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Article

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Provided in Cooperation with:

Expert journal of marketing

Reference: Ranaweera, Achini Tharaka/Wasala, Kamal (2020). Color matters : the impact of logo color on consumer perceived eco-friendliness. In: Expert journal of marketing 8 (2), S. 129 - 139.

https://marketing.expertjournals.com/ark:/16759/EJM_811ranaweera129-139.pdf.

This Version is available at:

<http://hdl.handle.net/11159/6216>

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Color matters: The Impact of Logo Color on Consumer Perceived Eco-Friendliness

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As a marketing tool, color attracts consumers, consequently, shaping their perception. This study seeks to examine how mere colors featured in brand logos evoke consumer perception about a retailer's eco-friendliness. Data from two experiments show that exposure to a logo featuring a high eco-friendly color (green) makes a retailer's practice more environmentally friendly, while exposure to a logo featuring a low-eco-friendly color (red) makes the retailer practice seem less environmentally friendly. The paper also demonstrates the moderating role of gender, such that females tend to show more positive responses to a logo featuring an eco-friendly color than male. Further, we show how processing fluency mediates the interactive effect of logo color and consumers' perception about a retailer's eco-friendliness. This current research makes some important theoretical contributions to the evolving field of design issues in marketing. Further, this research contributes to practice in several ways. We suggest marketing managers use green color in their logo designs to promote their environmentally friendly practices. Limitations and future research directions are discussed.

Keywords: environmental marketing, color, logo color, gender differences, perceived eco-friendliness

JEL Classification: M31

1. Introduction

The impact of color has been widely researched across many literature domains, such as psychophysics and visual cognition. The use of color in marketing is vital as colors always have a profound effect upon the minds of the consumers. Color helps a brand to create a unique visual identity and position itself among competitors in the marketplace (Labrecque and Milne, 2012). More importantly, color carries intrinsic cues to form an effective brand identity, contributes to brand recognition (Bottomley and Doyle, 2006) and influence consumers' thoughts, feelings, and behaviors (Labrecque et al., 2013). Further, color is an integral element of corporate and marketing communications (Aslam, 2006).

Color plays an essential role across products, brands, services, packaging, brand logos and retail atmosphere (Aslam, 2006). Empirical research on color in marketing has examined the effects of color on

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Article History:

Received 19 October 2020 | Accepted 11 November 2020 | Available Online 29 November 2020

Cite Reference:

Ranaweera, A.T. and Wasala, K., 2020. Color matters: The Impact of Logo Color on Consumer Perceived Eco-Friendliness. *Expert Journal of Marketing*, 8(2), pp.129-139.

product design (Deng et al., 2010; Batra et al., 2016; Lindström, 2005; Moreau and Herd, 2010), advertisements (Gorn et al., 1997; Meyers-Levy and Peracchio, 1995; Lohse and Rosen, 2001; Lichtlé, 2007; Aslam, 2006), product packaging (Beneke et al., 2015; Garber et al., 2000a; Velasco and Spence, 2019), logos (Bottomley and Doyle, 2006; Labrecque and Milne, 2012; Hynes, 2009, Sundar and Kellaris, 2017) and store atmosphere (Cho and Lee, 2017; Kotler, 1973). We build upon literature concerning the influence of color in marketing to study the role of color's embodied meaning in driving consumer judgment about a retailer's eco-friendliness. This is especially important given the rise of conscious consumerism with respect to the environment and their consequential demand for brands to be more environmentally friendly. In particular, this paper seeks to study if consumers are exposed to a high-eco-friendly logo color (green), perceive the retailer as more environmentally friendly as opposed to a low eco-friendly logo color (red).

We further draw on literature on gender differences in consumer behavior and marketing (Martin, 2003; Meyers-Levy and Maheswaran, 1991; Meyers-Levy and Sternthal, 1991) to examine the differences between men and women regarding their logo color- evoked perceived eco-friendliness. Examining such gender differences is vital for several reasons. First, gender differences appear to be of interest because branding tactics are typically targeted to both of these consumer groups. Second, gender examinations have a long history in consumer behavior research (Meyers-Levy and Maheswaran, 1991).

