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**The Colorful Company:  
Effects of Brand Logo Colorfulness on Consumer Judgments**

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**Abstract**

This research examines the impact of brand logo colorfulness on consumer judgments toward a brand and its products. Four experiments demonstrate that the colorfulness of a brand logo affects consumers' perception of the product variety offered by the brand. When consumers feel that a brand logo is colorful, they tend to infer that the brand offers a high variety of product options to its customers. Driven by the perception of product variety, logo colorfulness has downstream consequences on consumer attitudes, an effect which can be moderated by brand positioning. Together, this research introduces the effects of logo colorfulness on consumer judgments, contributes to the psychological literature on color and variety, and bears important practical implications regarding how designers and marketers can practically determine a brand logo that best serves the brand image.

Keywords: color, logo colorfulness, logo design, visual marketing, product variety, brand image, consumer judgments

## INTRODUCTION

Along with the abundant and heterogeneous supply of merchandise, modern consumers encounter a substantial number of logos printed on products and packages, inserted in advertisements and promotional material, and presented on social media and online store sites. Logos representing successful brands such as Apple, McDonald's, Coca-Cola, and Nike (the four most recognizable logos among US adult consumers; OnePoll, 2019) are characterized by high recognition, familiarity, meaningfulness, and positive affectivity (e.g., Cohen, 1986; Henderson & Cote, 1998). Logos have become important parts of companies' brand identity and valuation, making a significant impact on consumers' perception of the companies.

Effective logos condense the visual identity of brands, breach language and cultural barriers, and convey valuable messages to their audience (Wheeler, 2009). Logos can accelerate the decision process (Henderson & Cote, 1998), reflect brands' nature of conspicuousness and signal loudness (Berger & Ward, 2010; Han et al., 2010), and exert influence on the credibility and effectiveness of advertisements (Manville, 1965). Past marketing research on the impact of logos has investigated various elements of logo design, such as circularity (e.g., Jiang et al., 2016), completeness (e.g., Hagtvedt, 2011), boundary (e.g., Cutright, 2012; Fajardo et al., 2016), and dynamism (e.g., Cian et al., 2014).

Among the various logo design elements, color plays an essential role (e.g., Bottomley & Doyle, 2006; Labrecque & Milne, 2012). Logo color can facilitate brand recognition and recall (e.g., Coca-Cola and red; Kim & Lim, 2019), and specific color hues can help to shape brand image in a consumer's mind (Labrecque & Milne, 2012). Whereas past research has mainly focused on the impact of specific colors used in marketing (e.g., Bagchi & Cheema, 2013; Gorn et al., 2004), the effect of the overall logo color scheme on

consumer behavior has been largely overlooked. The logo color scheme (i.e., the color(s) used in a logo to create a unified aesthetic of the design, e.g., a complementary or analogous color scheme; Jeon et al., 2020) is used frequently as a strategic tool to serve brand marketing purposes. A survey of the logos of the Forbes Top 100 companies (Forbes.com, 2020) reveals that many of them (i.e., 39 firms) include two or more colors in the graphical design of their logos. It is also not uncommon for companies to change the color scheme of their brand logo periodically. For example, Apple changed its famous rainbow-like logo to a monocolored silver one in 1998; whereas Microsoft did the opposite in 2012.

Following the call for research on how “colors jointly affect consumer perception” (Labrecque et al., 2013), the current research investigates the impact of brand logo color scheme on consumer judgments about the brand and its products. Independent of the specific colors used in a logo, in the current paper we theorize that the colorfulness of a logo influences consumers’ perception, attitudes, and decisions regarding the company and its products. Specifically, we hypothesized and found that, when consumers sense that a brand logo is more (vs. less) colorful, they perceive that the brand offers a greater variety of products to its customers. Driven by this perception, logo colorfulness tends to have positive effects on consumer attitudes and choice preference, which can be moderated by brand positioning.

Adding to past research concerning the effect driven by colors in the marketing context (e.g., Hagtvedt & Brasel, 2017; Lee et al., 2014; Ye et al., 2020), the current research introduces the impact of logo colorfulness on consumer judgment. This paper adds to the existing literature on brand logo (e.g., Janiszewski & Meyvis, 2001; Jiang et al., 2016; Luffarelli et al., 2019) by investigating a previously overlooked vital attribute of logo design; that is, logo color scheme, and how it can shape consumers’ perceptions of brand variety, attitudes, and choices. More broadly, the current research contributes to the psychological

literature on color by demonstrating the mental association between colorfulness and variety. Lastly, this research bears important practical implications for how designers and marketers can practically determine a brand logo that best serves the brand image and suggests potential tactics to increase consumer attitudes and sales.

