928-1945) with 0.8%. In terms of educational qualifications, a clear majority of respondents with 72.9% stated that they had a university degree. Subsequently, 17.1% reported that they have an apprenticeship, 4.7% stated that they have a high school diploma and 3.1% have a doctorate. A small percentage of respondents (2.3%) declined to comment on this issue. The average monthly income (net) varies from: less than 1050€ (22.5%), between 1050€ and 1410€ (7%), between 1420€ and 2640€ (34.1%), between 2650€ and 4400€ (26.4%) and more than 4400€ (6.2%). The percentage of participants who refused to answer this question was 3.9%.

4 Results

4.1 Data preparation and cleaning

Before the statistical analysis was run using the program IBM SPSS Statistics, the data was first cleaned and prepared. For this purpose, the data was exported from the online survey tool Qualtrics to the statistics program SPSS. Of the 145 questionnaires received, ten participants were eliminated due to incomplete data. Another four participants were removed for missing the target group-relevant characteristic "German residence" and four respondents were excluded because they did not pass the attention check. There was no need to treat missing values since all items were marked as mandatory. Consequently, 16 respondents were excluded and 129 participants formed the total valid sample. Furthermore, the interval scale level was selected for the scales preference, personality trait and control variables (see Section 4.4), in which a numerical value was assigned to the response options. Additionally, the items of the personality scale with inversed scores were reversed here according to the scale assignment of the manual (Körner et al., 2008). Subsequently, the five personality traits were combined with their six associated items and aggregated to their mean values.

4.2 Descriptive analysis

Descriptive statistics are presented to provide a better overview of the data. Table 3 shows the minimum and maximum scale sum value of the respective measurement instruments, as well as mean values (*M*) and the standard deviations (*SD*). In the following, the entire respondent data set ($N = 129$) is considered.

Table 3

Descriptive Statistics of the respective measurement instruments

	Minimum	Maximum	*M*	*SD*	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Eb vs. Nb	1.00	4.00	1.26	0.63	2.81	0.21	8.08	0.42
Es vs. Nb	1.00	5.00	2.18	1.23	0.87	0.21	-0.31	0.42
Sb vs. Nb	1.00	4.00	1.46	0.86	1.91	0.21	2.69	0.42
Ss vs. Nb	1.00	5.00	2.34	1.25	0.61	0.21	-0.76	0.42
Eb vs. Sb	1.00	5.00	2.32	1.31	0.72	0.21	-0.63	0.42
Es vs. Sb	1.00	5.00	2.95	1.38	-0.03	0.21	-1.30	0.42
Neuroticism	1.00	4.67	2.41	0.86	0.42	0.21	-0.33	0.42
Extraversion	2.00	5.00	3.69	0.68	-0.45	0.21	-0.28	0.42
Openness	1.67	5.00	3.65	0.76	-0.37	0.21	-0.65	0.42
Agreeableness	1.67	5.00	4.02	0.71	-0.86	0.21	0.47	0.42
Conscientiousness	1.33	5.00	4.29	0.61	-1.53	0.21	4.13	0.42

Note. N=129, Eb="eco-label with base price", Es="eco-label with base price plus sustainability surcharge", Sb="sustainable label with base price", Ss="sustainable label with base price plus sustainability surcharge", Nb= "no label with base price"

Descriptively, it is interesting to see that the mean values for the choice experiment vary greatly depending on the six choices. It is important to note that the minimum reflects the strong preference for option A described by the left abbreviation, such as "Eb" in "Eb vs. Nb". The maximum reflects the strong preference for option B described by the abbreviation on the right, such as "Nb" in "Eb vs. Nb" (see Table 3).

To gain insight into the structure of the choice experiment data, additional measures of skewness and kurtosis were examined (see Table 3). To follow a normal distribution both values should be around zero (Field, 2013). In addition, distribution graphs of six histograms with normality curves plotted were formed for visual inspection (see Appendix B). For all choices where respondents had the option between a labeled t-shirt or a no labeled t-shirt, there are more values on the left end (label side) of the distribution.

However, since a normal distribution can be assumed for a sample size above 30 (which is the case in this study), further analyses are robust to a violation of the normality assumption due to the central limit theorem (Blanca et al., 2017; Bortz & Schuster, 2010; Kähler, 2004).

To examine linear relationships with their direction and strength between the different continuous variables, the Pearson correlation coefficient *r* was used. Moreover, to determine whether any correlation that may occur between the variables is significant, the significance level was tested with the criterion: $p < .05$. The bivariate Pearson correlations of the entire data set are shown in the following Table 4.