To further shed light on the underlying mechanisms, the current research aims to investigate the mediational role of processing fluency on the interactive effect of logo color and gender differences on consumer perceived eco-friendliness.

Two experimental studies test the hypothesized logo color effects. Study 1 consisted of one hundred and sixty-six participants who participated in a 2 (Logo color: low eco-friendly logo color (red) x high eco-friendly logo color (green) x 2 (participants' gender: male, female) between-subject experimental design. Study 2 consisted of eighty-four participants who replicated the findings of Study 1 and examined the mediating effect. All participants in Study 1 and Study 2 were recruited from USA through a crowdsourcing website to participate in an online survey.

The current research makes important contributions, both theoretically and substantively to the literature. First, we extend prior work on the impact of color on marketing applications by demonstrating how exposure to a high eco-friendly logo color (green) makes a retailer's practice more environmentally friendly. Second, we show the moderating role of gender on this relationship. In particular, we show how females are more influenced by high eco-friendly logo color than male. From a practical point of view, this current research demonstrates how marketing practitioners can strategically use logo color to enhance their green marketing activities.

2. Conceptual Development

2.1. Impact of Color on Marketing

Color plays a great role in bringing about certain responses from consumers because consumers make up their minds within 90 seconds after their initial interactions with products (Singh, 2006). Surprisingly, 62-90 percent of the assessment is based on colors alone (Singh, 2006). Colors provide valuable retrieval cues for adults when learning brand related information (Tavassoli, 2001). Indeed, color is one of the key elements of a brand's projection endowed with inherent meaning (Bottomley and Doyle, 2006). For instance, a green brand image in a consumer's mind reinforces their awareness and concerns for the environment (Chen, 2010; Sundar and Kellaris, 2017). Thus, through colors a brand can create a strong visual identity as well as position itself among competitors in the marketplace. More importantly, colors evoke a variety of associations that without prior conditioning can be used to communicate a brand's desired image in the consumer's mind (Madden et al., 2000). For example, to distinguish itself from its main rivalry- Coca-Cola, Pepsi spent millions of dollars on marketing activities to switch from color red to color blue (Labrecque and Milne, 2012).

Next, we review and draw upon literature on color perception to derive hypotheses regarding the color and consumer perception about a retailer's eco-friendliness.

2.2. Color Perception

Color perception is a complex phenomenon (Lucy, 1997; Garber et al. 2000b; Singh, 2006; Berlin and Kay, 1991; Labrecque et al., 2013). There are two schools of thought in color and human behavior. The first suggests that human reactions to color is due to an instinctual origin wherein the brain is stimulated by processing of color signals, which ultimately result in different reactions (Aslam, 2006). The second notion is that color preferences are learned during one's lifetime and being influenced by their past experiences (Aslam, 2006). The impact of color perception has been widely researched across many literature domains. A large

body of past research has studied the interface between color and human response and show that color may influence a range of psychological, physiological, and behavioral responses. Researchers use the term color psychology to refer the psychological effects of color across affective, cognitive, and behavioral responses and associations linked to specific colors.

Some scholars show that people perceive color unconsciously (Breitmeyer et al., 2004; Schmidt, 2000). Colors can evoke mood and cognitive performance (Knez, 2001; Kwallek et al., 1996; Kwallek and Lewis, 1990; Kwallek et al., 1988), emotions (Krishna, 2010) and the degree of felt arousal (Gorn et al., 1997). For example, people performed better in a blue and red office space than in a white office space (Kwallek et al., 1996). Krishna (2010) argues that if a brand can use a unique color and link it to an emotion, that color becomes memorable and elicits emotion along with the brand name. For example, consider the color pink and its influential applications in breast cancer awareness campaigns. Thus, color is the silent salesperson as it exerts persuasive power at a subliminal level (Hynes, 2009).

