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Beyond Sustainability Knowledge: How Awareness Drives Sustainable Actions

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Abstract

Encouraging sustainable consumption behavior requires more than just knowledge of environmental and social issues. This study investigates the relationships between knowledge of consumption impacts and sustainable behavior, focusing on the mediating role of sustainability awareness. Surveying 385 informed consumers, experienced in sustainability, structural equation modeling analysis was conducted. Results indicate interrelations between variables and highlight sustainability awareness as a mediator between environmental/social impact knowledge and sustainable behaviors. The findings underscore the necessity of awareness-raising initiatives to enhance understanding of the benefits of addressing environmental and social concerns. Ultimately, empirical evidence confirms that sustainability awareness drives sustainable consumption.

Keywords: Environmental and social impact of consumption, sustainable awareness, sustainable behavior, sustainable consumption.

Introduction

The analysis of sustainable consumption is a topic of general interest in the literature on production, business, and marketing practices, focusing on public concern and the debate on sustainability and responsible consumption (Degli et al., 2021; Gandhi et al., 2025; Giannetti et al*.,* 2023; Haider et al., 2022; Kar & Harichandan, 2022), which is commonly associated with the concept of sustainable development, to ensure the survival of humanity (Quoquab & Mohammad, 2020; Wang et al*.,* 2019).

Over the past five decades, sustainable consumption has received much attention from different arenas and organizations (e.g., the United Nations and the Organisation for Economic Co-operation and Development), with the idea that consumption patterns and levels are not ecologically sustainable (Dawkins et al*.,* 2019). Along this vein, the scientific research community has argued that the current levels of natural resource consumption and practices are unsustainable and may lead to economic and environmental collapse (Gunawan et al., 2020; Lim, 2017; Wang et al*.,* 2019), encouraging research to further understand how sustainability directions can be pursued and sustainable behavior encouraged (Lim, 2017; Topal et al., 2021).

According to Quoquab and Mohammad (2020), sustainable consumption is an ambiguous concept, which has not been conceptualized from in-depth discussions or conceptual exploration, and is traditionally based on the concept of sustainable development and associated consumption practices such as green purchasing (Nekmahmud et al*.,* 2022), personalized consumption (He et al., 2022), proenvironmental and prosocial engagement (Čapienė et al*.,* 2021), sustainable critical consumption (Anantharaman, 2018), extended self (Kunchamboo et al., 2017), identity of place (Lee et al., 2016), consumption values (Lee et al., 2015), consumption of wholeness (Schor, 2012), green marketing (Chouinard et al., 2011), prosocial marketing (Dibb & Carrigan, 2011), ecological intelligence (Jacobs, 2009), and ethical consumption (Cherrier, 2005). However, the literature still describes research gaps for issues such as sustainable consciousness, which is an alternative perspective from which to further understand the form of knowledge and consumer behavior within the sustainability context.

In particular, consumers exhibit a tendency to engage in sustainable consumption based on their values or awareness (Lee et al*.,* 2015; Sharma & Jha, 2017; Park &Kim, 2016) on the premise that they may reject or refrain from making purchases or make decisions attributed to recognition of the environmental or social impact of a firm's production practices (*henceforth* knowledge of the impact of consumption) (Labuschagne et al., 2005; Park & Lee, 2021;). Along these lines, we argue that consumers' prior knowledge of the negative environmental and social impacts of consumption (e.g., knowledge of an industry's or product's environmental pollution practices) can be expected to result in more sustainability-conscious responses and, in turn, more sustainable behavior.

Therefore, the aim of this study was twofold: first, to evaluate the existence of positive effects between these factors based on the consumer's own consideration of the environmental and social impact of consumption; second, to evaluate the mediation of sustainable awareness in linking the knowledge of the environmental and social impact of consumption to promote sustainable behaviors. This study depends on our

understanding of the role of consumer awareness of consumption issues and sustainable behaviors.

This article begins with a review of the literature, which outlines the current studies on sustainable consumption and consumer variables, focusing on sustainable awareness and behavior. We then propose a model focusing on the phases of sustainable consumption (problem recognition, awareness, and behavior), including the reasoning behind the hypotheses, and we discuss the methodology used in this study. Finally, we describe the results obtained and comment on the conclusions and implications derived from them and suggest future areas of research.