Table 4

Correlations between all variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Eb vs. Nb	r	1														
	p															
2. Es vs. Nb	r	**0.25**	1.00													
	p	0.004														
3. Sb vs. Nb	r	0.39	0.15	1.00												
	p	0.000	0.087													
4. Ss vs. Nb	r	**0.18**	**0.74**	0.39	1											
	p	0.046	0.000	0.000												
5. Eb vs. Sb	r	**0.19**	**0.21**	-0.15	-0.02	1										
	p	0.036	0.019	0.087	0.831											
6. Es vs. Sb	r	0.15	**0.60**	-0.08	**0.39**	**0.54**	1									
	p	0.086	0.000	0.379	0.000	0.000										
7. C	r	-0.09	0.03	-0.14	-0.08	-0.05	0.044	1								
	p	0.303	0.774	0.105	0.375	0.583	0.621									
8. E	r	0.02	-0.12	0.01	-0.13	-0.07	-0.09	**0.20**	1							
	p	0.826	0.180	0.884	0.150	0.450	0.291	0.023								
9. O	r	**-0.22**	**-0.22**	-0.06	-0.17	-0.13	**-0.21**	-0.07	0.09	1						
	p	0.013	0.013	0.516	0.051	0.143	0.019	0.464	0.331							
10. A	r	-0.02	**-0.19**	-0.10	-0.15	0.00	-0.09	0.14	-0.04	0.07	1					
	p	0.783	0.028	0.238	0.088	0.980	0.298	0.118	0.693	0.460						
11. N	r	0.11	**0.20**	0.02	0.05	0.08	0.04	**-0.24**	**-0.25**	-0.01	0.06	1				
	p	0.231	0.021	0.864	0.598	0.347	0.635	0.007	0.004	0.889	0.509					
12. G	r	0.06	0.08	0.14	0.11	0.05	0.08	**-0.27**	-0.11	0.06	**-0.26**	-0.13	1			
	p	0.489	0.344	0.105	0.204	0.573	0.374	0.002	0.196	0.526	0.002	0.132				
13. Ag	r	-0.11	**-0.30**	-0.04	**-0.25**	-0.05	-0.10	**0.20**	0.01	-0.06	0.07	**-0.31**	0.09	1		
	p	0.208	0.001	0.641	0.004	0.606	0.262	0.027	0.891	0.512	0.464	0.000	0.334			
14. ED	r	0.02	-0.01	0.01	-0.04	0.05	-0.07	0.17	-0.02	**-0.18**	0.12	-0.03	0.00	**0.38**	1	
	p	0.820	0.948	0.941	0.632	0.562	0.424	0.054	0.830	0.038	0.164	0.730	0.958	0.000		
15. I	r	0.01	-0.10	0.08	-0.06	-0.09	-0.11	0.01	0.02	0.07	-0.04	**-0.26**	.219[*]	**0.40**	0.13	1
	p	0.876	0.278	0.368	0.491	0.290	0.201	0.950	0.857	0.422	0.629	0.003	0.013	0.000	0.144	

Note. N = 129, Eb = "eco-label with base price", Es = "eco-label with base price plus sustainability surcharge", Nb = "no label with base price", Sb = "sustainable label with base price", Ss = "sustainable label with base price plus sustainability surcharge", C = Conscientiousness, E = Extraversion, O = Openness, A = Agreeableness, N = Neuroticism, G = Gender, Ag = Age, ED = Educational Degree, I = Income

4.3 Hypothesis Test

In the present study, I hypothesized that there is a general preference for purchasing eco-labels when consumers have a choice between eco-labeled and no labeled clothing during their purchase decision. Thus, considering only the results of the trials that compared the eco-label with no label option, a one-sample t-test was run to determine whether the preferences score in recruited subjects was lower (which means preferences towards eco-labels) than the middle of the scale, defined as score of 3.0 (which means that consumers could not decide between eco-labels and no labels; see Appendix C). The preference score for eco-label vs. no label was statistically significantly lower by 1.74 on average, 95% CI [1.63, 1.85] for the same price round and 0.82, 95% CI [0.61, 1.04] for different price round, than the middle of the scale, $t(128) = -31.52$, $p < .001$ for the same price and $t(128) = -7.57$, $p < .001$ for the different price. Thus, there was support for Hypothesis 1. Also noteworthy was that there was a significant preference for the labeled option for almost all choices, except for the choice eco-label vs. sustainable label with a price premium for the eco-label option. For more details, see Appendix C.

Furthermore, it was hypothesized that the preference to buy clothes with eco-labels is moderated by the five personality traits: neuroticism, extraversion, openness, agreeableness and consciousness. To validate these hypotheses, three repeated measures analyses of covariance (ANCOVA) were conducted to investigate the impact of price and personality on consumers preferences for eco-labels. Repeated measures are used because the same participants took part in all conditions of the choice experiment. Accordingly, the dependent variable for the three ANCOVAs were (1) eco-label vs. no label, (2) sustainable label vs. no label and (3) eco-label vs. sustainable label, respectively. The independent within-subjects variable was price (same price vs. different price). As there were only two within-subjects conditions (same price vs. difference price) in each ANCOVA, sphericity was always assumed (Field, 2013). The Big Five personality traits and the control variables (gender, age, education degree and income) were included as covariates.

Eco-label vs. no label

In this section the choice between eco-labels vs. no labels with the same and different price is considered (see Appendix D). Even though the preference for the eco-label was higher in the same price condition ($M = 1.26$, $SD = 0.63$, $N = 129$) than in the different price condition ($M = 2.18$, $SD = 1.23$, $N = 129$), the results revealed no main effect of price, $F(1,118) = 3.68$, p

= .058, η^2_p = .03. Thus, when a price surcharge was added to the eco-label option, there was no overall impact on participants' preference, which is in line with the literature.

In terms of Hypotheses 2-6 only one personality trait had a direct impact on eco-label preference when choosing between the eco-label and a no label t-shirt: openness, $F(1, 118)$ = 10.25, p = .002, η^2_p = .08, such that with increasing openness, preference for the eco-label also rose (β = -0.20, p = .008 in the same price condition and β = -0.33, p = .016 in the different price condition). The difference in price was not significant for openness, $F(1,118)$ = 0.80, p = .372, thus openness appears to leads to higher preference for eco-labels regardless of the price.

The trait conscientiousness showed just a significant interaction with price, $F(1,118)$ = 4.95, p = .028, η^2_p = .04. In the same price condition, conscientiousness had no effect on the preferences (β = -0.06, p = .532), whereas in the different price condition, as conscientiousness increased, so did the preference for the no label (β = 0.36, p = .049). Thus, conscientiousness had no general impact, but when there is a price difference, people higher in conscientiousness tend to prefer the no label.

Finally, agreeableness interacted with price, $F(1,118)$ = 4.19, p = .043, η^2_p = .03, such that, in the same price condition, as agreeableness increased, so did the preference for the no label option (β = 0.03, p = .758), while in the different price condition, as agreeableness increased, so did the preference for the eco-label option (β = -0.29, p = .051). Although this difference between conditions was significant, the influence of agreeableness on preferences was not significant by itself in either of the two conditions. Therefore, agreeableness has no influence on the preference for the eco-label. Thus, there was support for Hypothesis 3 and no support for Hypothesis 2,4,5 and 6.