Further, from a sensory marketing perspective which is a new marketing trend that suggests marketers to build upon consumer's five senses and affects their behavior (Krishna, 2010; Krishna, 2012; Lindström, 2005; Hultén, 2015; Hultén, 2011), researchers suggest that the sensory inputs of color attained through the sense of vision tend to impact on the consumer. In fact, colors have attention-attracting properties which can distract attention to irrelevant sensory cues at the expense of more relevant information (Meyers-Levy and Peracchio, 1995).

Some prior marketing research has shown that inherent meaning of color has consequences on marketing applications. For example, Bottomley and Doyle (2006) show that appropriately chosen color leads to inherent and immediate value to a brand. In a similar study, Labrecque and Milne (2012) demonstrate the role that color can play in consumer brand perceptions. Sundar and Kellaris (2017) show how logo colors affect consumer's judgments of retailer ethicality. Miller and Kahn (2005) demonstrate that when consumers encountered unusual color names, they can influence propensity of purchase. Skorinko et al. (2006) show that colors attached to fancy names are rated more positively than are colors attached to generic names. Ares and Deliza (2010) show that package color significantly influences consumers' expected liking and willingness to purchase the product. Some past studies have examined the role that food color on consumer perceived flavor (Garber et al., 2000b, Garber et al., 2003).

We build upon these color research in marketing that show the influential nature of color to study the influence of logo color on consumer perceived eco-friendliness. In this current study, we have focused on one primary color: red (which is also considered a warm color) and one secondary color: green (which is considered a cool color) (Singh, 2006). Green is the color of balance and harmony. Green is also restful, soothing, cheerful and health-giving. Generally, people use the color green to describe and represent environmental concerns. Extant literature also shows the close link between the color green and consumers environmental consciousness (Sundar and Kellaris, 2017; Pancer et al., 2017). For example, Sundar and Kellaris (2017) suggest that consumers could perceive the use of color green in branding tactics by retailers as a green company. Consistent with this body of work, we posit that the color green has become embedded in the schema of environmental responsibility (Pancer et al., 2017) meaning that it can prime more environmental salient thoughts about a retailer. On the other hand, red is considered a bright, warm color that evokes strong emotions such as anger, violence, feelings of excitement or intensity. Red is also the color for courage, strength, and spirit. Thus, we predict that color red has a weak association with consumer perceived eco-friendliness. More specifically, we focus on the color green as opposed to the color red used in a brand logo.

2.3. Logo Color

A logo is not only a badge of brand identification, but also a branding element to increase a brand's reputation (Hynes, 2009). Indeed, some prior research has studied how various elements of logo influence retail branding and consumer decision making. For example, Sundar and Noseworthy (2014) show that consumers prefer powerful brands more when the logo of the brand was displayed high on the packaging. In contrast, consumers show positive reactions to less powerful brands when they were placed low on the packaging.

Logo color is vital because of its mnemonic quality in the areas of recognition and recall (Hynes, 2009). Color in logos could elicit useful information about brand identity (Ailawadi and Keller, 2004; Bottomley and Doyle, 2006). Although not exclusively examined, some previous research has studied the relationship between logo colors and various branding measures. For instance, Sundar and Kellaris (2017) show the impact of logo colors on consumers' ethical judgments about a retailer. Hynes (2009) shows the association between logo color in expressing a company's corporate image. Marketers often use their brand logos as an extrinsic cue to evoke the environmental orientation of their products. For example, consider the

famous American coffee brand Starbucks' usage of color green in their brand logo. However, there is scant understanding about how logo colors shape consumer perceptions of a retailer's eco-friendliness. Given that consumer's concern about environmental issues is touching every corner of the current marketplace, this research seeks to examine the influence of logo color on consumer perceived eco-friendliness.

Next, we review literature pertaining to consumers environmental concern and more specifically their perceived eco-friendliness.