Literature Review

Several authors (Comim et al., 2007; Dawkins et al., 2019; Dolan, 2002; Geiger et al., 2018; Quoquab &Mohammad, 2020) have noted that the concept of sustainable consumption lacks a universal, multidisciplinary definition. However, the premise that consumer awareness and behaviour exist in terms of sustainable consumption is one of the points of agreement; therefore, according to Topal et al. (2021), research into such factors needs to be strengthened, particularly in the face of problems related to unsustainable consumption, by adopting a more intentional, holistic, and systematic approach (Lim, 2017; Sharma & Jha, 2017).

Unsustainable consumption refers to the harmful environmental impact of human behavior (Thøgersen, 2014), including social, economic, political, ecological, ethical, and cultural dimensions and impacts on sustainability (Dolan, 2002; Lim, 2016; Wang et al., 2019). For example, in the case of apparel manufacturing, the characteristics of consumption include self-expression, aesthetics, and functionality; consumers may express their support for beliefs or opinions by adopting a specific design, color, or brand of clothing that matches their values; they may even support issues concerning intellectual property rights (imitation and trademark copying) through varying ethical perceptions. This even extends to analyzing attitudes toward the use of animal fur in clothing; the environmental impact caused by the synthesis, dyeing, and processing of a garment for production; the social impact of waste disposal; and criticism of the reputation of some companies owing to their sourcing policies. As such, the consumption of clothing has led to profound discussions in terms of environmental and social impact, which can be recognized by the consumer to promote sustainable perceptions and behaviors.

Although academics and practitioners from various disciplines (e.g., marketing, psychology, sociology, and economics) have explored methods of encouraging consumers to choose more sustainable products, the understanding of how to encourage sustainable behaviors remains incomplete (Haider et al., 2022; Lim, 2017; Sharma & Jha, 2017), despite agreement on the existence of latent factors such as recognition of environmental and social issues, development of sustainable awareness, and preference for sustainable products (Labuschagne et al., 2005; Noh & Johnson, 2019; Park & Kim, 2016; Sharma & Jha, 2017).

Consumer Knowledge and Sustainable Behavior

Researchers have long attempted to explore what underlies sustainable consumer behavior, suggesting several models that explain how consumer attitudes toward and perceptions about sustainability translate into concrete behaviors (Liu et al., 2017; Sharma & Jha, 2017). These attitudinal models include multiple factors such as evaluation of beliefs, knowledge, awareness, feelings, and behavioral control, where the role of cognition is strongly emphasized (Topal et al., 2021).

A sustainable or environmental attitude is defined as a psychological tendency expressed through the evaluation of the natural environment (Milfont & Duckitt, 2010). Along this line, the theory that supports our conceptual proposal corresponds to the hierarchical model of standard cognition, affect, behavior (CAB) learning attitudes (Holbrook, 1986; Solomon, 2011), where the analysis of sustainable consumption begins with cognition (personal beliefs and perceptions about a given topic or object), followed by affect (conscious feelings that individuals have regarding a topic or object), which lead to behavior (intention to act or actual action) (Liu et al., 2017). The components of the CAB hierarchy of effects for the present case correspond to the key variables of analysis: the cognition component corresponds to the assessment of knowledge of the environmental and social impact of consumption; the affect component corresponds to the assessment of sustainable awareness (conscious affect); the behavior component corresponds to the assessment of sustainable behavior.

Based on this, we may argue that sustainable consumption from the consumer's perspective starts with learning and knowledge of the environmental and social impact of consumption (knowledge of the impact of consumption), which is followed by reacting with sensitivity to the issue in terms of understanding.

Littledyke (2008) analyzed proenvironmental or sustainable learning models, discussing the cognitive and affective domains to facilitate the understanding of the environmental consequences of human behavior, without being able to demonstrate with scientific evidence the effects or relationships of knowledge of the environmental and social impact of consumption on measures of sustainable behavior. Bergmann (2016) analyzed the effectiveness of environmental education (learning and knowledge of environmental and social care) on the attitudes, awareness, and behavioral intentions of high school students, obtaining encouraging results and a slight increase in sustainable behavior compared with the information received throughout the school year. These results indicated the need for further research that can demonstrate the effects of environmental education from the cognitive level (knowledge of environmental and social impact) on the affective variables of interest and environmental care behavior. Kong et al. (2016), after analyzing the comparative effects of sources of knowledge of sustainable consumption on attitudinal and behavioral intention measures, recommended further examination of the relationships to such global knowledge of sustainability, as they were unable to demonstrate some effects. Based on the background provided above, the following was hypothesized:

Hypothesis 1 (H1): Knowledge of the environmental and social impact of consumption is positively related to sustainable consumer behavior.

