Investigating the antecedents of consumer behavioral intention for sustainable fashion products: Evidence from a large survey of Italian consumers

Rosa Maria Dangelico [a,*], Letizia Alvino [b,c], Luca Fraccascia [b,d,**]

[a] Department of Mechanics, Mathematics, and Management, Politecnico di Bari, via Orabona 4, 70126 Bari, Italy
[b] Department of High-tech Business and Entrepreneurship, University of Twente, Drienerlolaan 5, 7522 NB Enschede, the Netherlands
[c] Center for Marketing and Supply Chain Management, Nyenrode Business University, Straatweg 25, 3621 BG Breukelen, the Netherlands
[d] Department of Computer, Control, and Management Engineering "Antonio Ruberti", Sapienza University of Rome, via Ariosto 25, 00185 Rome, Italy

ABSTRACT

The heavy environmental effect of the fashion industry, along with the growing interest of consumers in sustainability issues, is driving this industry towards greater ecological integrity through the development of sustainable clothing. This study investigates which factors influence green consumer behavioral intention in the clothing industry, through a survey of 2.694 Italian consumers. We study the influence of consumer's environmental concern, perceived value of the product, and consumer familiarity with the product (both direct and indirect experiences) on purchase intention and willingness to pay a premium price for sustainable fashion products. Our results show that environmental concern and perceived value positively affect purchase intention and the willingness to pay a premium price regardless the type of eco-materials used for the products, whereas direct and indirect experiences have different effects based on the specific eco-material used. Further, green consumer behavior is strongly dependent on consumers' socio-demographic characteristics. Based on these results, important implications for scholars, managers, and policymakers are provided that can foster consumers' adoption of sustainable clothing and a transition towards a more sustainable society. For instance, specific directions for marketing strategy and public communication campaigns are provided.

1. Introduction

The clothing industry is considered as one of the most polluting industries in the world (Fraccascia and Giannoccaro, 2019). The production of raw materials, spinning them into fibers, weaving fabrics, and dyeing are high resource- and energy-demanding practices (e.g., 2700 l of water, enough drinking water for one person for 2.5 years, are needed to produce one t-shirt[1]). This process is also responsible for the emission of chemicals into the environment, including pesticides for growing raw materials (e.g. cotton) (Pedersen and Gwozdz, 2014; Sajn, 2019). Nevertheless, population growth as well as improved global incomes and living standards have driven a significant increase in the production and consumption of textiles and fibers in the last decades (Shirvanimoghaddam et al., 2020). Furthermore, many companies in the fashion industry have increasingly embraced the philosophy of "fast fashion retailing". Accordingly, fashion brands launch multiple collections per year of low-durable goods that capture the latest consumer trends, aimed at selling clothing in large quantities and at cheap prices (Birtwistle and Moore, 2007; Cachon and Swinney, 2011; Vehmas et al., 2018). As a consequence, the amount of clothes bought per capita has significantly increased in Europe - e.g., by 40 % between 1996 and 2012 (Sajn, 2019). Only in 2015, European citizens purchased 6.4 million tons of new clothing, i.e., >12 Kg per person; nevertheless, it has been estimated that >30 % of clothes in Europeans' wardrobes have not been used for at least a year (Sajn, 2019). Fast fashion exacerbates the environmental pressure of the clothing industry, in terms of additional

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impact of production processes and additional amounts of textile wastes to be disposed of (Bianchi and Birtwistle, 2012; Dahlbo et al., 2017). In this regard, <15 % of textile waste is recycled at the global level; the remaining part ends up in mixed household waste (Shirvanimoghaddam et al., 2020).

The growing interest of consumers in sustainability issues (Aschemann-Witzel and Stangherlin, 2021; Chen and Hung, 2016; Dangelico et al., 2022; Featherman et al., 2021; D. Huang et al., 2021; Y. Huang et al., 2021; Yan et al., 2019) is driving fashion houses and retailers to take action and has been providing ground for the emergence of a new consumer market for the so-called "sustainable fashion". Sustainable fashion, which is mainly associated with the environmental pillar of sustainability, is a term used to describe clothing produced with eco-friendly raw materials and less pollutant production processes (Caniato et al., 2012; Shen et al., 2014).[2]

Studies conducted on sustainable fashion have investigated the potential environmental benefits (Hildebrandt et al., 2021), the sustainable product development processes (Fung et al., 2021; Provin et al., 2021), the consumers' engagement with sustainable fashion brands on social networks (Testa et al., 2021), and the consumer perceptions, attitudes, and willingness to pay for sustainable fashion products, as well as the factors impacting such behaviors (e.g., Grazzini et al., 2021; Kim et al., 2020; Eun Ju Lee et al., 2020; Lundblad and Davies, 2016; McNeill and Moore, 2015; Vehmas et al., 2018). The literature suggests that consumers want to be more sustainable when buying clothes (Brandão and da Costa, 2021). However, the number of consumers who consider sustainability when shopping for clothes is still small (Diddi et al., 2019). Nevertheless, the literature recognizes that this research is still at early stages and highlights the need to further investigate the motivations driving consumers towards sustainable fashion, for instance by enlarging the spectrum of participants to sustainable fashion studies, as well as to investigate the importance of widening the scope of research to include different categories of sustainable clothing (Mukendi et al., 2020). In fact, understanding and studying pro-environmental behavior is essential to shift to a society characterized by more sustainable consumption patterns (Brandão and da Costa, 2021; Connell, 2010).

Designers have a key role in the development of sustainable products (Esslinger, 2011) and eco-design choices may affect consumer behavior (Zeng et al., 2021). With regard to product design, materials are a key component of product form (Bloch, 2018) and, as such, may affect consumer's perception of product function (Hoegg and Alba, 2011). Thus, the use of different eco-materials in sustainable fashion (Niinimäki, 2010; Shen et al., 2014) may result in different responses by the consumers. However, this issue has received limited attention in the literature so far.

This paper aims at investigating which are the factors that influence the green consumer behavioral intention in the fashion industry. In particular, the Theory of Planned Behavior (TPB) (Ajzen, 1991) has been successfully used to explain a wide range of pro-environmental behaviors and intention to purchase green and fashion products (e.g., Brandão and da Costa, 2021; Onel, 2017; Perri et al., 2020; Rhodes et al., 2015; Saricam and Okur, 2019; Xu and Jackson, 2019). In this study, we rely on this theory, trying at the same time to explain the main variables also through the lens of other relevant theories for understanding consumer behavior (e.g., theory of reasoned action and value-belief-norm). Specifically, this article investigates the influence of consumer's environmental concern, perceived value of the product, and consumer familiarity with the product (both direct and indirect experiences) on purchase intention and willingness to pay a premium price for sustainable fashion products. We built a theoretical model and, via a survey conducted on 2.694 Italian consumers between June and September 2020, we tested it for products made of organic fibers (e.g., organic

cotton, linen, bamboo, wool) and, as a robustness check, for products made of recycled fibers/fabrics (e.g., PET from recycled plastic bottles or fabrics from recycled clothing) and alternative vegetable matter (e.g., peel of oranges or apples). The last two types of products (i.e., clothes made with recycled fibers/fabrics and alternative vegetable matter) can be considered as circular products, i.e., products that are consistent with the circular economy paradigm (Dissanayake and Weerasinghe, 2021; Pretner et al., 2021; Majumdar et al., 2020; Pal and Gander, 2018).

Italy was chosen as a setting for understanding consumer behavioral intention for sustainable fashion, given the relevance of the Italian fashion industry at both the country and international level. Indeed, the fashion industry represents 10 % of the Italian manufacturing, generating an added value of 24.2 billion euros yearly; furthermore, Italy holds a 6.8 % market share of the global fashion market, being the second country according to this ranking, and 33.9 % of the total added value generated by the fashion industry at the world level comes from Italy (Ministry of Foreign Affairs and International Cooperation, 2020).

Compared to existing studies, this paper proposes several elements of novelty. From the theoretical perspective, to the best of our knowledge, this is the first study that integrates the consumer behavior perspective with the perspective of green product design, by comparing green consumer behavioral intention for products belonging to the same product class (clothing) and made of different eco-materials. Furthermore, this is the first study that considers environmental concern together with consumer perceived value of the product and consumer familiarity with the product as antecedents of green consumer behavioral intention. Results of this paper provide implications for scholars, managers, and policymakers.

This article is structured as follows: Section 2 illustrates the literature and hypotheses development, Section 3 presents the employed methodology, Section 4 reports the results, while Section 5 the discussion. In the final section, we present the implications of our study, along with limitations and future research directions.

2. Theoretical background and hypotheses development

This section is divided into three subsections. Section 2.1 introduces the theoretical background of the study. Section 2.2 concerns the hypotheses development. Finally, Section 2.3 presents the developed theoretical model.

2.1. Theory background

The TPB of Ajzen (1991) is identified as a relevant social-psychological model commonly used to study consumer buying behavior (Perri et al., 2020; Xu and Jackson, 2019; Yang et al., 2022). The TPB suggests that *attitude towards behavior*, *subjective norms*, and *perceived behavioral control* are important predictors of an individual's behavioral intentions, and subsequently of his/her behavior (Ajzen, 1991; Brandão and da Costa, 2021). The first factor, attitude towards behavior, refers to "*the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior*" (Ajzen, 1991, p. 188; Zhang et al., 2020). Attitude can be defined as a person's beliefs and assessment of the results that can be derived by the behavior, also, the level to which a person has favorable or unfavorable evaluation of a given behavior (Ajzen, 1991; Brandão and da Costa, 2021; Fishbein and Ajzen, 1975). The second factor, subjective norms, refers to the perception of an individual about social pressure (e.g., friends, family or colleagues) to comply (or not) with a specific behavior (Ajzen, 1991; Brandão and da Costa, 2021). Unlike attitude, subjective norms reflect the importance of others' opinion on whether an individual should or should not perform a behavior (Venkatesh et al., 2003; Zhang et al., 2020). Finally, perceived behavioral control (PBC) denotes a person's perception of how simple or difficult is to perform a specific behavior, or the degree of difficulty to carry out a behavior (Ajzen, 1991; Lam and Hsu, 2006). Overall, a person with a positive attitude, high subjective

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[2] The focus of this study is on the environmental dimension of sustainability. Thus, the terms "sustainable" and "green" are used as synonyms.

norm, and behavior control tends to perform a specific behavior (Zhang et al., 2014, 2020).