2.4. Consumer Environmental Concern

Environmental concerns are emerging as a mainstream issue for modern day consumers (Chen, 2010; Huang and Rust, 2011; Brough et al., 2016; Olson, 2013; Kinnear et al., 1974). This critical issue had influenced for marketers to embrace environmental practices that match or exceed consumer environmental concerns (Ng et al., 2014; McDaniel and Rylander, 1993; Tanner and Wölfing Kast, 2003). Scholars had coined the term "green marketing" to define marketer's efforts to develop green marketing strategies particularly catering environmentally conscious consumer needs (McDaniel and Rylander, 1993). Consumers environmental concern drives various environmentally friendly behavior (Pagiaslis and Krontalis, 2014). For example, consumers' environmental concern positively links with paying more for renewable energy (Bang et al., 2000) and purchasing of environmentally friendly products (Kalafatis et al., 1999; Haws et al., 2014).

Despite consumer environmental concern is a top priority of many global societies, understanding green consumer behavior is a key issue (Pagiaslis and Krontalis, 2014; Haws et al., 2014). In particular, the inconsistencies of literature stress a need to understand the key determinants of consumer response to environmentally oriented practices (Pancer et al., 2017). Moreover, Pancer et al. (2017) suggest that consumers' ability to categorize products as environmentally friendly or not is a critical aspect. In fact, the physical representation of environmental cues on product packaging has notable implications for consumer product perceptions (Pancer et al., 2017). Given the background, this current study aims to offer some insights into the on-going discussion about pro-environmental consumer behavior by examining whether consumer judgment about a retailer's eco-friendliness elicits via the color of the brand logo. This discussion leads to the following hypothesis:

H1: High eco-friendly logo color (vs. low) makes a retailer's practice more (vs. less) environmentally friendly.

2.5. Color and Gender

Gender is a social construct that is intertwined with many aspects of human behavior (Cho and Workman, 2011). There are fundamental differences in how women and men perceive themselves and the world around them, in how they take meaning and in how they come to know or reason (Markus and Oyserman, 1989). Neurophysiology literature posits that basic sensory differences between the males and females do exist and is vital on the development of perceptual differences between the sexes (McGuinness and Pribram, 1979). For example, females appear to have a superior in object recognition from studying visual stimuli (Harshman et al., 1983). Saucier et al. (2002) show that when presented with a matrix of patches of color, women name colors faster than men do. They posit that this is due to female superiority at perceiving colors, naming, scanning a visual array, or rapidly articulating the correct name (Saucier et al., 2002).

Gender differences exist in the perception of color (Singh, 2006). Some prior studies have shown these differences in the perception of colors between genders (Kwallek and Lewis, 1990, Kwallek et al., 1996, Knez, 2001). For example, men were more tolerant of gray, white or black than women, and that women reacted to the combinations of red and blue more frequently, and got confused and distracted more than men (Khouw, 2002). Kwallek et al. (1996) demonstrate that females show negative moods such as anger towards low-saturated office interior colors (white, gray, beige). In contrast, males show more negative emotions in the high-saturated office interior colors such as green, red and yellow. In a similar study, Knez (2001) demonstrates that males performed best in the 'warm' and 'cool' white lighting than female. Based on these literature findings, this paper seeks to examine the moderating role of gender in logo color-evoked consumer perception about a retailer's eco-friendliness. More specifically, this study adopts a unidimensional perspective of gender, consequently measured male and female as opposite constructs. This discussion leads to the following hypothesis:

H2: Females will be more affected by a high eco-friendly logo color (vs. low), thus perceive a retailer's practice more (vs. less) environmentally friendly than male.

2.6. Processing Fluency

The phenomenon of processing fluency is the ease of mental operations concerned with stimulus meaning and its relation to semantic knowledge structures (Reber et al., 2004). Processing fluency corresponds to how easy a person can make sense of the physical characteristics of a stimulus (Alter and Oppenheimer, 2009, Lee and Labroo, 2004). In general, high fluency is indicative of positive states of the cognitive system, whereas low fluency is indicative of negative states of the cognitive system (Winkielman et al., 2003). Fluency associates with preferences as it empowers people to draw on subjective experiences when making evaluative judgments (Whittlesea, 1993, Winkielman et al., 2003).