Following Bergmann (2016), environmental learning and education programs resulting in increased knowledge of environmental and social issues can be enhanced by benefitting from an increased integration of the affective component, i.e., achieving the emotional internalization of knowledge based on an increased awareness of environmental impacts. Awareness is a process of accepting and internalizing external information, which places more weight on the perception of the acceptor than on the level of knowledge of objective information (Meijer et al., 2007) by focusing on the subjective judgment of the information: on how the consumer understands and feels the information.

In this study, sustainable awareness refers to an attitudinal response to how much consumers perceive themselves as aware of problems and coping strategies to manage sustainability issues (e.g., being recognized as a socially good person by practicing sustainable consumption). Sustainable awareness is understood as a consequence of understanding the environmental and social problems facing the environment as a prerequisite for the intention to engage in sustainable consumption behavior.

Several researchers have analyzed the role of sustainable awareness attributed to consumers' adjustment to improve their coping mechanisms beyond the degree of information knowledge. For example, Kang and Kim (2013) analyzed consumers' perceived risks in preferring environmentally sustainable products, including the effects on their attitudes and purchasing behaviors, suggesting that attitude may act as a mediating variable between available knowledge (risks) and behavior; they recommended further research on this topic. Shen et al. (2013) conducted a cluster segmentation analysis to assess the relationships between sustainable awareness and sustainable product consumption behaviors, proposing more effective offer combinations without examining the role of awareness as a mediating variable between customer knowledge and purchases. Jung et al. (2020), after discussing the congruence between the Chinese population's knowledge of and attitudes toward sustainability, and sustainable behavioral measures, identified the moderating role of consumption values and social norms. However, they did not examine the mediating role of sustainable attitude (examples of indicators used included "I am interested in this product" and "This product is favorable to me", p. 8); they recommended complementing their findings with further research. Finally, Park and Lin (2020) analyzed the relationships between attitudinal variables and sustainable behavior (categorical dependent variable) using logistic regression, finding that utilitarian value and subjective norm (awareness toward sustainable products) were the critical factors in predicting the purchase of recycled products, recommending further research to assess aspects that foster sustainable consumption intention, incorporating other cognitive and emotional factors, including mediating variables, that promote sustainable fashion behaviors. Overall, the literature suggests that as consumers internalize their consumption of sustainable products against their prior knowledge of sustainability, they develop an intention to engage in sustainable consumption behaviors. Therefore, the following hypothesis was put forward:

Hypothesis 2 (H2): Sustainable consumption awareness positively mediates the

relationship between sustainable behavior and knowledge of the environmental and social impacts of consumption.

Method

To confirm the hypotheses, the garment industry was chosen as a field of study because of its traditional association with sustainability issues including environmental, social, ethical and cultural aspects (Su et al., 2019) and its strong interest in more responsibly producing and marketing products (Centobelli et al., 2022), with a projected compound annual growth rate of 4.2% from 2023 to 2030 (Data Bridge Market Research, 2022).

Data were collected through an online survey of adults in a major Latin American city. Judgment sampling was used to ensure the participation of individuals genuinely familiar with the topic through two inclusion and exclusion questions, based on claiming to know and have experience with sustainable consumption. The sample included 385 people and consisted of the following: 80% were between 18 and 29 years old, 9.9% were between 30 and 39 years old, 6.8% were between 40 and 49 years old, 15.1% were between 41 and 50 years old and 2.2% were over 50 years old. In terms of sex, the sample was 61.1% women, 35.8% men, and 2.9% preferred not to say.

Data Collection

To test the relationships proposed in the model, existing instrument scales were adapted to fit the consumer framework. The items used were obtained from the work of Park and Lee (2021), who constructed a scale to measure the sustainable consumption of clothing, which was validated using measures from the literature in line with Churchill's (1979) recommendations. A total of 7, 12, and 13 items were used to measure the constructs of the environmental and social impact of clothing, sustainable consumption awareness, and sustainable behavior, respectively. The original measures were written in English. A professional translator was hired to translate them into Spanish; a working group of three academics was set up to select the items, and reliability was calculated through pilot testing. All variables were rated on a 5-point Likert-type scale ranging from 1 = strongly disagree to 5 = strongly agree. Data were collected during October and November 2022. The dimensionality was checked to continue with the testing of the measurement model.