As for the control variables, age had a significant main effect on eco-label preferences, $F(1, 118)$ = 11.85, p = .001, η^2_p = .09, such that as age increased, so did the preference for the eco-label (β = -0.09, p = .192 for the same price condition and β = -0.45, p = .001 for the different condition). A significant interaction of age with price, $F(1,118)$ = 7.06, p = .009, η^2_p = .06, confirms the effect is significantly stronger in the same price condition than in the different condition, in line with the fact that there was a significant effect in the different price condition, but not on the same price condition. Thus, age had an overall impact on preference for the eco-label, but it was mostly driven by older people preferring the eco-label more than young people when the eco-labelled product was more expensive than the not labelled product. This is in line

with previous literature (Bulut et al., 2017). No other control variable had a significant impact on preferences.

Sustainable label vs. no label

Within this section, the choice between sustainable label and no label with equal and different price is examined (see Appendix E). Results show a main effect of the price, $F(1,118) = 9.94$, p = .002, η^2_p = .08. Thus, the preference for the sustainable label was higher in the same price condition ($M = 1.46$, $SD = 0.86$, $N = 129$) than in the different price condition ($M = 2.34$, $SD = 1.25$, $N = 129$). Accordingly, if there was a price surcharge on the sustainable label, participants preferred it slightly less, which is consistent with the literature.

In analyzing the impact of personality traits, results show that no personality trait had an impact on the sustainable-label choice (all main effects and interactions with $p > .07$). Thus, personality had no impact on preference when the sustainability label was a generic label instead of a known eco-label.

Interesting to see is that for the control variables, again age had a significant main effect on preferences, $F(1,118) = 5.9$, $p = .017$, $\eta^2_p = .05$. Thus, when age increased, so did the preference for the sustainable label ($\beta = -0.07$, $p = .503$ for the same price condition and $\beta = -0.41$, $p = .003$ for the different price condition). A significant interaction of age with price, $F(1,118) = 6.48$, $p = .012$, $\eta^2_p = 0.05$, confirms the effect is significantly stronger in the different price condition than in the same price condition, replicating the results of the eco-label vs. no label conditions. Hence, age had an overall effect on the preference for the sustainability label, but mainly by the fact that older people preferred the sustainability label in the different price condition more than young people. This is in line with the literature (Bulut et al., 2017). No other control variable had a significant impact on preferences.

Eco-label vs. sustainable label

For this section, the choice between eco-label and sustainable label with equal and different prices is investigated (see Appendix F). Even though the preference for the eco-label was a bit higher in the same price condition ($M = 2.32$, $SD = 1.31$, $N = 129$) than in the different price condition ($M = 2.95$, $SD = 1.38$, $N = 129$), the results indicate no significant main effect of the price, $F(1,118) = 0.63$, $p = .428$, $\eta^2_p = 0.01$. Thus, participants were not willing to pay a higher price for the more informative eco-label than for the general sustainable label, which is in line with the literature.

The results in terms of personality traits were that only the personality trait openness had a direct impact on the eco-label preference, $F(1,118) = 4.24$, $p = .042$, $\eta^2_p = 0.03$. However, in the same price condition, openness had no effect on the preferences ($\beta = -0.21$, $p = .199$), whereas in the different price condition, as openness increased, so did the preference for the eco-label ($\beta = -0.38$, $p = .023$). Although the interaction was not significant $F(1,118) = 1.19$, $p = .277$, the results show openness led to higher preference for eco-label comparing to sustainable label when there is a price surcharge for eco-label. Thus, there was partial support for Hypothesis 3.

Regarding the control variables, results show that no control variable had an impact on the eco-label choice (all main effects and interactions with $p > .10$).

5   Discussion

5.1   Interpretation of the Results

As sustainable fashion, and with it the use of eco-labels, continues to attract the attention of researchers and practitioners alike, this thesis sought to determine whether consumer personality might be a predictor of preference for eco-labeled fashion.

First, I hypothesized that eco-labels have an influence on consumers' clothing purchase decisions when they must decide between eco-labeled and no labeled clothing. In accordance with several other studies (Leitherer, 2019; Taufique et al., 2019; Thøgersen, 2000) the conducted test showed that in this choice set, eco-labels have a significant positive influence on clothing purchase decisions. Based on this, Hypothesis 1 could be confirmed.

Moreover, in the choice set sustainability label vs. no label, such significant effect can also be observed with respect to the sustainability label. Consumers therefore always prefer labels more than no labels, possibly because they trust them more and may also provide an indication of quality for many (see Section 2.4). When choosing between eco-label vs. sustainable label, a significant preference for the eco-label could only be found for the same price condition. Consumers value the eco-label more than the sustainable label at the same price, but at a higher price, there is apparently no more significant added value for consumers.

Furthermore, I argued that the level of preference for labelled clothing is moderated by consumers' personality. The effect was hypothesized to be stronger for higher levels of all Big

Five personality traits, with the exception of neuroticism, here it was only tested whether there is an interaction at all. My analysis revealed that with a higher level of the personality trait openness, a stronger preference for eco-label can be expected when the choice is between eco-label and no label, regardless of whether a price difference is present or not. Moreover, openness also has a positive effect on preference for eco-labelled clothing when consumers have a choice between eco-labels with a price surcharge and labels with the term sustainability. Regarding the choice between labels with the term sustainability and no label, openness has no significant influence. This could be since people who are very open find new approaches more exciting and prefer them to the conventional, such as clothing eco-labels instead of the conventional clothing without. In relation to the labels with the term sustainability, the preference for eco-labels only when they are more expensive could be related to the perception that expensive means better. In summary, this means that Hypothesis 3 could be confirmed. Considering the other hypotheses, Hypothesis 2, 4, 5 and 6 could not be confirmed, since no examination has shown that agreeableness, extraversion or conscientiousness have a positive influence or that neuroticism has an influence on the preference of eco-labelled clothing.

However, it was interesting to see that the control variable age influenced the preference for eco-labeled and sustainable labeled clothing. With higher age, the positive effect on preference for labeled products increased. Reasons for this could be on the one hand the income, since it could be assumed that older people earn more than younger people and therefore buy more consciously and pay more attention to high-quality products. Whereby again the belief expensive is better could be taken into consideration. Since this effect does not occur when choosing between eco-label and sustainable label, this may indicate that the preference for these individuals is simply towards labels that show sustainability but do not value eco-label over sustainable label.

