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Showing color to the colorblind - The impact of the ColorADD code adoption on consumers' purchase intention

An analysis of fashion products.

Dissertation by

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Abstract

Title: “Giving color to the colorblind - The impact of the ColorADD code adoption on consumers’ purchase intention. An analysis of fashion products.”

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The pillars of the consumer's purchase decision have been evolving, going beyond product quality and price. Consumers have demonstrated a preference for inclusive companies, inclusiveness that can be expressed through product designs that are accessible to all.

Thus, the present study was developed with a focus on the color-blind public, about whom researchers have not been focusing a lot, for which companies have adapted enough. Thus, the objective is to test whether the inclusion of a color code in the design of fashion products impacts the consumers’ purchase intention (PI), using the ColorADD code as a reference. Consumers’ Perceived Ethicality (CPE) and Engagement with Social Issues were tested as mediators, while the Awareness of ColorADD as a brand was tested as a moderator.

Therefore, the data gathered with the online survey that was distributed, allowed to accept or reject the hypotheses previously defined with the literature revision as a basis. The inclusive design through the ColorADD code inclusion on fashion products proved to influence the consumers’ PI statistically significantly, fully through the mediating effect of CPE and ESI. Additionally, ColorADD awareness was a strengthened factor in the relationships of the color code inclusion with the mediators, consequently reinforcing the impact on the PI.

Keywords: ColorADD, Brand Awareness, Consumer Perceived Ethicality, Engagement with Social Issues, Purchase Intention

Sumário

Title: “Cor para os daltônicos - O impacto da adoção do código ColorADD na intenção de compra dos consumidores. Uma análise de produtos de moda.”

Autor: Inês Cristina Ribeiro Moreira da Silva

Os pilares da decisão de compra do consumidor têm vindo a evoluir, indo além da qualidade e do preço do produto. Os consumidores têm demonstrada uma preferência por empresas inclusivas, inclusão esta que pode ser expressa através de designs de produto acessíveis a todos.

O presente estudo focou-se no público daltónico, sobre o qual os investigadores não se têm debroçado, nem para o qual as empresas se têm adaptado o suficiente. Assim, estudou-se o impacto da inclusão do código ColorADD no design de produtos de moda sobre a intenção de compra dos consumidores, tanto de forma direta como através da inflência do Engajamento com Questões Sociais e Ética Percebida pelo Consumidor, enquanto mediadores e da Consciência sobre a marca ColorADD enquanto moderador.

Os dados recolhidos permitiram avaliar as hipóteses previamente definidas com base na literatura. De facto, a inclusão do código ColorADD, provou ter um um efeito estatisticamente significativo na intenção de compra, por meio de um total efeito mediador do Engajamento com Questões Sociais e da Ética Percebida pelo Consumidor. A consciência em relação à marca ColorADD mostrou-se um fator fortalecedor das relações entre a inclusão do código de cores com os mediadores, consequentemente reforçando a intenção de compra.

Palavras-Chave: ColorADD, Consciência de Marca, Ética Percebida pelo Consumidor, Engajamento com Questões Sociais, Intenção de Compra

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Glossary

ANOVA	Analysis of Variance
COEFF	Coefficient
CPE	Consumer Perceived Ethicality
CSR	Corporate Social Responsibility
DEI	Diversity, Equity, and Inclusion
DV	Dependent Variable
ESI	Engagement with Social Issues
IV	Independent Variable
LLCI	Lower Limit Confidence Interval
ULCI	Upper Limit Confidence Interval
MSE	Mean Square Error
NA	Not Applicable
PI	Purchase Intention
R-SQ	R-Square
SE	Standard Error
SIG.	Significance Level
STA.	Statistics
VIF	Variance Inflation Factor

1. Introduction

1.1. Background

Brands are being encouraged to develop their identities with ethical ideals in mind by consumers' growing desire for socially responsible businesses (Jung et al., 2022). Particularly, the Corporate Social Responsibility (CSR) concerns of diversity, equity, and inclusion (DEI) (Arsel et al., 2021) have gained significant importance because they are necessary for brands to not only be representative of the population and treat people fairly but also to foster a sense of belonging for diverse groups (Arsel et al., 2021).

Given that 5% of the world's population is colorblind (Irish, 2019), businesses can make use of this opportunity to include colorblind customers in the development of their goods and marketing strategies. ColorADD came to facilitate colorblind and companies' lives in that matter, as it offers a color identification system that aims to support and contribute to the integration of colorblind people using straightforward logical graphic representations for colors (Miranda, 2020). Its awareness is still in the early stages, so there is not much information regarding the impact on the PI, as well as the effect on their perception of the brand's ethical morals.

The way the world is seen depends on the person looking at him. It is difficult for most people to understand what the planet looks like through the eyes of a colorblind person, but it is even more challenging to understand how the world seen by the majority works, being a colorblind person. The truth is that a colorblind consumer cannot fall in love at first sight due to the color scheme when shopping for a T-shirt or sneaker. This creates a feeling of discrimination in the consumer that cannot have the same experience as the majority, besides the uncertainty involved not only during the purchasing process but also when choosing a cloth from the wardrobe. What if this would not be a barrier?

For that reason, the current paper intends to find evidence of the positive impact associated with the ColorADD code adoption by companies, in an attempt to motivate their adaptation with more inclusive designs.

1.2. Problem Statement

This research seeks to determine the effect of the inclusion of the ColorADD code on fashion products, in the specific scenario of sneakers and T-shirts from a fictitious brand, on the levels of PI of those products. Moreover, the study also intends to test if the impact of the inclusion of the mentioned labels over the PI is mediated by the CPE and the ESI, as well as if the ColorADD awareness moderates this relationship.

1.2.1. Research Questions

RQ1: Does the inclusion of the color code on fashion products impact consumers' purchase intention? Is it justified by the consumer perceived ethicality enhancement? Is the impact the same for colorblind and non-colorblind consumers?

RQ2: Does the inclusion of the color code on fashion products influences consumers' perceived ethicality and engagement with social issues?

RQ3: Does consumers' awareness of the ColorADD influences the impact of color-coding label inclusion on fashion products over purchase intention?

1.3. Relevance

According to Forbes (Adams, 2022), studies done by Deloitte (Bourke, 2018), and Boston Consulting Group (Tsusaka et al., 2019) show that more inclusive and diverse businesses tend to have bigger profits. Thus, investing in Diversity, Equity, and Inclusion (DEI) measures could lead to a growth of at least *33%* of the companies' EBITDA (Adams, 2022).

Even though a lot of papers study the companies' ethicality in terms of their social responsibility, there is still much to learn about the effects of becoming more inclusive. Particularly, a big gap is observed regarding colorblind consumers, to whom companies have not been creating inclusive designs that they can easily interpret.

In informal conversations with colorblind consumers, it was clear that the fashion industry still creates a big uncertainty, due to the difficulty of distinguishing colors during the purchase and post-purchase moments. According to Feinstein (2018), the need to

enhance the visual experience into a more inclusive one can be solved by simply adding the color of the product to its description.

Therefore, this topic brings an academic contribution by studying the impacts of inclusive designs focused on solving colorblind discrimination, especially over the PI. It also gives a further understanding of the PI's correlation with the CPE and ESI, as well as the impact of the level of awareness about the brand with whom the company associates to be more inclusive (the brand that gives the tools for more inclusive choices).

The discrimination of colorblind consumers could lead to the loss of almost 5% of the market to the competitor that takes measures to ease their experience. Thus, this investigation brings a managerial contribution, as it proposes a solution to the problem, through the adaptation of the designs to include the ColorADD code. As shown by the research, it can enhance the ethical perception of the company by the public, which consequently can increment the intention of purchase.

1.4. Research Methods

An analysis of the available literature was done to gain a thorough grasp of the necessary concepts. This review was mainly focused on the CPE, especially with inclusive designs and its relationship with the PI, including the possible impact of the consumers' ESI. The colorblindness topic was in the center, drawing possible connections between the different topics, based on the existing articles. These serve as the basis for the formation of the hypotheses.

To determine whether the inclusion of the color code on fashion products improves consumers' PI, the framed hypotheses were evaluated using primary data. An online survey was distributed, with four stimuli included: (1) sneakers with the color code; (2) sneakers without the color code; (3) T-shirt with the color code; (4) T-shirt without the color code. Participants were divided into two groups: a control group that wasn't exposed to color code on T-shirts or sneakers, and a group that was.

This quantitative research was then analyzed on SPSS, so that the results were quantified and, due to the large sample, generalized to the population of interest, assuming the limitations and biases of the study

1.5. Dissertation outline

The following chapter reviews the existing literature about the relevant concepts and presents the conceptual framework and hypotheses under research. The third chapter includes the methodology that is employed to address the research questions. The fourth chapter describes the data development, gives a sampling characterization, and exposes the results of the statistical tests conducted to test the hypotheses of chapter two. The last chapter answers the research questions, traces the final conclusions, as well as mentions the study's limitations and future research suggestions.

2. Literature Review and Conceptual Framework

2.1. Purchase Intention

This PI is, according to (Wu et al., 2011), the term “purchase intention" refers to “the possibility that consumers will plan or be willing to purchase a certain product or service in the future”, based on the level of satisfaction they anticipate achieving after the purchase (Kupiec & Revell, 2001). It occurs before the purchasing behavior (Chang & Wildt, 1994), which is influenced not only by the tradeoff between price, quality, and value perception, but also by physiological, social, or psychological needs (Kakkos et al., 2015).

However, the capacity of the intention to buy to predict the actual behavior is questionable (Papista & Krystallis, 2013), even though a larger majority of the literature considered it as a good indicator of the PI, leading most companies to use this KPI.

2.2. Corporate Social Responsibility & Diversity, Equity and Inclusion

The concept of corporate social responsibility has been evolving over the years. The term started as social responsibility (Bowen, 1953; Frederick, 1960; Friedman, 1970), evolved to CSR and now is being transformed into corporate responsibility (CR) (Nooriani & Ismail, 2011). Despite the name, it refers to the ethical duty that corporations have to society (Laskin & Kresic, 2021), by voluntarily incorporating social and environmental aspects into the structure Commission of the European Communities, 2002). Overall, it relies on the triple bottom line, known as the economic, environmental, and social pillars (Elkington, 2008).

Moreover, the concept of Diversity Equity and Inclusion has been significantly associated with CSR (Arsel et al., 2021; Hansen & Seierstad, 2017), considering that they align with the purpose of improving society. DEI measures are taken in an attempt to produce societies that are more representative of the population - diversity -, treat people fairly - equity -, and foster a sense of belonging to diverse groups – inclusion. The idea is that companies contribute to lessening the discrimination of the minorities in terms of 4 categories - gender, age, and body; race and ethnicity; social class and social status; religion and cultural identity (Arsel et al., 2021). Particularly, putting disabled individuals aside is one of the issues the DEI concept intends to fight (Claeys-Kulik et al., 2019).

Various studies show the positive impact that corporates' ethicality and social responsibility have on purchase intention (Bianchi et al., 2019; Sharma et al., 2018), being associated with a higher propensity to establish strong consumers loyalties with future purchases and recommendations (Singh et al., 2012). However, although the CSR topic has been studied a lot in terms of sustainable matters, the DEI pillars still have much to discover, particularly in terms of the inclusion issue. According to Jung et al., 2022, consumers' PI is impacted by not only the perceived "acceptance/inclusion" of themselves but also by how others enjoy it. Thus, the impact of being an inclusive company occurs when consumers have both a sense of belonging and that others are not discriminated against.

Investing in CSR measures is likely to motivate the consumers' purchase intention (Utgard, 2018), although prior studies determined both positive (Long, 2014; Saha et al., 2020; Tingchi Liu et al., 2014; Van Quaquebeke et al., 2019), and negative (Brammer et al., 2006; Elouidani & Zoubir, 2015) impacts of CSR on its performances. According to Dang et al. (2020), this might be justified by the mediating or moderating effects of variables omitted in previous investigations.

2.3. Consumer's Perceived Ethicality

Consumer's Perceived Ethicality can be related to a brand, a company, a service, or a product (Brunk, 2010). On its corporate level, the CPE might be a moderator of the relationship between the CSR and the PI. In fact, consumers and marketing executives perceive ethical behaviors differently (Dornoff & Tankersley, 1975), as what is ethical for a business may not correspond to the consumer perceptions of ethical conduct (Galavielle, 2004).

Therefore, since consumers' concerns about companies' behaviors have been increasing, with an expectation for larger purposes, businesses are under more pressure to adapt to the target preferences, which they totally rely on (Kuokkanen & Sun, 2020). Considering that the perceived ethical leadership positively impacts the PI (Van Quaquebeke et al., 2019), when implementing social and ethical responsible measures, consumers' thoughts and perceptions should be considered, as they analyze the ethical values before deciding to purchase (Accenture, 2018). The trust the consumers have in the brand empowers the integrity he attributes to it (Morgan & Hunt, 1994). Thus, the brand's behavior and

relationship developed with the consumer, influence the perception of the company's level of fairness, responsibility, and accountability. When translated into a positive CPE, it induces the company's success (Brunk, 2010), as the CPE is a significant indicator of consumers' buying behaviors (Shah et al., 2020).

2.4. Engagement with Social Issues

Values determine the beliefs of an individual and motivate his actions toward a specific goal (Connor & Becker, 1975; Feather, 1992), as ethical practices have an elevated value behind them. As the study of (Quaquebeke et al., 2019) found out, consumers to whom moral concerns are more important give significantly higher recognition to CEO's ethical leadership than consumers who do not deposit that level of value. This happens because individuals use their own convictions to set opinions regarding companies' ethical values, the strength of which influences their level of involvement with those beliefs and, consequently, with the brands (Chipulu et al., 2018). Thus, the intensity of individual opinions in terms of moral matters shape the level of engagement with social issues, and accordingly, the applied behavior. In fact, the actions are adapted according to the topic a person is more engaged with, and in which recognizes more relevance (Hoverstad & Howard-Pitney, 1986).

Therefore, the degree to which a consumer desires to engage in a particular conduct, such as a social cause, also influences their intention. The higher the motivation to engage, the higher the PI (Ajzen, 1991), which in turn leads to enhanced brand commitments and, therefore, future intentions or actual purchases (Wu et al., 2011).

2.5. Inclusive Design

Design is used as "all forms of tangible and intangible artifacts (…) that have been created by designers for people (Pohlmeyer, 2017). According to Carroll and Kincade (2007), for a design to be considered inclusive, it must be adapted to the needs of everyone, being usable, safe, and appealing to people with a wide range of abilities.

Over time, the concept of inclusive design has been taking different formats. "Accessible Design" suggests that products were made to be used and accessed by individuals with disabilities (Etchell & Yelding, 2004). "Design for All" implies that a product is designed to be used by everyone without adaptation. "Universal Design" incorporates the disability

into the basis of the design (Imrie & Hall, 2001), involving an equitable, flexible, intuitive and well-informed use, that requires low physical effort (NC State University College of Design, 2008). So, brands are shifting from a “one size fits all” (Mizrahi, 2020) concept to designs that are “inclusive for all” (Angus & Westbrook, 2022), which not only helps them increase their market share and profits (Patrick & Hollenbeck, 2021) but also embattle the relationships with their target audience.

According to CABE (2008), in order to treat people with dignity and respect, a design needs to attend people’s needs with flexibility of use. In fact, they should create a feeling of belonging for a large variety of individuals, by accommodating the ones with special requirements, rather than demanding extra effort to use the product. More than defining consumers’ perceptions of products’ attributes, product design plays a critical role in shaping societal attitudes and actions, as it influences how people feel (Veryzer & Hutchinson, 1998) and behave (Heitmann et al., 2020).

According to the executive creative director of the design consultant Jones Knowles Ritchie, currently, the design aims to appeal to "the majority" in order to achieve scale and maximize sales. However, the sense of inclusion through the product design can generate feelings of empowerment (Paharia & Swaminathan, 2019) that translates into higher PI, willingness to pay, and willingness to recommend the product to others (Schreier et al., 2012). As a result, if the ethical reason is not enough to change the brands’ design, the strengthened profit is.

Particularly, inclusive designs have the power to facilitate disabled people’s lives. For example, while the elderly require lightweight and easy-to-open packaging that is highly visual, and easy to read (Billerud, 2020), users with vision disabilities, need alternatives to understand the packaging information. L’Occitane was a pioneer in including braille in its products’ packaging (Sicardi, 2019), while Herbal Essences distinguishes the shampoo and conditioner lines with tactile identifications – stripes for shampoos and dots for the conditioners (Almeida & D’Arcangelo, 2019). With the same mindset, Zippy adopted a code for colorblind consumers on the labels of its products (Sonae, 2017).

2.6. Colorblindness

In 1946, has been projected that around *0.5%* of females and *8%* of males were in the presence of colorblind disease (Wright, 2023). These statistics prevailed until recent

studies, estimated that almost *5%* of the entire world's population suffers from this condition (Iris, 2019).

The first interest in color occurred in 1672 in "A letter of Mr. Isaac Newton" (Newton, 1672) and in 1675 he suggested that the different colors were perceived differently depending on the strength and mixture of the vibrations brought to the sensorium via the fibers of the optic nerve. This ground-breaking study generated controversy in the eighteenth century because other physicists held that only the primary colors red, yellow, and blue (Wollaston, 1802; Young, 1802; YOUNG, 1807) were required to create all other colors. According to Balaraman (Balaraman, 1962; Deeb, 2005), Gentilly described in 1785 how the retina uses three different types of membranes, each of which is sensitive to one of the elementary colors, . This theory is confirmed by Deeb (2005), who stated that the retina is composed of rods, that allow to distinguish different light levels, and cones, that are "sensitive in the blue, green, and red regions of the spectrum". These cones, named L, M, and S-cones (Jenny & Kelso, 2007), are the cells that transmit information to the brain so that it can be converted into color perceptions (Turbert, 2022).

After Dalton (1948) defined it through his colorblind eyes, according to Balarman (1962), the term "colorblindness" was first used by physicians such as Gentilly (1785), Purkinje (1828), Seebeck (1837), Szokalski (1841), and Wartmann (1846) after Dalton (1798). Gentilly (1785) considered that circumstances, where color vision is impaired, are caused by one of the three retinal membranes becoming inactive.