## **THEORETICAL BACKGROUND**

### **Color and Its Usage in the Marketing Context**

A color is defined by three dimensions, outlined differently in various studies: hue, value, and chroma; hue, saturation, and value; or hue, saturation, and lightness (e.g., Hagtvedt & Brasel, 2017; Labrecque, 2020). Most existing research on color has focused on the impact of color hue. For example, one of the most widely documented effects of color is the comparison between red and blue (e.g., Bagchi & Cheema, 2013; Labrecque & Milne, 2012). Research has disclosed that red (vs. blue) triggers arousal and cheerfulness; perceived physical attractiveness and powerfulness; aggressive, competitive, and avoidance-oriented behavior; and purchase postponements and sensory-social product preference (e.g., Bellizzi & Hite, 1992; Labrecque et al., 2013; Mehta & Zhu, 2009).

Researchers have also explored the effects of different color combinations that stem from the three-color dimensions in single-color design. Consumer attitudes toward color combinations are substantially determined by the color harmony (Ou et al., 2004). For example, consumers generally prefer color combinations with lower hue and saturation contrast, or similar implied meanings (e.g., silver-black for luxury products), owing to the higher visual coherence and lower processing complexity (Deng et al., 2010; Madden et al., 2000). At the same time, individuals might be inclined toward color combinations with

higher contrast (e.g., for sensory-social products), complementary colors (those opposite each other on the color wheel), or complementary implied meanings in consumers' culture (Deng et al., 2010; Huang et al., 2020; Madden et al., 2000; Schloss & Palmer, 2010).

What is largely overlooked in previous color research is the macro-impact of color scheme that is independent of the specific color selected. Colorfulness, for example, is such a construct. *Colorfulness* refers to the visual perception of the color design of an area as more or less chromatic, so that perceived colorfulness can be influenced by both the chroma of specific colors and the number of colors within the design (Hunt, 1977; Wyszecki & Stiles, 2000). The limited extant research on colorfulness reveals that colorfulness can be better communicated using more highly saturated colors, or full color, rather than a black-and-white scheme (Lee et al., 2014; Scott & Vargas, 2007). In addition, compared with black-and-white advertisements, fully colored ones are more attractive and more effective in marketing communication; they require more cognitive effort to process and are cognitively associated with lower construal levels (e.g., Janiszewski, 1998; Lee et al., 2014; Meyers-Levy & Peracchio, 1995; Stillman et al., 2020). Adding to this stream of literature, in the current research we examine the impact of brand logo colorfulness on consumer judgments about the brand and its products. Specifically, we investigate why and how the colorfulness of a brand logo affects consumers' perception of product variety offered by the brand.

### **Logo Colorfulness and Product Variety**

Product variety denotes the total number of choices offered by a brand, company, or retailer and can be measured by the assortment size (Hart & Rafiq, 2006; Simonson, 1999). Perceived product variety can be influenced by the depiction of the assortment-related information (Townsend & Kahn, 2014), product display (Deng et al., 2016), presence of the

category labels (Mogilner et al., 2008), as well as the assortment structure and organization (Hoch et al., 1999; Kahn & Wansink, 2004).

In the current research, we hypothesize that a visual marketing factor, namely logo colorfulness, can heighten consumers' estimation of the product variety of this brand. This prediction is based on the mental association between colorfulness and variety. The concepts of colorfulness and variety are frequently co-activated in our daily lives. Variety is a relatively abstract construct, referring to the quality of being different and diverse (Wright, 2010). In our daily lives, different and diverse objects often have different colors. Over time, the repeated co-occurrence of object variety and color variety prompts human beings to utilize the sensory experience of colorfulness as a metaphor to facilitate their comprehension of variety. For instance, when we put the word *variety* into the image search engine of Google, most of the images found are composed of multiple colors. In addition, different colors of vegetables and fruits indicate higher variety of nutrients in food (BBC, 2021; Penn Medicine, 2018), and different colors can enhance the variety of expression in product design (Coalesse, 2019). Thus, we posit that starting from an early learning stage, individuals begin to grasp the abstract meaning of variety through the concrete visual experience of colorfulness and gradually established the colorfulness–variety mental association.

Mental association is elaborated in the associative network model of human memory (Wickelgren, 1981): when individuals perform information retrieval, mental activation tends to spread from one concept (node) to another, depending on the strength of the linkage between concepts (Collins & Loftus, 1975; Mitchell, 1982; Wickelgren, 1981). A notable feature of the associative network model of human memory is that the mental association between two concepts will be strengthened when the two concepts are frequently activated simultaneously in one's life (Perkins & Forehand, 2006; Wyer, 2008). Thus, the frequent co-activation of the concepts of colorfulness and variety in our daily lives likely establishes a

strong mental association between the two. Past research also provides support for the colorfulness–variety mental association. For instance, colorfulness represents a higher diversity and variety in a color design (e.g., Nasar, 1987), and a more colorful webpage design is perceived as richer in elements and conveying a higher variety (Post et al., 2017). We further predict that in the marketing domain, the links between colorfulness and variety will be reflected by the mental association of the colorfulness of a brand’s logo with the level of product variety the brand is perceived to offer. This learning process is similar to the establishment of other mental associations, such as round–softness (Jiang et al., 2016) and meat–males (Rozin et al., 2012).