Ajzen (1991) anticipated that the TPB can be adjusted by adding new constructs. This can help study the variation in intention or behavior (Rise et al., 2010). A modified version of the TPB model can be used to study a particular context, for instance sustainable clothing consumption, by incorporating variables that help researchers study what motivates (or disincentives) sustainable behavior (Brandão and da Costa, 2021; Stern, 2000). Existing literature suggests that several constructs can be used for modifying the original model to study green purchasing behavior and sustainable consumption (Bigerna et al., 2021; Dangelico et al., 2021; Frommeyer et al., 2022; Onel, 2017; Si et al., 2022; Singh et al., 2021, Srivastava et al., 2022; Yadav and Pathak, 2017; Yew et al., 2022; Zhang et al., 2019). For instance, the study by Kang et al. (2013) modified the TPB and found that customers' perceived consumer effectiveness, product knowledge, and perceived personal relevance greatly affected the dimensions of the TPB, thus influencing the purchase intentions for environmentally sustainable clothing. Similarly, Bong Ko and Jin (2017) investigated the purchase intention of US and Chinese consumers for green apparel products by adding man-nature orientation and environmental knowledge to the TPB. The results of the study suggest that environmental knowledge is an antecedent of attitude and PBC. In fact, environmental knowledge was found to strengthen attitudes towards purchasing green products and PBC for both US and Chinese consumers (Bong Ko and Jin, 2017). However, man-nature orientation positively influenced attitude and internal PBC only for US consumers.

In this study, we modify the TPB to model the consumer behavioral intention for sustainable clothing, using environmental concern, perceived value, and consumer familiarity as determinants. In the following, we explain how these well-established concepts are related to the three original constructs of the TPB (i.e., attitude, social norm, and PBC). Moreover, we explore the relationship between these constructs and two dimensions of consumer behavioral intention: purchase intention and willingness to pay a premium price for sustainable fashion. These two dimensions have been considered as representative of the behavioral intention towards sustainable products, consistently with previous studies (e.g., Prakash and Pathak, 2017; Magnier et al., 2019; Notaro and Paletto, 2021; Rausch and Kopplin, 2021; Xu et al., 2020).

Environmental concern is a dominant cognitive construct to investigate purchase intention for sustainable products (Zhang et al., 2019). Several studies found that more positive environmental concern can lead to a more positive attitude, subjective norms, and PBC towards sustainable products (Hartmann and Apaolaza-Ibáñez, 2012; Maichum et al., 2016; Santos et al., 2021; Si et al., 2022; Siraj et al., 2022; Zhang et al., 2019; Rausch and Kopplin, 2021). For instance, Rausch and Kopplin (2021) suggest that environmental concern is an essential cognitive and affective component in forming and influencing consumers' attitudes towards sustainable clothing. Similarly, Bang et al. (2000) suggest that environmental concern contributes to the belief component of the Theory of Reasoned Action (TRA).[3] This is also in line with the Value-Belief-Norm Theory (VBN) for environmental attitudes. Based on the VBN, a person's concerns about specific environmental issues (e.g., soil pollution, air pollution, waste disposal) may be rooted in the individual's awareness of harmful consequences of certain actions (Schultz, 2000, 2001; De Groot and Steg, 2007a; Rausch and Kopplin, 2021). The VBN theory can be considered as an extension of Schwartz's (1977) norm-activation theory of altruistic behavior. Thus, we recognize there are three different clusters of environmental concern that might affect specific behavior attitudes, namely egoistic (e.g., threat to one's health), altruistic (e.g., threat to future generations), and biospheric (e.

g., threats to animals and nature) (Schultz, 2000; De Groot and Steg, 2007a; Leszczyńska, 2014). These forms of specific behavior attitudes are relevant for understanding pro-environmental behaviors (De Groot and Steg, 2007b; Schultz, 2000; Leszczyńska, 2014).

Perceived value is a customers' overall evaluation of the utility of perceived benefits and perceived sacrifices (Zeithaml, 1988). Based on the quality perspective, value can be defined as the difference between the quality of a product and the money paid for it (Bishop, 1984). Thus, if a consumer pays less money for a high quality product, he/she will perceive the value of the product as positive (Kuo et al., 2009). However, perceived value means more than the money paid for certain products. A consumer's perceived value of a product also relies on non-monetary costs, such as search cost, transaction cost, and time invested during the purchase, as well as social incentive, for instance socioeconomic status and social culture (Cronin et al., 2000; Kuo et al., 2009; Sheth et al., 1991; Zeithaml, 1988). That is why studies in the TPB context often consider perceived value as an antecedent of attitude, subjective norms, and PBC (Mafé et al., 2010; Abbasi et al., 2021; Brandão and da Costa, 2021; Fiandari et al., 2019; Kondo and Ishida, 2014; Wang et al., 2020). In fact, a positive perceived value can be linked to "*a positive attitude, a stronger social pressure, and a feeling of control over difficulties to perform sustainable fashion consumption*" (Brandão and da Costa, 2021). Similarly, the TRA suggests that perceived quality is linked to attitude. People's behaviors are impacted by the consequences of such behaviors (Brandão and da Costa, 2021). In fact, people tend to perform those behaviors that are associated with desirable outcomes. De Canio and Martinelli (2021) found that perceived quality can lead to a more positive attitude towards green products (e.g., green food) in a TRA context. In this study, perceived value was included as a form of functional, economic, and social value of a product.

Finally, we consider *consumer familiarity* for a product (as prior knowledge about a product), as a form of indirect (e.g., knowing the product exists) or direct (e.g., prior purchase or use) experience that a consumer has with a product (Moser, 2015). Existing literature suggests that familiarity influences consumer attitude towards a product, service, or task (Li and Jaharuddin, 2020; Notani, 1998; Shahangian et al., 2021), as customers feel more secure and comfortable towards the product (Biswas and Roy, 2015; Li and Jaharuddin, 2020; Notani, 1998). For instance, Mohd Suki (2016) found that consumers with a high level of familiarity with green food products are more likely to hold a pro-environmental attitude and display a stronger intention to purchase such products. Similarly, familiarity might improve a consumer's perceived control over his/her behaviors, (Aungatichart et al., 2020; Notani, 1998). In fact, consumers with prior knowledge about a product feel secure and comfortable and this could improve their PBC (Notani, 1998). Thus, consumer familiarity with product categories can be considered a predictor of both attitude and PBC (Aungatichart et al., 2020; Shahangian et al., 2021).

Based on the above considerations, we use *environmental concern*, *perceived value*, and *consumer familiarity* with the product as determinants of consumer behavioral intention. Additionally, we extend the TPB model on the outcome side, as we consider two dependent variables: the intention to purchase a product and the willingness to pay a premium price for that product. In the following section, we consider relevant literature related to the effect of each of the three abovementioned determinants on purchase intention and willingness to pay a premium price for sustainable fashion, developing specific hypotheses.

2.2. Hypotheses development

2.2.1. Environmental concern

Consumers' environmental concern can be explained as "*the degree to which consumers are concerned about environmental problems and support efforts to solve them*", for instance by purchasing green or sustainable products (Dunlap and Jones, 2002, p. 485). According to Yue et al. (2020), environmental concern can be divided into two categories, such

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[3] The TRA postulated by Fishbein and Ajzen (1975) suggests behavioral intent results from two factors, such as attitude towards the behavior and subjective norms.

as environmental concern for (1) *specific environmental issues* (e.g., soil pollution) and (2) *comprehensive and universal* (e.g., variety of different environmental issues). In this study, we adopted the latter definition, as a full and universal perspective of environmental issues.

Existing literature suggests that environmental concern is a major factor that affects consumers' decision-making process towards sustainable products (Diamantopoulos et al., 2003; Sharma and Foropon, 2019). In fact, environmental concern is often considered as an important predictor of consumers' environmentally-friendly behavior and directly impacts purchase intention (Bamberg, 2003; Hartmann and Apaolaza-Ibáñez, 2012; Felix et al., 2018; Pagiaslis and Krontalis, 2014; Santos et al., 2021; Siraj et al., 2022; White and Simpson, 2013; Yue et al., 2020; Rausch and Kopplin, 2021). Testa et al. (2020) indicated that environmental concern might positively influence the purchase of sustainable packaging as green consumers actively search for environmental information. Park and Lin (2020) found that environmental concern has a positive impact on the intention to purchase recycled and upcycled fashion products. Similarly, Rausch and Kopplin (2021) found that environmental concern can positively impact both attitude and purchase intention for sustainable clothes. According to the argument above, we formulated the following hypothesis:

Hypothesis 1. Consumers' environmental concern is positively related to the intention to purchase sustainable clothing.

Marketing literature also suggests that consumer intention to purchase a product is affected by the product price. In this regard, consumers who are concerned about the environment might not necessarily buy green or sustainable products (Yue et al., 2020). In fact, consumers who claim to be concerned about the environment might still not adopt pro-environmental behavior during the purchase, due to the higher price of green products compared to traditional products (Malik et al., 2017; Yue et al., 2020). Thus, it is important to study whether a price increment can affect consumers' purchase behavior for sustainable products (Lichtenstein et al., 1993; Stall-Meadows and Davey, 2013). As environmental concern is an antecedent of attitude, people who value environment issues tend to evaluate environmental consequences related to the purchase of a product (e.g., less harmful to the environment) (Leszczyńska, 2014; Santos et al., 2021; Siraj et al., 2022). If these consequences are significant enough for consumers, then they might be willing to pay a higher price for this product. For instance, Notaro and Paletto (2021) investigated the WTP of Italian consumers for different bio-textile garments (shirt, socks and T-shirt) made from certified wood. Authors found that consumers with higher environmental concern were willing to pay a premium price – between 64 % to 128 % of the initial price – for these products. Based on the aforementioned considerations, we formulated the following hypothesis:

Hypothesis 2. Consumers' environmental concern is positively associated with the willingness to pay a premium price for sustainable clothing.