According to Deeb (2005), normal color vision uses the three photoreceptors cones - L, M, and S (Jenny & Kelso, 2007). Thus, the absence or the malfunction of at least one of the three cones generates different types of colorblindness.

The most prevalent form, red-green colorblindness, makes it hard to distinguish red and green colors (American Optometric Association, n.d.). The blue-yellow colorblindness normally implies the existence of red-green color blindness, so it causes difficulties distinguishing not only blue and yellow but also red and green (National Eye Institute, 2019). Complete colorblindness occurs due to the absence of the three photoreceptors (Turbert, 2022), and being a non-reversible genetic condition (Scott, 2022). Nonetheless, non-treatable colorblindness is the result of heredity, which is the most prevalent cause,

as well as other diseases or injuries that affect the eyes or brain (National Eye Institute, 2019).

Over the years, different solutions have been created to ease colorblind consumers' lives. Special glasses and contact lenses facilitate color distinction, apps, and other technologies help to determine the color of the surroundings, as well as the ColorADD system translates each color into a code, with no language barriers.

2.6.1. ColorADD Code

The focus will be on the ColorADD code, as it will be the topic of this paper's investigation.

Miguel Neiva started to design it in 2000, aiming to contribute to the quality of life of the, so many times, forgotten colorblind consumers. In 2010 it started to be used, and nowadays it is present in more than *90* countries, has reached *100,000* individuals through schools, and may be found on more than *100* million clothing labels and *5* million colored pencils (Miranda, 2020).

This color language can simplify the life of the ones that have a hard time distinguishing color, by implementing simple graphic symbols for primary colors (blue, yellow, and red). The secondary color's symbols are the result of mixing the primary elements' symbols, using the same rationalization as the Tri-Color Theory of Additive Color Mixing, in which the mixing of primary colors allows to achieve the secondary ones (Smith, 1985). Additionally, to represent lighter or darker tones, this color system further codifies black and white, whose graphic symbols are added to the primary and secondary color symbols (ColorADD, 2016). The code is shown in Appendix 1.

Sonae adopted the ColorADD language in some of its Zippy products, turning it into the world's first children's fashion brand to use this color scheme in its collections (Sonae, 2017). Additionally, while Viarco and Cin used it to identify the color of their pencils and tints, respectively, Mattel created a new Uno design that included the ColorADD code. The training vests of Futebol Clube do Porto, the drugs of São João Hospital's operating rooms, and the Metro do Porto's lines were also adapted to include this language. Moreover, the public system also implemented the color code in some of the traffic lines, beach flags, and Eco points around Portugal (Costa, 2015).

Thus, companies are gradually implementing this language, which not only improves the brand experience for colorblind customers but also helps to create a more inclusive society, something that can be positively reflected in the company. This paper is developed precisely to determine whether the inclusion of this code affects the PI, as well as if it enhances the CPE and ESI, something that has not been studied before.

2.7. Brand Awareness

According to Percy & Rossiter (1992), BA is related to a consumer's ability to "identify a brand within a category in sufficient detail to make a purchase". It does not necessarily require recalling the brand's name when thinking of a product category, given that BA can derive from brand recognition at the point-of-sale, with which the consumer is presented to the brand and thinks of the product category.

According to Louangrath (2021), the ethicality a consumer recognizes in a business is part of the brand awareness he builds about it, which motivates future purchases. This awareness is also influenced by the positioning a brand sets for the market. So, although it depends on multiple factors, setting an Ethical Positioning builds part of brand awareness (Sagar et al., 2006). Furthermore, high levels of awareness a consumer has regarding a brand, positively influence his engagement with that brand, until they get a bad experience (Vanitha & Subramanian, 2020), as well as motivate the PI (Garber et al., 2003). In fact, individuals tend to choose the product from brands about whom they have higher BA, as it reduces the time they will spend searching for a product and lowers the chance they won't be satisfied with it (Verbeke et al., 2005).

Therefore, companies associated with a brand whose purpose and position are focused on moral and ethical behaviors will be impacted by the awareness consumers have about that brand, in terms of the way they are also ethically perceived (Hoang et al., 2020). In the same way, the level of engagement and the PI will be impacted by the awareness consumers have toward a brand that allows other companies to be more ethical.

2.8. Conceptual Framework and Hypotheses

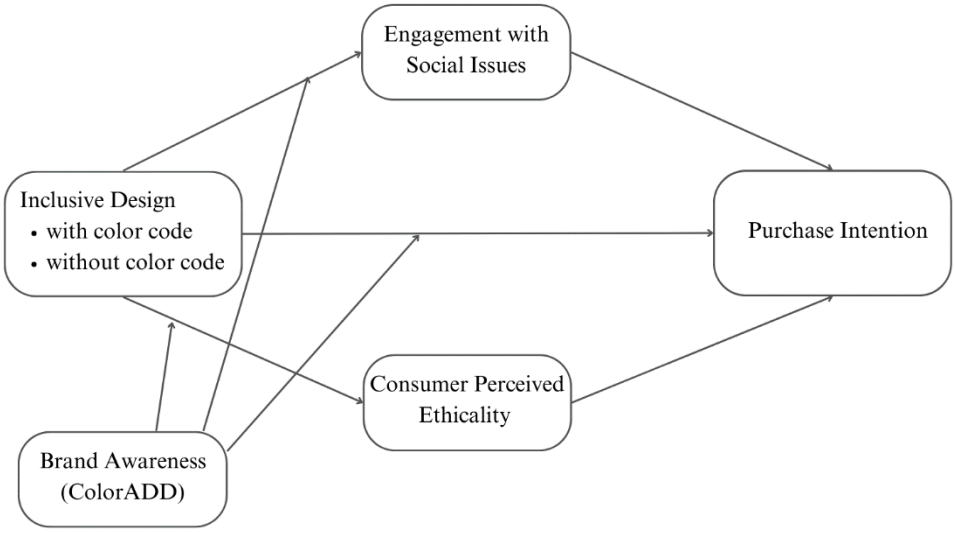

Figure 1: Conceptual Framework

H_1: Color-coding inclusion positively impacts consumers' purchase intention of fashion products.

$H_{1.1}$: Color-coding inclusion positively impacts consumers' purchase intention of fashion products.

$H_{1.2}$: The impact of color-coding inclusion on the purchase intention is higher for the colorblind than for the non-colorblind consumers.

H_2: Engagement with social issues and Consumer Perceived Ethicality mediate the relationship between the color code inclusion on fashion products and the purchase intention.

H_3: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and the purchase intention.

H_4: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and engagement with social issues.

H_5: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and the consumer's perceived ethicality.

3. Methodology

3.1 Research Approach

The purpose of the paper is to understand the impact of the inclusion of the color code on fashion products in the PI, being mediated by BI.

To get a deep understanding of the subject matter, a review of existing literature was conducted, which laid the foundation to formulate the hypotheses and constructs.

According to Kothari, research objectives involve the use of scientific methods to provide answers to certain queries. These objectives can be classified into four categories – exploratory, descriptive, diagnostic, and hypotheses-testing (Kothori, 2004). Thus, the appropriate methodology to use is hypotheses testing given that the current dissertation's goal is to investigate the hypotheses of a relationship between variables.

Moreover, the study uses a quantitative research method – mentioned by Creswell (King, 1991). This way, by conducting a survey, the quantitative research allows to study of which stimuli generate a higher PI for the sample, and, consequently, the inference of the correlation between variables for the population.

3.2. Primary Data

3.2.1. Data Collection

In order to collect as many responses as possible while consuming the least amount of time and money, an online survey was undertaken. In fact, the assurance of anonymity, the non-interference of the interviewer, and the convenience of response, giving the participant the time, he needs to deliver well-thought-out responses, contribute to a higher response rate and reduced bias (Kothori, 2004). Considering that its development was done in Qualtrics, the ability to import the responses straight into SPSS maximizes the effectiveness of the procedure.

Nonetheless, there are some drawbacks to using online channels for the survey, including the option to leave it before it is finished, the inability to ask follow-up questions to get a deeper understanding of participants' responses, as well as the lack of a guarantee that respondents will give the survey their full attention and the impossibility to clarify any

doubts during the survey response. In order to lessen the bias brought on by these limitations, the stimuli of the questionnaire were previously tested in a focus group to maximize its clarity, as well as the questionnaire's logical flow.

To reach a wider audience, the survey was distributed through WhatsApp and Instagram. Since the majority of responses were coming from non-colorblind individuals, it was also posted in Facebook groups related to colorblindness, as well as through the ColorADD contacts.

The questionnaire was open from April 25 to May 3, during which time *214* complete responses were gathered.

3.2.2. Stimuli Development

The questionnaire used a two-by-two data collection design, considering that it included combinations of two variables – the type of fashion product (Sneakers vs T-shirt) and the type of design (with the color code vs. without the color code). This resulted in four stimuli - (1) sneakers with the color code; (2) sneakers without the color code; (3) T-shirt with the color code; (4) T-shirt without the color code. Note, the mention of the stimuli will be done through the numbers set in the preceding phrase.

	With the Color-Code	Without the Color-Code
Sneakers	1	2
T-shirt	3	4

Table 1: Questionnaire design matrix

These stimuli were previously approved in a focus group. First, to guarantee that the products were not associated with a specific brand, as the study uses a fictional one, they were selected from Zara. Considering they did not represent iconic items, the association with the brand was eliminated, something that was also confirmed in the focus group, which allowed to avoid biases caused by the previous brand image judgment. Second, to ensure that the products were both identified as unisex and attractive in terms of color, the original models were edited with different colors, as evaluated in the two topics by the focus group participants. Finally, the design of the stimulus was selected by the participants from a list of options, instructing them to choose the most clear and logical layout for all stimuli, as it needed to be used for all. More information about the focus group can be found in Appendix 2.

Therefore, the survey started by questioning participants whether they were colorblind. Then, one of the four stimuli was shown, followed by a list of questions gathered from the articles mentioned in chapter 3.2.3, assigned to the variables under research. It ended with six demographic questions, regarding age, current country of residence, gender, occupation, education, and monthly income. The questionnaire can be found in Appendix 3.

3.2.3. Measurement / Indicators

3.2.3.1. Independent Variable

Inclusive Design - was experimentally manipulated using two conditions – *Code* vs. *No Code.*

3.2.3.2. Dependent Variable

Purchase Intention – evaluated the self-predictions of purchasing the product with 3 items, through a 7-point Likert scale, adapted from Santos (2018).

3.2.3.3. Mediator

Consumer Perceived Ethicality – measured with 6 items, through a 7-point Likert scale, adapted from Brunk (2012).

Engagement with social issues – measured with a 4-item scale, through a 7-point Likert scale, that was recoded from Goldberg et al. (2002).

3.2.3.3. Moderators

Brand Awareness – measured with 5 items, through a 7-point Likert scale, which was adapted from a 5-point Likert scale of Rivera et al. (2019) to be easier compared with the other variables.

3.2.3.4. Operational Model

Framework	Measure	Items	Scale	Reference	Cronbach α
IV	Inclusive Design	Stimuli	na	na	na
Mediator	ESI	*4*	7-point Likert Scale	Goldberg et al. (2002)	*0.879*
Mediator	CPE	*6*	7-point Likert Scale	Brunk (2012).	*0.960*
Moderator	BA	*5*	5-point Likert Scale	Rivera et al. (2019)	*0.884*
DV	PI	*3*	7-point Likert Scale	(Santos, 2018)	*0.728*

Table 2: Operational Model

3.3 Data Analysis

The data gathered in Qualtrics was transferred to SPSS, in order to statistically test the formulated hypotheses. Note that the tests conducted in this paper employed a 95% confidence interval.

The first step was to clean the data from invalid responses, something that is explained in Chapter 4.1. Second, a sampling characterization was developed, applying descriptive statistics to the demographic questions, both in general for the total sample, as well as it was employed for each scenario. This sample description is essential to discuss the applicability of the used sample.

After that, the hypotheses were tested. H_1 used a linear regression, using the variable *Code - No Code* vs. *Code* -, as the IV and the PI as the DV. For $H_{1.1}$ and $H_{1.2}$., in order to compare the effects of the ColorADD code adoption on the PI between the two products - sneakers vs. T-shirt -, as well as between colorblind and non-colorblind consumers, the model 1 of the Hayes Process Macro extension of SPSS was used. The same model was applied to investigate the mediating parallel mediating effects of CPE and ESI. The moderation of the ColorADD awareness on the interaction of the color code inclusion with the ESI, CPE, and PI was studied with model 4 of this extension. Finally, the full model was tested through model 8 of the same extension, considering the existence of one IV, two mediators, one moderator over three interactions, and one DV.

4. Results and Discussion

4.1. Data Development

4.1.1. Data Cleaning

The survey reported a total of 214 responses, from which only 137 were valid, due to incorrect answers to the manipulation questions, incomplete answers, and repeated IPs.

To ensure that more realistic results were achieved during the hypotheses analysis, a Mahalanobis distance analysis was conducted, guaranteeing the elimination of outliers. Therefore, the variable Mahalanobis was created for each stimulus, including all the questions done for that path. Next, the probability of its occurrence was then accessed by creating a computed variable for each stimulus with the expression *1-CDF CHISQ(...)* using the previously constructed Mahalanobis variable. This allowed to conclude that the dataset contained no outliers since all values were lower than *0.001*.

4.1.2. Data Recodification

After eliminating all the invalid answers, the data needed to be codified. Considering that the Qualtrics randomization tool evenly distributed the survey's respondents among the 4 different scenarios, the data was dispersed according to the questions participants have and have not answered.

The first step was to compute the variable *Scenario* attributing the values 1, 2, 3, and 4 to the stimulus defined in chapter 3.2.2. The dummy variable *Code* was also computed, to associate stimuli 2 and 4 with the value 0, indicative of the absence of the color code - *No Code* -, and stimuli 1 and 3 with the value 1, representing the presence of the color code – *Code.*

The second step was to compute the variables. A mean was applied to the items referent to the same variable for each stimulus, reaching the variables under research separated by the stimulus. Then, the new variables of each stimulus were added up, creating the final constructs - CPE, ESI, PI, and BA. The sum was also applied to the manipulation check questions of each stimulus so that they would be concentrated in the same column for easier analysis.

4.1.3. Multicollinearity

The multicollinearity was assessed to ensure the IV is not significantly correlated so that the results interpretations of the model have a high level of reliability.

According to the (Corporate Finance Institute, 2022), VIF values above 4 indicate that multicollinearity might exist between variables, requiring further investigation. If those values are "greater than 10 indicate that the linear regression model presents a significant degree of collinearity" (Salmerón-Gómez et al., 2020).

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.037	.364		-.102	.919		
	CPE	.400	.091	.360	4.393	<.001	.372	2.688
	ESI	.513	.086	.466	5.949	<.001	.406	2.462
	BA	.063	.057	.058	1.109	.269	.905	1.105
	Code	.143	.177	.049	.807	.421	.689	1.452

DV: PI

Table 3: Multicollinearity diagnosis - PI as the DV

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.467	.323		4.549	<.001		
	ESI	.657	.059	.663	11.064	<.001	.780	1.282
	BA	-.028	.054	-.029	-.522	.603	.907	1.103
	Code	.637	.159	.2410	3.998	<.001	.772	1.296

DV: CPE

Table 4: Multicollinearity diagnosis - CPE as the DV

As shown in Tables 3 and 4, all VIF values are lower than 3, which indicates non-significant collinearity between the variables, considering both the PI and the CPE as the DV. Additionally, the tolerance values are all lower or higher than *.350,* supporting the conclusion of no multicollinearity.

4.1.4. Parametric Diagnosis

Testing whether the variables are parametric is required to choose the methods to investigate the hypotheses. This relies on some assumptions.

First, the fact that the respondents were randomly assigned to one of the 4 stimuli, guarantees independence between the 4 groups of the sample. Note that all the variables are continuous as they were measured with a 7-Likert Scale.

Another assumption of parametric variables is the normal distribution.

Constructs	Kolmogorov-Smirnova			Shapiro-Wilk			Skewness			Kurtosis		
	Sta.	df	Sig.	Sta.	df	Sig.	Sta.[A]	Std. Error [B]	A/B	Sta.[A]	Std. Error [B]	As/Bs
CPE	*.147*	*137*	*<.001*	*.935*	*137*	*<.001*	*-0,847*	*0,207*	*-4,092*	*1,113*	*0,411*	*2,708*
ESI	*.099*	*137*	*.002*	*.967*	*137*	*.002*	*-0,550*	*0,207*	*-2,657*	*0,238*	*0,411*	*0,579*
PI	*.114*	*137*	*<.001*	*.958*	*137*	*<.001*	*-0,519*	*0,207*	*-2,507*	*-0,201*	*0,411*	*-0,489*
BA	*.101*	*137*	*.002*	*.964*	*137*	*.002*	*-0,211*	*0,207*	*-1,019*	*-0,750*	*0,411*	*-1,825*

Table 5: Test of Normality (based on Appendices 4.1 and 4.2)

No normal distribution was observed for the variables, according to the Kolmogorov-Smirnov and the Shapiro-Wilk tests ($p<.001$ for CPE and PI; $p<.01$ for ESI and BA). The ratio between the statistic (A) values and their own Std. Error of both Skewness and Kurtosis lead to the same conclusion, except for the BA, as at least one is not included in the range of reference [-2, 2] (Table 5).

However, considering each stimulus was answered by more than 30 respondents, the normality assumption becomes less important since, according to the Central Limit Theorem, means based on large sample sizes are normally distributed.

Finally, the homogeneity of variances is required to be a parametric construct.

Constructs	Levene's Test for Equality of Variances	
	F	Sig.
CPE	*2.684*	*.104*
ESI	*.503*	*.479*
PI	*.767*	*.383*
BA	*2.506*	*.120*

Equal variances assumed

Table 6: Levene's Test

Levene's test indicated that the null hypothesis of equal variances between groups is confirmed ($p>.05$), which means that the homogeneity of variances is guaranteed.

Therefore, the variables of the present study are parametric.

4.1.5. Scales Reliability

Although the variables were tested with consistent scales collected from previous literature, the reliability was ensured via Cronbach's alpha. According to George and

Mallery (2007), values above *0.7* are acceptable, and higher than *0.8* are good, but excellence is only guaranteed with *0.9*.