Following the recommendations of Hair et al. (2012), we started with the acceptance of the measurement model. For this exercise, we sought to circumvent the common method variance (CMV) problem through a careful review of the indicators, and the results of Harman's simple factor test (Podsakoff et al., 2003) allowed us to identify that the variance explained by the first factor was 40.88%, revealing that the CMV problem did not affect the data or measurement model.

In line with the aim of the study, a first-order reflective measurement model was used. Following Hair et al. (2012), the measurement model was evaluated using reliability testing, convergent validity, and discriminant validity. The results revealed model adequacy (Tables 1 and 2).

Table 1

Measurement Model: Loadings, Construct Reliability, and Convergent Validity

Construct	Item	Charge	t-Value	α	ρA	ρc	AVE
Knowledge of the impact of consumption (KIC)	knowledge1	0.797	0,797	0.854	0.833	0.878	0.549
	knowledge2	0.791	0,791				
	knowledge3	0.835	0,835				
	knowledge4	0.763	0,763				
	knowledge5	0.609	0,609				
	knowledge6	0.619	0,619				
Sustainable awareness (AWARENESS)	Awareness1	0.788	0,788	0.892	0.886	0.913	0.635
	Awareness2	0.762	0,762				
	Awareness3	0.828	0,828				
	Awareness4	0.833	0,833				
	Awareness5	0.794	0,794				
	Awareness6	0.775	0,775				
Sustainable behavior (BEHAVIOR)	Behaviour1	0.751	0,751	0.925	0.913	0.933	0.698
	Behaviour2	0.846	0,846				
	Behaviour3	0.883	0,883				
	Behaviour4	0.880	0,880				
	Behaviour5	0.832	0,832				
	Behaviour6	0.816	0,816				

Note: t-value for 5000 subsamples; α: Cronbach's alpha; (pA: Rho): Dijkstra–Henseler's indicator; (pc): composite reliability (Dillon–Goldstein's index); AVE: average variance extracted.

Following Hair et al. (2017) and Falk and Miller (1992), items above 0.6 were retained to answer individual reliability. To assess construct reliability, Cronbach's alpha (α) and composite reliability (ρc: Dillon–Goldstein's index) were greater than 0.7 and considered adequate (Nunnally & Bernstein ,1994). The test result for the construct reliability indicator (ρA: Dijkstra–Henseler index) was greater than 0.7, so the degree of adequacy of the internal consistency of the model could be verified (Dijkstra & Henseler, 2015).

To assess convergent validity, the criterion of Fornell and Larcker (1981) was applied, as widely used in the literature. They suggested that values above 0.50 were acceptable and values above 0.70 were good to ensure convergent validity.

To assess discriminant validity, the Fornell–Larcker and Heterotrait–Monotrait (HTMT) criteria were used, and appropriate values were obtained. To test for discriminant

validity, the diagonal items must be significantly higher than the off-diagonal items in the corresponding rows and columns (Fornell & Larcker, 1981). This result was also verified by the HTMT values being lower than 0.85 and 0.90, confirming model adequacy (Henseler et al., 2015).

Table 2
Measurement Model: Discriminant Validity

Fornell–Larcker criterion				**HTMT**	
	BEHAVIOUR	AWARENESS	KIC	BEHAVIOUR	AWARENESS
Sustainable behavior	0.836				
Sustainable awareness	0.465	0.797		0.485	
knowledge of the impact of consumption	0.405	0.590	0.741	0.462	0.665

Note: KIC: knowledge of the impact of consumption; AWARENESS: sustainable consciousness; BEHAVIOR: sustainable behavior.

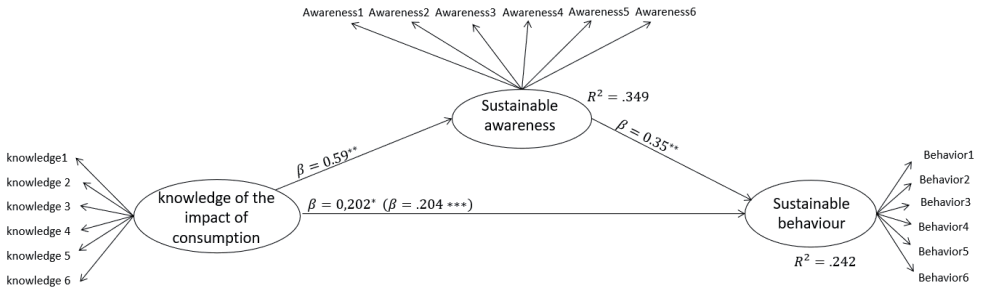
Components and Data Processing

Partial least squares (PLS) path modelling, which is a variance-based structural equation modelling (SEM) technique, was used to test the model (Hair et al., 2019). PLS allows simultaneous assessment of the reliability and validity of measurements of theoretical constructs (measurement models), as well as estimating the relationships between these constructs. SmartPLS 3 software version 3.2.8 was used.