2.2.2. Perceived value

The perception that consumers have of a product can play an important role in their purchase decision process (Coupey and Nakamoto, 1988; Watanabe et al., 2020; Wei and Jung, 2017). In this regard, the value of a product is determined based on its (objective) attributes and the (subjective) outcomes of those attributes (Zeithaml, 1988). Thus, the perceived value of a product is a much more comprehensive concept than "value for price" (Wei and Jung, 2017). Perceived value is defined as "*the consumer's overall assessment of the utility of a product based on what is received and what is given*" (Zeithaml, 1988, p. 14). Stonewall (1992) argued that "*value is a perception, a view, or understanding made up of measurable components*", thus it is a function of delivery, product features, service, quality issues and price (Yee and San, 2011). As a result, customer perceived value could be considered as a multidimensional construct, thus several attributes or dimensions

contribute to define consumers' multilayered value perceptions (Babin et al., 1994; Sheth et al., 1991; Zauner et al., 2015). Instead, the "theory of consumption values" takes five additional customer value dimensions into account, such as functional, epistemic, conditional, emotional, and social values (Sheth et al., 1991). The constitutive PERVAL model also suggests that functional, economic, and social values are three fundamental constructs of perceived value (Sweeney and Soutar, 2001). Functional value, also known as performance/quality, is explained as the perceived utility for "*functional, utilitarian, or physical performance*"; economic value, such as price/value for money, is the utility a product provides compared to the overall costs (output/input ratio); social value is the utility a product provides by enhancing an individual's social self-concept (Wei and Jung, 2017; Zauner et al., 2015; Chi et al., 2021). Based on the aforementioned considerations, we used functional, economic, and social values as the three reflective dimensions of the total value of sustainable clothing.

Studies suggest that consumers' intention to purchase garments might be positively related to their perceived value (Han et al., 2017; Wei and Jung, 2017; Zhao et al., 2018; De Toni et al., 2018; Şener et al., 2019; Chi et al., 2021). Thus, understanding consumer's perceived value for sustainable clothes is important to define the purchase intention of such products. For instance, a qualitative study from Han et al. (2017) found that a negative perception of clothing and the lack of justification for paying a premium price might negatively affect the intention to buy sustainable clothing. On the contrary, Watanabe et al. (2020) argued that perceived value, especially emotional value, can increase purchase intention for organic food. Similarly, Zhang et al. (2020) found that consumer perceived quality, price, emotional, and environmental values significantly and positively impact consumers' purchasing attitude for energy-saving appliances. Further, investigating the role that perceived value plays on intention to purchase and WTP a premium price for slow fashion products of Turkish and Kazakh students, Şener et al. (2019) found that perceived value has a positive influence on the intention to purchase. Thus, the more positive a product's value is perceived, the higher consumers' willingness to purchase that specific product. Hence, we formulated the following hypothesis:

Hypothesis 3. The perceived value of a sustainable clothing product made with a given eco-friendly material positively impacts consumers' intention to purchase that kind of product.

In the sustainable fashion context, perceived value can also be a predictor of consumers' willingness to pay a premium price. The higher price for sustainable clothing can be justified by the environmentally-friendly materials and production processes used (Moon et al., 2014). Despite this, consumers still look to get the most value for money; finding the desired trade-off between money and quality (Brandão and da Costa, 2021). Thus, perceived benefits that a consumer might derive from the consumption of a product affect their WTP for it. Consumers who perceive that a product has high performance and quality are more inclined to pay a higher price for these expected benefits (Baker and Crompton, 2000; Homburg et al., 2018; Jung and Jin, 2016; Sweeney and Soutar, 2001; Yang and Peterson, 2004). D'Souza et al. (2007) found that consumers are willing to pay a premium for environmentally-friendly products, provided their quality is higher than that of conventional products. According to Zhang et al. (2020), consumer perceived quality, as well as emotional and environmental values, influence the willingness to pay a premium price for energy-saving appliances. Moreover, Şener et al. (2019) highlighted that perceived value has a positive influence on the willingness to pay a higher price for slow fashion products. Finally, according to Hasbullah et al. (2020), if customers perceive that sustainable fashion products have more value than non-sustainable products, they will think that their investment is more valuable and they will not be reluctant to pay more. Hence, we formulated the following hypothesis:

Hypothesis 4. The perceived value of a sustainable clothing product

made with a given eco-friendly material positively impacts consumers' willingness to pay a premium price for that kind of product.

2.2.3. Consumer familiarity

The first step in purchasing a product is having knowledge that a product exists. While studying consumers' decision-making process, it is important to assess the impact of their prior knowledge of a product on their purchase behavior. Prior knowledge can be defined as consumers' objective or self-reported amount of knowledge about a product (Johnson and Russo, 1984; Rao and Monroe, 1988; Sujan, 1985; Torrico et al., 2019). In the past, researchers have used terms like familiarity, expertise, and experience when referring to prior knowledge (Rao and Monroe, 1988). Alba and Hutchinson (1987) specified that consumer prior knowledge has two major traits: familiarity and expertise (Alba and Hutchinson, 1987; Eung Jin Lee et al., 2020; Rao and Monroe, 1988). In this study, we focus only on consumer familiarity, explained as the number of products-related experiences that the consumer has accumulated (Pollard et al., 2002; Sabbe et al., 2008; van Kleef et al., 2005). Familiarity includes both *indirect* (e.g., knowing the product exists) or *direct* (e.g., prior purchase or use) *experiences* that a consumer has with a product (Marks and Olson, 1981). Accordingly, as indirect experience with a sustainable clothing product, we consider a consumer's general familiarity with a clothing product made with a specific eco-friendly material (i.e., consumer knowledge that such a product exists). As direct experience with a sustainable clothing product, we consider the prior purchase of clothing products made with a specific eco-friendly material.

Product familiarity has been related to several marketing-related issues, such as message acceptance, product preference, product satisfaction, and product quality (Marks and Olson, 1981; Schnurr et al., 2017; Sirgy, 1981; Torrico et al., 2019). Studies suggest that consumers who are familiar with a product can process information about the product more efficiently than buyers with no prior knowledge of the product (Loureiro et al., 2020; Shehryar and Hunt, 2005; Zhang et al., 2017). In fact, strong familiarity with a product can undercut a consumer's sense of risk associated with the product (Kim and Kwon, 2018); thus, the consumer feels more certain in buying it (Herrera and Blanco, 2011; Verbeke et al., 2009). Several TPB studies show that past behavior can help to explain future behaviors (Carfora et al., 2019; Conner and Armitage, 1998; de Bruijn, 2010), suggesting that consumers' familiarity with a product has an impact on their purchase intention (Chéron and Hayashi, 2001; Loureiro et al., 2020; Marks and Olson, 1981; Sabbe et al., 2008). For instance, Marks and Olson (1981) investigated the influence of product familiarity on purchase intention. The authors argued that consumers who are familiar with a product are more likely to recommend its purchase than those who are less familiar with the product. Similarly, Sandes and Leandro (2016) found that inexperienced consumers (who had never bought second-hand products) have a higher negative perception of purchasing second-hand products, including clothing, compared to consumers who are familiar with the product category - who had already bought second-hand products (Sandes and Leandro, 2016). Wang and Hazen (2016) found that product knowledge can influence the perceived value of remanufactured products, which in turn drives the purchase intention. Wang et al. (2020) highlighted that product knowledge and past experience with the product are positive determinants of consumers' purchase intentions towards remanufactured products. According to Zhang and Dong (2020), consumers usually choose green products due to their previous purchase experience. Therefore, we expect that consumers who have a priori indirect and direct experiences with a product make more accurate judgments about it, resulting in increased purchase intention. Based on these factors, we

developed the following hypotheses:

Hypothesis 5a. Consumers' indirect experience (knowledge of the product's existence) with a sustainable clothing product made with a given eco-friendly material positively impacts their intention to purchase that kind of product.

Hypothesis 5b. Consumers' direct experience (prior purchase) with a sustainable clothing product made with a given eco-friendly material positively impacts their intention to purchase that kind of product.

Product familiarity can also impact the consumers' willingness to pay more for that product. Several studies on green consumption highlighted that consumers who never bought a specific green product, but have knowledge on the existence of the product, its characteristics, or the sustainable methods used for its production, are willing to pay a higher price compared to consumers without such knowledge (D'Amico et al., 2016; Lanfranchi et al., 2019; Vecchio, 2013). Rao and Sieben (1992) showed that consumers with limited knowledge about the product (clothes) offer lower overall product evaluations compared to consumers with higher product knowledge; therefore, they are not willing to pay a price higher than or equal to the price their more knowledgeable counterpart is available to pay.

Similar outcomes have been found for consumers who had a direct experience with the product. Studies conducted on electric vehicles show that experienced users have a higher chance to recognize and appreciate the product characteristics and, therefore, are willing to pay a higher price compared to users without direct experience (Gyimesi and Viswanathan, 2011; Larson et al., 2014; Peters and Dütschke, 2014). More recently, Notaro and Paletto (2021) found that consumers who buy >5 % of eco-friendly clothing compared to traditional clothing have a higher willingness to pay a premium price for bio-textile socks compared to regular consumers. According to Ayedun et al. (2017), farmers who had direct experience with an organic product for reducing infestation of crops have a higher willingness to pay for this type of product compared to inexperienced farmers. Therefore, we expect that consumers who have a priori indirect and direct experiences with a product make more accurate judgments about it, resulting in increased willingness to pay. Based on these factors, we formulated the following hypotheses:

Hypothesis 6a. Consumers' indirect experience (knowledge of the product's existence) with a sustainable clothing product made with a given eco-friendly material positively impacts consumers' willingness to pay a premium price for that kind of product.

Hypothesis 6b. Consumers' direct experience (prior purchase) with a sustainable clothing product made with a given eco-friendly material positively impacts their willingness to pay a premium price for that kind of product.