To provide initial evidence for the mental association between logo colorfulness and product variety, a pilot study investigated how real-world designers intuitively incorporate information about a company’s product variety into their design of the company’s logo color scheme (see Appendix A, supporting information for details). Additionally, a pretest also verified this mental association among consumers (see Appendix F, supporting information).

## **THE CURRENT RESEARCH**

Derived from the colorfulness–variety mental association, we further posit that this association has an impact on the brand-related inferences that consumers are likely to make. According to the marketing literature on spreading activation and associative retrieval (e.g., Crestani, 1997; Frakes & Baeza-Yates, 1992; van Rijsbergen, 1979), consumers make product-related inferences based on their learned associations, by using specific cues to infer the attribute that is less obvious or lacks information (Deval et al., 2013). For instance, the price–quality mental association leads consumers to excessively base their quality inferences on the price level of a product (Bagwell & Riordan, 1991; Yang et al., 2019). The



unhealthiness–tastiness association guides consumers to consider food with less health benefits to be tastier (Raghunathan et al., 2006). Moreover, based on the angular–hardness and circular–softness associations, consumers make the inference that companies with angular (vs. circular) logos are likely to sell more durable but less comfortable products (Jiang et al., 2016). Following this stream of research, we propose that the strong colorfulness–variety association can lead consumers to infer that when a brand logo is colorful, the brand will provide a high variety of product options to its customers. Stated formally:

**H1:** Brands with more colorful logos are perceived as providing a greater variety of products than brands with less colorful logos.

Past research has demonstrated that consumers’ product-variety perception has strong impacts on subsequent consumer behavior; and variety offers individuals opportunities to satisfy their innate need for stimulation and variety-seeking (e.g., Etkin & Mogilner, 2016; Inman 2001; van Herpen & Pieters, 2002). In addition, a broader product variety can appeal to a wider range of tastes, and buffer risks from future preference uncertainty (Kahn & Ratner, 2005). Therefore, consumers generally have a positive attitude toward brands with higher product variety. Following our H1, the perception of higher product variety can be induced by a more colorful logo. We thus propose that logo colorfulness tends to positively affect consumer attitudes, which is mediated by consumers’ perceived product variety of the brand. Stated formally:

**H2:** Consumers have more favorable attitudes toward brands with more colorful logos, an effect which is driven by the perception of a greater variety of products of brands with more colorful logos.

Furthermore, we propose a factor moderating the downstream effect of perceived product variety on consumer attitude and posit that perceived product variety can contribute

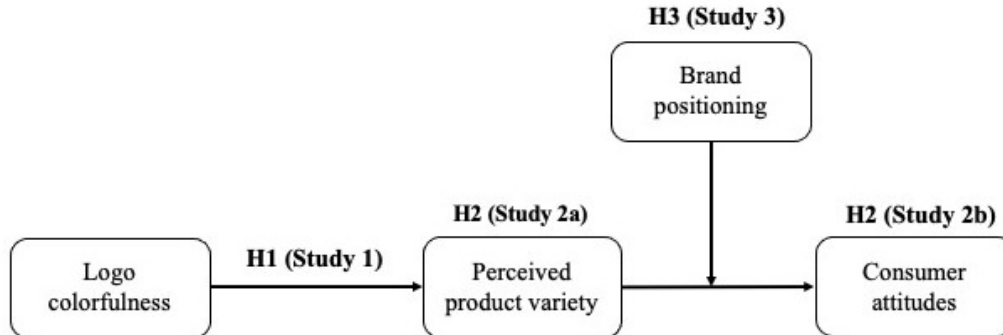
to higher consumer attitudes when the company has a general rather than specialized brand positioning. Adapted from the work of Park and his colleagues (1986), brands with a general positioning provide a one-stop shopping experience and fulfill multiple needs for the mass-market consumers, such as general merchandise stores, department stores, and supermarkets. In contrast, specialized brands concentrate on one narrow and specific product category and carry a broad assortment of brands, styles, or models of those products, such as specialty stores.

We advance that the perceived product variety induced by a colorful (vs. less colorful) logo design can lead to more favorable consumer attitudes when the brand has a general rather than specialized brand positioning. According to previous literature, people are “sense makers” who spontaneously develop hypotheses for questions that arise and always ask why products have certain characteristics (Biliciler et al., 2021; Gilovich, 1993). Hence, when they encounter a brand logo, they might consider why the company uses such a logo design. The concept of fit fluency suggests that, when there is high congruence between two parties, people will generate higher processing fluency toward the two, which results in enhanced evaluation (Graf et al., 2018). In our case, the perception of product variety induced by a colorful (vs. less colorful) logo is more congruent with the general (vs. specialized) brand positioning, and the general-positioned (vs. specialized-positioned) brand also provides a plausible explanation to answer consumers’ questions about the color scheme. These answered questions consequently lead to more positive attitudes toward the brand. Stated formally:

**H3:** Logo colorfulness will lead to more positive consumer attitudes when the brand has a general, rather than specialized positioning.