5.2   Practical Implications

This research results in a few practical implications. First, eco-labels matter. The choice experiment showed that when consumers had a choice between eco-labels and no label, the affinity for eco-labels was so strong that even a higher price for eco-labels did not reverse their preference. Consequently, fashion companies competing with non-labeled clothes could gain a competitive advantage by labeling their sustainable goods with eco-labels. The same applies to the labeling of goods with the term sustainability. This is also an important factor in making sustainable clothing more appealing to companies, since even a possible price increase of products due to the sustainable conversion will attract consumers more than a product without a

sustainable label. In the case of competing products with eco-label and label with the term "sustainability", a competitive advantage could only arise if the product price is the same since no eco-label preference appeared when there was a price surcharge for eco-label.

Regarding the personality of consumers, companies advertising with eco-labels and competing with products without such labels can focus their marketing strategy strongly on target groups with the trait openness, as they prefer eco-labels to products without such labels, irrespective of price. Target groups with an older age can also be focused on, if the products with eco-labels have a higher price than the competing products without sustainable label. Fashion companies whose target groups are already people with a strong openness or elderly could consider introducing eco-labels to gain an advantage and to address their target group even better.

In the case of fashion companies with competitors who label their clothing with the term sustainable, target groups with a high degree of openness should be addressed. Besides this a higher price for the eco-label products should be used to secure advantages, as this is decisive for the preference in this case.

5.3 Limitations and further research

As with all research, this work is subject to some limitations. Although the quantitative research approach provides a good basis for the examined topic, this method only refers to areas that are already known or assumed. Thus, only a limited state of knowledge can be gained (Kromrey, 2002). Therefore, a qualitative approach could uncover unexplored indicators of preference for eco-labeled clothing, not just personality or the covariates studied, and thereby provide additional value. In addition, while quantitative research can provide an estimate of behaviors, it tends to be very vague due to the attitude-behavior gap (Sheeran & Webb, 2016). A linked observational study could be used to test the behaviors reported by the subjects.

Regarding the sample, an attempt was made to generate a broad and large sample of the entire German population with purchasing power, which is however not representative due to time constraints and the arbitrary selection procedure. To obtain a more representative and meaningful study, further longitudinal research with a representative population would be useful. In addition, it would be interesting to investigate other nationalities regarding their personality and eco-label preference for clothing, since eco-labels are not only widespread in Germany.

In addition, there are concerns about the external and internal validity of the study. The choice experiment was only a fictional purchase situation and replication in a real-world setting could lead to different results. Moreover, the experiment was only tested in the context of an online purchase with just one sample eco-label. Consequently, some participants may not have been able to identify with the situation or/and the label, as they may have been looking for clothing more offline or simply did not know the label. However, adjustments were made to provide a realistic situation as close as possible by including a reality check in the pretest. Furthermore, there are boundaries in testing with online questionnaires, for example, the limits of interest and concentration of the participants. Thus, there is no control whether participants are sufficiently engaged with the questionnaire or whether personal and situational factors influence them and thus, for example, due to low attention, they provide false information. For further investigations, it is therefore recommended to check the awareness of eco-labels used and the reality of the scenario regarding offline buyers. Furthermore, additional attention questions can also help to minimize the falsification of the measurement results.

Considering the measurement of personality using the NEO-FFI-30, this is widely acknowledged in Germany as a valid short version of Costa and McCrae's well-known measurement instrument and has been used in several studies (Hess et al., 2017; Körner et al., 2008; McCrae & Costa, 1987; Randler et al., 2017). Despite this, some researchers see the need for further research beyond the current five-factor model with seven or even eight factors (De Raad & Barelds, 2008; Hogan & Hogan, 2007; Saucier, 1997). This issue also needs to be investigated in further research to obtain more meaningful results regarding personality.

Another issue is the within-subject design, which was used in the choice experiment. Although this design offers the advantage that all subjects complete all experimental conditions and thus act as their own control subjects, this can lead to distortions of the results. Thus, different effects due to the randomized order (carry-over effect), the adaptation to the question (positioning effect), the fatigue caused by the same questions (fatigue effect), or the speculation about the subject with associated socially desirable answers (demand effects) can lead to distortions of the results. With the help of a between-subject design these biases could be eliminated.

The study's results show interesting and important assessments, but it should be noted that further research is needed to clarify the research question and to gain further insights into the subject area. Future research could focus more on the different purchase scenarios and the

varying eco-labels. Especially in the case of eco-labels, awareness often influences preference, which could be better addressed in further studies (Schaus, 2016). In addition, prospective research could benefit from identifying additional impact factors on eco-label preference in clothing purchasing using a qualitative approach to apply them in a targeted manner. Moreover, the research design should be adapted with a between-subjects design and an extended personality test should be conducted. Additionally, the sample should obtain more representativeness with the help of a longitudinal study and a random selection of participants.

6 Conclusion

This thesis addresses important challenges of our time: preference for eco-labeled clothing as a contribution to sustainable consumer behavior and the influence of personality on purchasing decisions. Based on the results of this paper, the influence of eco-labels on the purchase decision could be identified in the first place. Furthermore, the personality trait openness showed a positive influence on the preference for eco-labels when compared to clothing with no label. Also, a certain influence of a higher age on the preference for eco-labels could be detected in different choice scenarios. However, the limitations of the study indicate the need for further research to explore this area in more detail. Still, the findings can be used by companies to draw conclusions for target group-specific marketing strategies for eco-label clothing and to consider eco-labeling integrations based on their target group. This study is a step towards better understanding indicators of eco-label preference, such as personality in this case, and thus pushing sustainable fashion further towards the norm through increased visibility.