2.3. The theoretical model

Fig. 1 shows the theoretical model of this study, with the developed hypotheses. On the left, there are the factors determining the consumer behavioral intention for sustainable clothing (environmental concern, perceived value of the product, and consumer familiarity with the product - distinguished into indirect and direct experiences), while, on the right, there is the behavioral intention as represented by two dimensions: purchase intention and willingness to pay a premium price. Further, consumers' socio-demographic characteristics and relevance given to several aspects when purchasing clothing are included in the model as control variables.
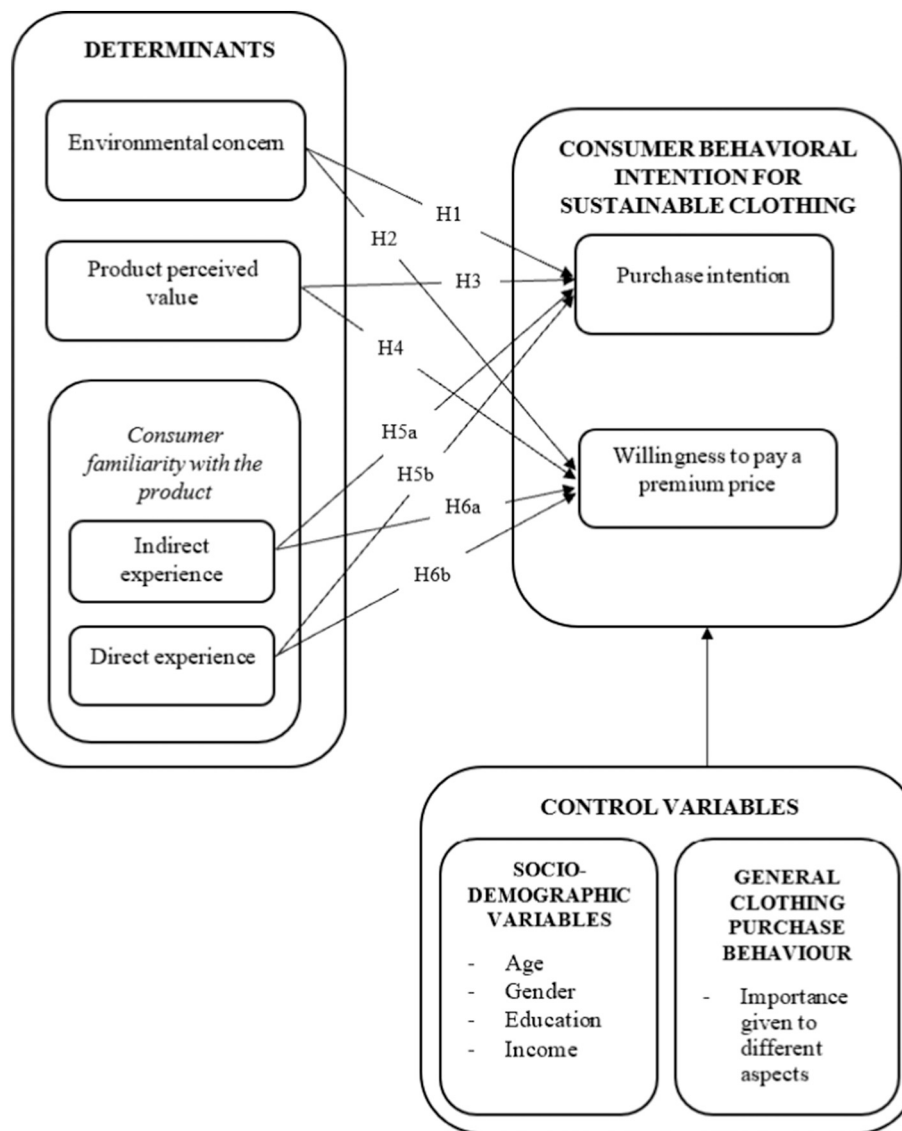
Fig. 1. Theoretical model of consumer behavioral intention for sustainable fashion products.

3. Methodology

This section is divided into three subsections. Section 3.1 presents the procedure used to collect data and the sample. Section 3.2 presents the questionnaire. Section 3.3 describes the analytic technique used for data analysis.

3.1. Procedure and sample

Data were collected by means of a questionnaire distributed across a sample of consumers living in Italy. A pre-test of the questionnaire was conducted on a sample of 20 consumers to (1) assess whether the questions were clear to respondents, (2) assess whether the questions effectively measured what they were intended to, and (3) test the time required to complete the questionnaire. On average, respondents took 15 min to complete the questionnaire.

A convenience sampling was used as common in consumer behavior studies (e.g., Butt et al., 2017; Jaiswal et al., 2021; Mohd Suki and Mohd Suki, 2019). The final questionnaire was distributed online, between June 2020 and September 2020, to 47 management engineering students of Sapienza University of Rome, who were invited to fill it and spread it to their contacts, using social networks, instant messaging

clients, and e-mails.[4] Hence, the snowball sampling method was used to collect data.[5] The final sample included 2.694 consumers.[6] Since all questions were mandatory, there are no missing values in the dataset.

3.2. Structure of the questionnaire

At the beginning of the questionnaire, it was specified that questions refer to garments such as shirts, T-shirts, pants, skirts, sweaters, and jackets (underwear was excluded). We divided the questionnaire into different sections. In the first section, respondents were asked about the importance of several aspects when purchasing garments: brand, store, price, sturdiness, type of fabric, quality, comfort, long-lasting fashion style, trendy style, country of origin (manufacturing location), and

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[4] The participation in the survey by students was on a voluntary basis and all answers were anonymous.

[5] Despite this method might not guarantee representation and be affected by sampling biases, a high number of responses mitigate these risks (Atkinson and Flint, 2001).

[6] On average, each student shared the questionnaire with 57(=2.694/47) other respondents. Hence, respondents to the survey are not limited to management engineering students of Sapienza University of Rome.

environmental impact, on a five-point scale, from 1 = "not at all important" to 5 = "extremely important" (adapted from Chan and Wong, 2012).

Then, there were three different sections, one for each eco-material option for sustainable clothing: garments made from recycled fibers/fabrics, organic fibers/fabrics, and alternative vegetable matter. For each of them, to measure *consumer familiarity* with the product in terms of *indirect experience*, we first asked the respondent whether he/she had ever heard about such a type of product (0 = "no", 1 = "yes"). If the answer was "no", we associated a value 0 also to consumer familiarity with the product in terms of *direct experience* assuming that, if a consumer had not even ever heard about a product, he/she could not have bought it, at least purposefully. If the answer was "yes", in order to measure *direct experience*, we asked whether he/she had ever purchased such a type of product (0 = "no", 1 = "yes"). Then, we measured respondent's *perceived value* of such a kind of products, in terms of quality, resistance, expensiveness, and trendiness, through a four-item five-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree", which takes into account functional, economic, and social values as reflective dimensions of the general value of the product (new scale inspired by Dangelico et al., 2021; Magnier et al., 2019). Further, *purchase intention* for products made with that eco-friendly material was measured through a three-item five-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree" (adapted from Sweeney et al., 1999). We measured the *willingness to pay more* for such a kind of product compared to traditional garments on a five-point scale, from 1 = "nothing" to 5 = "more than 30% more" (adapted from Niinimäki, 2010).

After that, a three-item five-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree", was used to measure respondent's *environmental concern* (D'Souza et al., 2015). Finally, we included several questions about socio-demographic characteristics of respondents: gender (a dummy variable codified as 0 for male and 1 for female), age (from 1 = "under 25" to 6 = "over 65"), education level (from 1 = "primary education" to 6 = "PhD"), and monthly net income (from 1 = "less than 1.000 €" to 6 = "over 3.000 €") (Barbarossa and Pelsmacker, 2014; Dangelico et al., 2021; Magnier et al., 2019; Pagiaslis and Krontalis, 2014).[7]

3.3. Analytic technique

To test our hypotheses, we employed structural equation modeling (SEM) with maximum likelihood estimation using AMOS 25.0. First the measurement model was assessed through confirmatory factor analysis (CFA), then the structural model was tested. The analyses were first conducted using scales referred to organic products. After that, as a robustness check for the obtained results, the same analysis was conducted using scales referring to products made with recycled fibers/fabrics and for products made with alternative vegetable matter.

Being the Chi-square statistic (χ^2) highly sensitive to sample size, it is not an optimal indicator of fit for large samples (Bagozzi, 2010; Iacobucci, 2010). Since our sample is very large ($N = 2694$), model fit will be primarily assessed through other model fit indexes (Bagozzi, 2010; Byrne, 2001; Kline, 2015): the comparative fit index (CFI), the global fit index (GFI), the Tucker–Lewis index (TLI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SMRS).

4. Results

This section is divided into five subsections. Sections 4.1 and 4.2 present the respondent profile and the descriptive analysis of replies,

respectively. Section 4.3 describes the measurement model. Section 4.4 concerns the structural model. Finally, Section 4.5 addresses the robustness check.

4.1. Respondents' profile

Table 1 illustrates the socio-demographic characteristics of our sample, such as age, gender, education level, and monthly net income.

4.2. Descriptive analysis

Table 2 reports the level of importance given to several aspects when shopping for clothes in general. Results show that the most important is comfort, followed by quality, price, type of fabric, and resistance. The least important seems to be the brand, whereas long-lasting style, trendy style, country of origin, store, and environmental impact are characterized by a medium level of importance.

Table 3 reports consumer familiarity as indirect and direct experiences, as well as willingness to pay a premium price for each of the three eco-design options. Results show that >70 % of consumers are knowledgeable about garments made of recycled fibers/fabrics, with about 36 % of them having bought these garments at least once. Almost 70 % of respondents declared to be willing to pay a premium for these products - for the greatest part of them the premium price is between 1 % and 20 % more. Almost 70 % of consumers are knowledgeable about garments made of organic fibers/fabrics, with about 53 % of them having bought these garments at least once. The 80 % of respondents declared to be willing to pay a premium for these products - for the greatest part of them the premium price is between 1 % and 20 % more. Only about 18 % of respondents stated to be knowledgeable about garments made of alternative vegetable matter, and, among them, only 16 % have ever bought such a type of product. About 55 % of respondents declared to be willing to pay a premium for these products - for the greatest part of them the premium price is between 1 % and 20 % more.

4.3. Measurement model

CFA was employed to assess convergent and discriminant validity of the multi-item scales of our study: environmental concern, perceived value, and purchase intention.

The initial measurement model that included all 10 items of

Table 1
Socio-demographic characteristics of respondents (N = 2694).