Thus, Cronbach's alphas were calculated for the averages of each scale items, which confirmed the reliability of the study, as all values were above *0.7.* Considering that the PI's reliability improved when the item "I believe that most people would like to buy this product." was eliminated, the final constructs of the stimulus are represented in Table 7.

Construct	Expression
CPE	(CPE_1 + CPE_2 + CPE_3 + CPE_4 + CPE_5 + CPE_6) / 6
ESI	(ESI_1 + ESI_2 + ESI_3 + ESI_4) / 4
PI	(PI_1 + PI_3) / 2
BA	(BA_1 + BA_2 + BA_3 + BA_4 + BA_5) / 5

Table 7: New Constructs

By averaging the values of each stimulus, the final constructs showed to have either a good or excellent reliability, that when compared to the literature scales, increased for the PI and the B, but decreased for the CPE and the ESI.

Construct	The initial number of items	Cronbach's alpha	Deleted Items	The final number of items	Cronbach's alpha if deleted
CPE	6	0.907	0	6	-
ESI	4	0.844	0	4	-
PI	3	0.899	1	2	0.953
BA	5	0.831	0	5	-

Table 8: Scales Reliability

4.1.6. Manipulation Check Results

To understand whether the participants understood the stimulus, they were exposed to two manipulation questions. The first intended to understand if participants recognized the color code on the stimulus, considering that only two stimuli included it, while the second determined if it was clear that the product of the stimuli belonged to a fictitious brand. Considering that the second question should be answered equally by all participants, independently of the stimulus, only the first was evaluated to ensure that there was a difference in the responses of the two independent samples – *No Code* vs. *Code.*

Given the fact that the first manipulation question is not normally distributed (Appendix 4.1) nor homogeneous (Appendix 4.2.), the non-parametric Mann-Whitney U test was conducted, using the previously created dummy variable, *Code*, as the group. Thus, the

rank sums between the two samples significantly differ (Appendix 6), which confirms the manipulation question by rejecting the null hypothesis.

4.2. Sampling Characterization

As shown in Appendix 7, among the *137* participants with valid responses, *94,2%* currently live in Portugal, while the remaining *8* participants are distributed across Germany, France, Hungary, Brazil, Spain, Afghanistan, and Denmark. Also, the sample includes mostly individuals in their *20s* (*55.5%*) and *50s* (*23.4%*), as well as the female gender, prevails (*63.5%*). Note that no valid responses came from participants in their *70s* or more. Regarding education, most of the sample has a degree higher than high school (*49.6%* with a Bachelor, *32.1%* with a Master, and *3.6%* with a Ph.D., with only *0.7%* located under this level. Moreover, *62%* of participants are currently employed, *21%* are still studying and 10.9% are doing both. In terms of the monthly household income, the majority (*21.2%*) receive between *1001€* and *1500€, 28.5%* are equally distributed between the intervals *750€* and *1000€, 1501€* and *2000€*, and *2001€* and *2500€*. Only *2.9%* make less than *750€*, while *10.2%* have an income above *4000€*.

Thus, the sample is not an accurate representation of the population, especially in terms of age, allowing better inferences for the Portuguese market, considering the big Portuguese percentage in the group of participants.

4.3. Main Results

4.3.1. Color Code

***H_1**: Color-coding inclusion positively impacts consumers' purchase intention of fashion products.*

To test the first hypothesis a linear regression was performed, noting that no outliers were found in the regression.

		PI	Code
Pearson Correlation	**PI**	1.000	.465
	Code	.465	1.000
Sig. (1-tailed)	**PI**		<.001
	Code	.000	
N	**PI**	137	137
	Code	137	137

Table 9: Pearson Correlations [H_1]

According to the Pearson Correlation (Table 9), there is a low correlation between the color code inclusion and the PI (Asuero et. al, 2006), as they are *.465* correlated.

Model	R	R Square	Adjusted R Square	Std Error	Durbin-Watson
1	*.465*	*.216*	*.210*	*1.31078*	*1.735*

Table 10: Model Summary [H_1]

Following the R-square analysis of the linear regression shows that *21.6%* of the variability in the PI is accounted for the color code inclusion (Table 10). The Durbin-Watson statistic has a value close to *2*, indicating that there is no autocorrelation.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	*63.884 1*	*1*	*63.884*	*37.182*	*<.001*
	Residual	*231.949*	*135*	*1.718*		
	Total	*295.833*				

Table 11: ANOVA [H_1]

The ANOVA (Table 11) suggests this regression equation fits the data, given the fact that the null hypothesis is rejected ($p<.05$), which means it statistically significantly predicts the effect on the PI.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	*3.744*	*.163*		*23.026*	*<.001*
	Code	*1.368*	*.224*	*.465*	*6.098*	*<.001*

Table 12: Coefficients [H_1]

Finally, analyzing Table 12, in which the statistical significance is also proved ($p<.05$), it is possible to study the effect of the color code inclusion on the PI, for fashion products. The fact that the unstandardized beta value is *1.368*, including the color code on fashion products, leads to an increase of the PI of *1.368* considering the Likert scale. To conclude, the null hypothesis is rejected, affirming with *95%* of confidence that the color code inclusion has a statistically significant positive effect on consumers' PI of fashion products, represented by sneakers and T-shirts.

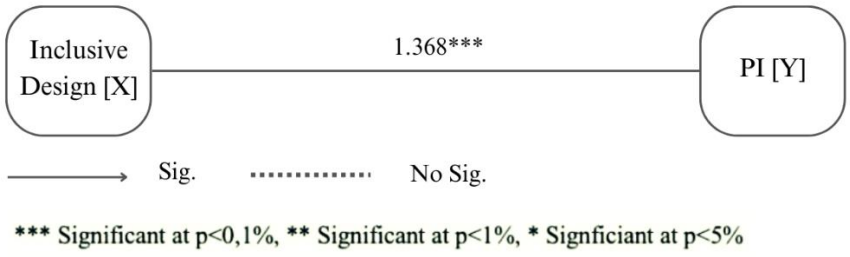

Figure 2: Statistical Diagram [H_1]

***$H_{1.1}$**: The impact of the color code inclusion on the purchase intention is higher when included on T-shirts than on sneakers.*

Model						
	coeff	**se**	**t**	**p**	**LLCI**	**ULCI**
constant	*4.463*	*.111*	*40.244*	*.000*	*4.244*	*4.683*
Code	*1.370*	*.222*	*6.170*	*.000*	*.931*	*1.810*
Product	*.403*	*.222*	*1.816*	*.072*	*-.036*	*.842*
Int_1	*.517*	*.444*	*1.164*	*.246*	*-.361*	*1.396*
Product terms key:						
Int_1: Code * Product						

Table 13: Model 1 - H. Process Macro [$H_{1.1}$] (based on Appendix 9.)

The positive coefficient of Table 13 suggests that the color code inclusion generates a higher PI for T-shirts (codified with 1) than the sneakers (codified with 0). However, this difference is not statistically significant (*$p>.05$; 95% CI = [-.361, 1.396]*), jumping to the conclusion that the type of product does not have a statistically significant moderate impact on the relationship between the color code inclusion and the PI.

This way, the null hypothesis was accepted, not being possible to prove that the impact of the color code inclusion on the purchase intention is higher when included on T-shirts than on sneakers.

***$H_{1.2}$**: The impact of color-coding inclusion on the purchase intention is higher for the colorblind than for the non-colorblind consumers.*

Model						
	coeff	se	t	p	LLCI	ULCI
constant	*4.463*	*.111*	*40.244*	*.000*	*4.244*	*4.683*
Code	*1.370*	*.222*	*6.170*	*.000*	*.931*	*1.810*
Colorblindness	*.403*	*.222*	*1.816*	*.072*	*-.036*	*.842*
Int_1	*.517*	*.444*	*1.164*	*.246*	*-.361*	*1.396*
Product terms key:						
Int_1: Code * Colorblindness						

Table 14: Model 1 - H. Process Macro [$H_{1.2}$] (based on Appendix 10)

Colorblindness existence has a statistically significant moderate effect on the interaction between the color code inclusion and the PI (*$p<.01$, 95% CI = [1.014, 3.759]*), strengthening it (Table 14). In other words, a colorblind individual (codified with 1) has a higher statistically significant intention of purchasing a product with the color code than a non-colorblind one. However, considering that the sample only included 15 colorblind consumers, the variable was not added to the model in the study as a moderator, and the conclusions of significant moderation cannot lead to the acceptance or rejection of the null hypothesis with an acceptable level of confidence.

4.3.2. Mediation

***H_2**: Engagement with social issues and Consumer Perceived Ethicality mediate the relationship between the color code inclusion on fashion products and the purchase intention.*

The second hypothesis is represented by 2 mediators in parallel, whose tests were done through model 4 of Hayes Process Macro. It allows studying the direct effect of the color code inclusion (variable X), represented by the inclusive design (dichotomous *Code* variable), on the PI (variable Y), both the indirect effects mediated by ESI (variable M_1) and CPE (variable M_2) and the total effect.

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		t-statistics	Conclusion
				Lower Bound	Upper Bound		
Inclusive Design → ESI → PI	*1.188*	*.179 (.305)*	*.633*	*.323*	*1.032*	*3.497**	*Full mediation*
Inclusive Design → CPE → PI			*.555*	*.263*	*.917*	*3.304**	

* t-statistics = Indirect Effect / BootSE

Table 15: Mediation [H_2] (based on Appendix 11)

Regarding the ESI mediation, paths a_1 and b_1 are statistically significant ($p<.001$), as the outcomes of ESI [M] and PI [Y] show (Table 15). This way, while path a_1 ensures that X has a positive effect on M_1, with a coefficient of *1.202*, path b_2 ensures that M_2 positively impacts Y, with a coefficient of *.527*.

In terms of CPE mediation, paths a_2, and b_2 are statistically significant ($p<.001$), as the outcomes of CPE [M] and PI [Y] show (Table 15). This way, while path a_2 ensures that X has a positive effect on M_2, with a coefficient of *1.406*, path b_2 ensures that M_2 positively impacts Y, with a coefficient of *.395.*

The direct effect of X on Y, represented by *c'*, is not statistically significant ($p>.05$), with a coefficient of *.179*.

This way, even though the direct effect of X on Y is not statistically significant ($p>.05$), the total effect is, which is justified by the statistical significance of the indirect effect of X on Y through both M_1 and M_2. The indirect effect caused by the ESI mediation is *.633* ($a_1*b_1 = 1.202*.527$; *CI = [.323, 1.032]*), and due to the CPE mediation is *.555* (a_2*b_2 =

*1.406 *.395; CI = [.263, .917]*), resulting in a total effect of *1.188* (*sum(.633, .555); CI = [.850, 1.565]*).

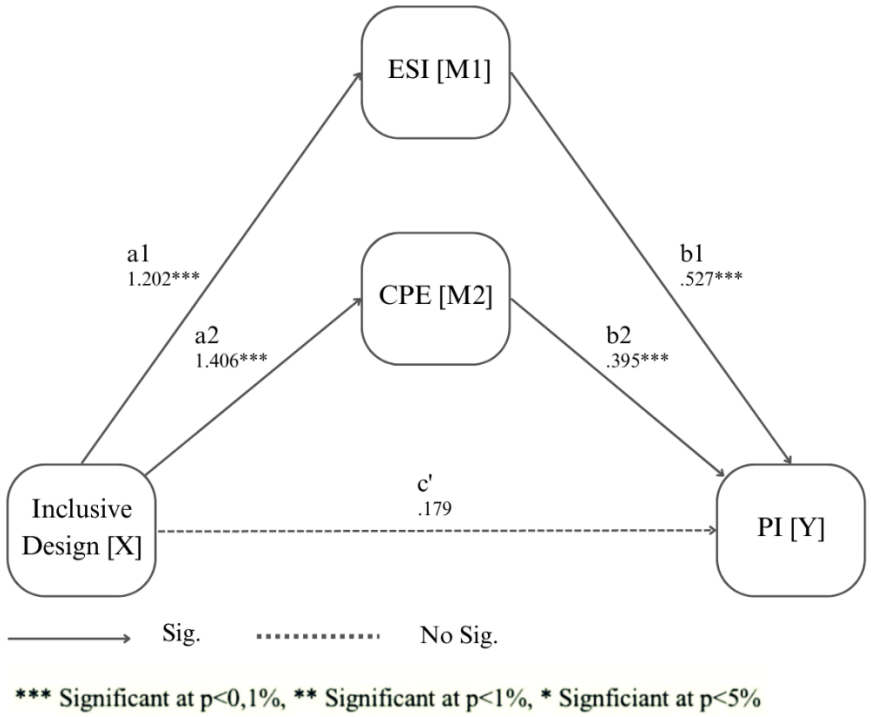

Figure 3: Statistical Diagram [H_2] (based on Appendix 12)

Therefore, the mediation effect of ESI and CPE in the mentioned interaction is proved, rejecting the null hypothesis. It corresponds to a full mediation model, given the fact that the impact of X on Y is completely passing through M_1 and M_2. Considering the coefficients presented in the scheme (Figure 3), the following formula was developed:

$$Y = b_0 + b_1M_1 + b_2M_2 + c'X$$
$$\Leftrightarrow PI = .212 + .527*ESI + .395*CPE + .179*Code$$

$$M_1 = a_{01} + a_1X$$
$$\Leftrightarrow ESI = 3.819 + 1.202*Code$$

$$M_2 = a_{02} + a_2X$$
$$\Leftrightarrow CPE = 3.849 + 1.406*Code$$

Merging the three expressions, we arrive at the final regression.

$$PI = 3.745 + 1.367*Code$$

Considering that the variable *Code* is dichotomic, in which *0* corresponds to not including the code and *1* to including it, then the code inclusion implies an increase of *1.367* on the PI when compared to the situation where the code is not included.

4.3.3. Moderation

***H_3**: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and the purchase intention.*

To test the moderation effect of the ColorADD Awareness (variable W) on the relationship between the color code inclusion (variable X) and the PI (variable Y), model 1 of Hayes Process Macro was applied.

Model Summary						
Output Variable: PI						
R	R-sq	MSE	F	df1	df2	p
.559	*.312*	*1.530*	*20.121*	*3.000*	*133.000*	*.000*
Model						
	coeff	se	t	p	LLCI	ULCI
constant	*4.347*	*.110*	*39.569*	*.000*	*4.130*	*4.564*
Code	*1.220*	*.220*	*5.548*	*.000*	*.785*	*1.655*
BA	*.234*	*.083*	*2.815*	*.006*	*.070*	*.398*
Int_1	*.632*	*.164*	*3.848*	*.000*	*.307*	*.957*
Product terms key:						
Int_1: Code * BA						
Test(s) of highest order unconditional interaction(s).						
	R2-chng		F	df1	df2	p
X*W	*.077*		*14.803*	*1.000*	*133.000*	*.000*

Table 16: Model 1 – H. Process Macro [H_3] (based on Appendix 13)

As shown in the Model Summary of Table 16, *55.9%* (*R-sq*) of change in PI is being accounted for by the three exogenous variables X, W, and XW. This is justified by the significant positive impact of X (*p<.001; 95% CI = [.785, 1.655]*), W (*p<.01; 95% CI = [.070, .398]*), and XW (*p<.001; 95% CI = [.307, .957]*) on Y. Note that *7.7%* (*R2-change*) of variance in the endogenous variable Y is uniquely attributed to the interaction (XW), representing around *14%* of the total variation of Y in this model.

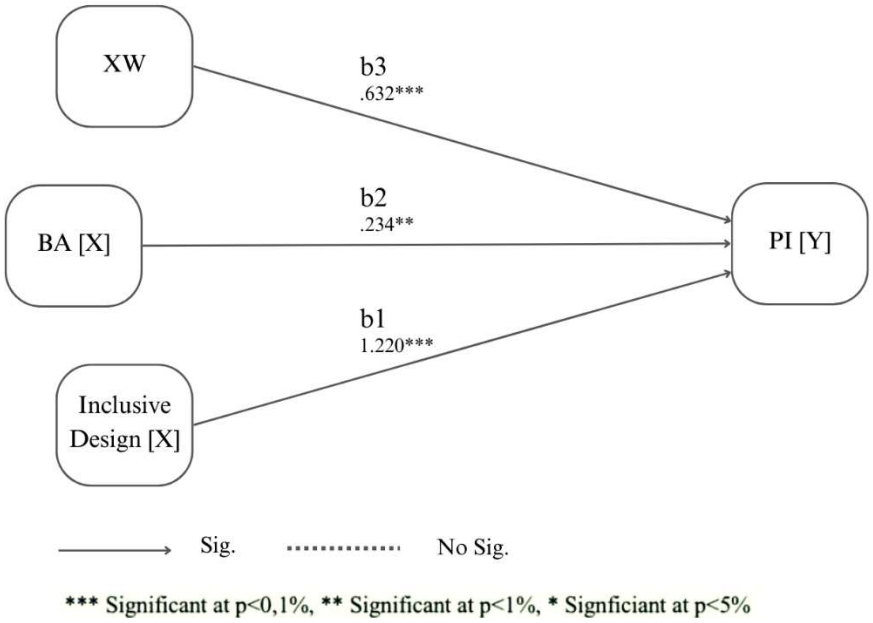

Figure 4: Statistical Diagram [H3] (based on Appendix 14)

Therefore, ColorADD awareness has a statistically significant moderate effect on the interaction between the color code inclusion and the PI, strengthening it. Thus, the level of BA impacts the moderation of the model, which is represented in the graphic of Figure 5.