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8 Appendix

Appendix A: Online Survey

Thank you for your participation and your interest in supporting this study through your collaboration!
The **topic of sustainability** is currently one of the greatest challenges of the 21st century. As part of my final thesis for the Master's degree " Management with a specialization in strategic marketing", I am using this survey to investigate **the extent to which certain consumer and product characteristics can influence customers' purchase intentions.**
Target group: The study refers to the consumer behavior of German shoppers, therefore only persons living in Germany will be interviewed.

The duration of the survey is about **6-7 min**. There are **no right or wrong answers** in this survey, only your **personal opinion** and user behavior is asked. I would be very grateful if you answer all questions **completely** and **sincerely.**

Your privacy is important to me: Your participation in the survey is **voluntary** and can be interrupted or canceled at any time. The collection and analysis of the data will be **anonymous** and only in the context of the research project.

If you have any questions about the study or the process, please feel free to contact me at any time: th.hummel.95@gmail.com.

Thank you for your support!

- -

Q1: **I have read the above information on data protection and agree to participate in this study.**
- o I agree (start the survey) (1)
- o I do not agree (cancel the survey) (2)

- -

> *Show this Text: If Q1 = I do not agree (cancel the survey)*

Unfortunately, you did not agree to begin the study.
If you still wish to participate in this study, please click on the survey link again and select the answer option "I agree (start the survey)".

Thank you very much for your effort.

Best regards, Tanja Hummel

> *Skip to: End of survey, if "Unfortunately, you did not agree to begin the study. If you still wish to participate in this st..." is displayed*

- -

Q2: **Where is your primary residence located?**
- o In Germany (1)
- o Not in Germany (2)

- -

> *Show this Text: If Q2 = Not in Germany*

This study examines the consumer behavior in the German market. Unfortunately, you are not part of the target group studied.
Nevertheless, thank you very much for wanting to participate in this study.

Best regards, Tanja Hummel

The following survey is divided into three parts. It begins with six decision questions, followed by five sections of six questions each, and ends with five demographic questions.

In each of the next 6 decision questions, you have a choice between two black cotton T-shirts <u>A</u> and <u>B</u>. Please have a close look at the two T-shirts before making a decision.

Q3:

Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o   I would certainly prefer A (1)
- o   I would probably prefer A (2)
- o   I would be undecided between A and B (3)
- o   I would probably prefer B (4)
- o   I would certainly prefer B (5)

Q4:

Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o   I would certainly prefer A (1)
- o   I would probably prefer A (2)
- o   I would be undecided between A and B (3)
- o   I would probably prefer B (4)
- o   I would certainly prefer B (5)

Q5:

Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o I would certainly prefer A (1)
- o I would probably prefer A (2)
- o I would be undecided between A and B (3)
- o I would probably prefer B (4)
- o I would certainly prefer B (5)

Q6:

Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o I would certainly prefer A (1)
- o I would probably prefer A (2)
- o I would be undecided between A and B (3)
- o I would probably prefer B (4)
- o I would certainly prefer B (5)

Q7:
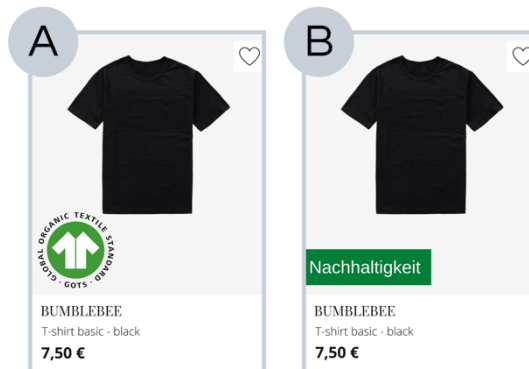
Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o   I would certainly prefer A (1)
- o   I would probably prefer A (2)
- o   I would be undecided between A and B (3)
- o   I would probably prefer B (4)
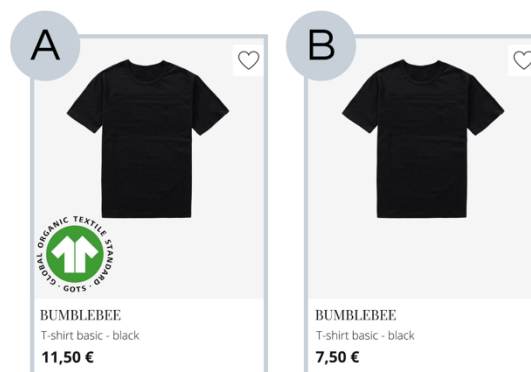- o   I would certainly prefer B (5)

Q8:
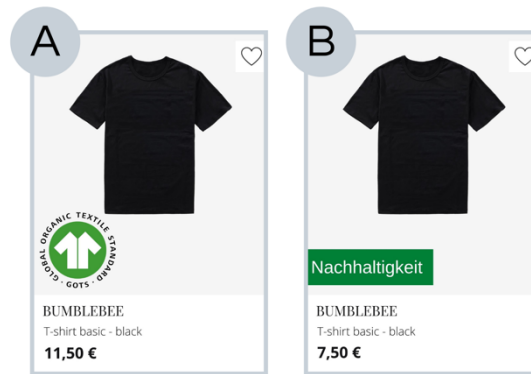
Which of the two options would you prefer if you are looking for exactly this type of t-shirt.
- o   I would certainly prefer A (1)
- o   I would probably prefer A (2)
- o   I would be undecided between A and B (3)
- o   I would probably prefer B (4)
- o   I would certainly prefer B (5)

To what extent do the following statements apply to you? Answer as spontaneously as possible. There are no right or wrong answers. (1 from 5)

Q9: **I often feel inferior to others.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q10: **When I'm under a lot of stress, I sometimes feel like I'm falling apart.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q11: **I often feel tense and nervous.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q12: **Sometimes I feel completely worthless.**
- o   Strongly disagree (1)

o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q13: Too often I get discouraged and want to give up when something goes wrong.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q14: I often feel helpless and wish for a person to solve my problems.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

To what extent do the following statements apply to you? Answer as spontaneously as possible. There are no right or wrong answers. (2 from 5)