	Frequency	Percentage
Gender		
Male	1002	37.19
Female	1692	62.81
Age		
18–24	1078	40.01
25–34	779	28.92
35–44	183	6.79
45–54	264	9.80
55–65	319	11.84
Over 65	71	2.64
Education		
Primary education	5	0.19
Lower secondary education	68	2.52
Upper secondary education	949	35.23
Bachelor degree	814	30.22
Master degree	809	30.03
PhD	49	1.82
Monthly net income		
Less than 1.000 €	1034	38.38
1.000–1.500 €	614	22.79
1.500–2.000 €	474	17.59
2.000–2.500 €	204	7.57
2.500–3.000 €	150	5.57
Over 3.000 €	218	8.09

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[7] Several other questions were included in the questionnaire, but they are out of the scope of this article.

Table 2

Importance of several aspects when shopping for clothes ($N = 2694$).

	Mean	Standard Deviation
Please rate the importance of the following aspects when you purchase garments: [1 = not important at all; 5 = extremely important]		
Brand	2.47	1.109
Store	2.64	1.105
Price	3.97	0.932
Resistance	3.74	0.932
Type of fabric	3.83	0.985
Quality	3.99	0.895
Comfort	4.16	0.888
Long-lasting fashion style	2.91	1.224
Trendy style	2.68	1.137
Country of origin (production place)	2.65	1.241
Environmental impact	2.87	1.237

environmental concern, perceived value for sustainable clothing made of organic materials, and purchase intention for sustainable clothing made of organic materials, as reported in Table A.1, showed a good model fit ($\chi^2 = 329.450$ [df = 32] ($p = 0.000$), CFI = 0.982, GFI = 0.977, TLI = 0.975, RMSEA = 0.059, SRMR = 0.034) (Hair et al., 2006; Schumacker and Lomax, 2016). However, the third and the fourth items of the perceived value scale displayed factor loadings lower than 0.50 (0.45 and 0.48, respectively), which is the threshold value needed for guaranteeing the practical significance of the measures (Hair et al., 2006). Thus, these items were deleted. After having eliminated these two items, the model fit increased ($\chi^2 = 152.918$ [df = 17] ($p = 0.000$), CFI = 0.991, GFI = 0.986, TLI = 0.985, RMSEA = 0.054, SRMR = 0.024), showing a good fit (Hair et al., 2006; Schumacker and Lomax, 2016).

After that, convergent and discriminant validity of constructs were assessed. All standardized factor loadings were higher than 0.50 and the average variance extracted (AVE) was >0.50 for each construct, providing evidence of good convergent validity (Hair et al., 2006). The composite reliability for each measure was >0.80, while Cronbach's alpha and Spearman-Brown's coefficient (used for the two-item scale perceived value, according to Eisinga et al., 2013) were above 0.80 for all scales, indicating high reliability of our measures (Nunnally, 1978; Nunnally and Bernstein, 1994) (Tables 4 and A.1). Discriminant validity was assessed according to Fornell and Larcker (1981). In particular, since the AVE of each construct exceeds the squared correlation between that construct and other constructs, there is evidence of discriminant validity between constructs. Table 4 reports the summary of the measurement model.

4.4. Structural model

In order to test the research hypotheses, indirect experience, direct experience, and willingness to pay a premium price (referred to sustainable clothing made of organic materials), as well as control variables (socio-demographic variables – gender, age, education, income – and importance given to different aspects when purchasing clothing – brand, store, price, resistance, type of fabric, quality, comfort, long-lasting style, trendy style, country of origin, environmental impact), were added to the measurement model and the hypothesized paths were included. The obtained structural model displayed a good fit ($\chi^2 = 520.453$ [df = 108] ($p = 0.000$), CFI = 0. 986, GFI = 0. 986, TLI = 0.957, RMSEA = 0.038, SRMR = 0.019). Structural model results are reported in Table 5.

Results show that environmental concern, perceived value, direct experience, and indirect experience have a positive and significant effect on purchase intention, providing support to hypotheses H1, H3, H5a, and H5b. Further, environmental concern, perceived value, and direct experience with the product positively and significantly affect

Table 3

Consumer familiarity (indirect and direct experiences) and willingness to pay a premium price for sustainable clothing made from different types of materials.

Sustainable clothing made from		Frequency	Percentage
Recycled fibers/fabrics E.g. PET from recycled plastic bottles or fabrics from recycled clothing	Consumer familiarity (Indirect experience) Have you ever heard of garments made from recycled fibers/fabrics?		
	Yes	1982	73.57
	No	712	26.43
	Total (N)	2694	100
	Consumer familiarity (Direct experience) Have you ever purchased garments made from recycled fibers/fabrics?		
	Yes	718	36.23
	No	1264	63.77
	Total (N)	1982	100
	Willingness to pay more How much more are you willing to pay for garments made from recycled fibers/fabrics compared to traditional garments?		
	Nothing	822	30.51
	Between 1 % and 10 % more	1221	45.32
	Between 11 % and 20 % more	527	19.56
	Between 21 % and 30 % more	101	3.75
	More than 30 %	23	0.85
	Total (N)	2694	100
Organic fibers/fabrics E.g., organic cotton, linen or bamboo derived from organic agriculture (no pesticides, fertilizers, herbicides and other toxic substances are used) and wool derived from organic breeding (animals live freely and they feed on organic food)	Consumer familiarity (Indirect experience) Have you ever heard of garments made from organic fibers/fabrics?		
	Yes	1857	68.93
	No	837	31.07
	Total (N)	2694	100
	Consumer familiarity (Direct experience) Have you ever purchased garments made from organic fibers/fabrics?		
	Yes	976	52.56
	No	881	47.44
	Total (N)	1857	100
	Willingness to pay a premium price How much more are you willing to pay for garments made from organic fibers/fabrics compared to traditional garments?		
	Nothing	540	20.04
	Between 1 % and 10 % more	1238	45.95
	Between 11 % and 20 % more	673	24.98
	Between 21 % and 30 % more	199	7.39
	More than 30 %	44	1.63
	Total (N)	2694	100
Alternative vegetable matter E.g., peel of oranges, apples, etc.	Consumer familiarity (Indirect experience) Have you ever heard of garments made from alternative vegetable matter?		
	Yes	478	17.74

Table 3 (*continued*)

Sustainable clothing made from		Frequency	Percentage
	No	2216	82.26
	Total (N)	2694	100
Consumer familiarity (Direct experience) Have you ever purchased garments made from alternative vegetable matter?			
	Yes	76	15.90
	No	402	84.10
	Total (N)	478	100
Willingness to pay a premium price How much more are you willing to pay for garments made from alternative vegetable matter compared to traditional garments?			
	Nothing	1204	44.69
	Between 1 % and 10 % more	1003	37.23
	Between 11 % and 20 % more	374	13.88
	Between 21 % and 30 % more	88	3.27
	More than 30 %	25	0.93
	Total (N)	2694	100

willingness to pay a premium price, thus supporting H2, H4, and H6b. Alternatively, indirect experience does not influence willingness to pay a premium price; thus, H6a does not receive support. The strongest predictor of both purchase intention and willingness to pay a premium price is perceived value.

Referring to socio-demographic variables, results show that gender has positive and significant impacts on purchase intention and willingness to pay a premium price. These results show that, compared to men, women have a higher level of preference for garments made of organic materials and are more willing to pay a premium price for them. Age negatively affects willingness to pay a premium price, showing that older consumers have a lower willingness to pay a premium price for sustainable clothing made of organic materials than younger ones. The level of education positively affects the purchase intention, but does not influence the willingness to pay a premium price; accordingly, more educated consumers have a higher propensity towards the purchase of organic clothing, but they are not willing to spend more for these products, compared to less educated consumers. Finally, the level of income displays a significant effect on the willingness to pay a premium price, showing that higher-income consumers are more willing to pay extra money for organic clothing.

With regard to the influence of the aspects important for consumers when purchasing clothing, results show that considering the brand, the

store, and the country of origin as important factors in the purchase decision negatively and significantly influences purchase intention. The level of importance given to the price significantly affects the purchase intention positively and the willingness to pay a premium price negatively. Finally, the level of importance given to the environmental impact of products positively and significantly affects the willingness to pay a premium price.

4.5. Robustness check

To check for the robustness of the obtained results, the same measurement and structural models tested for organic clothing were also tested for sustainable clothing made of recycled materials and for sustainable clothing made of alternative vegetable matter. Results of the assessment of the measurement models are reported in Tables 6 and 7, while structural model results are reported in Tables 8 and 9.

For both types of eco-materials, the measurement model showed adequate model fit and there was evidence of convergent and discriminant validity of constructs; all the scales were reliable (Tables 6, 7, and A.1). Further, the structural model displayed good model fit for both types of eco-materials (Tables 8 and 9).

In Table 10, results of hypothesis testing are reported in correspondence of each of the three types of eco-materials used in sustainable clothing analyzed in this study. Results referred to the effects of environmental concern, perceived value, and indirect experience on purchase intention are robust across all types of eco-materials. Thus, H1, H3, and H5a are fully supported. Similarly, results related to the influence of environmental concern and perceived value on the willingness to pay a premium price are robust across all types of eco-materials. Therefore, H2 and H4 are fully supported. Alternatively, results referring to the effects of direct experience on purchase intention and willingness to pay a premium price, as well as results on the effect of indirect experience on the willingness to pay a premium price, are not robust, as differences do emerge when considering different types of eco-materials. Thus, H5b, H6a, and H6b only receive partial support.

Comparing the results of the structural models (Tables 5, 8, and 9) referring to control variables, some results reveal to be robust, despite some differences appearing across the different types of eco-materials.

In particular, with regard to the socio-demographic variables, the positive effect of education on purchase intention and the negative effect of age on the willingness to pay a premium price are robust across the three types of eco-materials. Alternatively, considering consumer gender, the positive effect on purchase intention that emerged for organic clothing is not confirmed for the other two eco-materials and the positive effect on the willingness to pay a premium price is confirmed only for clothing made of alternative vegetable matter. The positive impact of income on the willingness to pay more is not confirmed for the other two types of eco-materials.