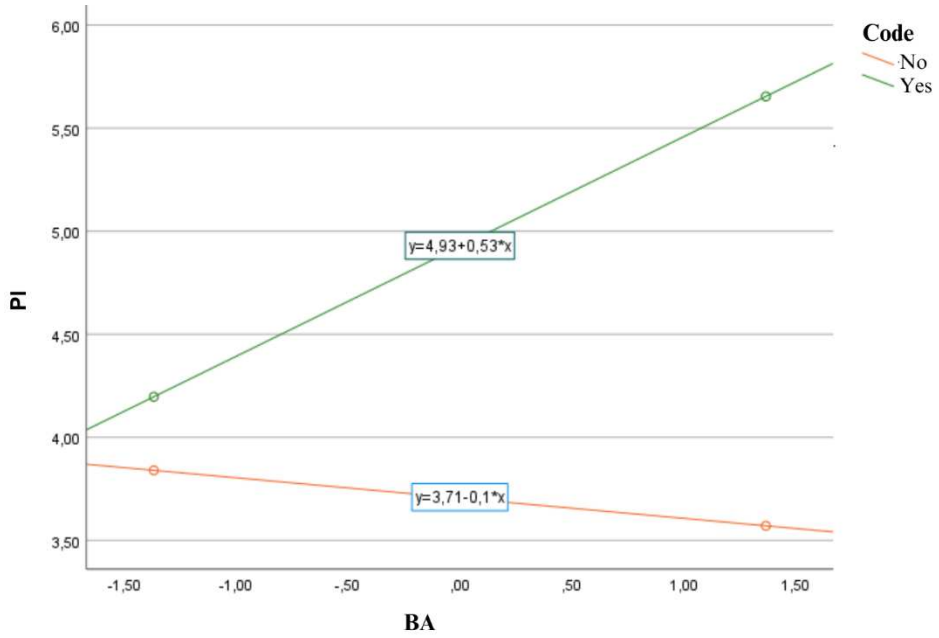

Figure 5: Graph Regressions [H3]

Considering the coefficients presented in the statistical diagram (Figure 4), the following formula was developed:

$$Y = b_0 + b_1X + b_2W + b_3XW$$

$$\Leftrightarrow PI = 4.347 + 1.220*Code + .234*BA + .632*Code*BA$$

Considering that the variable *Code* is dichotomic (*0 = No Code; 1 = Code*):

$$PI = \begin{cases} 4.347 + .234 * BA & , Code = 0 \\ 5.567 + .866 * BA & , Code = 1 \end{cases}$$

This way, for the same level of BA, including the color code would generate an increase of *1.852* on the PI when compared to the situation with no code.

***H₄**: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and engagement with social issues.*

To test the moderation effect of the ColorADD Awareness (variable W) on the relationship between the color code inclusion (variable X) and the ESI (variable Y), model 1 of Hayes Process Macro was applied.

Model Summary						
Output Variable: ESI						
R	R-sq	MSE	F	df1	df2	p
.540	*.292*	*1.299*	*18.265*	*3.000*	*133.000*	*.000*
Model						
	coeff	se	t	p	LLCI	ULCI
constant	*4.349*	*.101*	*42.963*	*.000*	*4.149*	*4.549*
Code	*1.073*	*.203*	*5.297*	*.000*	*.673*	*1.474*
BA	*.203*	*.077*	*2.659*	*.009*	*.052*	*.355*
Int_1	*.556*	*.151*	*3.670*	*.000*	*.256*	*.855*
Product terms key:						
Int_1: Code * BA						
Test(s) of highest order unconditional interaction(s).						
	R2-chng		F	df1	df2	p
X*W	*.072*		*13.472*	*1.000*	*133.000*	*.000*

Table 17: Model 1 – H. Process Macro [H₄] (based on Appendix 14)

As shown in the Model Summary of Table 17, *29.2%* (*R-sq*) of change in CPE is accounted for by the three exogenous variables X, W, and XW. This is justified by the significant positive impact of X (*p<.001; 95% CI = [.673, 1.474]*), W (*p<.01; 95% CI = [.052, .355]*), and XW (*p<.001; 95% CI = [.256, .855]*) on Y. Note that *7.2%* (*R2-change*) of variance in the endogenous variable Y is uniquely attributed to the interaction (XW), representing almost *25%* of the total variation of Y in this model.

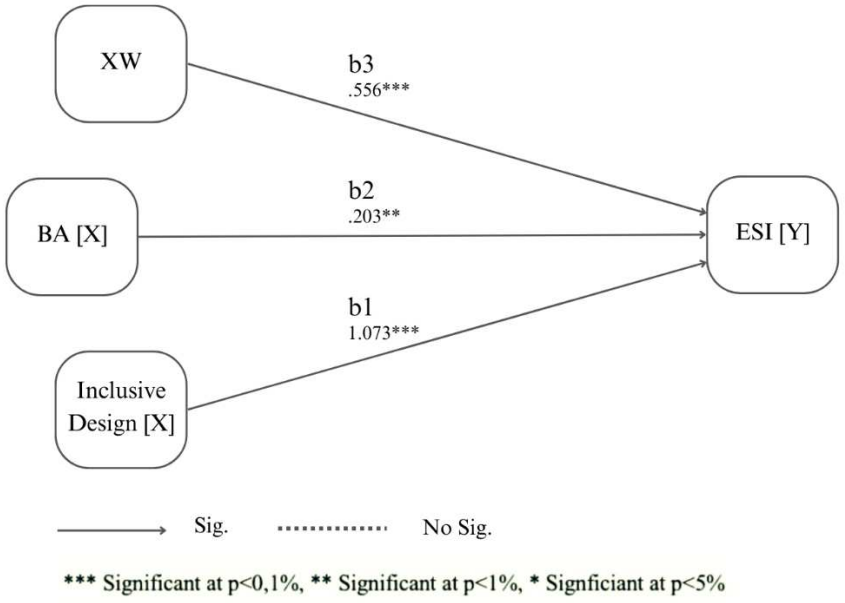

Figure 6: Statistical Diagram [H4] (based on Appendix 15)

Therefore, ColorADD awareness has a statistically significant moderate effect on the interaction between the color code inclusion and the ESI, strengthening it. Thus, the level of BA impacts the moderation of the model, which is represented in the graphic of Figure 7.

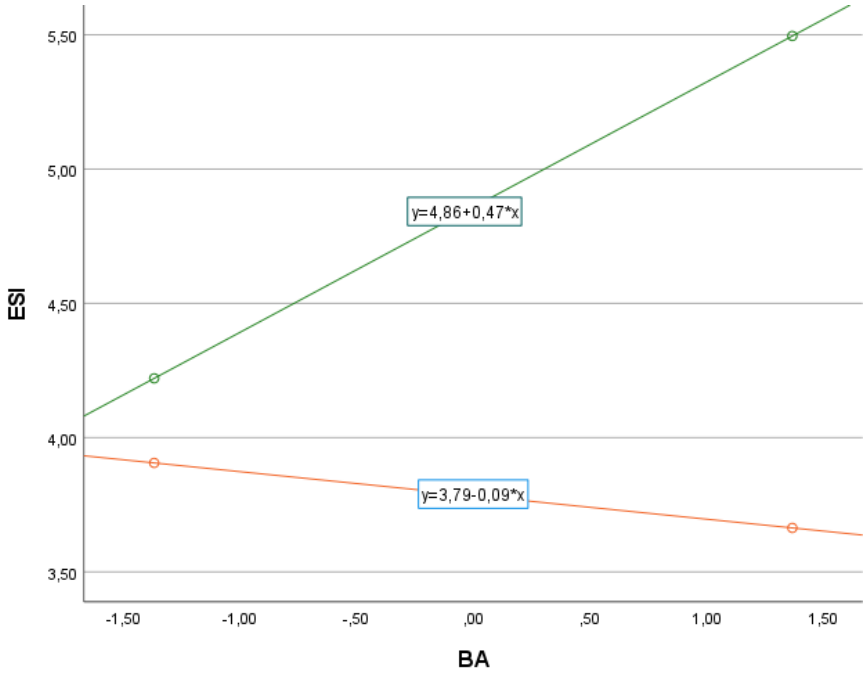

Figure 7: Graph Regression [H4]

Considering the coefficients presented in the scheme (Figure 6), the following formula was developed:

$Y = b_0 + b_1X + b_2W + b_3XW$

$\Leftrightarrow ESI = 4.349 + 1.073*Code + .203*BA + .556*Code*BA$

Considering that the variable *Code* is dichotomic (*0 = No Code; 1 = Code*):

$$ESI = \begin{cases} 4.349 + .203 * BA & , Code = 0 \\ 5.422 + .759 * BA & , Code = 1 \end{cases}$$

This way, for the same level of BA, including the color code would generate an increase of *1.629* on the ESI when compared to the situation with no code.

***H_5**: ColorADD awareness moderates the relationship between the color code inclusion on fashion products and the consumer's perceived ethicality.*

To test the moderation effect of the ColorADD Awareness (variable W) on the relationship between the color code inclusion (variable X) and the CPE (variable Y), model 1 of Hayes Process Macro was applied.

Model Summary *Output Variable: CPE*						
R	R-sq	MSE	F	df1	df2	p
.598	*.357*	*1.158*	*24.618*	*3.000*	*133.000*	*.000*
Model						
	coeff	se	t	p	LLCI	ULCI
constant	*4.487*	*.096*	*46.942*	*.000*	*4.298*	*4.676*
Code	*1.333*	*.191*	*6.966*	*.000*	*.954*	*1.711*
BA	*.128*	*.072*	*1.769*	*.079*	*-.015*	*.271*
Int_1	*.550*	*.143*	*3.847*	*.000*	*.267*	*.833*
Product terms key: Int_1: Code * BA						
Test(s) of highest order unconditional interaction(s).						
	R2-chng		F	df1	df2	p
X*W	*.072*		*14.802*	*1.000*	*133.000*	*.000*

Table 18: Model 1 – H. Process Macro [H_5] (based on Appendix 16)

As shown in the Model Summary of Table 18, *35.7%* (*R-sq*) of change in CPE is being accounted for by the three exogenous variables X, W, and XW. Although the impact of W on Y is not statistically significant (*p>.05; 95% CI = [-.15, .271]*), the impact of X (*p<.001; 95% CI = [.954, 1.711]*), and XW (*p<.001; 95% CI = [.267, .833]*) on Y is. Note that *7.2%* (*R2-change*) of variance in the endogenous variable Y is uniquely attributed to the interaction (XW), representing around *20%* of the total variation of X in this model.

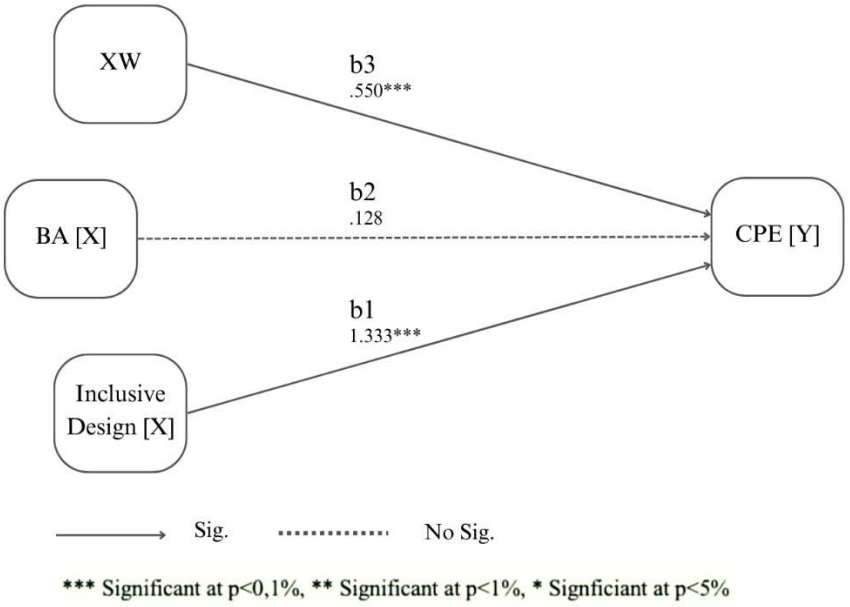

Figure 8: Statistical Diagram [H_5] (based on Appendix 17)

Therefore, ColorADD awareness has a statistically significant moderate effect on the interaction between the color code inclusion and the CPE, strengthening it. Thus, the level of BA impacts the moderation of the model, which is represented in the graphic of Figure 9.

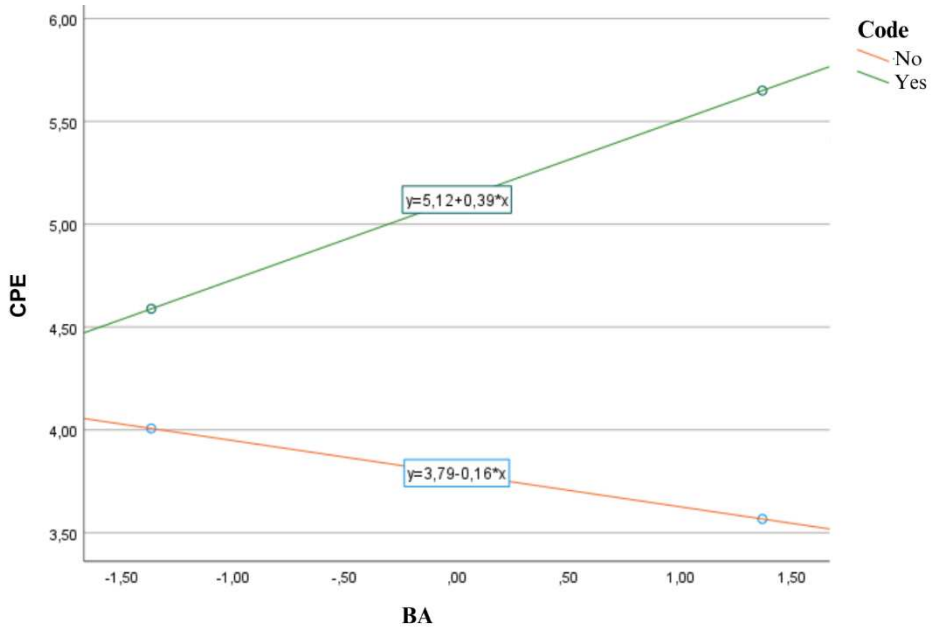

Figure 9: Graph Regression [H_5]

Considering the coefficients presented in the scheme (Figure 8), the following formula was developed:

$$Y = b_0 + b_1X + b_2W + b_3XW$$

$$\Leftrightarrow CPE = 4.487 + 1.333*Code + .128*BA + .550*Code*BA$$

Considering that the variable *Code* is dichotomic (*0 = No Code; 1 = Code*):

$$CPE = \begin{cases} 4.487 + .128 * BA & , Code = 0 \\ 5.820 + .678 * BA & , Code = 1 \end{cases}$$

This way, for the same level of BA, including the color code would generate an increase of *1.883* on the CPE when compared to the situation with no code.

4.3.4. Full Model

After accessing all the relevant individual connections between variables, the full model was tested to determine all interactions in a single model output. It was studied with model 8 of the Hayes Process Macro, using the PI as the DV (Y), Code as the IV (X), ESI (M_1) and CPE (M_2) as the two mediators, and BA as the moderator (W) of the model.

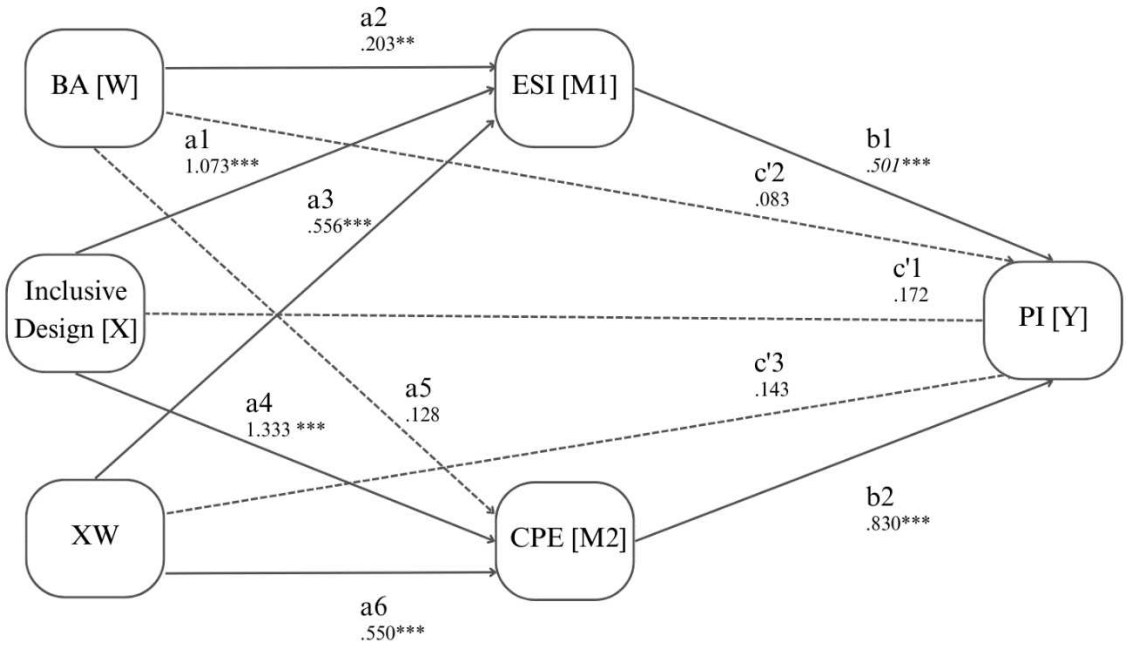

Figure 10: Statistical Diagram [Full Model] (based on Appendix 18)

It indicates that color code inclusion does not have a statistically significant direct impact on PI. Note that although this seems to not be corresponded to the same conclusions taken on H_1, in which the color code inclusion has a statistically significant impact on PI, the results are in fact aligned. This happens since the impact of the color code inclusion on PI is fully made through the mediating effect of ESI and CPE, proved both in H_2 and the full model. Therefore, even though the direct effect is not significant, the inclusion of this language positively impacts the consumers' PI.

BA also led to the same determinations of H_4 and H_5, considering the statistical significance of the direct impact on the ESI, and the moderating effect in the relationship between the color code inclusion and the ESI, as well as with CPE. The direct impact of BA on CPE remained not statistically significant. However, the introduction of the other variables in the model, weakens the influence of BA, as the direct effect on PI and the moderating effect between the color code inclusion and the PI, is no longer statistically significant as stated in H_3.

In conclusion, the impact of the color code inclusion on the PI is fully mediated by the ESI and the CPE, but not moderated by the BA. BA only moderates the relationship between the color code inclusion and both mediators.