## **Summary of Studies**

As depicted in Figure 1, four studies were conducted to test our propositions. Study 1 verified the positive effect of logo colorfulness on the perceived product variety of a brand. Studies 2a and 2b showed that logo colorfulness can influence downstream consumer attitudes and behavior, which is driven by the perception of product variety. Study 3 demonstrated that the effect of logo colorfulness on consumer attitudes is moderated by the general versus specialized positioning of the brand. We report all data exclusions (if any), all manipulations, and all hypothesis-related measures. Basic demographic measurements (such as gender and age) were collected at the end of each experiment, and they had no significant impact on our results (see Appendix G, supporting information for more details). We also ruled out the alternative explanation of logo attractiveness using pretests (see Appendix E, supporting information).



**FIGURE 1** Conceptual framework

## STUDY 1

Study 1 provides an initial test of our basic hypothesis that the colorfulness of a brand logo affects consumers' perception of product variety offered by the brand (H1).

## Method

One hundred and twenty-six US adult consumers participated in this study via Amazon Mechanical Turk (MTurk) for a nominal payment. One participant with colorblindness was excluded from later data analyses, leaving us a final sample of 125 ( $M_{\text{age}} = 34.14$ , 54.4% female).

Participants were randomly assigned to a condition of either high logo colorfulness or low logo colorfulness. They were told that a tourist agency was collecting consumers' evaluations of different tourist attractions. Then participants were presented with the logo and some information about a fictitious shopping mall in Bangkok, Thailand (e.g., location, targeted customers, and positioning; see Appendix B, supporting information). This information was kept identical between the two conditions, except for the brand logo. In the *high logo colorfulness* condition, the logo of the shopping mall contains all three primary colors (i.e., blue, red, and green). In the *low logo colorfulness* condition, only one randomly selected color from the three primary colors is used. Other design elements of the logo, such as its shape and size, were strictly controlled across conditions (see Appendix for the logos used).

After viewing and reading the promotional material, participants indicated their perception of product variety in the shopping mall on two 9-point measures ( $r = .68$ ,  $p < .001$ ): how much product variety the mall is likely to have (1 = very little, 9 = a lot), and how large the assortment of available items in the mall is likely to be (1 = very small, 9 = very large; adapted from Deng et al., 2016; Kahn & Wansink, 2004). As a manipulation check, participants also indicated perceived logo colorfulness on three 9-point scales ( $\alpha = .78$ ): how colorful the logo is (1 = not colorful at all, 9 = very colorful), to what extent the

logo is rich in its color (1 = not rich at all, 9 = very rich), and to what extent this logo has a complex color pattern (1 = not complex at all, 9 = very complex; constructed partially based on Reinecke et al., 2013).

## Results

The manipulation check confirmed that participants perceived the multi-color logo as more colorful ( $M = 6.49$ ,  $SD = 1.36$ ) than the mono-color one ( $M = 4.13$ ,  $SD = 2.07$ ;  $F(1, 123) = 55.98$ ,  $p < .001$ ). More importantly, consistent with our H1, participants also perceived the shopping mall in the high logo-colorfulness condition as offering a higher variety of products ( $M = 7.58$ ,  $SD = 1.30$ ) than the shopping mall in the low logo-colorfulness condition ( $M = 6.96$ ,  $SD = 1.61$ ;  $F(1, 123) = 5.43$ ,  $p = .021$ ,  $\eta_p^2 = .04$ ).

## Discussion

Study 1 provided support for our hypothesis that the colorfulness of a brand logo affects consumers' perception of product variety offered by the brand (H1). Consistent with our hypothesis, we found that consumers infer that a brand will provide a high variety of product options to its customers when its brand logo is colorful.

## STUDY 2

Study 1 verified the effect of logo colorfulness on consumers' perception of product variety. What remains unanswered is the downstream consequences of this effect on consumers. In Study 2 we investigate how logo colorfulness influences consumers' product

attitude and real consumption choice (H2). Specifically, Study 2a examines whether consumers have a more favorable product attitude when the brand logo is more (vs. less) colorful and whether this effect is driven by the heightened product-variety perception. Study 2b replicates the findings of Study 2a in an incentive-compatible behavioral experiment.

### Study 2a

Two hundred and two US adult consumers participated in this study via MTurk for a nominal payment. Five participants with colorblindness or who were unable to clearly see all the pictures were excluded from later data analyses, leaving a final sample of 197 ( $M_{\text{age}} = 36.75$ , 57.4% female).