With regard to results on the influence of the aspects important for consumers when purchasing clothing, the negative effect of brand and the positive effect of price on purchase intention are robust across the

Table 4
Summary of the measurement model (clothing made from organic fibers/fabrics).

Construct	Item #	Stand. factor loading	Composite reliability	Discriminant validity			
Environmental concern (EC)	1	0.838	0.892	Squared construct correlations off-diagonal; AVE on diagonal			
	2	0.913		Constructs	EC	PV	PI
	3	0.815		EC	0.733		
Perceived value (PV)	1	0.930	0.858	PV	0.171	0.752	
	2	0.800		PI	0.298	0.386	0.784
Purchase intention (PI)	1	0.926	0.915				
	2	0,959					
	3	0,758					

Note. N = 2694; Model fit (χ^2 = 152.918 [df = 17] (p = 0.000), CFI = 0.991, GFI = 0. 986, TLI = 0.985, RMSEA = 0.054, SRMR = 0.024).
Abbreviation: AVE: average variance extracted.

Table 5
Structural equation model coefficients (clothing made from organic fibers/fabrics).

	Standardized coefficients
Paths	
EC → PI	0.324**
PV → PI	0.438**
IE → PI	0.037*
DE → PI	0.059**
EC → WTP	0.057*
PV → WTP	0.304**
IE → WTP	0.018
DE → WTP	0.051*
Control variables	
Gender → PI	0.032*
Age → PI	−0.031
Education → PI	0.059**
Income → PI	−0.019
Brand → PI	−0.042*
Store → PI	−0.034*
Price → PI	0.070**
Resistance → PI	−0.010
Type of fabric → PI	0.037
Quality → PI	0.010
Comfort → PI	0.028
Long-lasting style → PI	0.006
Trendy style → PI	−0.007
Country of origin → PI	−0.043*
Environmental impact → PI	0.004
Gender → WTP	0.044*
Age → WTP	−0.180**
Education → WTP	0.015
Income → WTP	0.042*
Brand → WTP	−0.016
Store → WTP	−0.003
Price → WTP	−0.098**
Resistance → WTP	−0.034
Type of fabric → WTP	−0.001
Quality → WTP	−0.004
Comfort → WTP	−0.024
Long-lasting style → WTP	0.020
Trendy style → WTP	−0.028
Country of origin → WTP	0.012
Environmental impact → WTP	0.100**

Note. N = 2694; Model fit (χ^2 = 520.453 [df = 108] (p = 0.000), CFI = 0.986, GFI = 0.986, TLI = 0.957, RMSEA = 0.038, SRMR = 0.019).
Abbreviations: EC: environmental concern; PV: Perceived value; IE: indirect experience; DE: direct experience; PI: purchase intention; WTP: willingness to pay.

* $p < 0.05$.
** $p < 0.01$.

three types of materials, while the negative effect of store is confirmed only for alternative materials and the negative effect of country of origin is confirmed only for recycled materials.

The negative influence of price and the positive influence of environmental impact on the willingness to pay are robust across the three types of materials.

5. Discussion

Nowadays, there is increased opportunity for consumers to adopt a more sustainable lifestyle by buying sustainable products. Recent years have seen an increase in the production of fashion clothing made of recycled, organic, or other eco-friendly materials, also known as sustainable fashion.

In this study, we examined consumers' behavioral intention for sustainable clothing made of different types of eco-materials, in a modified TPB context. Specifically, we studied the effect of environmental concern, perceived value, and consumer familiarity on consumers' purchase intention and willingness to pay a premium price. In addition, we investigated the effects of socio-demographic variables on consumer behavioral intention.

5.1. The impact of environmental concern, perceived value, and consumer familiarity

The results of our study show that environmental concern, consumer perceived value of the product, and consumer familiarity with the product have a positive and significant effect on consumer behavioral intention for sustainable fashion products. In particular, we find that consumer perceived value is the strongest predictor of both purchase intention and willingness to pay a premium price for sustainable fashion, regardless of the specific eco-material used. This suggests that, in a sustainable fashion context, high levels of customer perceived value of a product made with a specific eco-friendly material increase consumers' intention to buy that kind of product, but also to pay a premium price for it. These results are consistent with previous studies on sustainable fashion products (Chi et al., 2021; Han et al., 2017; Şener et al., 2019; Wei and Jung, 2017). Our results also indicate that environmental concern positively influences purchase intention and willingness to pay a premium price for sustainable clothing, regardless of the specific eco-material. Therefore, if a consumer is more concerned about environmental issues, he/she will show stronger intention to purchase sustainable clothing compared to consumers with lower environmental concern. This result is coherent with previous studies (e.g., Alzubaidi et al., 2020), as this might suggest that the intention to purchase a product is high as relates to the moral and personal satisfaction to safeguard the environment (Kahneman and Knetsch, 1992; Nunes and Schokkaert, 2003; Ritov and Kanheman, 1997), in particular for sustainable fashion (Park and Lin, 2020; Rausch and Kopplin, 2021). Similarly, our results show that consumers who are more concerned about the environment are also willing to pay a premium price for sustainable clothing. This is in line with other studies on green products (Cicia et al., 2002; Laroche et al., 2001) and sustainable fashion (Notaro and Paletto, 2021). This might suggest that consumers with a high environmental concern favor paying more for sustainable clothing, as this is an indication of the extra effort taken by the manufacturer to produce sustainable clothing. Plus, consumers with higher environmental concern might be more willing to take action to solve

Table 6
Summary of the measurement model (clothing made from recycled fibers/fabrics).

Construct	Item #	Stand. factor loading	Composite reliability	Discriminant validity			
Environmental concern (EC)	1	0.841	0.892	Squared construct correlations off-diagonal; AVE on diagonal			
	2	0.912		Constructs	EC	PV	PI
	3	0.815		EC	0.734		
Perceived value (PV)	1	0.862	0.789	PV	0.172	0.653	
	2	0.750		PI	0.265	0.346	0.767
Purchase intention (PI)	1	0.910	0.907				
	2	0.949					
	3	0.756					

Note. N = 2694; Model fit (χ^2 = 151.121 [df = 17] (p = 0.000), CFI = 0.990, GFI = 0.987, TLI = 0.984, RMSEA = 0.054, SRMR = 0.027).
Abbreviation: AVE: average variance extracted.

Table 7
Summary of the measurement model (clothing made from alternative vegetable matter).

Construct	Item #	Stand. factor loading	Composite reliability	Discriminant validity			
Environmental concern (EC)	1	0.841	0.892	Squared construct correlations off-diagonal; AVE on diagonal			
	2	0.912		Constructs	EC	PV	PI
	3	0.815		EC	0.734		
Perceived value (PV)	1	0.931	0.882	PV	0.099	0.790	
	2	0.844		PI	0.166	0.454	0.828
Purchase intention (PI)	1	0.94	0.935				
	2	0.973					
	3	0.808					

Note. N = 2694; Model fit (χ^2 = 241.135 [df = 17] (p = 0.000), CFI = 0.987, GFI = 0. 978; TLI = 0.978, RMSEA = 0.070, SRMR = 0.024).
Abbreviation: AVE: average variance extracted.

Table 8
Structural equation model coefficients (clothing made from recycled fibers/fabrics).

	Standardized coefficients
Paths	
EC → PI	0.309**
PV → PI	0.431**
IE → PI	0.052**
DE → PI	0.097**
EC → WTP	0.067**
PV → WTP	0.256**
IE → WTP	0.031
DE → WTP	−0.014
Control variables	
Gender → PI	−0.005
Age → PI	−0.152**
Education → PI	0.061**
Income → PI	0.018
Brand → PI	−0.049**
Store → PI	−0.030
Price → PI	0.095**
Resistance → PI	0.011
Type of fabric → PI	0.020
Quality → PI	0.006
Comfort → PI	0.004
Long-lasting style → PI	0.005
Trendy style → PI	−0.018
Country of origin → PI	−0.091**
Environmental impact → PI	0.011
Gender → WTP	0.037
Age → WTP	−0.248**
Education → WTP	0.003
Income → WTP	0.022
Brand → WTP	−0.011
Store → WTP	0.002
Price → WTP	−0.128**
Resistance → WTP	0.009
Type of fabric → WTP	−0.079**
Quality → WTP	0.020
Comfort → WTP	−0.037
Long-lasting style → WTP	0.009
Trendy style → WTP	−0.018
Country of origin → WTP	0.004
Environmental impact → WTP	0.126**

Note. N = 2694; Model fit (χ^2 = 600.482 [df = 108] (p = 0.000), CFI = 0.982, GFI = 0.984, TLI = 0.945, RMSEA = 0.041, SRMR = 0.020).
Abbreviations: EC: environmental concern; PV: Perceived value; DE: direct experience; IE: indirect experience; PI: purchase intention; WTP: willingness to pay.
** $p < 0.01$.

Table 9
Structural equation model coefficients (clothing made of alternative vegetable matter).

	Standardized coefficients
Paths	
EC → PI	0.191**
PV → PI	0.597**
IE → PI	0.081**
DE → PI	−0.008
EC → WTP	0.059**
PV → WTP	0.324**
IE → WTP	0.120**
DE → WTP	0.019
Control variables	
Gender → PI	0.014
Age → PI	−0.033
Education → PI	0.040**
Income → PI	0.008
Brand → PI	−0.043*
Store → PI	−0.046**
Price → PI	0.055**
Resistance → PI	−0.007
Type of fabric → PI	0.049*
Quality → PI	−0.022
Comfort → PI	0.001
Long-lasting style → PI	−0.008
Trendy style → PI	−0.038*
Country of origin → PI	−0.032
Environmental impact → PI	0.023
Gender → WTP	0.050**
Age → WTP	−0.145**
Education → WTP	−0.006
Income → WTP	0.009
Brand → WTP	−0.015
Store → WTP	−0.035
Price → WTP	−0.113**
Resistance → WTP	0.003
Type of fabric → WTP	−0.039
Quality → WTP	−0.041
Comfort → WTP	−0.006
Long-lasting style → WTP	0.039
Trendy style → WTP	−0.043*
Country of origin → WTP	0.044
Environmental impact → WTP	0.065**

Note. N = 2694; Model fit (χ^2 = 549.111 [df = 108] (p = 0.000), CFI = 0.985, GFI = 0. 984, TLI = 0.956, RMSEA = 0.039, SRMR = 0.017).
Abbreviations: EC: environmental concern; PV: Perceived value; IE: indirect experience; DE: direct experience; PI: purchase intention; WTP: willingness to pay.
* $p < 0.05$.
** $p < 0.01$.

environmental issues, hence paying a higher price for sustainable clothing. Consumers with high environmental concern might also be more aware of the extra risks and costs (e.g., managing the production, diversification, alternatives, sustainable agriculture) encountered by companies to produce sustainable clothing, hence displaying a higher willingness to pay a premium price.