Considering the coefficients presented in the scheme (Figure 10) the following formula was developed:

$Y = b_0 + b_1M_1 + b_2M_2 + c_1'X + c_2'W + c_3'XW$

$\Leftrightarrow PI = .452 + .501*ESI + .83*CPE + .172*Code + .083*BA + .143*Code*BA$

$M_1 = a_{01} + a_1X + a_2W + a_3XW$

$\Leftrightarrow ESI = 4.349 + 1.073 *Code + .203*BA + .556*Code*BA$

$M_2 = a_{02} + a_4X + a_5W + a_6XW$

$\Leftrightarrow CPE = 4.487 + 1.333 *Code + .128*BA + .550*Code*ESI$

Merging the two expressions, we arrive to the final regression.

$PI = 6.355 + .1.816*Code + .291*BA + .879*Code*BA$

Considering that the variable *Code* is dichotomic (*0 = No Code; 1 = Code*):

$$PI = \begin{cases} 6.355 + .291 * BA & ,Code = 0 \\ 8.171 + 1.170 * BA & ,Code = 1 \end{cases}$$

This way, the interaction of all variables would generate that for the same level of BA, including the color *Code* would generate an increase of *2.695* on the PI when compared to the situation with *No Code*.

5. Conclusions

5.1. Main Findings & Conclusions

This research intended to understand if the adoption of the ColorADD code by fashion companies on their products would generate beneficial outcomes in terms of the way consumers' perceived and engage with the companies' ethicality, as well as how it would be translated into the purchase intention.

Regarding the first research question, Schreier et al. (2012) defended a significant impact of the adaptation of product designs into more inclusive ones, on the PI. This was justified by the fact that consumers are increasingly valuing the social responsibility brands adopt (Jung et al., 2022), specifically in terms of diversity, equity, and inclusion values (Arsel et al., 2021). The present study determined with the H_1 that including the color code on fashion products does not have a significant direct effect on PI, something that was reinforced in the full model conclusions. However, considering that the beta coefficient was positive, it suggests that there is some beneficial impact on the consumers' intention to buy a product, even though it is not considered to be statistically significant. This is explained by the H_2 conclusions, as there was a statistically significant full mediation of CPE and ESI, which means that the impact of the color code inclusion on the PI was fully made through the mediation. Therefore, including the ColorADD code on fashion products, represented by the sneakers and the T-shirt, generates a higher consumers purchase intention, when the company that adopted the color language is perceived to be ethical. This is aligned with Brunk (2010) and (Shah et al., 2020) determinations regarding the impact of a positive CPE on businesses success and willingness to purchase a certain product. However, if the consumer does not associate this design adaptation with a company's ethical behavior, no impact is observed. Note that no significant evidence was found about in which product – sneakers or T-shirt – this impact is stronger, and if colorblind consumers have greater PI, when the color code is included, considering that the respondents with colorblindness were not representative.

The second research question is then proved considering that the code inclusion positively impacts the CPE and ESI, which consequently has a beneficial effect on the PI. This is also related to the third research question as the impact is strengthened when consumers are aware of the ColorADD brand, as H_4 and H_5 showed. Indeed, consumers who can

easily recognize the ColorADD code strengthen the effect of this inclusive design on the CSE and ESI, which consequently positively influences the consumers' intent to purchase the product. The moderation behavior does not occur in the direct relationship between the color code inclusion and the PI, as shown in H_3, but does in the statistically significant paths that connect the independent and dependent variables. The fact that ColorADD awareness reinforces the mentioned interactions is aligned with the conclusions of Garber et al. (2003), Vanitha & Subramanian (2020), and Louangrath (2021). The awareness regarding the company that sells the product proves to not be the only one affecting these interactions, given the fact that consumers who are more aware of the ColorADD brand, have more positive behaviors towards the company that includes its code, than consumers who do not know it.

To sum up, companies benefit from the adaptation of their designs to include the ColorADD code, but for relevant outcomes, consumers must be taught about the color language not only in terms of how it works but how it impacts society through inclusion.

5.2. Managerial & Academic Implications

Regarding academic relevance, theories described in the literature review have been validated for the context that puts colorblindness in the center. The ColorADD code was not studied before as an inclusive design in terms of its impact on several variables. Thus, even though the study did not prove that the inclusive design, represented by the inclusion of the ColorADD code, directly influences the PI, the impact fully happened through the mediation of the CPE and the ESI. Additionally, the awareness of the ColorADD brand showed to be a moderator of the relationship between the inclusive design, represented by the ColorADD code inclusion, and the PI. Therefore, consumers' awareness of the brand that creates the conditions for companies to be more inclusive, in this case, ColorADD, has an important role in the mentioned interactions.

Regarding managerial relevance, company leaders should consider the adaptation of their packaging designs by including the ColorADD code, as this will enhance how consumers perceive the ethicality of the brand, as well as motivate their concerns about these matters, engaging with it. Once consumers recognize the company in that way, they will also demonstrate a higher intention to purchase the product. That way, placing a flyer of the product with the ColorADD code, as studied in this research, not only in-store but also

sent with the purchase, jointly promoting, and teaching the community about it, could bring various benefits for the company.

5.3. Limitations and Further Research

This study presents several limitations that could be solved if time and money would not represent a limitation in this study.

First, the sample was not representative of the population, as more than half of the valid responses correspond to individuals between 21 and 30 years old and people in their 70s or older did not participate. Also, only *35%* of the sample correspond to male respondents and more than *94%* to Portuguese individuals. Thus, future research could repeat the study for a more representative sample, also investigating which generations and gender would be more influenced by the adoption of the ColorADD code by the company. It could also be applied specifically to a market, such as the Portuguese or European markets.

Second, even though the research aimed to understand the results for the consumers in general, considering that the code eases colorblind consumers' lives, it would make sense to have a representative colorblind sample, which is another study's limitation. In a talk with a colorblind friend, it was also highlighted that the gaming market should be more inclusive to this segment, as it currently does not create a sense of belonging to the game community, representing a valuable topic for future research.

Third, the fact that only two products were considered to represent the fashion market is also a limitation. This way, to be able to generalize the conclusions for the entire fashion industry, future research should repeat the study for other fashion products.

Forth, considering the ColorADD awareness showed to have a strengthening impact on the results, future research should study the best ways for a company, that implements the code in its designs, to communicate it with the goal of increasing their awareness. Also, considering consumers increasingly prefer companies who adopt ethical values to various extents, it would be interesting to investigate the impact of including this language system on different levels of the business, such as on the website, on social media, on marketing campaigns, in-store and on company's employee's daily work.

Finally, the emotional responses associated with the inclusion of the colorblind segment would be a good addition to this research, as well as how these emotions define their experience with the brand and how the relationship with the brand evolves.

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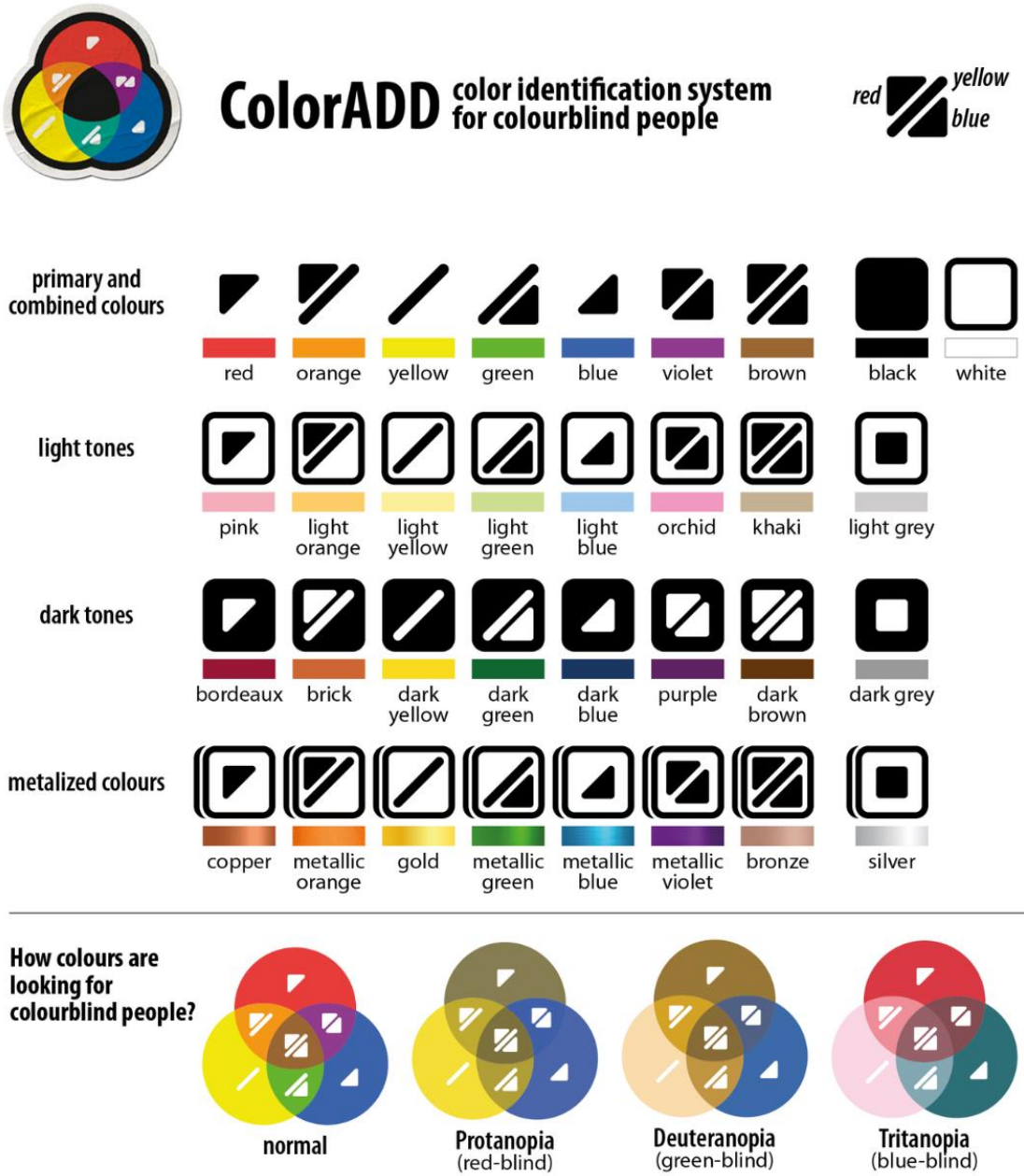
Appendices

Appendix 1 : ColorADD Code



Appendix 2 : Focus Group

2.1. Script

"Hello and welcome to this focus group. First of all, thank you for your availability. To contextualize you, we intend to gather information regarding the clarity of some stimuli in terms of presenting the situation descriptively, displaying visual elements, and proving the unisex perception and non-brand association of the evaluated products.

Feel comfortable to have an informal conversation with the other participants. The intention is to hear honest answers from all of you, so there are no right or wrong answers.

The session will take around 20 minutes and, as previously mentioned, it will be recorded so that I can analyze it later and take conclusions for my dissertation. It will only be used for that purpose.

Your answers will be a huge contribution to my project, so thank you again, and feel motivated to share your opinions.

If there are no doubts, the session will begin.

I ask you to present yourselves so that we are more comfortable with this informal environment."

A. Selection of the products shown in the stimuli

A.1. Sneakers

"Next, you'll see different models of sneakers. I ask you to take a close look at the colors of the product, as we are going to access which model you consider to be more unisex, yet colorful enough to add a color code."

Figure A.1.1

Figure A.1.2

Figure A.1.3

Figure A.1.4

Figure A.1.5

a. *As I said previously, which of the products shown before do you consider to be more unisex?*
b. *Additionally, do you associate this model, independently of the color, with a specific brand? If yes, which one?*

A.2. T-shirt

"As you did for the sneakers, take a look at the models of the T-shirts I will show, paying attention to the colors of the product, as we are also going to access which model you consider to be more unisex, yet colorful enough to add a color code."

Figure A.2.1

Figure A.2.2

Figure A.2.3

Figure A.2.4

Figure A.2.5

Figure A.2.6

Figure A.2.7

Figure A.2.8

Figure A.2.9

Figure A.2.10

Figure A.2.11

Figure A.2.12

Figure A.2.13

a. *The same answers repeat, which of the products shown before do you consider to be more unisex?*

b. *Do you associate this T-shirt, independently of the color, with a specific brand? If yes, which one?*

B. Select how to present the product:

"Now, we aim to understand which the clearer way is to show the product to the respondents of the survey. Pairs of stimuli will appear, considering that we want to compare two scenarios – a scenario without the ColorADD color code versus a scenario with the ColorADD color code. This way, in your evaluation, take into consideration the clarity of the stimuli as well as the most logical way to show both stimuli – both scenarios need to make sense with the stimuli shown."

B.1. Sneakers

Option 1 – Flyer with the image of the product.

Figure B.1.1.1

Figure B.1.1.2

Option 2 – Flyer with the drawing of the product.

Figure B.1.2.1

Figure B.1.2.2

Option 3 – Shoe box with the image of the product.

Figure B.1.3.1

Figure B.1.3.2

Option 4 – Shoe box with the drawing of the product.

Figure B.1.4.1

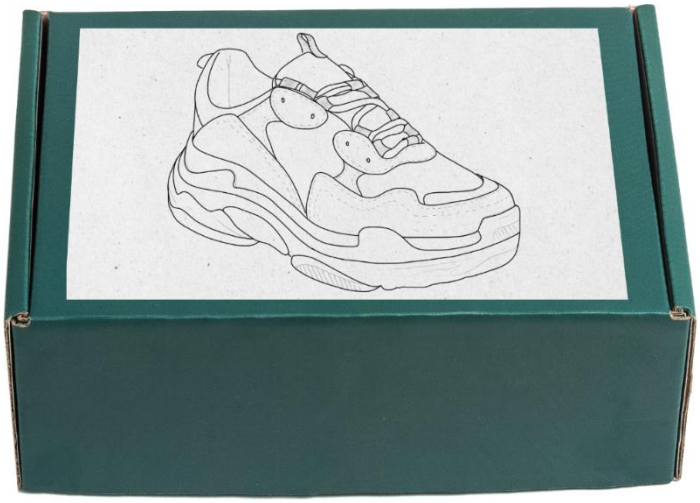


Figure B.1.4.2

Option 5 – Product with a label with the image of the product.

Figure B.1.5.1

Figure B.1.5.2

Option 6 – Product with a label with the drawing of the product.

Figure B.1.6.1

Figure B.1.6.2

B.2. Sweatshirt *(that will be used for the T-shirt)*

Option 1 – Flyer with the image of the product.

Figure B.2.1.1

Figure B.2.1.2

Option 2 – Flyer with the drawing of the product.

Figure B.2.2.1

Figure B.2.2.2

Option 3 – Product with a label with the image of the product.

Figure B.2.3.1

Figure B.2.3.2

Option 4 – Product with a label with the drawing of the product.

Figure B.2.4.1

Figure B.2.4.2

a. *Which do you consider to be the clearer option to show the product?*
b. *Would you do any changes to the chosen stimuli? Which one?*

That is the end of today's session and thank you so much once again for participating.

2.2. Conclusions

The group reached a consensus on every question, due to the argumentation from each participant. However, valuable insights were taken to improve the stimuli.

Regarding the models chosen, different models were highlighted as being unisex.

For the sneakers, all participants consider that the model from Figure A.1.2. was the most masculine, so it was the first to be eliminated. As a consensus, the white and green model (Figure A.1.1) was considered to be the most unisex. However, considering that it only has two colors, they agreed that it would not be very interesting to add the color code. The options that remain under discussion were the ones from Figure A.1.3 and A.1.4. Between the two, the model from Figure A.1.3 was considered to be more masculine, electing the model from Figure A.1.4 as the most suitable for both genders. However, one of the participants suggested adding the light grey of the model of Figure A.1.3 to the model of Figure A.1.4, so that it would have more color codes to include in the stimuli.

For the T-shirt, 5 models were highlighted as being perceived as suitable for both genders (Figure A.2.2, A.2.3, A.2.5, A.2.6, A.2.8, A.2.9). However, the models from Figure A.2.2 and Figure A.2.3 were discarded, since the participants considered that the monochromatic scheme would not be as interesting to include the color-code as the other options. From the remaining options, the ones from Figures A.2.5 and A.2.6 were the

most voted, considering the unisex designation. Finally, the group agreed that the model from Figure A.2.6 was the best option, due to the fact that red could not be the preference of everyone.

Regarding the selection of the best way to show the product, even though the opinions diverged, the arguments supported the final stimuli decision. The label option was eliminated considering that the main justification to choose it was the fact that it looked good, and one of the participants argued that the scenario without the color code would not make sense. The shoebox option was highlighted by everyone, but some considered that the sweatshirt did not have a comparable stimulus, which could bias the results. This way, the flyers were the remaining options, from which the flyer with the image of the product was the final decision, considering that the group discussed the fact that not showing any color (as the drawing did), would make it hard for people decide if they would be willing to purchase the product or not. The final decision was for option 1, both for the sneakers and sweatshirt (representative of the T-shirt).

Additionally, one of the participants suggested increasing the size of the logo and adding the phrase *"Colorblind Accessible Design"*, so that the difference between stimuli was more enhanced and clearer for respondents that do not know the ColorADD brand.

2.3. Final Stimuli

After merging all the insights gathered with the focus group, the following stimuli were created:

Figure 7.2.2.1 – Stimuli sneakers with the ColorADD code

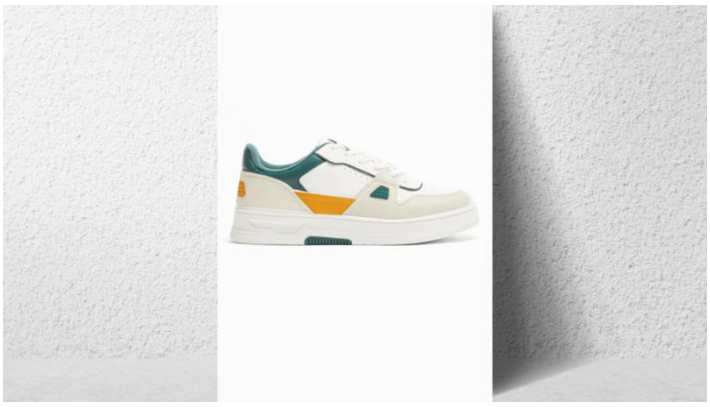


Figure 7.2.2.2 – Stimuli sneakers without the ColorADD code

Figure 7.2.2.3 – Stimuli T-shirt with the ColorADD code

Figure 7.2.2.4 – Stimuli T-shirt without the ColorADD code

Appendix 3 : Survey

Welcome!