Participants were randomly assigned to a condition of either high logo colorfulness or low logo colorfulness. They were told that the purpose of this study was to test the effectiveness of a company's product packaging. Participants were then presented with the image of a candy pack from a fictitious candy brand and were told that there were five randomly packed candies in each candy pack. Similar to the colorfulness manipulation used in previous studies, in the *high logo colorfulness* condition, the logo of the candy brand contains six colors (i.e., red, yellow, green, blue, purple, and peacock blue). In the *low logo colorfulness* condition, the brand logo uses only one randomly selected color from the six. Other design elements of the logo, such as its shape and size, were strictly controlled across conditions (see Appendix for the logos used).

After seeing the candy pack, participants reported their attitude toward it on three 9-point scales ( $\alpha = .94$ ; adapted from Adaval, 2003; Fan et al., 2019): 1) how much they liked the candy pack (1 = dislike very much; 9 = like very much), 2) how attractive they thought the candy pack was (1 = very unattractive; 9 = very attractive), and 3) how good they thought

the candy pack was (1 = very bad; 9 = very good). They also completed a similar product-variety perception measurement to that used in Study 1 ( $r = .68, p < .001$ ): how much candy variety this candy pack is likely to have (1 = very little, 9 = a lot) and how large the assortment of candies in the product is likely to be (1 = very small, 9 = very large; adapted from Deng et al., 2016; Kahn & Wansink, 2004). The sequence of these two sets of measurements (i.e., product attitude and product variety perception) was counter balanced. Finally, participants completed the same logo-colorfulness manipulation check ( $\alpha = .91$ ) used in previous studies.

The manipulation check confirmed that participants perceived the multi-color logo as more colorful ( $M = 7.02, SD = 1.37$ ) than the mono-color one ( $M = 3.56, SD = 2.13; F(1, 195) = 186.83, p < .001$ ). As expected, participants showed more favorable product attitudes in the high logo-colorfulness condition ( $M = 6.15, SD = 1.83$ ) than in the low logo-colorfulness condition ( $M = 5.51, SD = 1.76; F(1, 195) = 6.33, p = .013, \eta_p^2 = .03$ ). Moreover, participants perceived the product in the high logo-colorfulness condition as offering a higher level of variety ( $M = 6.10, SD = 1.63$ ) compared to perceptions of the product in the low logo-colorfulness condition ( $M = 5.55, SD = 1.70; F(1, 195) = 5.39, p = .021, \eta_p^2 = .03$ ). Finally, bootstrapping methods (PROCESS Model 4, with 5,000 resamples; Hayes, 2013) confirmed that product-variety perception mediated the impact of logo colorfulness on product attitude ( $b = .16, SE = .11; 95\% CI: .02 \text{ to } .29$ ).

## Study 2b

Study 2b tests the downstream consequence of logo colorfulness in an incentive-compatible real behavioral study. One hundred and eighty-three Hong Kong undergraduates participated in this lab study for a nominal payment. Three participants with colorblindness

were excluded from later data analyses, leaving a final sample of 180 ( $M_{\text{age}} = 20.89$ , 78.9% female).

Participants were randomly assigned to a condition of either high logo colorfulness or low logo colorfulness. They were told that the purpose of this study was a candy taste test for a local candy store. For the tasting, participants needed to pick only one set of candies from two options: a cup of five marshmallows or a mystery candy pack (i.e., a non-transparent pack containing five randomly packed candies), both from the fictitious local candy store.

Participants then received the two candy options for making the choice. They were instructed explicitly not to open the mystery candy pack before they made their choice. The cup of marshmallows is the same across conditions; the logo of the mystery candy pack, however, was varied systematically to manipulate logo colorfulness. Specifically, in the *high logo colorfulness* condition, the logo contains six colors (i.e., red, yellow, green, blue, purple, and peacock blue). In the *low logo colorfulness* condition, the logo uses only one randomly selected color from the six. Other design elements of the logo, such as its shape and size, were strictly controlled across conditions (see Appendix for the stimuli used). After making the choice, participants tasted the candies they chose and answered a few open-ended questions about the candy taste. Finally, participants completed the same logo-colorfulness manipulation check ( $\alpha = .89$ ) that we used in previous studies.

The manipulation check again confirmed that participants perceived the multi-color logo as more colorful ( $M = 6.10$ ,  $SD = 1.42$ ) than the mono-color one ( $M = 3.11$ ,  $SD = 1.44$ ;  $F(1, 178) = 195.93$ ,  $p < .001$ ). More importantly, participants were also more likely to choose to taste the mystery candy pack over the cup of marshmallows when the mystery candy pack had a highly colorful logo (82.1%) than when it had a less colorful logo (63.5%;  $\chi^2(1) = 7.73$ ;  $p = .005$ ;  $OR = .62$ ).