Results

Based on the study objectives, after the evaluation and acceptance of the measurement model, the structural model was evaluated in accordance with the recommendations of Hair et al. To analyze structural models, as described by Henseler et al. (2009), bootstrapping (5000 subsamples) should be used, which produces standard errors and t-statistics that can be applied to assess the statistical significance of the path coefficients. The analysis includes the confidence interval (95%) calculation of the bootstrapping of the standardized regression coefficients. In addition, to verify the absence of multicollinearity between antecedent variables, a variance inflation factor (VIF) test was used, which produced values below 3.0, indicating the absence of multicollinearity (Hair et al., 2019) (Table 3).

Figure 1
Research Model



Note: ***Significant Path (p value < 0.001); **Significant Path (p value < 0.01); * Significant Path (p value < 0.05). With mediation (without mediation).

Values and significance levels of trajectory coefficients, together with R^2 coefficients, for each endogenous construct. The KIC → BEHAVIOUR trajectory (β = 0.202, t = 2.86) is significant and positive, and the KIC → AWARENESS (β = 0.59, t = 13.78) and AWARENESS → BEHAVIOR (β = 0.35, t = 5.02) trajectories are significant and positive, and their respective confidence intervals do not contain 0. Thus, these results support H1 and provide evidence not to reject H2.

Table 3
Results of the Structural Model

$R^2_{\text{AWARENESS}}$ = 0.349
$R^2_{\text{BEHAVIOUR}}$ = 0.242

		Bootstrap Percentile						
		β	**t-Value**	**95%CI**			**VIF**	**Supported**
Relationship			**Inferior**	**Top**	**f²**			
Hypothesis		Direct effects						
H1 +	KIC → BEHAVIOUR	0.20*	2.86	0.065	0.340	0.035	1.5350	Yes
	KIC → AWARENESS	0.59**	13.78	0.506	0.672	0.535	1.0000	Yes
	AWARENESS → BEHAVIOUR	0.35**	5.02	0.209	0.478	0.103	1.5350	Yes

Note: KIC: knowledge of the impact of consumption; AWARENESS: sustainable awareness; BEHAVIOR: sustainable behavior; β: coefficient; CI: confidence interval; t-value for 5000 bootstrapping subsamples. p < 0.05, ** p < 0.01, *** p < 0.001.

The R2 of a dependent latent variable is used to determine the amount of variance explained by a model. R2 measures the variance explained in each endogenous construct and is therefore a measure of the explanatory power of a model (Hair et al., 2019). According to Falk and Miller (1992), the exponent should be greater than 0.1, which ensures that at least 10% of the variability in the construct comes from the model. In Table 4, the R-index^2 BEHAVIOR of the sustainable behavior variables shows that the theoretical model explained 24.2% of the construct variance, which is considered weak and close to moderate according to the criteria established by Chin (1998) (R^2, 0.19: weak, 0.33: moderate, 0.67: significant). Therefore, the results showed that the structural model had explanatory power for the sustainable behavior of the endogenous variables.

The effect size was evaluated through f^2, considering the criteria proposed by Cohen (1988) for values that are small ($f^2 > 0.02$), medium ($f^2 > 0.15$), and large ($f^2 > 0.35$). The relationship between sustainable awareness and sustainable behavior presented a medium effect ($f^2_{\text{AWARENESS} \rightarrow \text{BEHAVIOUR}} = 0{,}103$), while the relationship between knowledge of the environmental and social impact and sustainable behavior was small ($f^2_{\text{KIC} \rightarrow \text{BEHAVIOUR}} = 0.035$), and the relationship between environmental and social impact and sustainable awareness variable was large ($f^2_{\text{KIC} \rightarrow \text{AWARENESS}} = 0.535$).