Finally, we investigated the effect of direct and indirect product familiarity on purchase intention and willingness to pay a premium price for sustainable clothing. We find that indirect familiarity with a product (e.g., knowing the product exists) has a positive effect on purchase intention, regardless of the specific eco-material used; however, it

Table 10

Summary of hypotheses and results.

Hypotheses	Results - ORG	Results - REC	Results - ALT	Overall results
H1: Consumers' environmental concern is positively related to the intention to purchase sustainable clothing.	Supported	Supported	Supported	Fully supported
H2: Consumers' environmental concern is positively associated with the willingness to pay a premium price for sustainable clothing.	Supported	Supported	Supported	Fully supported
H3: The perceived value of a sustainable clothing product made with a given eco-friendly material positively impacts consumers' intention to purchase that kind of product.	Supported	Supported	Supported	Fully supported
H4: The perceived value of a sustainable clothing product made with a given eco-friendly material positively impacts consumers' willingness to pay a premium price for that kind of product.	Supported	Supported	Supported	Fully supported
H5a: Consumers' indirect experience (knowledge of the product's existence) with a sustainable clothing product made with a given eco-friendly material positively impacts their intention to purchase that kind of product.	Supported	Supported	Supported	Fully supported
H5b: Consumers' direct experience (prior purchase) with a sustainable clothing product made with a given eco-friendly material positively impacts their intention to purchase that kind of product.	Supported	Supported	Not supported	Mixed results
H6a: Consumers' indirect experience (knowledge of the product's existence) with a sustainable clothing product made with a given eco-friendly material positively impacts consumers' willingness to pay a premium price for that kind of product.	Not supported	Not supported	Supported	Mixed results
H6b: Consumers' direct experience (prior purchase) with a sustainable clothing product made with a given eco-friendly material positively impacts their	Supported	Not supported	Not supported	Mixed results

Table 10 (*continued*)

Hypotheses	Results - ORG	Results - REC	Results - ALT	Overall results
willingness to pay a premium price for that kind of product.				

Abbreviations: ORG: organic; REC: recycled; ALT: alternative.

positively affects only the willingness to pay for clothes made with alternative materials. We also find that direct experience (e.g., having purchased or used the product) positively influences purchase intention for clothes made with two out of three eco-materials (organic and recycled materials). Further, we find that direct experience positively affects willingness to pay a premium price only for clothes made with organic materials - probably because, during usage, organic clothing appeared to consumers to be superior in quality compared to conventional clothing (e.g., Hustvedt and Dickson, 2009). The non-significant effects of direct experience on purchase intention and willingness to pay more for clothing made of alternative vegetable matter may be due to the very limited presence of these products in the market that reflects on a very low percentage of consumers having tried them. The obtained results are mostly consistent with studies showing that a consumer who is familiar with a product processes information differently than a buyer with no prior knowledge of the product (Rao and Monroe, 1988; Shehryar and Hunt, 2005; Notaro and Paletto, 2021). In fact, being familiar with a product is likely to reduce consumer's sense of risk related to a product, thus consumers might feel more confident when buying products that they already know or they have used in the past (Kim and Kwon, 2018; Loureiro et al., 2020; Verbeke et al., 2009). This might suggest that consumers with a greater product familiarity have a more positive attitude towards the product compared to buyers with no prior knowledge of the product. Similarly, consumers familiar with a product might find it easier to perform a behavior, such as paying more to buy sustainable clothes made with a specific material, compared to consumers with no prior experience with that type of clothes.

5.2. The impact of socio-demographic characteristics

Several studies emphasized socio-demographic characteristics as important determinants of consumers' purchasing behavior of sustainable products (Dangelico et al., 2021; Govindasamy and Italia, 1999; Liobikienè et al., 2017; Pollard et al., 2002; Sabbe et al., 2008; Zhang and Dong, 2020). Thus, socio-demographic differences should also be taken into consideration when investigating purchase behavior or intention for sustainable fashion (Zhang and Dong, 2020). Socio-demographics variables, such as gender, age, income, and education, were included in our model as control variables. Our results show that there are negative effects of age on willingness to pay a premium price (for clothes made with all three eco-materials). In fact, younger consumers show higher willingness to pay for sustainable clothing compared to older consumers; this is coherent with previous research on organic and sustainable products by Cranfield and Magnusson (2003), Van Doorn and Verhoef (2011), and Rizzo et al. (2020). For instance, Cranfield and Magnusson (2003) found that younger consumers are willing to pay a premium price for green food products. Our results also show that gender has a positive and significant impact on the purchase intention of products made of organic materials, as well as positive and significant impacts on the willingness to pay a premium price for clothes made with two out of three eco-materials (organic and alternative). In particular, women have a higher purchase intention (for garments made with organic materials) and willingness to pay (for clothes made with organic and alternative materials) than men. Studies on the effect of gender on environmental purchase behavior confirm these findings (D'Souza et al., 2007; Dangelico et al., 2021; Krystallis and

Chryssohoidis, 2005; Liobikienė et al., 2017). For instance, Liobikienė et al. (2017) found that women are more willing to buy green products, compared with men, while Dangelico et al. (2021) highlighted that women are more willing to pay a premium price for green products than men. In this study, we also considered the level of education, acknowledged as an important factor for social or environmental consumption (Park and Lin, 2020). Our results suggest that education positively affects the purchase intention for clothes made with all the three eco-materials. Consumers with higher education had more intention to purchase sustainable clothing than those with lower levels of education, as also reported by Dettmann and Dimitri (2007). However, we find that education does not influence the willingness to pay more, showing that more educated consumers are not willing to spend more for sustainable products, compared to less educated ones, as reported by Malone (1990) and Misra et al. (1991). In fact, these studies reported that higher-educated consumers exhibit a lower willingness to pay for sustainable products. Finally, our results suggest that the level of income does not affect the intention to purchase sustainable clothing, consistently with what was found by Dangelico et al. (2021). Alternatively, income has a positive impact on the willingness to pay a premium price, despite this result being limited to organic garments. This highlights that consumers with a higher income might be more willing to pay an extra amount of money to buy sustainable alternatives to traditional clothes, despite only specific solutions. In Dangelico et al. (2021), the level of income was not found to affect the willingness to pay a premium price for green products in general. Jointly considering their results and our study's results suggests that the influence of income on the willingness to pay a premium price may be dependent upon the specific type of product and the specific design option for a given product type.

6. Conclusions

This section concludes the paper with the implications provided by our work (Section 6.1), as well as acknowledging the limitations and suggesting future research directions (Section 6.2).

6.1. Implications

The findings presented in this study have several implications for scholars, managers, and policymakers.

In terms of theoretical implications, this research contributes to the literature on green consumption behavior in several ways. Firstly, by employing the TPB, this study investigates the determinants of consumers' behavioral intentions for sustainable fashion products. Specifically, we consider environmental concern (as antecedent of attitude, subjective norms, and PBC), consumer perceived value (as antecedent of attitude, subjective norms, and PBC), and consumer familiarity (as antecedent of attitude and PBC) as determinants. We also rely on other theories, such as TRA and VBN, to explain why environmental concern and consumer perceived value can be considered as determinants of pro-environmental behaviors. To the best of our knowledge, this is the first study that includes environmental concern together with consumer perceived value of the product and consumer familiarity with the product to explain behavioral intentions towards sustainable products. Further, two dimensions of consumer familiarity (indirect and direct experiences) are included and this is among the few studies that have analyzed the influence of consumer familiarity on the willingness to pay a premium price for green products. On the outcomes' side, both purchase intention and willingness to pay a premium price are simultaneously considered. Moreover, consumers' socio-demographic characteristics and general purchase behavior for the product class (in terms of relevance given to different aspects) are included in the model as control variables. As a result, a multi-faceted and comprehensive view of the phenomenon of green consumer behavior in the clothing industry is provided and it is shown that the two outcomes have, indeed, different antecedents, regarding the two dimensions of consumer familiarity,

socio-demographic characteristics of respondents and the relevance they give to different aspects when purchasing clothes. Consumer perceived value of the product emerged to be the strongest predictor of both purchase intention and willingness to pay a premium price. Finally, to the best of our knowledge, this is the first study that examines and compares consumer behavioral intentions for sustainable clothing characterized by different eco-materials. In so doing, this study integrates the consumer behavior/marketing perspective with the design one for green products. The testing of the model with regard to organic clothing provided results that revealed to be mostly robust also with regard to the other two types of eco-materials. However, mixed results on the effects of consumer experience, as well as of some control variables obtained for the different types of eco-materials, highlight that, to fully understand green consumer behavior, it is important to be very specific on the green characteristics of the products, since they can influence consumer behavior.

From a managerial perspective, this study may suggest that companies should: (1) carefully identify and evaluate all the different design options to green their product offerings and (2) clearly communicate to consumers the green characteristics of their products, providing detailed information on the labels or on the packaging or through advertising. A useful tool to these aims can be represented by the Green Option Matrix (Dangelico and Pontrandolfo, 2010). Moreover, before introducing the use of innovative eco-friendly materials in a given category of products, companies should conduct in-depth marketing analysis in order to understand consumers' perceptions about that. Further, our findings show that green consumer behavior is strongly dependent on consumers' socio-demographic characteristics. Thus, it is important that companies also take into account socio-demographic segmentation when designing their marketing strategies and develop specific marketing mixes for each target segment. For instance, we find that gender may have an impact on both intention to purchase and willingness to pay for sustainable fashion products. This might suggest that companies can opt for a gender segmentation of the market, mainly targeting women or offering to women a higher-priced line of sustainable products and to men a lower-priced one; in the latter option, investments in specific advertisements should also be made to raise men awareness about the benefits of sustainable fashion products, so to increase their purchase intention and their willingness to pay more. Finally, since this study highlights that consumer familiarity (both indirect and direct experiences) may positively affect green consumer behavior, companies should invest in increasing consumer familiarity with their green products, for instance through investments in advertisement and promotion of sales.