Prior marketing research has shown that processing fluency influences on consumers' judgments and decision making. For example, Lee and Labroo (2004) show that advertising exposures enhance the ease with which consumers recognize and process a brand, and this increased fluency leads to more favorable attitudes toward the brand. Therefore, it seems reasonable to predict the conceptual link between logo color and gender on consumer perceived eco-friendliness can create a similar fluency effect. This discussion leads to the following hypothesis:

H3: Processing fluency will mediate the interactive effect of logo color and gender on consumer perceived eco-friendliness.

In the two studies that follow, we first examine the hypotheses. Study 1 tests H1–H2. Study 2 aims to test H3.

3. Study 1

Study 1 aims to set the stage by examining (1) whether high eco-friendly logo color (vs. low) makes a retailer's practice more (vs. less) environmentally friendly (2) to test whether females will be more impacted by a high eco-friendly logo color (vs. low), consequently perceive a retailer's practice more (vs. less) environmentally friendly than male.

3.1. Stimuli Creation

Following Sundar and Kellaris (2017), participants were asked to read the profile of a fictitious retailer comprising a professionally designed brand logo featuring either a low eco-friendly color (red) or a high eco-friendly color (green). The graphical composition was ambiguous with respect to perceived eco-friendliness (Please see Figure 1). We have used a minimum amount of graphics and layout to rule out any confounding effects. Following, Bottomley and Doyle (2006), we have used logos presented in a mono color on a white background.

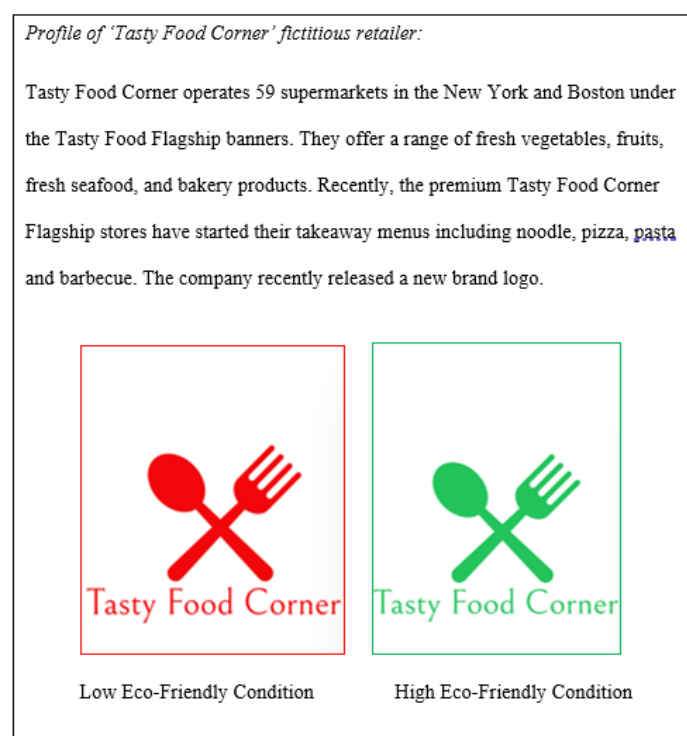


Figure 1. *Experimental stimuli*

3.2. Manipulation Check

A manipulation check ensured the premise that colors evoke eco-friendliness. A total of forty participants took part in the pre-test. We have randomly assigned participants to a one factorial (logo color: green vs. red) experimental design, resulting twenty participants per one condition. We have adopted a similar experimental design. Accordingly, participants first read a brief sentence about color perception: “Colors convey different thoughts and associations. For example, colors evoke different levels of eco-friendliness (Sundar and Kellaris, 2017). Next, a colored square (either green or red) appeared on the participants’ screen depending on the experimental condition they were assigned. Next, they were asked to answer the question: Please rate the following color in terms of the eco-friendliness it conveys on a seven-point Likert scale (anchored 1 = not very eco-friendly, 7 = very eco-friendly).

We used an independent sample t-test to check the experimental manipulations. As expected, there was a significant statistical difference in the scores of color green and red for perceived eco-friendliness ($M_{green} = 5.50, SD = 1.67$) red ($M_{red} = 4.20, SD = 1.96$), ($t(38) = 4.54, p < .05$). This result concluded that experimental manipulation of our independent variable: color was satisfactory and can be used for further analysis.