## Discussion

Study 2 provided convergent evidence that the effect of logo colorfulness on product variety perception has downstream consequences on consumer preferences (H2). Specifically, Study 2a revealed that consumers showed more favorable product attitudes when the brand logo is more colorful, and this effect is mediated by the perceived product variety. In an incentive-compatible behavioral context, Study 2b replicated the finding of Study 2a with real consumer choice.

## STUDY 3

So far, we have presented evidence that logo colorfulness enhances consumers' perception of the product variety, an effect which generally leads to more favorable consumer attitudes. Nevertheless, a larger assortment size might not always be consistent with the brand positioning that a company intends to promote to its consumers. In this study, we examine the effect of logo colorfulness on consumer attitudes when the brand positions itself as a general versus a specialized brand. We expect logo colorfulness to lead to more positive consumer attitudes only when the brand has general, rather than specialized positioning (H3).

## Method

Four hundred and three US adult consumers participated in this study via MTurk for a nominal payment. One participant who was unable to clearly see the pictures during the study was excluded from later data analysis, leaving us a final sample of 402 ( $M_{\text{age}} = 41.11$ , 48.3% female).

Participants were randomly assigned to one of the 2 (logo colorfulness: high vs. low)  $\times$  2 (brand positioning: general vs. specialized) between-subjects conditions. At the beginning of the experimental session, participants were told that the study sought to collect their brand evaluations about a store named Tech Center based on its advertisement. To manipulate the logo colorfulness, similar to the manner in which we conducted previous studies, in the *high logo colorfulness* condition, the brand logo contains three colors (i.e., red, yellow, and blue). In the *low logo colorfulness* condition, the brand logo uses only one randomly selected color from the three. Other design elements of the logo, such as its shape and size, were strictly controlled across conditions (see Appendix for the logos used). In addition, we manipulated brand positioning by varying the verbal content in the ad. In the *general* condition, the store is framed as a general electronic appliances store that offers more tech gadgets than most other retailers, whereas in the *specialized* condition, the store is described as a specialty store that offers only professional tablet computers (see Appendix B, supporting information). The manipulations of logo colorfulness and brand positioning were validated in pretests (see Appendices C and D, supporting information for details).

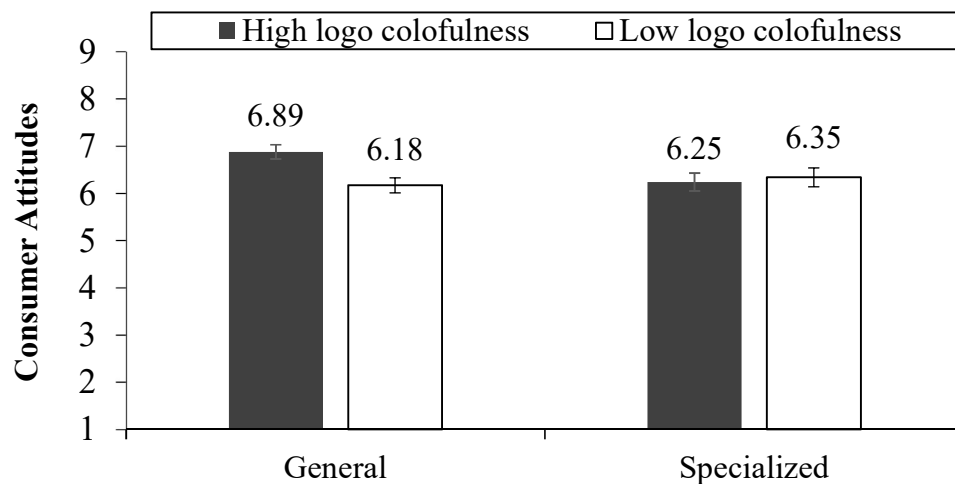
After viewing and reading the advertisement, participants reported their attitudes toward the store based on similar questions to those used in Study 2a ( $\alpha = .93$ ): how much they like the store (1 = dislike very much, 9 = like very much), how attractive they think the store is (1 = very unattractive, 9 = very attractive), and how good they think the store is (1 = very bad, 9 = very good; adapted from Adaval, 2003; Fan et al., 2019).

## Results

A  $2 \times 2$  ANOVA showed only a significant interaction between colorfulness and brand positioning on consumer attitudes ( $F(1, 398) = 5.23; p = .023, \eta_p^2 = .01$ ; see Figure 2).