This questionnaire is part of my MSc dissertation from Católica Lisbon School of Business and Economics. It is the final step of my Master, so your honest response represents a valuable contribution. Thank you in advance for that!

Note that your volunteer participation is done **anonymously and confidentially**, only being used for the purpose of my thesis.

It is expected to take around 5 minutes.

For any additional clarification contact me through *s-icrsilva@ucp.pt*

Are you colorblind?

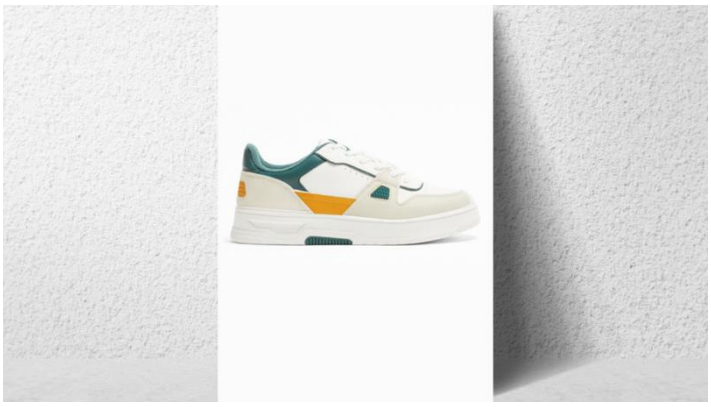
- Yes (1)
- No (2)

Stimuli

Imagine that you need Sneakers in your wardrobe, but you don't have anything in mind in terms of the model you want to buy. You start looking for some options and find a brand you didn't know before but have the information that it offers high-quality products.

Please take a look at the following flyer that contains the mentioned Sneakers/ T-shirt with/ without the color code.

or



or

or

Brand Image

After analyzing the previously described scenario, rate your level of agreement with the following statements, on a scale from 1 (Completely Disagree) to 7 (Completely Agree).

I think the brand is trustworthy.

The brand takes social responsibility seriously.

The brand has a reputation for quality.

Consumer Perceived Ethicality

After analyzing the previously described scenario, rate your level of agreement with the following statements, on a scale from 1 (Completely Disagree) to 7 (Completely Agree).

The brand respects moral norms.

The brand always adheres to the law.

The brand is a socially responsible company.

The brand avoids damaging behavior at all cost.

The brand is a good company.

The brand will make a decision only after careful consideration of the potential positive or negative consequences for all those involved.

Engagement with Social Issues

After analyzing the previously described scenario, rate your level of agreement with the following statements, on a scale from 1 (Completely Disagree) to 7 (Completely Agree).

The purchase of this product reflects the kind of person I am.

The purchase of this product gives me a sense of satisfaction.

The purchase of this product is valued by other people.

The purchase of this product helped me express my personal values.

Purchase Intention

Having the shown product in mind, on a scale from 1 (Completely Disagree) to 7 (Completely Agree), please rate your level of agreement with the following statements.

I would be glad to own the product.

I believe that most people would like to buy this product.

I would purchase this product.

Willingness to Pay

Having the shown product in mind, how much would you be willing to pay for this product?

0 10 20 30 40 50 60 70 80 90 100

Manipulation Questions

On a scale from 1 (Completely Disagree) to 7 (Completely Agree), please rate your level of agreement with the following statements.

The shown product includes the ColorADD code.

The product belongs to a well-known brand.

Brand Awareness

Take a close look at the following logo:

Please state your awareness regarding the brand represented by this logo, by rating your level of agreement, on a scale from 1 (Completely Disagree) to 7 (Completely Agree).

It is a well-known brand.

The brand is appropriate for colorblind initiatives.

I can easily recognize it among other brands.

I can quickly remember its logo.

It offers a unique value.

Demographics

How old are you?

- o < 20 years old (1)
- o 21-30 years old (2)

- 31-40 years old (3)
- 41-50 years old (4)
- 51-60 years old (5)
- 61-70 years old (6)
- > 70 years old (7)

In which country do you currently reside?

▼ Afghanistan (1) ... Zimbabwe (1357)

What is your gender?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

What is your highest level of education?

- Lower than High School
- High School Graduate or equivalent
- Bachelor Degree
- Master Degree / MBA
- Post-Doctoral Degree / PhD

What is your household's monthly income?

- < 750€
- 750€ - 1000€
- 1001€ - 1500€
- 1501€ - 2000€
- 2001€ - 2500€
- 2501€ - 3000€
- 3001€ - 3500€
- 3501€ - 4000€
- 4000€
- Prefer not to say.

Appendix 4 : Normality Diagnosis

4.1. Kolmogorov-Smirnov & Shapiro-Wilk

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ManCheck_q1	,228	137	<,001	,832	137	<,001
BA	,101	137	,002	,964	137	,001
WTP	,121	137	<,001	,925	137	<,001
PI	,114	137	<,001	,958	137	<,001
ESI	,099	137	,002	,967	137	,002
CPE	,147	137	<,001	,935	137	<,001
BI	,143	137	<,001	,931	137	<,001

a. Lilliefors Significance Correction

4.2. Skewness & Kurtosis

Descriptives

			Statistic	Std. Error
CPE	Mean		4,5876	,11340
	95% Confidence Interval for Mean	Lower Bound	4,3633	
		Upper Bound	4,8119	
	5% Trimmed Mean		4,6590	
	Median		4,6667	
	Variance		1,762	
	Std. Deviation		1,32736	
	Minimum		1,00	
	Maximum		7,00	
	Range		6,00	
	Interquartile Range		1,33	
	Skewness		-,847	,207
	Kurtosis		1,113	,411
ESI	Mean		4,4507	,11443
	95% Confidence Interval for Mean	Lower Bound	4,2244	
		Upper Bound	4,6770	
	5% Trimmed Mean		4,5011	
	Median		4,5000	
	Variance		1,794	
	Std. Deviation		1,33939	
	Minimum		1,00	
	Maximum		7,00	
	Range		6,00	
	Interquartile Range		1,50	

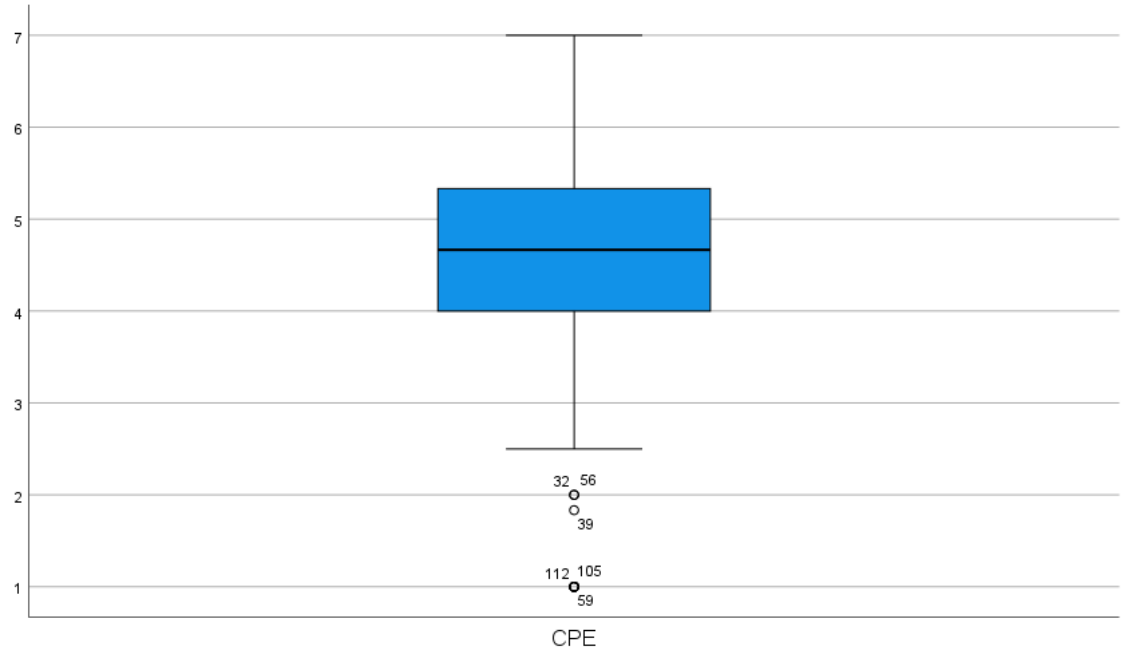
	Skewness		-,550	,207
	Kurtosis		,238	,411
PI	Mean		4,4623	,12601
	95% Confidence Interval for Mean	Lower Bound	4,2131	
		Upper Bound	4,7115	
	5% Trimmed Mean		4,5137	
	Median		4,6667	
	Variance		2,175	
	Std. Deviation		1,47487	
	Minimum		1,00	
	Maximum		7,00	
	Range		6,00	
	Interquartile Range		2,00	
	Skewness		-,519	,207
	Kurtosis		-,201	,411
BA	Mean		4,8774	,11669
	95% Confidence Interval for Mean	Lower Bound	4,6466	
		Upper Bound	5,1081	
	5% Trimmed Mean		4,9105	
	Median		4,8000	
	Variance		1,865	
	Std. Deviation		1,36581	
	Minimum		1,00	
	Maximum		7,00	
	Range		6,00	
	Interquartile Range		2,00	
	Skewness		-,211	,207
	Kurtosis		-,750	,411
ManCheck1	Mean		4,17	,200
	95% Confidence Interval for Mean	Lower Bound	3,77	
		Upper Bound	4,56	
	5% Trimmed Mean		4,19	
	Median		5,00	
	Variance		5,494	
	Std. Deviation		2,344	
	Minimum		1	
	Maximum		7	
	Range		6	
	Interquartile Range		4	
	Skewness		-,101	,207
	Kurtosis		-1,693	,411

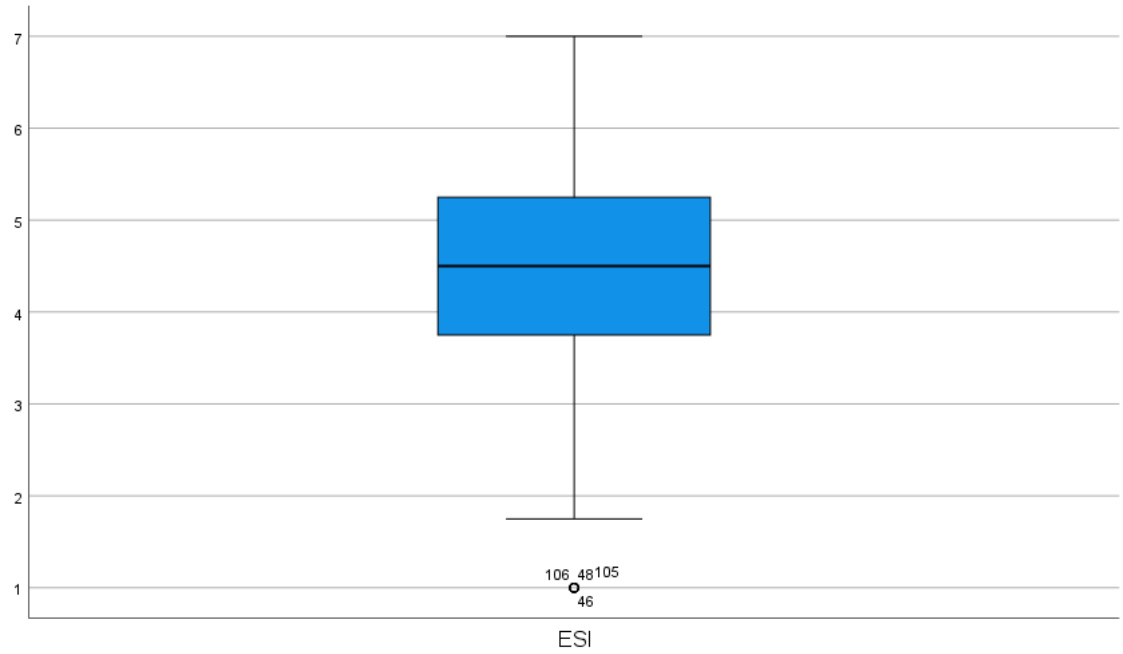
4.3. Levene's Test

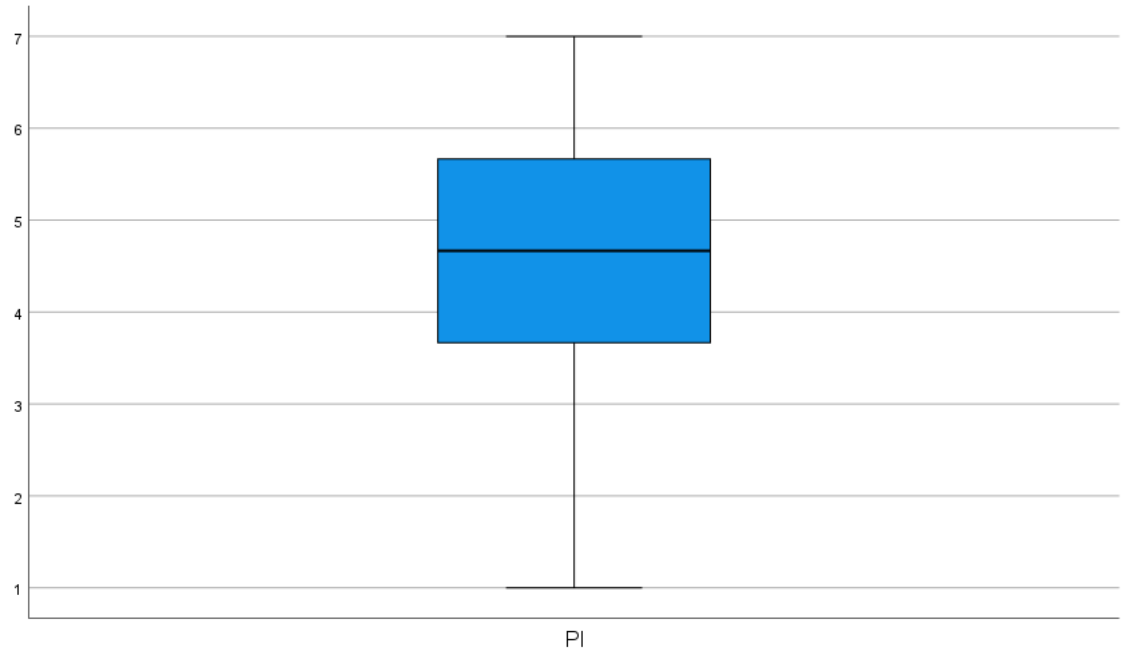
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
						Significance			
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference
CPE	Equal variances assumed	2,684	,104	-7,278	135	<,001	<,001	-1,40591	,19318
	Equal variances not assumed			-7,169	117,085	<,001	<,001	-1,40591	,19611
ESI	Equal variances assumed	,503	,479	-5,849	135	<,001	<,001	-1,20160	,20545
	Equal variances not assumed			-5,827	130,993	<,001	<,001	-1,20160	,20621
PI	Equal variances assumed	,767	,383	-6,098	135	<,001	<,001	-1,36752	,22427
	Equal variances not assumed			-6,061	128,841	<,001	<,001	-1,36752	,22562
BA	Equal variances assumed	6,506	,012	-3,243	135	<,001	,001	-,73269	,22591
	Equal variances not assumed			-3,203	120,981	<,001	,002	-,73269	,22873
ManCheck1	Equal variances assumed	,017	,897	-35,694	135	<,001	<,001	-4,447	,125
	Equal variances not assumed			-35,632	132,526	<,001	<,001	-4,447	,125

4.4. Outliers




7
6
5
4
3
2
1
106 48105
46
ESI


7
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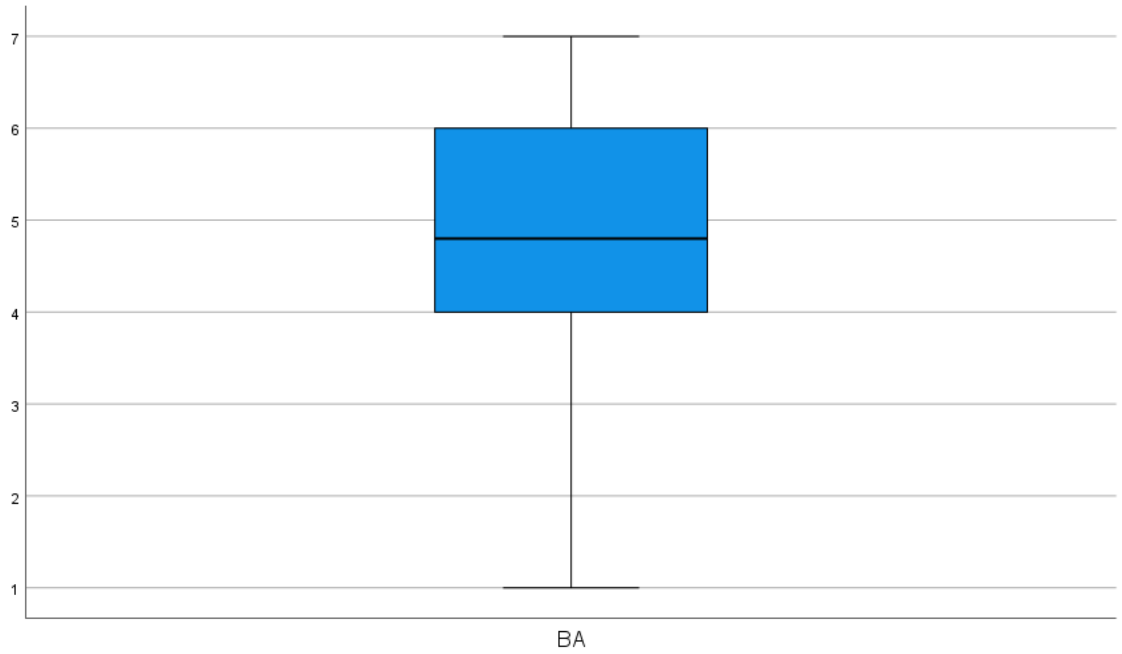
7
6
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4
3
2
1
BA

Appendix 5 : Scales Reliability

Scale reliability analysis

Construct	Initial number of items	Cronbach's alpha	Deleted Items	Final number of items	Cronbach's alpha if deleted
Stimuli 1: Sneakers with the color code					
Consumer Perceived Ethicality	6	0.885	0	6	-
Engagement with Social Issues	4	0.874	0	4	-
Purchase Intention	3	0.898	1	2	0.959
Brand Awareness	5	0.804	1	5	0.821
Stimuli 2: Sneakers without the color code					
Consumer Perceived Ethicality	6	0.953	0	6	-
Engagement with Social Issues	4	0.804	1	3	0.819
Purchase Intention	3	0.920	1	2	0.965
Brand Awareness	5	0.862	0	5	-
Stimuli 3: T-shirt with the color code					
Consumer Perceived Ethicality	6	0.844	0	6	-
Engagement with Social Issues	4	0.786	1	3	0.848
Purchase Intention	3	0.866	1	2	0.970
Brand Awareness	5	0.793	1	4	0.816
Stimuli 4: T-shirt without the color code					
Consumer Perceived Ethicality	6	0.946	1	5	0.947
Engagement with Social Issues	4	0.912	0	4	-
Purchase Intention	3	0.911	1	2	0.917
Brand Awareness	5	0.873	0	5	-
Total					
Consumer Perceived Ethicality	6	0.907	0	6	-
Engagement with Social Issues	4	0.844	0	4	-
Purchase Intention	3	0.899	1	2	0.953
Brand Awareness	5	0.831	0	5	-

Appendix 6 : Manipulation Check Test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The distribution of ManCheck_q1 is the same across categories of Codigo.	Independent-Samples Mann-Whitney U Test	,000	Reject the null hypothesis.

a. The significance level is ,050.

b. Asymptotic significance is displayed.