Table 4

Evaluation Indicators and Predictive Power of the Structural Model

Factor	R^2	R^2 adjusted	Q2
AWARENESS	0.349	0.347	0.340
BEHAVIOUR	0.242	0.238	0.155

Note: AWARENESS: sustainable consciousness; BEHAVIOR: sustainable behavior. Source: the authors' data and elaboration.

Subsequently, the predictive performance or relevance (Q^2 predictive) was assessed. Values of 0.01, 0.25, and 0.50 indicated small, medium, and large relevance of the model, respectively (Hair et al., 2019). At the variable level, sustainable awareness presented medium-high relevance ($Q^2_{\text{AWARENESS}} = 0.34$), and sustainable behavior showed low relevance ($Q^2_{\text{BEHAVIOUR}} = 0.155$). As such, the results suggested that the structural model had predictive relevance for the sustainable behavior variable.

Finally, after the structural model was considered adequate (Hair et al., 2019), the mediating effect of sustainable awareness was analyzed following the methods of Gutiérrez et al. (2020). For this analysis, the procedure developed by Nitzl et al. (2016) was adopted to test the mediation effect in PLSSEM and to define the type of mediation found. This procedure considers two steps to test the mediation effects in PLS: (1) determining the importance of spillover effects and (2) determining the type of mediation effect.

Step 1: Significance of indirect effects. Table 5 expresses the total effect (c'') from the use of sustainable awareness (AWARENESS) on the sustainable behavior variable (BEHAVIOR) as the sum of the direct (c′) and indirect (a1 × b1) effects. For the estimation

of the latter, the product of the path coefficients for the path in the mediation chain was used. The application of bootstrapping allows for testing mediation hypotheses (Nitzl et al., 2016). The 5000 samples in this study were used to generate 95% confidence intervals (percentile) for the mediators. According to Nitzl et al. (2016), the indirect effect (a × b) must be significant to establish a mediation effect. The results of the analysis showed a significant indirect effect (a1 × b1). The path of the mediating variable $M_{KIC \rightarrow AWARENESS \rightarrow BEHAVIOUR}$ (a1 × b1 = 0.204, t-value = 4.894) did not include zero in its respective 95% confidence interval, indicating a significant indirect effect. Therefore, H2 was supported. Consequently, the results confirmed the existence of mediation through the mediating variable AWARENESS.

Table 5

Summary of Mediating Effect Test

Total effect of KIC on BEHAVIOR (c")		**Direct effect of KIC on BEHAVIOR (c")**			**Indirect KIC spillover effects in BEHAVIOR**			**Bootstrap percentile 95% CI**		VAF
β	t- value	β		t- value	Estimated point		t- value	Inferior	Top	
0.405***	8.253	H1: c′	0.201**	2.859	H2 = a1 × b1	0.204***	4.894	0.124	0.288	50.37%

Note: β: coefficient; VAF: variance explained test; t-value for 5000 bootstrapping subsamples (based on a one-tailed Student's t(4999) distribution): t(0.05; 4999) = 1.645 ; t(0.01; 4999) = 2.327 ; t(0.001; 4999) = 3.092. $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Step 2: Type of effect and/or mediation. In this step, the significance of the direct effect (c´) is verified. If not significant, full mediation is indicated; the opposite indicated partial mediation (Nitzl et al., 2016). Consequently, when both the direct effect (c´) and the indirect effect (a × b) are significant, the mediation is partial. Table 5 shows the point estimate of the direct effect (c´). As the direct effect was (H1: c´ = 0.201; t = 2.859), which supported H2, and the indirect effect (a1 × b1) was significant, partial mediation was indicated. In addition, the variance explained test (VAF) was performed to assess the magnitude of mediation, the result of which was 50.37%. Because the VAF was below 80%, an additional argument for partial mediation was found (Nitzl et al., 2016; Hair et al., 2017). Finally, the results demonstrated the existence of complementary partial mediation because both the direct effect (c') and the indirect effect (a1 × b1) pointed in the same direction (Baron & Kenny ,1986; Nitzl et al., 2016).

Discussion

To address the objective, this study analyzed the mediating effect of sustainable awareness on the relationship between prior knowledge of the environmental and social impacts of consumption and sustainable behavior in the garment industry. The results obtained from the model analysis empirically supported the first hypothesis of a positive relationship between environmental and social impact and sustainable behavior,

which demonstrated a weak relationship. However, from the results of the analysis of the second hypothesis, a significant indirect effect was found for sustainable awareness on the relationship between the knowledge of the environmental and social impacts of consumption and sustainable behavior, including the identification of a complementary partial mediation effect.