Q15: I like to have a lot of people around me.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q16: I am easily made to laugh.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q17: I like to be in the center of the action.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q18: I often feel like I'm foaming over with energy.
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q19: I am a cheerful, good-humored person.
o   Strongly disagree (1)

o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q20: **I am a very active person.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

To what extent do the following statements apply to you? Answer as spontaneously as possible. There are no right or wrong answers. (3 from 5)

Q21: **I find philosophical discussions boring.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q22: **I am inspired by the motives I find in art and in nature.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q23: **Poetry impresses me little or not at all.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q24: **When I read literature or look at a work of art, I sometimes feel a shiver or a wave of excitement.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q25: **I have little interest in speculating about the nature of the universe or the state of humanity.**
o   Strongly disagree (1)
o   Somewhat disagree (2)
o   Neither agree nor disagree (3)
o   Somewhat agree (4)
o   Strongly agree (5)

Q26: **I often enjoy playing with theories or abstract ideas.**
o   Strongly disagree (1)
o   Somewhat disagree (2)

- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

To what extent do the following statements apply to you? Answer as spontaneously as possible. There are no right or wrong answers. (4 from 5)

Q27: **I get into fights with my family and colleagues more often.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q28: **Some people think I'm selfish and self-indulgent.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q29: **With regard to the intentions of others, I am rather cynical and skeptical.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q30: **Some people think I'm cold and calculating.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q31: **I always try to act considerately and sensitively.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q32: **To get what I want, I am prepared to manipulate people if necessary.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q33: **Please select the answer "Strongly agree" (attention-check question).**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)

- o   Somewhat agree (4)
- o   Strongly agree (5)

To what extent do the following statements apply to you? Answer as spontaneously as possible. There are no right or wrong answers. (5 from 5)

Q34: **I keep my things neat and clean.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q35: **I can manage my time quite well, so I finish my tasks on time.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q36: **I try to be very conscientious in performing all the tasks assigned to me.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q37: **When I make a commitment, I can certainly be counted on.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q38: **I am a hardworking person who always gets the job done.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

Q39: **I will probably never be able to bring order into my life.**
- o   Strongly disagree (1)
- o   Somewhat disagree (2)
- o   Neither agree nor disagree (3)
- o   Somewhat agree (4)
- o   Strongly agree (5)

You're almost there! Just five more short questions about yourself.

Q40: **How do you describe your gender?**
- o   female (1)

    o   male (2)
    o   divers (3)
    o   N/A (4)

Q41: How old are you?
- under 18 years (1)
- between 18 - 24 years (2)
- between 25 - 40 years (3)
- between 41 - 56 years (4)
- between 57 - 76 years (5)
- 76 years and older (6)
- N/A (7)

Q42: What is your highest level of education?
- School graduation (1)
- Apprenticeship (2)
- University degree (3)
- PhD (4)
- N/A (5)

Q43: What is your average monthly income (net)?
- less than 1050€ (1)
- between 1050€ and 1410€ (2)
- between 1420€ and 2640€ (3)
- between 2650€ and 4400€ (4)
- more than 4400€ (5)
- N/A (6)

Appendix B: Histograms Choice Experiment

Figure 4

Histograms of the six preferences with normal distribution curve
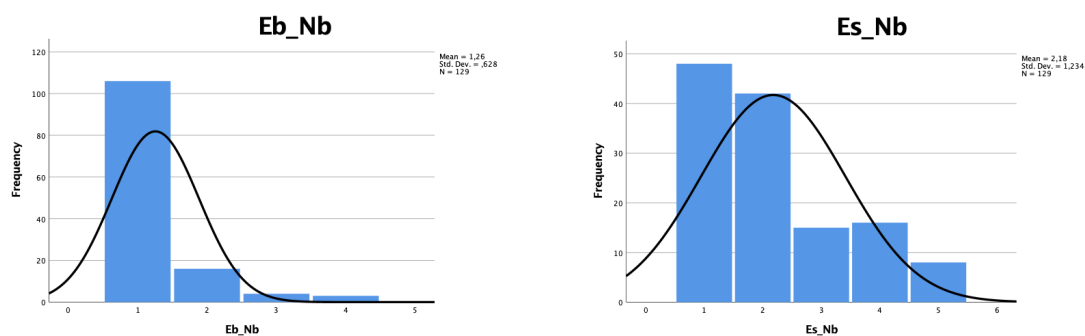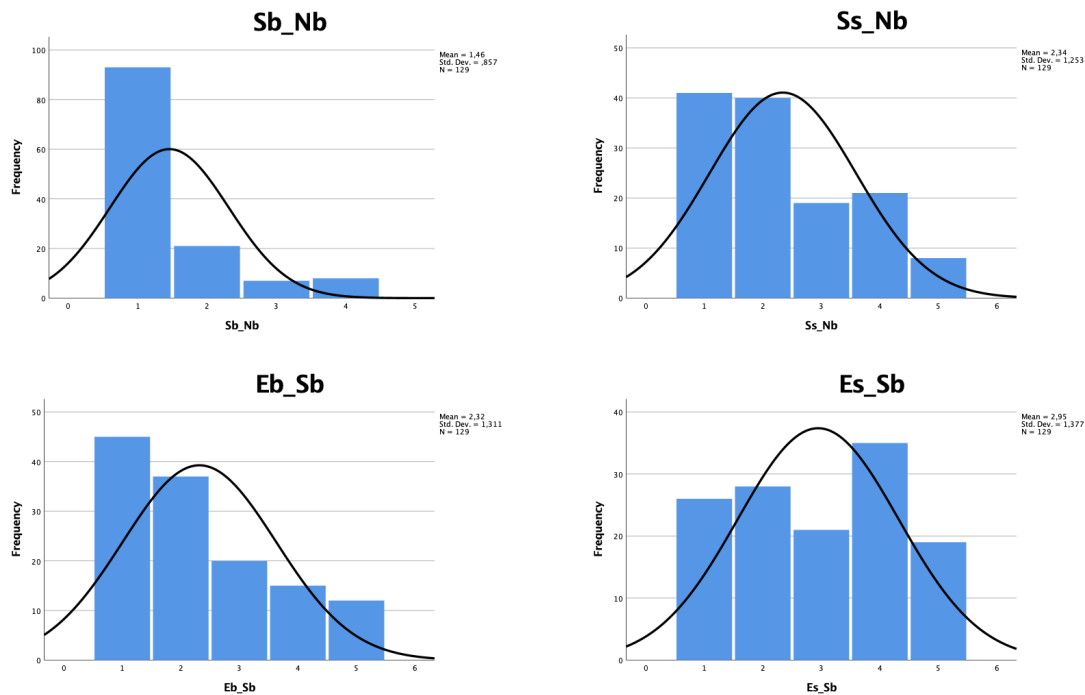
Note. Eb="eco-label with base price", Es="eco-label with base price plus sustainability surcharge", Sb="sustainable label with base price", Ss="sustainable label with base price plus sustainability surcharge", Nb= "no label with base price"