Appendix 7 : Demographic Variables

Demographics

		Sneakers w/ color code		Sneakers w/o color code		T-shirt w/ color code		T-shirt w/o color code		Total	
		Count	%	Count	%	Count	%	Count	%	Count	%
Age	< 20	2	*5.6*	1	*3.1*	1	*2.8*	1	*3.0*	5	*3.6*
	21 – 30	22	*61.1*	15	*46.9*	21	*58.3*	18	*54.5*	76	*55.5*
	31 – 40	2	*5.6*	2	*6.3*	3	*8.3*	4	*12.1*	11	*8.0*
	41 – 50	1	*2.8*	0	*0.0*	2	*5.6*	1	*3.0*	4	*2.9*
	51 – 60	7	*19.4*	12	*37.5*	6	*16.7*	7	*21.2*	32	*23.4*
	61 – 70	2	*5.6*	2	*6.3*	3	*8.3*	2	*6.1*	9	*6.6*
	> 70	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*
Current Country of Residence	Portugal	33	*91.7*	29	*90.6*	34	*94.4*	33	*100.0*	129	*94.2*
	France	1	*2.8*	0	*0.0*	0	*0.0*	0	*0.0*	1	*0.7*
	Hungary	1	*2.8*	0	*0.0*	0	*0.0*	0	*0.0*	1	*0.7*
	Brazil	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	1	*0.7*
	Spain	0	*0.0*	1	*3.1*	0	*0.0*	0	*0.0*	1	*0.7*
	Afghanistan	0	*0.0*	1	*3.1*	0	*0.0*	0	*0.0*	1	*0.7*
	Germany	1	*2.8*	0	*0.0*	1	*2.8*	0	*0.0*	2	*1.5*
	Denmark	0	*0.0*	0	*0.0*	1	*2.8*	0	*0.0*	1	*0.7*
Gender	Male	12	*33.3*	12	*37.5*	11	*30.6*	13	*39.4*	48	*35.0*
	Female	24	*66.7*	18	*56.3*	25	*69.4*	20	*60.6*	87	*63.5*
	Non-binary / third gender	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*	0	*0.0*
	Prefer not to say	0	*0.0*	2	*6.3*	0	*0,0*	0	*0.0*	2	*1.5*
Occupation	Student	13	*36.1*	6	*18.8*	8	*22.2*	3	*9.1*	30	*21.9*
	Student-worker	1	*2.8*	4	*12.5*	4	*11.1*	6	*18.2*	15	*10.9*
	Employed	19	*52.8*	20	*62.5*	22	*61.1*	24	*72.7*	85	*62.0*
	Unemployed	1	*2.8*	2	*6.3*	1	*2.8*	0	*0.0*	4	*2.9*

	Retired	2	*5.6*	0	*0.0*	1	*2.8*	0	*0.0*	3	*2.2*
Education	Lower than High School	0	*0.0*	1	*3.2*	0	*0.0*	0	*0.0*	1	*0.7*
	High School Graduate or equivalent	5	*13.5*	2	*6.5*	6	*16.7*	6	*18.2*	19	*13.9*
	Bachelor Degree	17	*45.9*	17	*54.8*	21	*58.3*	13	*39.4*	68	*49.6*
	Master Degree / MBA	15	*40.5*	8	*25.8*	8	*22.2*	13	*39.4*	44	*32.1*
	Post-Doctoral Degree / PhD	0	*0.0*	3	*9.7*	1	*2.8*	1	*3.0*	5	*3.6*
Monthly Income	< 750€	4	*11.1*	0	*0.0*	0	*0.0*	0	*0.0*	4	*2.9*
	750€ - 1000€	3	*8.3*	4	*12.5*	4	*11.1*	2	*6.1*	13	*9.5*
	1001€ - 1500€	10	*27.8*	3	*9.4*	8	*22.2*	8	*24.2*	29	*21.2*
	1501€ - 2000€	3	*8.3*	5	*15.6*	3	*8.3*	2	*6.1*	13	*9.5*
	2001€ - 2500€	0	*0.0*	2	*6.3*	5	*13.9*	6	*18.2*	13	*9.5*
	2501€ - 3000€	3	*8.3*	1	*3.1*	1	*2.8*	1	*3.0*	6	*4.4*
	3001€ - 3500€	1	*2.8*	2	*6.3*	0	*0.0*	0	*0.0*	3	*2.2*
	3501€ - 4000€	1	*2.8*	0	*0.0*	2	*5.6*	1	*3.0*	4	*2.9*
	> 4000€	4	*11.1*	2	*6.3*	4	*11.1*	4	*12.1*	14	*10.2*
	Prefer not to say.	7	*19.4*	13	*40.6*	9	*25.0*	9	*27.3*	38	*27.7*

Appendix 8 : Descriptives

8.1. Descriptives – General

Descriptive Statistics

Code		N	Minimum	Maximum	Mean	Std. Deviation
No	CPE	65	1,00	6,00	3,8487	1,29359
	ESI	65	1,00	6,00	3,8192	1,24570
	PI	65	1,00	6,67	3,7436	1,38916
	BA	65	1,00	7,00	4,4923	1,47990
	WTP	65	0	55	21,26	13,655
	Valid N (listwise)	65				
Yes	CPE	72	2,00	7,00	5,2546	,95680
	ESI	72	1,75	7,00	5,0208	1,15882
	PI	72	2,00	7,00	5,1111	1,23587
	BA	72	2,80	7,00	5,2250	1,15792
	WTP	72	4	95	50,08	24,229
	Valid N (listwise)	72				

The means of CPE, ESI, and PI are higher in the group that saw the color code in the stimulus in comparison to the one that did not. The std. deviations showed to be lower than 2.

8.2. Descriptives – Separated by Brand Awareness

Descriptive Statistics

Code		N	Minimum	Maximum	Mean	Std. Deviation
No	PI	30	1,00	6,00	3,4444	1,57892
	Valid N (listwise)	30				
Yes	PI	61	2,00	7,00	5,2678	1,15921
	Valid N (listwise)	61				

Considering the sample with BA>4

Descriptive Statistics

Code		N	Minimum	Maximum	Mean	Std. Deviation
No	PI	26	1,00	6,67	3,9231	1,28688
	Valid N (listwise)	26				
Yes	PI	7	2,00	6,00	4,4286	1,47465
	Valid N (listwise)	7				

Considering the sample with BA<4

By splitting the sample into two groups according to the BA levels – *BA<4* vs. *BA>4* -, it was determined that participants that knew ColorADD (*BA>4*) had higher PI than the ones who were not aware of it (*BA<4*) (Appendix 8.2.).

8.3. Descriptives – Separated by Gender

Descriptive Statistics

Gender_D3	Code		N	Minimum	Maximum	Mean	Std. Deviation
Male	No	CPE	25	1,00	6,00	3,3600	1,56398
		ESI	25	1,00	5,00	3,5300	1,21475
		PI	25	1,00	6,67	3,3333	1,39775
		BA	25	1,80	7,00	4,5680	1,53154
		WTP	25	0	50	18,88	13,252
		Valid N (listwise)	25				
	Yes	CPE	23	2,00	7,00	5,3913	1,11646
		ESI	23	2,50	7,00	5,0978	1,42170
		PI	23	2,00	7,00	5,3188	1,28109
		BA	23	2,80	7,00	5,3130	1,39065
		WTP	23	4	92	53,00	24,694
		Valid N (listwise)	23				
Female	No	CPE	38	1,00	5,33	4,0614	,93193
		ESI	38	1,00	5,75	3,9408	1,23359
		PI	38	1,00	6,00	3,9035	1,30121
		BA	38	1,00	7,00	4,4316	1,47155
		WTP	38	0	55	22,16	13,900
		Valid N (listwise)	38				
	Yes	CPE	49	2,83	7,00	5,1905	,87731
		ESI	49	1,75	7,00	4,9847	1,02750
		PI	49	2,00	7,00	5,0136	1,21518
		BA	49	3,00	7,00	5,1837	1,04470
		WTP	49	15	95	48,71	24,142
		Valid N (listwise)	49				
Prefer not to say	No	CPE	2	5,83	6,00	5,9167	,11785
		ESI	2	4,25	6,00	5,1250	1,23744
		PI	2	5,67	6,00	5,8333	,23570
		BA	2	3,40	6,00	4,7000	1,83848
		WTP	2	28	40	34,00	8,485
		Valid N (listwise)	2				

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance		Mean	Std. Error	95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Difference	Difference	Lower	Upper
PI	Equal variances assumed	3,074	,082	-,919	133	,180	,360	-,24401	,26555	-,76927	,28124
	Equal variances not assumed			-,868	82,096	,194	,388	-,24401	,28123	-,80347	,31544

The gender topic was interesting, considering that the means of the PI in the scenarios with the color code were higher for the male respondents when compared to the female ones. This might be justified by the fact that the means of the CPE, ESI, and BA were also higher. Anyway, the means of the PI were not statistically significant between the two genders.

Appendix 9 : SPSS Output - $H_{1.1}$

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PI
    X  : Code
    W  : Product

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,492       ,242      1,685     14,189      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,463       ,111     40,244       ,000      4,244      4,683
Code          1,370       ,222      6,170       ,000       ,931      1,810
Product       -,403       ,222     -1,816       ,072      -,842       ,036
Int_1         -,517       ,444     -1,164       ,246     -1,396       ,361

Product terms key:
 Int_1    :        Code     x        Product

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,008      1,355      1,000    133,000       ,246
----------
    Focal predict: Code     (X)
          Mod var: Product  (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.
```

```
DATA LIST FREE/
   Code       Product    PI         .
BEGIN DATA.
      -,526      -,496      3,808
       ,474      -,496      5,435
      -,526       ,504      3,677
       ,474       ,504      4,787
END DATA.
GRAPH/SCATTERPLOT=
 Code     WITH     PI       BY       Product  .

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 PI

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,463      4,463       ,112      4,240      4,677
Code          1,370      1,375       ,223       ,910      1,802
Product       -,403      -,407       ,222      -,846       ,028
Int_1         -,517      -,507       ,445     -1,381       ,374

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: The following variables were mean centered prior to analysis:
          Product  Code

------ END MATRIX -----
```

Appendix 10 : SPSS Output - $H_{1.2}$

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PI
    X  : Code
    W  : Colorbli

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,529       ,280      1,601     17,245      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,478       ,108     41,380       ,000      4,264      4,692
Code          1,369       ,217      6,316       ,000       ,940      1,797
```

```
Colorbli       ,169       ,348       ,484       ,629      -,520       ,858
Int_1         2,387       ,694      3,439       ,001      1,014      3,759

Product terms key:
 Int_1    :        Code     x        Colorbli

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,064     11,825      1,000    133,000       ,001
----------
    Focal predict: Code     (X)
          Mod var: Colorbli (W)

Conditional effects of the focal predictor at values of the moderator(s):

   Colorbli     Effect         se          t          p       LLCI       ULCI
      -,109      1,107       ,230      4,823       ,000       ,653      1,562
       ,891      3,494       ,655      5,335       ,000      2,199      4,789

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Code       Colorbli   PI         .
BEGIN DATA.
      -,526      -,109      3,877
       ,474      -,109      4,985
      -,526       ,891      2,792
       ,474       ,891      6,286
END DATA.
GRAPH/SCATTERPLOT=
 Code     WITH     PI       BY       Colorbli .

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 PI

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,478      4,477       ,106      4,263      4,683
Code          1,369      1,365       ,216       ,933      1,794
Colorbli       ,169       ,162       ,275      -,395       ,679
Int_1         2,387      2,386       ,563      1,305      3,541

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

NOTE: The following variables were mean centered prior to analysis:
          Colorbli Code

NOTE: Due to estimation problems, some bootstrap samples had to be replaced.
      The number of times this happened was:
        4

WARNING: Variables names longer than eight characters can produce incorrect
output
when some variables in the data file have the same first eight characters.
Shorter
variable names are recommended. By using this output, you are accepting all
risk
and consequences of interpreting or reporting results that may be incorrect.

------ END MATRIX -----
```

Appendix 11 : SPSS Output - H_2

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 4
    Y  : PI
    X  : Code
   M1  : ESI
   M2  : CPE

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 ESI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,450       ,202      1,442     34,207      1,000    135,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      3,819       ,149     25,643       ,000      3,525      4,114
Code          1,202       ,205      5,849       ,000       ,795      1,608

**************************************************************************
OUTCOME VARIABLE:
 CPE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,531       ,282      1,275     52,967      1,000    135,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      3,849       ,140     27,483       ,000      3,572      4,126
Code          1,406       ,193      7,278       ,000      1,024      1,788

**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,817       ,668       ,739     89,100      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant       ,212       ,286       ,740       ,461      -,355       ,778
Code           ,179       ,174      1,030       ,305      -,165       ,524
ESI            ,527       ,086      6,158       ,000       ,357       ,696
CPE            ,395       ,091      4,344       ,000       ,215       ,575


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Direct effect of X on Y
     Effect         se          t          p       LLCI       ULCI
```

```
       ,179       ,174      1,030       ,305      -,165       ,524

Indirect effect(s) of X on Y:
          Effect     BootSE   BootLLCI   BootULCI
TOTAL      1,188       ,184       ,850      1,565
ESI         ,633       ,181       ,323      1,032
CPE         ,555       ,168       ,263       ,917

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 ESI

             Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      3,819      3,815       ,155      3,500      4,101
Code          1,202      1,206       ,207       ,812      1,626

----------

OUTCOME VARIABLE:
 CPE

             Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      3,849      3,845       ,158      3,515      4,141
Code          1,406      1,410       ,196      1,034      1,793

----------

OUTCOME VARIABLE:
 PI

             Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant       ,212       ,206       ,224      -,232       ,662
Code           ,
179       ,176       ,181      -,167       ,530
ESI            ,527       ,529       ,108       ,315       ,736
CPE            ,395       ,394       ,113       ,188       ,625

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

------ END MATRIX -----
```

Appendix 12 : SPSS Output - H_3

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : PI
    X  : Code
    W  : BA

Sample
Size:  137
```

```
**************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,559       ,312      1,530     20,121      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,347       ,110     39,569       ,000      4,130      4,564
Code          1,220       ,220      5,548       ,000       ,785      1,655
BA             ,234       ,083      2,815       ,006       ,070       ,398
Int_1          ,632       ,164      3,848       ,000       ,307       ,957

Product terms key:
 Int_1    :        Code     x        BA

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,077     14,803      1,000    133,000       ,000
----------
    Focal predict: Code     (X)
          Mod var: BA       (W)

Conditional effects of the focal predictor at values of the moderator(s):

         BA     Effect         se          t          p       LLCI       ULCI
     -1,366       ,357       ,320      1,114       ,267       -,277       ,990
       ,000      1,220       ,220      5,548       ,000        ,785      1,655
      1,366      2,083       ,308      6,762       ,000      1,474      2,693

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -1,042     24,088     75,912

Conditional effect of focal predictor at values of the moderator:
         BA     Effect         se          t          p       LLCI       ULCI
     -3,877     -1,231       ,682     -1,805       ,073     -2,579       ,118
     -3,577     -1,041       ,635     -1,639       ,104     -2,298       ,215
     -3,277       -,852      ,589     -1,445       ,151     -2,017       ,314
     -2,977       -,662      ,544     -1,217       ,226     -1,738       ,414
     -2,677       -,472      ,499       -,946      ,346     -1,460       ,515
     -2,377       -,283      ,455       -,621      ,536     -1,184       ,618
     -2,077       -,093      ,413       -,225      ,822       -,910      ,724
     -1,777        ,097      ,372        ,259      ,796       -,640      ,833
     -1,477        ,286      ,334        ,857      ,393       -,374      ,946
     -1,177        ,476      ,298      1,595       ,113       -,114     1,066
     -1,042        ,561      ,284      1,978       ,050        ,000     1,123
       -,877       ,665      ,267      2,487       ,014        ,136     1,194
       -,577       ,855      ,243      3,522       ,001        ,375     1,335
       -,277      1,045      ,226      4,617       ,000        ,597     1,492
        ,023      1,234      ,220      5,616       ,000        ,800     1,669
        ,323      1,424      ,224      6,351       ,000        ,980     1,867
        ,623      1,613      ,239      6,753       ,000      1,141      2,086
        ,923      1,803      ,262      6,876       ,000      1,284      2,322
      1,223      1,993       ,292      6,823       ,000      1,415      2,570
      1,523      2,182       ,327      6,681       ,000      1,536      2,828
      1,823      2,372       ,365      6,505       ,000      1,651      3,093
      2,123      2,562       ,405      6,324       ,000      1,760      3,363

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Code       BA         PI         .
BEGIN DATA.
```

```
      -,526     -1,366      3,840
       ,474     -1,366      4,197
      -,526       ,000      3,706
       ,474       ,000      4,926
      -,526      1,366      3,571
       ,474      1,366      5,654
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     PI       BY       Code     .

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 PI

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,347      4,348       ,119      4,116      4,582
Code          1,220      1,214       ,237       ,746      1,682
BA             ,234       ,231       ,094       ,048       ,415
Int_1          ,632       ,639       ,196       ,264      1,030

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

NOTE: The following variables were mean centered prior to analysis:
          BA       Code

------ END MATRIX -----
```