The results are related to those of previous studies, which have indicated that the knowledge of consumption issues, which, in our case, is the knowledge of the impact of consumption of the garment industry, encourages little sustainable environmental behavior. In an exploratory study, Arcury (1990) revealed a minimal relationship between the degree of knowledge of proenvironmental issues and sustainable behavior, questioning the role of environmental policies in the United States. Bergmann (2016) found that environmental education programs based on the cognitive components of knowledge of environmental issues had a minimal effect on proenvironmental or sustainable behavioral intentions, suggesting that other variables such as experience (the emotional internalization of learning) had a stronger relationship in promoting sustainable behaviors. Kong et al. (2016), after analyzing the effects of various types of sustainable knowledge (declarative, procedural, efficacy, and social knowledge), failed to confirm effects on sustainable behavioral intentions. The literature suggests that having knowledge of environmental and social impact of consumption does not necessarily promote sustainable consumer behaviors, indicating agreement regarding the analysis of the role of other variables that may favor or improve the relationship.

In contrast to the mediating effect of sustainable awareness, researchers have examined indirect relationships regularly using the concept of attitudes. For example, Kang and Kim (2013) revealed that people's favorable attitudes toward purchasing sustainable products contribute to strong purchase intentions; furthermore, attitudes play a mediating role between perceived risk and behavioral intentions, i.e., they favor preferences to purchase sustainable products in the face of an expectation of risk or loss. However, the role of awareness, manifested in internalizing how much consumers perceive themselves to be aware of sustainability issues, had not been examined. Thus, this study advances the understanding of spillover effects to promote sustainable behaviors. In turn, by comparing our results with those of Jung et al. (2020), we complement their findings of the spillover effects of consumer values and social norms between the variables of sustainable knowledge, attitudes, and behavioral measures by providing evidence for the mediating role of environmental awareness.

Regarding limitations and future lines of research, although knowledge of environmental and social impacts and sustainable behavior have been widely used as indicators of sustainable consumption in the framework of attitudinal theories, this methodology can be complemented by including behavioral measures based on the observation and recording of behaviors typified as sustainable (e.g., attendance at sustainable consumption activities, number of sustainable clothes purchased, or number of recycling actions performed by person, among others).

Furthermore, we consider our results to be of particular value for the garment industry, so generalization of the results to other industries or products should be conducted with care due to differences in production practices, marketing, and the

economic, political, social and cultural dynamics of the markets. Further research is needed to test our findings in different settings.

Conclusions and Implications

The results obtained in this study show that sustainable awareness means recognizing the state of consumers' awareness of their underlying consumption choices. That is, sustainable awareness leads to sustainable consumption because when consumers are more aware, they can maintain increased attention to their consumption habits and preferences, and they internalize information about the impact of consumption, leading to a strengthened intention to practice sustainable behaviors. These findings allow us to consider the value of conscious education for sustainability through transformative learning, i.e., learning beyond knowledge.

The theoretical application of this study lies in linking of the sustainable awareness variable as a complementary partial mediating variable that favors the relationship between knowledge of the environmental and social problems caused by clothing and garment consumption, and the adoption of sustainable consumption behaviors. That is, the findings enhance our understanding of the effectiveness of sustainable consumption from a conceptual framework of cognition, affect, and behavior, drawing on the hierarchical model of standard CAB learning attitudes (Holbrook, 1986; Solomon, 2011), extending the understanding of how to favor sustainable consumption, and going beyond knowledge.

The results also allow for improving sustainable development learning programs by progressing beyond the acquisition of knowledge of the environmental and social impacts of unsustainable consumption. This leads toward a model of transformational learning based on the incorporation of emotional actions and critical awareness of the ethical and environmental implications of consumption choices, i.e., designing experiential activities and powerful narratives aimed at understanding the benefits of engaging in environmental and social issues, for example, transcending cognitive learning (explicit or declarative information) about pollution levels produced by the garment industry to a more emotional type of learning focused on deeply transforming consumers beliefs, values, and perspectives. Strategies for implementing transformational learning could include offering hands-on experiences such as visits to sustainable garment workshops, designing stories, or providing real-life testimonials that highlight the challenges and successes of brands that adopt sustainable production and marketing practices, as well as providing activities for reflection and meaningful dialogue on the benefits of sustainable consumption in terms of environmental protection, ethical sourcing practices, and respect for workers' rights.

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