This study also provides implications for policymakers. Specifically, results highlighted that older people are less likely to adopt a green consumption behavior than younger ones. Thus, communication campaigns should be devoted to raising awareness of older citizens about the relevance of green products to protect the natural environment as well as to highlight that these products' quality and performance are not lower than those of conventional alternatives. Further, the positive influence of the consumers' education level on their purchase intention of sustainable clothing suggests that investing in education allows governments to move towards not only more educated but also more environmentally-friendly societies.

6.2. Limitations and future research directions

This study has some limitations. First, the survey focused on Italian consumers, so limiting the generalizability of the achieved results. Further, the analysis is based on a convenience sample, which is not representative of the whole Italian population. However, the high number of respondents allows us to overcome the potential risks of sampling biases (Atkinson and Flint, 2001). Second, this study refers to garments (like shirts, T-shirts, pants, skirts, sweaters, and jackets) that are highly visible to other people. It should be highlighted that different results could have been obtained referring to clothing, such as

undergarments and socks, that are both less apparent (and for which, thus, social pressures may be less relevant) and in close contact with the skin of users (so that the quality of the materials used can be perceived as more important). Third, it should be acknowledged that, while our aim was to measure the broad perceived value of products (including functionality as well as economic value and social value), the test of the measurement model led us to retain in the scale only the items related to functionality. Thus, the obtained results should be interpreted only as referring to this dimension of value.

Fourth, this study focuses on the materials of which garments are made, considering three types of eco-materials: recycled, organic, and made of alternative vegetable matter. We acknowledge that other specific materials, different from those considered in this paper, might exist. In addition, other options do exist for making garments more environmentally-friendly, such as making them resistant over time, designing them with a classic style (that does not quickly go out of fashion), or, in the case of baby clothing, designing them with adjustable size, to fit the baby growth. These options allow to "slow the loop" from a circular economy perspective (Geissdoerfer et al., 2017; Korhonen et al., 2018).

Future studies could extend this research in several ways. For instance, future research could be aimed at testing the developed theoretical model by surveying consumers living in other geographical regions, so as to assess cultural influences on green consumer behavior, as well as whether differences in consumer behavior emerge between developed and developing countries - in this regard, purchase intention and willingness to pay a premium price for sustainable fashion products could depend on the economic conditions of the country under investigation. Another interesting research avenue would be enlarging and comparing the product categories under investigation (including, for instance, fashion accessories - such as shoes and bags - or undergarments). This would be relevant, since consumer purchase behavior for clothing products made with eco-friendly materials is dependent upon the perception of associated contamination risks, whose impact is higher for products closer to the skin; this has been proven, for instance, for textile products made of recycled plastic bottles (Meng and Leary, 2021). Further, it would be interesting to investigate consumers' attitudes and preferences about other options to make clothing more eco-friendly (e.g., design for "slowing the loop"). Moreover, future technological developments may lead to other innovative eco-friendly materials that can be used for garments and whose influence on green consumer behavior should be promptly analyzed.

Finally, future studies, by focusing on consumers with a direct experience with sustainable clothing, could investigate the role played by consumer satisfaction in green consumption behavior.

We hope that this study supports the achievement of the United Nations Sustainable Development Goal n. 12 (sustainable production and consumption) in an industry, that of clothing, with a relevant environmental impact worldwide, and will stimulate further research on the topic, contributing to the transition towards a more sustainable society.

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CRediT authorship contribution statement

Rosa Maria Dangelico: Conceptualization, Investigation, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Letizia Alvino:** Conceptualization, Methodology, Writing - original draft, Writing - review & editing. **Luca Fraccascia:** Conceptualization, Investigation, Methodology, Data curation, Writing – original draft, Writing – review & editing.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

Appendix A

Table A.1
Scales.

Items		Mean	SD	Reliability
Please indicate your level of agreement with the following statements (from 1 = "strongly disagree" to 5 = "strongly agree"):				
Environmental concern	1. I am very concerned about the environment	4.34	0.764	Cronbach's alpha =
(D'Souza et al., 2015)	2. I would be willing to reduce or change my consumption to help protect the environment	4.34	0.756	0.891
	3. Protecting the natural environment increases my quality of life	4.43	0.779	
Please indicate your level of agreement with the following statements on garments made from organic fibers/fabrics (from 1 = "strongly disagree" to 5 = "strongly agree"):				
Perceived value (organic)	1. I think that a garment made from organic fibers/fabrics has a good quality	3.60	0.865	Spearman-Brown =
(new scale inspired by Dangelico et al., 2021; Magnier et al., 2019)	2. I think that a garment made from organic fibers/fabrics is resistant over time	3.43	0.814	0.853
	3. I think that a garment made from organic fibers/fabrics should be more expensive than traditional garments (D)	3.16	1.024	
	4. I think that wearing a garment made from organic fibers/fabrics is trendy (D)	3.10	0.956	
Purchase intention (organic)	1. I would consider buying garments made from organic fibers/fabrics	4.14	0.805	Cronbach's alpha =
(adapted from Sweeney et al., 1999)	2. I am willing to purchase garments made from organic fibers/fabrics	4.11	0.807	0.900
	3. There is a strong likelihood that I will buy garments made from organic fibers/fabrics	3.72	0.965	
Please indicate your level of agreement with the following statements on garments made from recycled fibers/fabrics (from 1 = "strongly disagree" to 5 = "strongly agree"):				
Perceive value (recycled)	1. I think that a garment made from recycled fibers/fabrics has a good quality	3.13	0.763	Spearman-Brown =
(new scale inspired by Dangelico et al., 2021; Magnier et al., 2019)	2. I think that a garment made from recycled fibers/fabrics is resistant over time	3.22	0.762	0.785
	3. I think that a garment made from recycled fibers/fabrics should be more expensive than traditional garments (D)	2.50	0.946	

(continued on next page)

Table A.1 (*continued*)

	Items	Mean	SD	Reliability
	4. I think that wearing a garment made from recycled fibers/fabrics is trendy (*D*)	3.02	0.937	
Purchase intention (recycled) (adapted from Sweeney et al., 1999)	1. I would consider buying garments made from recycled fibers/fabrics	4.11	0.863	Cronbach's alpha = 0.894
	2. I am willing to purchase garments made from recycled fibers/fabrics	4.05	0.891	
	3. There is a strong likelihood that I will buy garments made from recycled fibers/fabrics	3.58	1.033	
Please indicate your level of agreement with the following statements on garments made from alternative vegetable matter (from 1 = "strongly disagree" to 5 = "strongly agree"):				
Perceived value (alternative) (new scale inspired by Dangelico et al., 2021; Magnier et al., 2019)	1. I think that a garment made from alternative vegetable matter has a good quality	2.88	0.808	Spearman-Brown = 0.880
	2. I think that a garment made from alternative vegetable matter is resistant over time	2.81	0.831	
	3. I think that a garment made from alternative vegetable matter should be more expensive than traditional garments (*D*)	2.64	0.964	
	4. I think that wearing a garment made from alternative vegetable matter is trendy (*D*)	2.79	0.959	
Purchase intention (alternative) (adapted from Sweeney et al., 1999)	1. I would consider buying garments made from alternative vegetable matter	3.48	1.048	Cronbach's alpha = 0.930
	2. I am willing to purchase garments made from alternative vegetable matter	3.44	1.034	
	3. There is a strong likelihood that I will buy garments made from alternative vegetable matter	3.03	1.071	

(*D*): Dropped item for reasons elaborated in text.

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Rosa Maria Dangelico is Associate Professor of Management Engineering at the Department of Mechanics, Mathematics, and Management of Politecnico di Bari (Italy). She was formerly Associate Professor at Sapienza University of Rome. She holds a laurea degree with top graduation mark in Management Engineering from Politecnico di Bari and a PhD in the Area Innovation Management and Product Development from Scuola

Interpolitecnica di Dottorato (Italy).

She teaches or has taught Marketing and Innovation Management, Business Management, and Economics and Business Organization.

She is author of several papers published in international journals, including Journal of Business Ethics, Business Strategy and the Environment, and Journal of Product Innovation Management.

Her research mainly relates to corporate sustainability, green innovation, and green consumer behavior.

Letizia Alvino is Assistant Professor of Marketing at the Faculty of Behavioural, Management and Social Sciences (BMS) at the University of Twente the Net. Her research interest focuses on neuromarketing, consumer buying behavior and marketing strategy. She has developed and taught courses such as Marketing, Digital Marketing, Consumer Behavior, Neuromarketing, Organizational Behavior and Research. She graduated cum laude in Management and Business Control at the Parthenope University of Naples. In 2018, she received her Ph.D. from University of Molise in collaboration with the University of Twente. She investigated the potential benefits of utilizing neuroimaging and biometric tools in marketing research. Letizia has been visiting scholar at various universities and research institutes including University of Twente (The Netherlands), Chaudhary Charan Singh University of Meerut (India), International Institute of Knowledge Management (Sri Lanka), and Global Alliance of Marketing & Management Association (Japan).

Luca Fraccascia is Senior Assistant Professor of Management Engineering at the Department of Computer, Control, and Management Engineering "Antonio Ruberti" of Sapienza University of Rome, where he teaches *Environmental Economics and Management* and *Marketing and Innovation Management,* and Guest Researcher at the Department of High-tech Business and Entrepreneurship of University of Twente. He got a laurea degree with top graduation mark in Management Engineering from Politecnico di Bari and a PhD in Mechanical and Management Engineering from Politecnico di Bari.

Luca is author of several papers published by scientific international journals, including International Journal of Production Economics, Ecological Economics, and Business Strategy and the Environment, and is Editor of Resources, Conservation and Recycling Advances. His research focuses on circular economy, industrial symbiosis, sustainable business models, and green consumer behavior.