3.3. Procedure

One hundred and sixty-six participants (49% female) from USA participated in a 2 (Logo color: low eco-friendly logo color (red) x high eco-friendly logo color (green) x 2 (participants’ gender: male, female) between-subject experimental design. They were randomly placed into one of the two treatments, resulting (N=83) participants per treatment. No missing data were observed in the data set. Logo color was controlled between the group and gender was measured within the group. All participants were recruited from a website (Amazon Mechanical Turk - MTurk) to participate in an online survey. They were offered \$ 5 as an incentive to participate in the study. Participants were told that this study was commissioned on behalf of the company to evaluate their new brand logo. They were randomly assigned to one of two experimental conditions. A fictitious retailer, “tasty food corner” ensured that there was no previous exposure to any logo designs.

3.4 Measurements

Following Sundar and Kellaris (2017), we have used a single-item measure of consumer perceived eco-friendliness: How eco-friendly do you think Tasty food corner is? (anchored: 1 = not at all eco-friendly, 7 = very eco-friendly).

3.5 Results and Discussion

We conducted a 2 (Logo color: low eco-friendly logo color (red) x high eco-friendly logo color (green) x 2 (participants’ gender: male, female) ANOVA. The results suggested a main effect of logo color ($M_{green} = 5.61$ vs. $M_{red} = 4.74, F(1, 162) = 20.43, p < .001$). Our results show that high eco-friendly logo color (green) makes a retailer’s practice more environmentally friendly than a low eco-friendly color (red). This result supports H1. The main effect of gender was non-significant ($F(1, 162) = .58, p = .44$). As hypothesized, the univariate interaction between logo color and gender for perceived eco-friendliness was significant ($F(1, 162) = 6.17, p < .05$). These univariate results are presented in Table 1.

Table 1. Interactions between Logo Color and Gender on Perceived Eco-Friendliness

Dependent Variable	Low eco-friendly logo color (red)		High eco-friendly logo color (green)		F test
	Female	Male	Female	Male	
Perceived Eco-Friendliness	4.43 (1.34)	5.05 (1.42)	5.78 (.89)	5.44 (1.0)	6.17*

Note. * $p < 0.05$. Mean Values. Standard deviations are in parentheses. The F-values indicated above pertain to the interactions between logo color and gender

Supporting H2, the analysis shows that females perceived a retailer as more eco-friendly when the logo color is high-eco-friendly (green) than low-eco-friendly (red) (see Figure 2). Females were more influenced by high-eco-friendly (green) logo color than male.

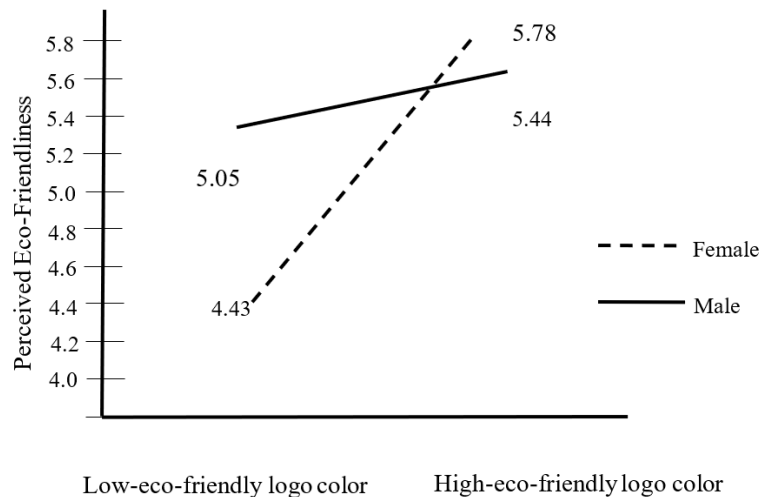


Figure 2. The effects of logo color and gender on consumer perceived eco-friendliness

4. Study 2

The key objectives of study 2 were to (1) replicate the observed effects of Study 1, (2) and to test for the mediating role of processing fluency. The experimental procedure was the same as Study 1. However, this time we have used a different fictitious retailer name and logo designs. The same red and green colors were used in the two experimental condition. Eighty-four participants (50% female) took part in study 2. They were randomly placed into one of the two treatments, resulting (N=42) participants per treatment. No missing data were observed in the data set.