Appendix C: One Sample Test for eco-label vs. no label

Table 5

One-Sample Test for eco-label vs. no label

Test Value = 3

	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
Eb vs. Nb	-31.521	128	0.000	0.000	-1.744	-1.85	-1.63
Es vs. Nb	-7.563	128	0.000	0.000	-0.822	-1.04	-0.61
Sb vs. Nb	-20.444	128	0.000	0.000	-1.543	-1.69	-1.39
Ss vs. Nb	-5.972	128	0.000	0.000	-0.659	-0.88	-0.44
Eb vs. Sb	-5.910	128	0.000	0.000	-0.682	-0.91	-0.45
Es vs. Sb	-0.448	128	0.328	0.655	-0.054	-0.29	0.19

Appendix D: Repeated measure ANCOVA of eco-label vs. no label

Table 6

Tests of Within-Subjects Effects of eco-label vs. no label

Source		F	p	η^2_p
Price	Sphericity Assumed	3.68	.058	.03
Price * Conscientiousness	Sphericity Assumed	4.95	.028	.04
Price * Extraversion	Sphericity Assumed	2.09	.151	.02

Price * Openness	Sphericity Assumed	0.80	.372	.01
Price * Agreeableness	Sphericity Assumed	4.19	.043	.03
Price * Neuroticism	Sphericity Assumed	1.23	.269	.01
Price * Gender	Sphericity Assumed	0.85	.357	.01
Price * Age	Sphericity Assumed	7.06	.009	.06
Price * Education Degree	Sphericity Assumed	0.42	.520	.00
Price * Income	Sphericity Assumed	0.00	.966	.00

Note. N = 129

Table 7

Tests of Between-Subjects Effects of eco-label vs. no label

Source	F	p	η^2_p
Intercept	13.45	.000	.10
Conscientiousness	1.77	.185	.01
Extraversion	0.13	.717	.00
Openness	10.25	.002	.08
Agreeableness	2.15	.145	.02
Neuroticism	3.47	.065	.03
Gender	2.38	.125	.02
Age	11.85	.001	.09
Education Degree	0.66	.418	.01
Income	0.76	.385	.01

Note. N = 129

Table 8

Parameter Estimates of eco-label vs. no label

Dependent Variable	Parameter	β	SE	t	p	95% Confidence Interval		η^2_p
						Lower Bound	Upper Bound	
Eb vs. Nb	Intercept	1.96	0.86	2.26	.025	0.25	3.67	.04
	Conscientiousness	-0.06	0.10	-0.63	.532	-0.26	0.14	.00
	Extraversion	0.08	0.09	0.96	.337	-0.09	0.25	.01
	Openness	-0.20	0.07	-2.71	.008	-0.35	-0.05	.06
	Agreeableness	0.03	0.08	0.31	.758	-0.14	0.19	.00
	Neuroticism	0.07	0.07	1.02	.309	-0.07	0.22	.01
	Gender	0.10	0.12	0.84	.402	-0.14	0.35	.01
	Age	-0.09	0.07	-1.31	.192	-0.24	0.05	.01
	Education Degree	0.01	0.03	0.29	.770	-0.05	0.07	.00
	Income	0.04	0.05	0.93	.355	-0.05	0.13	.01
Es vs. Nb	Intercept	5.10	1.56	3.26	.001	2.00	8.19	.08
	Conscientiousness	0.36	0.18	1.99	.049	0.00	0.72	.03
	Extraversion	-0.15	0.16	-0.98	.329	-0.46	0.16	.01
	Openness	-0.33	0.13	-2.44	.016	-0.59	-0.06	.05

Agreeableness	-0.29	0.15	-1.97	.051	-0.59	0.00	.03
Neuroticism	0.23	0.13	1.73	.087	-0.03	0.49	.02
Gender	0.32	0.22	1.43	.154	-0.12	0.77	.02
Age	-0.45	0.13	-3.51	.001	-0.71	-0.20	.09
Education Degree	0.05	0.06	0.84	.404	-0.06	0.16	.01
Income	0.05	0.08	0.56	.577	-0.12	0.21	.00

Note. $N = 129$, Eb = "eco-label with base price", Es = "eco-label with base price plus sustainability surcharge", Nb = "no label with base price"

Appendix E: Repeated measure ANCOVA of sustainable label vs. no label

Table 9

Tests of Within-Subjects Effects of sustainable label vs. no label

Source		F	p	η^2_p
Price	Sphericity Assumed	7.73	.006	.06
Price * Conscientiousness	Sphericity Assumed	0.97	.326	.01
Price * Extraversion	Sphericity Assumed	2.99	.086	.02
Price * Openness	Sphericity Assumed	1.93	.168	.02
Price * Agreeableness	Sphericity Assumed	0.52	.471	.00
Price * Neuroticism	Sphericity Assumed	0.41	.523	.00
Price * Gender	Sphericity Assumed	0.12	.729	.00
Price * Age	Sphericity Assumed	6.48	.012	.05
Price * Education Degree	Sphericity Assumed	0.05	.821	.00
Price * Income	Sphericity Assumed	0.11	.743	.00