Planned contrasts revealed that when the brand was positioned as a general brand, participants had a more positive attitude toward the store when its logo was multi-color ( $M = 6.89$ ,  $SD = 1.51$ ) than when it was mono-color ( $M = 6.18$ ,  $SD = 1.60$ ;  $F(1, 398) = 8.00$ ;  $p = .005$ ,  $\eta_p^2 = .02$ ). However, the effect did not appear when the brand was positioned as a specialized brand, with participants in both logo conditions reporting similar levels of attitude toward the store ( $M_{\text{multi}} = 6.25$ ,  $SD = 1.91$  vs.  $M_{\text{mono}} = 6.35$ ,  $SD = 2.03$ ;  $F(1, 398) = .16$ ;  $p = .69$ ).

**FIGURE 2** Study 3: Consumer Attitudes as a Function of Logo Colorfulness and Brand Positioning



### Discussion

Study 3 added to the previous studies by demonstrating the moderating role played by brand positioning in the effect of logo colorfulness on consumer attitudes (H3). It shows that, although consumers generally prefer brands with a more colorful logo due to their pursuit of

variety, this preference diminished when they expect specialized products and services from a brand based on its positioning.

## **GENERAL DISCUSSION**

The current research investigates the effects of logo colorfulness on consumers' judgments and preference. Study 1 showed how logo colorfulness boosted consumers' perceived brand variety (H1). Study 2 further explored this effect by showing how perceived product variety drives the positive consequence of logo colorfulness on consumer attitudes and choices (H2). Study 3 disclosed how brand positioning acts as a moderator in the effect of logo colorfulness on consumer attitudes (H3).

### **Theoretical Contributions**

Our work makes important theoretical contributions to prior research. First, this research contributes most directly to the literature on the usage of colors in marketing (e.g., Chung & Saini, 2021; Hagtvedt, 2020; Wang et al., 2020). Color is one of the most prominent and important visual design elements in marketing, serving as the source of approximately 62% to 90% of first impressions among consumers (Singh, 2006). Inroads in color research have mainly examined how single colors orient consumer perceptions and decisions through affecting arousal levels and emotions (e.g., Bagchi & Cheema, 2013; Gorn et al., 2004), and delivering culturally varying semantic meanings (e.g., Wieggersma & Van der Elst, 1988). However, there have been few studies in consumer research on the impact of color scheme independent of specific colors. The present theory eliminates this gap by disclosing how logo colorfulness shapes perceptions of product variety among consumers and

influences their subsequent attitudes and consumption behavior. We also contribute new knowledge to the inference literature in marketing. As consumers rarely master full product information, they tend to make different inferential judgments based on the available cues (Kardes et al., 2004), such as quality inferences based on pricing (e.g., Yang et al., 2019) and a tastiness inference based on unhealthiness (Raghunathan et al., 2006). Adding to this stream of research, we identify a new inferential basis, namely, logo colorfulness, and verify how consumers use it to infer product variety and change their attitudes.

Second, findings of the present research shed light on the growing literature on product variety (e.g., Deng et al., 2016; Mogilner et al., 2008; Townsend & Kahn, 2014) by pointing to the visual antecedents of perception of variety. Even though variety has been widely explored by previous researchers, less is known about the visual drivers of variety. To our knowledge, the present research is the first to provide evidence that logo color scheme can induce changes in perceived product variety. We also offer empirical and experimental verification for the downstream consequences of product variety, that is, how consumers' perception of product variety drives the effects of logo colorfulness on brand and product evaluations.

Lastly, our findings provide insights regarding the interaction between colorfulness and brand positioning. We contend that although consumers tend to form positive impressions on firms with more colorful logos, their preference can be dampened when the brand positioning of the company does not imply larger assortments. Our findings extend the fit fluency literature (Graf et al., 2018) and more broadly the knowledge of metacognitive experience (e.g., Schwarz, 2004) in the visual marketing context.

## **Future Directions**

In our studies, we manipulated logo colorfulness by varying the number of colors used in the logo. To supplement this work, future study could examine whether other features of the logo color scheme are also relevant to perceived product variety. One possible way to manipulate logo colorfulness is to keep the absolute number of colors in the logo constant but alter the color dominance in the logo. Specifically, the color that takes up a larger proportion of the logo area will be visually dominant and attract more concentrated attention, whereas the impact of other colors that occupy a smaller logo area could be muted in comparison or overlooked. A second factor in the color scheme that can change consumers' perception of colorfulness is color alternation, which is visually represented by the demarcation between two colors (Nicolini, 2015). Since shifting from one color to another generates a color demarcation, and demarcation highlights the differences between the two adjacent colors, more color alternations could lead to a heightened perception of colorfulness, even when the number of colors used in the logo remains constant. Another speculation is whether judgment of product variety can be boosted when the colors in the logo have higher contrast with each other, which could be another method to manipulate logo colorfulness. In our experiments, we used a variety of color contrasts, suggesting that our research can be applied to a wide range of color contrasts. However, whether different levels of color contrasts lead to the same level of effect remains questionable. Future research may examine the boundary conditions of our findings.