4.1. Dependent measures

Consumer perceived eco-friendliness was measured using the unidimensional scale from Sundar and Kellaris (2017). Processing fluency ($\alpha = .86$) was measured on: (difficult to understand/easy to understand, difficult to processing /easy to processing, well organized/not at all organized, well-structured/not at all structured, logical/illogical, and clear/unclear (Chae and Hoegg, 2013; Lee and Aaker, 2004). All measures used seven-point scales.

4.2. Results and Discussion

We conducted a 2 (Logo color: low eco-friendly logo color (red) x high eco-friendly logo color (green) x 2 (participants' gender: male, female) ANOVA. The results suggested a main effect of logo color ($M_{green} = 5.65$ vs. $M_{red} = 2.95$ $F(1, 80) = 72.91, p < .001$). Importantly, there was a significant univariate interaction between logo color and gender for perceived eco-friendliness ($F(1, 80) = 4.28, p < .05$). These univariate results are presented in Table 2. Study 2 results further supported H1 and H2.

Table 2. Interactions between Logo Color and Gender on Perceived Eco-Friendliness

Dependent Variable	Low eco-friendly logo color (red)		High eco-friendly logo color (green)		F
	Female	Male	Female	Male	
Perceived Eco-Friendliness	2.65 (1.87)	3.26 (1.66)	6.00 (.94)	5.30 (1.02)	4.28*

Note. * $p < 0.05$. Mean Values. Standard deviations are in parentheses. The F-values indicated above pertain to the interactions between logo color and gender

Next, we examined whether the interaction effect of logo color and gender on consumer perceived eco-friendliness is mediated by processing fluency. The study followed the bootstrapping procedure using the PROCESS Macro, model 8 (Hayes, 2018) with 5,000 bootstrapped samples. As expected, the interaction effect was significant (95% CI= [1.1260, .3361]). Mediation was established.

5. Conclusion

This paper shows the power of color in marketing. This current research makes some important theoretical contributions to marketing literature. Foremost, the findings across two experimental studies show the impact of logo color on consumer perception about a retailer's eco-friendliness. In particular, we show that

when consumers were exposed to a high-eco-friendly logo color (green), they perceived the retailer's practice as more environmentally friendly than when they were exposed to a low eco-friendly logo color (red). Second, this research extends current literature by demonstrating gender differences in the perception of color. In particular, we show that females were more influenced by high eco-friendly logo color (vs. low), thus perceive a retailer's practice more (vs. less) environmentally friendly than their male counterparts. Further, this research shows that processing fluency mediates the interactive effect of logo color and gender on a consumer perception about a retailer's eco-friendliness.

Our findings have practical implications for visually distinguishing a brand. There are also useful insights for practitioners in relation to market segmentation in terms of gender differences with respect to logo color-evoked perception about a retailer's eco-friendliness. This paper also provides some insights on design practitioners in creating logo colors to enrich green branding practices of their clients.

This research has been subjected to certain limitations. Foremost, we have adopted a unidimensional perspective of gender, consequentially applied a dichotomous categorization of gender. However, gender identity theory proposes an alternative approach claiming that gender phenomenon is multifactorial (McCabe et al., 2006). Thus, future research could examine how gender identity affects consumer perception about a retailer's eco-friendliness. Further, we have used a sample of Americans in both of our studies. However, some early research shows that perceptions and meanings of colors could vary across different cultures (Madden et al., 2000; Hynes, 2009; Aslam, 2006). Thus, future research could examine possible cultural differences in the perceptions of logo color. Further, the current study examined logos presented in a mono color on a white background. However, most modern-day retailers tend to use color combinations in their branding activities. Thus, additional work could investigate the interaction effect between different color applications of their brand logo's (for example green logo on a white background versus black background) and their consequential impact on branding measures.

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