Appendix 13 : SPSS Output - H_4

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : ESI
    X  : Code
    W  : BA

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 ESI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,540       ,292      1,299     18,265      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,349       ,101     42,963       ,000      4,149      4,549
Code          1,073       ,203      5,297       ,000       ,673      1,474
BA             ,203       ,077      2,659       ,009       ,052       ,355
```

```
Int_1          ,556       ,151      3,670       ,000       ,256       ,855

Product terms key:
 Int_1    :        Code     x        BA

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,072     13,472      1,000    133,000       ,000
----------
    Focal predict: Code     (X)
          Mod var: BA       (W)

Conditional effects of the focal predictor at values of the moderator(s):

         BA     Effect         se          t          p       LLCI       ULCI
     -1,366       ,314       ,295      1,066       ,288       -,269       ,898
       ,000      1,073       ,203      5,297       ,000       ,673      1,474
      1,366      1,832       ,284      6,454       ,000      1,271      2,394

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -1,011     24,088     75,912

Conditional effect of focal predictor at values of the moderator:
         BA     Effect         se          t          p       LLCI       ULCI
     -3,877     -1,081       ,628     -1,721       ,088     -2,324       ,162
     -3,577      -,914       ,585     -1,562       ,121     -2,072       ,244
     -3,277      -,748       ,543     -1,377       ,171     -1,822       ,326
     -2,977      -,581       ,501     -1,159       ,248     -1,572       ,410
     -2,677      -,414       ,460      -,901       ,369     -1,324       ,496
     -2,377      -,248       ,420      -,590       ,556     -1,078       ,583
     -2,077      -,081       ,381      -,213       ,832      -,834       ,672
     -1,777       ,086       ,343       ,250       ,803      -,593       ,764
     -1,477       ,252       ,307       ,821       ,413      -,356       ,861
     -1,177       ,419       ,275      1,525       ,130      -,125       ,963
     -1,011       ,511       ,259      1,978       ,050       ,000      1,023
      -,877       ,586       ,246      2,377       ,019       ,098      1,073
      -,577       ,753       ,224      3,364       ,001       ,310      1,195
      -,277       ,919       ,208      4,409       ,000       ,507      1,332
       ,023      1,086       ,203      5,362       ,000       ,685      1,486
       ,323      1,253       ,207      6,063       ,000       ,844      1,661
       ,623      1,419       ,220      6,446       ,000       ,984      1,855
       ,923      1,586       ,242      6,563       ,000      1,108      2,064
      1,223      1,753       ,269      6,512       ,000      1,220      2,285
      1,523      1,919       ,301      6,377       ,000      1,324      2,515
      1,823      2,086       ,336      6,208       ,000      1,421      2,751
      2,123      2,253       ,373      6,036       ,000      1,514      2,991

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Code       BA         ESI        .
BEGIN DATA.
      -,526     -1,366      3,906
       ,474     -1,366      4,221
      -,526       ,000      3,785
       ,474       ,000      4,858
      -,526      1,366      3,664
       ,474      1,366      5,496
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     ESI      BY       Code     .

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ***********

OUTCOME VARIABLE:
 ESI
```

```
              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,349      4,349       ,108      4,135      4,561
Code          1,073      1,070       ,216       ,636      1,488
BA             ,203       ,201       ,084       ,034       ,366
Int_1          ,556       ,557       ,169       ,228       ,881

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

NOTE: The following variables were mean centered prior to analysis:
         BA       Code

------ END MATRIX -----
```

Appendix 14 : SPSS Output - H_5

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 1
    Y  : CPE
    X  : Code
    W  : BA

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 CPE

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,598       ,357      1,158     24,618      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,487       ,096     46,942       ,000      4,298      4,676
Code          1,333       ,191      6,966       ,000       ,954      1,711
BA             ,128       ,072      1,769       ,079      -,015       ,271
Int_1          ,550       ,143      3,847       ,000       ,267       ,833

Product terms key:
 Int_1    :        Code     x        BA

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,072     14,802      1,000    133,000       ,000
----------
    Focal predict: Code     (X)
          Mod var: BA       (W)

Conditional effects of the focal predictor at values of the moderator(s):
```

BA	Effect	se	t	p	LLCI	ULCI
-1,366	,582	,279	2,088	,039	,031	1,133
,000	1,333	,191	6,966	,000	,954	1,711
1,366	2,084	,268	7,774	,000	1,554	2,614

Moderator value(s) defining Johnson-Neyman significance region(s):

Value	% below	% above
-1,406	19,708	80,292

Conditional effect of focal predictor at values of the moderator:

BA	Effect	se	t	p	LLCI	ULCI
-3,877	-,800	,593	-1,348	,180	-1,973	,374
-3,577	-,635	,553	-1,148	,253	-1,728	,459
-3,277	-,470	,513	-,916	,361	-1,484	,545
-2,977	-,305	,473	-,644	,521	-1,241	,632
-2,677	-,140	,434	-,321	,748	-,999	,720
-2,377	,025	,396	,064	,949	-,759	,809
-2,077	,190	,359	,530	,597	-,520	,901
-1,777	,355	,324	1,097	,274	-,285	,996
-1,477	,520	,290	1,792	,075	-,054	1,095
-1,406	,559	,283	1,978	,050	,000	1,119
-1,177	,685	,260	2,640	,009	,172	1,199
-,877	,850	,233	3,653	,000	,390	1,311
-,577	1,015	,211	4,806	,000	,597	1,433
-,277	1,180	,197	5,995	,000	,791	1,570
,023	1,345	,191	7,035	,000	,967	1,724
,323	1,510	,195	7,742	,000	1,124	1,896
,623	1,675	,208	8,058	,000	1,264	2,086
,923	1,840	,228	8,065	,000	1,389	2,292
1,223	2,005	,254	7,890	,000	1,503	2,508
1,523	2,170	,284	7,635	,000	1,608	2,732
1,823	2,335	,317	7,360	,000	1,708	2,963
2,123	2,500	,352	7,094	,000	1,803	3,197

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   Code       BA         CPE        .
BEGIN DATA.
      -,526     -1,366      4,007
       ,474     -1,366      4,589
      -,526       ,000      3,787
       ,474       ,000      5,119
      -,526      1,366      3,567
       ,474      1,366      5,650
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     CPE      BY       Code     .
```

********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 CPE

	Coeff	BootMean	BootSE	BootLLCI	BootULCI
constant	4,487	4,488	,107	4,280	4,703
Code	1,333	1,330	,215	,914	1,753
BA	,128	,125	,087	-,047	,294
Int_1	,550	,555	,178	,201	,900

********************** ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

```
W values in conditional tables are the mean and +/- SD from the mean.

NOTE: The following variables were mean centered prior to analysis:
          BA       Code

------ END MATRIX -----
```

Appendix 15 : SPSS Output - Full Model

```
Run MATRIX procedure:

***************** PROCESS Procedure for SPSS Version 4.2 *****************

          Written by Andrew F. Hayes, Ph.D.       www.afhayes.com
    Documentation available in Hayes (2022). www.guilford.com/p/hayes3

**************************************************************************
Model  : 8
    Y  : PI
    X  : Code
   M1  : ESI
   M2  : CPE
    W  : BA

Sample
Size:  137

**************************************************************************
OUTCOME VARIABLE:
 ESI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,540       ,292      1,299     18,265      3,000    133,000       ,000

Model
              coeff         se          t          p       LLCI       ULCI
constant      4,349       ,101     42,963       ,000      4,149      4,549
Code          1,073       ,203      5,297       ,000       ,673      1,474
BA             ,203       ,077      2,659       ,009       ,052       ,355
Int_1          ,556       ,151      3,670       ,000       ,256       ,855

Product terms key:
 Int_1    :        Code     x        BA

Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,072     13,472      1,000    133,000       ,000
----------
    Focal predict: Code     (X)
          Mod var: BA       (W)

Conditional effects of the focal predictor at values of the moderator(s):

         BA     Effect         se          t          p       LLCI       ULCI
     -1,366       ,314       ,295      1,066       ,288       -,269       ,898
       ,000      1,073       ,203      5,297       ,000       ,673      1,474
      1,366      1,832       ,284      6,454       ,000      1,271      2,394

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -1,011     24,088     75,912

Conditional effect of focal predictor at values of the moderator:
         BA     Effect         se          t          p       LLCI       ULCI
```

-3,877	-1,081	,628	-1,721	,088	-2,324	,162
-3,577	-,914	,585	-1,562	,121	-2,072	,244
-3,277	-,748	,543	-1,377	,171	-1,822	,326
-2,977	-,581	,501	-1,159	,248	-1,572	,410
-2,677	-,414	,460	-,901	,369	-1,324	,496
-2,377	-,248	,420	-,590	,556	-1,078	,583
-2,077	-,081	,381	-,213	,832	-,834	,672
-1,777	,086	,343	,250	,803	-,593	,764
-1,477	,252	,307	,821	,413	-,356	,861
-1,177	,419	,275	1,525	,130	-,125	,963
-1,011	,511	,259	1,978	,050	,000	1,023
-,877	,586	,246	2,377	,019	,098	1,073
-,577	,753	,224	3,364	,001	,310	1,195
-,277	,919	,208	4,409	,000	,507	1,332
,023	1,086	,203	5,362	,000	,685	1,486
,323	1,253	,207	6,063	,000	,844	1,661
,623	1,419	,220	6,446	,000	,984	1,855
,923	1,586	,242	6,563	,000	1,108	2,064
1,223	1,753	,269	6,512	,000	1,220	2,285
1,523	1,919	,301	6,377	,000	1,324	2,515
1,823	2,086	,336	6,208	,000	1,421	2,751
2,123	2,253	,373	6,036	,000	1,514	2,991

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

```
DATA LIST FREE/
   Code       BA         ESI        .
BEGIN DATA.
      -,526     -1,366      3,906
       ,474     -1,366      4,221
      -,526       ,000      3,785
       ,474       ,000      4,858
      -,526      1,366      3,664
       ,474      1,366      5,496
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     ESI      BY       Code     .
```

****

OUTCOME VARIABLE:
CPE

Model Summary

R	R-sq	MSE	F	df1	df2	p
,598	,357	1,158	24,618	3,000	133,000	,000

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,487	,096	46,942	,000	4,298	4,676
Code	1,333	,191	6,966	,000	,954	1,711
BA	,128	,072	1,769	,079	-,015	,271
Int_1	,550	,143	3,847	,000	,267	,833

Product terms key:
Int_1 : Code x BA

Test(s) of highest order unconditional interaction(s):

	R2-chng	F	df1	df2	p
X*W	,072	14,802	1,000	133,000	,000

Focal predict: Code (X)
Mod var: BA (W)

Conditional effects of the focal predictor at values of the moderator(s):

BA	Effect	se	t	p	LLCI	ULCI
-1,366	,582	,279	2,088	,039	,031	1,133

```
       ,000      1,333       ,191      6,966       ,000       ,954      1,711
      1,366      2,084       ,268      7,774       ,000      1,554      2,614

Moderator value(s) defining Johnson-Neyman significance region(s):
      Value    % below    % above
     -1,406     19,708     80,292

Conditional effect of focal predictor at values of the moderator:
         BA     Effect         se          t          p       LLCI       ULCI
     -3,877      -,800       ,593     -1,348       ,180     -1,973       ,374
     -3,577      -,635       ,553     -1,148       ,253     -1,728       ,459
     -3,277      -,470       ,513      -,916       ,361     -1,484       ,545
     -2,977      -,305       ,473      -,644       ,521     -1,241       ,632
     -2,677      -,140       ,434      -,321       ,748      -,999       ,720
     -2,377       ,025       ,396       ,064       ,949      -,759       ,809
     -2,077       ,190       ,359       ,530       ,597      -,520       ,901
     -1,777       ,355       ,324      1,097       ,274      -,285       ,996
     -1,477       ,520       ,290      1,792       ,075      -,054      1,095
     -1,406       ,559       ,283      1,978       ,050       ,000      1,119
     -1,177       ,685       ,260      2,640       ,009       ,172      1,199
      -,877       ,850       ,233      3,653       ,000       ,390      1,311
      -,577      1,015       ,211      4,806       ,000       ,597      1,433
      -,277      1,180       ,197      5,995       ,000       ,791      1,570
       ,023      1,345       ,191      7,035       ,000       ,967      1,724
       ,323      1,510       ,195      7,742       ,000      1,124      1,896
       ,623      1,675       ,208      8,058       ,000      1,264      2,086
       ,923      1,840       ,228      8,065       ,000      1,389      2,292
      1,223      2,005       ,254      7,890       ,000      1,503      2,508
      1,523      2,170       ,284      7,635       ,000      1,608      2,732
      1,823      2,335       ,317      7,360       ,000      1,708      2,963
      2,123      2,500       ,352      7,094       ,000      1,803      3,197

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Code       BA          CPE        .
BEGIN DATA.
      -,526     -1,366      4,007
       ,474     -1,366      4,589
      -,526       ,000      3,787
       ,474       ,000      5,119
      -,526      1,366      3,567
       ,474      1,366      5,650
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     CPE      BY       Code     .

************************************************************************
OUTCOME VARIABLE:
 PI

Model Summary
          R       R-sq        MSE          F        df1        df2          p
       ,821       ,674       ,735     54,244      5,000    131,000       ,000

Model
             coeff         se          t          p       LLCI       ULCI
constant      ,452       ,336      1,344       ,181      -,213      1,117
Code          ,172       ,179       ,966       ,336      -,181       ,526
ESI           ,501       ,087      5,767       ,000       ,329       ,672
CPE           ,383       ,092      4,163       ,000       ,201       ,565
BA            ,083       ,059      1,404       ,163      -,034       ,200
Int_1         ,143       ,121      1,185       ,238      -,096       ,383

Product terms key:
 Int_1    :        Code     x        BA
```

```
Test(s) of highest order unconditional interaction(s):
       R2-chng          F        df1        df2          p
X*W       ,003      1,404      1,000    131,000       ,238
----------
    Focal predict: Code     (X)
          Mod var: BA       (W)

Data for visualizing the conditional effect of the focal predictor:
Paste text below into a SPSS syntax window and execute to produce plot.

DATA LIST FREE/
   Code       BA         PI         .
BEGIN DATA.
      -,526     -1,366      4,335
       ,474     -1,366      4,312
      -,526       ,000      4,345
       ,474       ,000      4,518
      -,526      1,366      4,356
       ,474      1,366      4,724
END DATA.
GRAPH/SCATTERPLOT=
 BA       WITH     PI       BY       Code     .


****************** DIRECT AND INDIRECT EFFECTS OF X ON Y *****************

Conditional direct effects of X on Y
         BA     Effect         se          t          p       LLCI       ULCI
     -1,366      -,023       ,226      -,104       ,917      -,470       ,423
       ,000       ,172       ,179       ,966       ,336      -,181       ,526
      1,366       ,368       ,260      1,418       ,159      -,145       ,882

Conditional indirect effects of X on Y:

INDIRECT EFFECT:
 Code        ->    ESI         ->    PI

         BA     Effect     BootSE   BootLLCI   BootULCI
     -1,366       ,157       ,158      -,129       ,496
       ,000       ,537       ,170       ,236       ,888
      1,366       ,917       ,272       ,433      1,487

      Index of moderated mediation:
        Index     BootSE   BootLLCI   BootULCI
BA       ,278       ,106       ,095       ,511

INDIRECT EFFECT:
 Code        ->    CPE         ->    PI

         BA     Effect     BootSE   BootLLCI   BootULCI
     -1,366       ,223       ,129       ,001       ,516
       ,000       ,510       ,162       ,227       ,861
      1,366       ,798       ,257       ,355      1,360

      Index of moderated mediation:
        Index     BootSE   BootLLCI   BootULCI
BA       ,210       ,090       ,065       ,414

*********** BOOTSTRAP RESULTS FOR REGRESSION MODEL PARAMETERS ************

OUTCOME VARIABLE:
 ESI

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,349      4,351       ,107      4,140      4,563
Code          1,073      1,072       ,217       ,647      1,494
BA             ,203       ,200       ,083       ,038       ,361
Int_1          ,556       ,560       ,169       ,226       ,894
```

```
----------

OUTCOME VARIABLE:
 CPE

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant      4,487      4,490       ,107      4,277      4,699
Code          1,333      1,326       ,213       ,911      1,745
BA             ,128       ,124       ,085      -,046       ,290
Int_1          ,550       ,555       ,173       ,213       ,893

----------

OUTCOME VARIABLE:
 PI

              Coeff   BootMean     BootSE   BootLLCI   BootULCI
constant       ,452       ,459       ,274      -,055      1,032
Code           ,172       ,172       ,185      -,189       ,543
ESI            ,501       ,496       ,108       ,280       ,701
CPE            ,383       ,385       ,113       ,178       ,627
BA             ,083       ,085       ,060      -,033       ,204
Int_1          ,143       ,150       ,118      -,078       ,386

************************ ANALYSIS NOTES AND ERRORS ************************

Level of confidence for all confidence intervals in output:
  95,0000

Number of bootstrap samples for percentile bootstrap confidence intervals:
  5000

W values in conditional tables are the mean and +/- SD from the mean.

NOTE: The following variables were mean centered prior to analysis:
          BA       Code

------ END MATRIX -----
```