This research may also inspire further exploration into the directionality of the link between logo color scheme and product variety. In our theorization, we argued that the mechanism underlying the observed effect is the mental association between colorfulness and variety. Nevertheless, we believe that this associative arc is likely to be asymmetrical in regard to its spillover effect, that is, tending more strongly in the direction from logo colorfulness to product variety. This is because the activation spreading from nodes located at

a lower construal level to broader categorical descriptions at a higher construal level (e.g., activation spillover from a sub-brand to a family brand) is usually easier than the reverse (e.g., Lei et al., 2008). Colorfulness can be regarded as a more concrete and tangible expression of variety, so that the colorfulness–variety arc would be stronger than the variety–colorfulness association. This also corresponds to the widely cited findings in embodied cognition literature whereby the effect is more ubiquitous and salient in the direction from concrete sensory experience to abstract cognitions—e.g., from weight to importance, and from physical coldness to psychological coldness—and it is weaker when reversed (Hong & Sun 2012; Jostmann et al., 2009).

In addition, as we only tested one product (candy packs) in Studies 2a and 2b, future research might probe consumer attitudes toward logo colorfulness in other product categories. Based on the findings of our Study 3, we suspect that for products where specialization and professionalism are of great importance (e.g., medical devices), consumers may not prefer products with a more (vs. less) colorful logo. Meanwhile, the current study tried to incorporate participants with different cultural backgrounds (e.g., US MTurkers and Hong Kong undergraduates) and different color hues in logo design (red, yellow, green, blue, purple, and peacock blue); however, culture may still play a key role in influencing consumer attitudes toward colorfulness, due to different attributions of color meanings and preferences for color combinations across cultures (e.g., Madden et al., 2000). We suggest that future research test the interplay between logo colorfulness and culture in changing consumer judgments.

Another avenue worth exploring is whether the effect of color scheme on perceived product variety is driven by the complexity of the logo design. We expect the effect to be unique to the color design, rather than any logo design dimensions. For example, when logos incorporate a great number of different shapes and patterns (e.g., Versace, St. Regis, and

Bentley logos), they are visually more intricate. We suspect that their complex patterns may highlight the exclusiveness, specialization, and professionalism of the brands. Referring to what was found in our Studies 2 and 3, when variety is appreciated, consumers might have even less favorable attitudes toward brands that display a logo with an intricate pattern. As this research focuses on color design, we leave this speculation for future studies to explore.

### **Managerial Implications**

Our results offer abundant managerial implications. Logos are widely regarded as a part of the intangible assets of companies, and some corporations allocate more resources to logo design than advertising (Henderson & Cote, 1998). The findings of the current research suggest that corporations that have an expansive business reach (e.g., Procter & Gamble, Walmart, Pfizer), offer a one-stop shopping experience and convenience for mass-market consumers (e.g., general merchandise stores, department stores and supermarkets), or practice brand-extension strategies are likely to benefit from increasing the colorfulness of their brand logos to enhance consumer attitudes and potentially boost their sales.

It is also common for well-established firms to adjust their logos from time to time. For instance, Microsoft has gradually changed the typeface in its logo since 1975, while remaining a mono-color scheme until its big change in 2012, when a new logo was designed, with its name in neutral gray accompanied by a four-color symbol that was inspired by Windows (Skillings, 2020). As our research suggested, this colorful logo may assist the brand-extension strategy of Microsoft, whose business expanded from software development alone to all-round related business applications, such as laptop, tablets, smartphones, search engine, intelligent cloud, education technology, and game consoles (Microsoft Corp., 2020). In an opposite evolution, Apple's logo dating back to 1977 used to be very colorful, with a



multi-color scheme embracing six colors; it was aptly referred to as the rainbow logo (Klara, 2011). Nevertheless, in 1998, Steve Jobs replaced the logo with a mono-color minimalistic design without modifying its original conceptualization (Klara, 2011). According to our findings, this adjustment of the logo color scheme is likely to help Apple create a concentrated and professional brand image, but it could also hinder the consumers' acceptance of its extensions to other business.

In conclusion, what is appropriate is the best. The current research suggests that companies should think strategically when they (re)design a brand logo. If matched well, the color scheme of a company's brand logo and the strategic positioning and product portfolio of the business ideally create a synergy, leaving harmonic and powerful impressions in consumers' minds.

#### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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**APPENDIX  
LOGOS AND STIMULI USED IN THE STUDIES**

<b>Study 1: Logos Used</b>						
Low-Colorfulness Logos			High-Colorfulness Logos			
						
<b>Study 2: Logos Used</b>						
Low-Colorfulness Logos						High-Colorfulness Logo
						
<b>Study 2b: Stimuli Used</b>						
Low-Colorfulness Condition		High-Colorfulness Condition		The Marshmallow Cup (Control Condition)		
						
<b>Study 3: Logos Used</b>						
Low-Colorfulness Logos				High-Colorfulness Logo		