Note. $N = 129$

Table 10

Tests of Between-Subjects Effects of sustainable label vs. no label

Tests of Between-Subjects Effects

Source	F	p	η^2_p
Intercept	15.03	.000	.11
Conscientiousness	0.21	.645	.00
Extraversion	0.35	.555	.00
Openness	3.17	.078	.03
Agreeableness	1.12	.291	.01
Neuroticism	0.06	.807	.00
Gender	1.51	.221	.01
Age	5.90	.017	.05
Education Degree	0.28	.600	.00
Income	0.45	.501	.00

Note. $N = 129$

Table 11

Parameter Estimates of sustainable label vs. no label

Dependent Variable	Parameter	β	SE	t	p	95% Confidence Interval		η^2_p
						Lower Bound	Upper Bound	
Sb vs. Nb	Intercept	2.36	1.21	1.96	.053	-0.03	4.74	.03
	Conscientiousness	-0.16	0.14	-1.14	.257	-0.44	0.12	.01
	Extraversion	0.07	0.12	0.60	.551	-0.17	0.31	.00
	Openness	-0.09	0.10	-0.82	.413	-0.29	0.12	.01
	Agreeableness	-0.06	0.11	-0.56	.577	-0.29	0.17	.00
	Neuroticism	0.02	0.10	0.20	.845	-0.18	0.22	.00
	Gender	0.17	0.17	0.99	.326	-0.17	0.52	.01
	Age	-0.07	0.10	-0.67	.503	-0.26	0.13	.00
	Education Degree	0.02	0.04	0.37	.713	-0.07	0.10	.00
	Income	0.06	0.06	0.90	.371	-0.07	0.18	.01
Ss vs. Nb	Intercept	6.97	1.68	4.15	.000	3.65	10.29	.13
	Conscientiousness	0.03	0.20	0.16	.876	-0.36	0.42	.00
	Extraversion	-0.21	0.17	-1.28	.203	-0.55	0.12	.01
	Openness	-0.28	0.14	-1.96	.052	-0.57	0.00	.03
	Agreeableness	-0.18	0.16	-1.12	.266	-0.49	0.14	.01
	Neuroticism	-0.07	0.14	-0.49	.623	-0.35	0.21	.00
	Gender	0.25	0.24	1.05	.294	-0.22	0.73	.01
	Age	-0.41	0.14	-3.00	.003	-0.69	-0.14	.07
	Education Degree	0.03	0.06	0.49	.626	-0.09	0.15	.00
	Income	0.03	0.09	0.32	.749	-0.15	0.21	.00

Note. N = 129, Sb = "sustainable label with base price", Ss = "sustainable label with base price plus sustainability surcharge", Nb = "no label with base price"

Appendix F: Repeated measure ANCOVA of eco-label vs. sustainable label

Table 12

Tests of Within-Subjects Effects of eco-label vs. sustainable label

Source		F	p	η^2_p
Price	Sphericity Assumed	0.63	.428	.01
Price * Conscientiousness	Sphericity Assumed	2.43	.122	.02
Price * Openness	Sphericity Assumed	1.19	.277	.01
Price * Agreeableness	Sphericity Assumed	0.75	.389	.01
Price * Neuroticism	Sphericity Assumed	0.07	.792	.00
Price * Gender	Sphericity Assumed	0.28	.598	.00
Price * Age	Sphericity Assumed	0.17	.678	.00
Price * Education Degree	Sphericity Assumed	2.20	.141	.02
Price * Income	Sphericity Assumed	0.00	.971	.00

Note. N = 129

Table 13

Tests of Between-Subjects Effects of eco-label vs. sustainable label

Source	F	p	η²ₚ
Intercept	5.70	.018	.05
Conscientiousness	0.34	.559	.00
Extraversion	0.44	.509	.00
Openness	4.24	.042	.03
Agreeableness	0.04	.837	.00
Neuroticism	0.16	.686	.00
Gender	1.44	.232	.01
Age	0.27	.606	.00
Education Degree	0.04	.835	.00
Income	0.92	.340	.01

Note. N = 129

Table 14

Parameter Estimates of eco-label vs. sustainable label

Dependent Variable	Parameter	β	SE	t	p	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound	η²ₚ
Eb vs. Sb	Intercept	3.21	1.86	1.73	.087	-0.47	6.88	.02
	Conscientiousness	-0.05	0.22	-0.24	.812	-0.48	0.38	.00
	Extraversion	-0.05	0.18	-0.28	.781	-0.42	0.32	.00
	Openness	-0.21	0.16	-1.29	.199	-0.52	0.11	.01
	Agreeableness	0.04	0.18	0.24	.813	-0.31	0.39	.00
	Neuroticism	0.08	0.16	0.49	.627	-0.23	0.39	.00
	Gender	0.22	0.27	0.81	.422	-0.31	0.75	.01
	Age	-0.04	0.15	-0.25	.799	-0.34	0.26	.00
	Education Degree	0.04	0.07	0.53	.594	-0.10	0.17	.00
	Income	-0.08	0.10	-0.83	.408	-0.28	0.11	.01
Es vs. Sb	Intercept	4.64	1.89	2.45	.016	0.90	8.39	.05
	Conscientiousness	0.28	0.22	1.25	.213	-0.16	0.71	.01
	Extraversion	-0.17	0.19	-0.88	.382	-0.54	0.21	.01
	Openness	-0.38	0.16	-2.31	.023	-0.70	-0.05	.04
	Agreeableness	-0.11	0.18	-0.59	.555	-0.46	0.25	.00
	Neuroticism	0.04	0.16	0.23	.822	-0.28	0.35	.00
	Gender	0.35	0.27	1.29	.198	-0.19	0.89	.01
	Age	-0.10	0.16	-0.65	.519	-0.41	0.21	.00
	Education Degree	-0.06	0.07	-0.89	.376	-0.19	0.07	.01
	Income	-0.08	0.10	-0.85	.398	-0.28	0.11	.01

Note. N = 129, Eb = "eco-label with base price", Es = "eco-label with base price plus sustainability surcharge", Sb = "sustainable label with base price"