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ROLE OF COLOR HUES IN SIGNALING HEALTHINESS

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Increased concern about what we consume has given prominence to health-oriented products both for niche and mainstream segments (Dixne and Lepisto 2005). It is therefore no surprise that sales of soft drinks and other foods perceived to be unhealthy have been consistently plummeting since 2005 (Kall 2016). This trend has led to brands launching allegedly healthier “mid-calorie” alternatives. Consider the examples of Coke Life (unveiled in 2013) and Pepsi True (2014). These soft drink alternatives have 36–40% fewer calories than the regular options, with part of the sugar substituted with stevia, a naturally sourced sweetener (O’Keally 2014). What is interesting though is the way in which these options are presented to the consumer. Both of these examples use the color green, which is starkly different from the brands’ colors (i.e., Coke’s red and Pepsi’s red and blue). Such examples and other such initiatives that use specific hues in rebranding health food options motivate this research.

Colors can elicit a myriad of physiological, emotional, and cognitive reactions (Valdez and Mehrabian 1994), and the use of color influences consumer perceptions regarding a product or a brand (see Labrecque, Patrick, and Milne 2013). In fact, research indicates that color can influence judgments such as those concerning ethical views (De Boek, Pandhare, and Van Kenhove 2013; Sundar and Kellaris 2015a, 2015b). Specifically in the realm of food and beverages, studies reveal that color has a major influence in taste perceptions and other sensory characteristics (e.g., sweetness, saltiness, flavor identification and intensity, aroma), thus affecting food acceptability, choice, and preference (Clvdesdale, 1993).

However, when it comes to the use of color and associations with health, we have limited understanding of the effects of color cues used in packaging. One area of inquiry indicates that brightness can contribute to health inferences and at the same time influence perceptions of taste negatively (Mai, Symank, and Seeborg-Etverfeldt 2016). Such research is consistent with research in non-food related areas that inform health inferences (Hammond et al. 2009; Hammond and Parkinson 2009; Bansal-Travers et al. 2011). Nonetheless, we know that in addition to brightness, hue and saturation are other attributes of color that influence not only consumer perception but also, more importantly, the inferences consumers make. We situate the current research on the effects of hue on spontaneous health inferences consumers make in this context.

In the current paper, we examine the potential role of hues adopted in packaging that influence health and taste associations surrounding a product. Specifically, by investigating the role of individual differences of centrality of visual product aesthetics (CVPA), we demonstrate that using visual information regarding a product manifests the effect of color on taste inferences. Surprisingly, this individual difference influences the effect of color on health inferences in a rather contradictory manner. In addition, we present the theoretical implications, strategic implications in advertising, and areas of focus for future research.

Conceptual Framework

De Boek, Pandhare, and van Kenhove (2013) note that colors are associated with valence of emotion. Specifically, colors such as red and green often are paired, as green conveys positive emotions and approach responses, whereas red promotes negative emotions and avoidance responses (De Boek et al. 2013). When it comes to judgments regarding health, there is evidence that color can affect consumer inferences (Mai, Symank, and Seeborg-Etverfeldt 2016). Mai and colleagues observed that one aspect of color, namely brightness, has the potential to inform spontaneous inferences surrounding health. Lighter colors, they noted, cue a perception of the healthiness of a product.

Nevertheless, we know that color has different facets that influence consumer perceptions. Color is a product of three aspects: hue, brightness, and saturation (Sundar and Kellaris 2015b). Hue is a prominent attribute of color experience, and the three basic hues are red, blue, and yellow. This quality of a color corresponds to the distinctive, discernable wavelength (Zelanski and Fisher 1989, p. 16). Brightness (also referred to as lightness or value) is how light or dark a color is perceived. In technical terms, lightness is defined by the perceived brightness of a non-white object compared to a perfectly white one, and it can be measured with a photometer, which simulates the perception of human vision (Kuehn 2013, p. 39). The term “value” also is used to indicate this attribute: the lighter or darker the color, the higher or lower the value. Saturation, or chroma, indicates how far a color is from gray of the same lightness—it is the

most difficult color attribute to assess (Kuehni 2013, p. 42). The purer or more intense the color is, the higher the saturation is considered to be (i.e., further away from the corresponding gray). These aspects of color have different effects on consumer perception.

Research has shown that colors affect the physiology, emotion, and cognition of humans. Consistent with animal research showing that certain colors, specifically red, can make animals more aggressive (Pryke 2009), red is more arousing than green, as Wilson (1966) revealed using electrodermal measurements of human skin. Similarly, Stone and English (1998) demonstrated that colors with longer wavelengths (i.e., red and orange) are more arousing than colors with shorter wavelengths (i.e., green and blue). Importantly, color influences emotions, and individuals tend to associate colors with positive or negative feelings (De Block, Pandelare, and Van Kenhove 2013). For instance, Hemphill (1996) studied the color-emotion link and found that individuals linked bright colors (e.g., pink, white) to positive feelings and dark colors (e.g., black, brown) to negative feelings. Furthermore, Jacobs and Suss (1975) showed that yellow and red induce a stronger anxiety score than blue and green. Likewise, Profuck and Rainey (1987) tested the effects of background color (pink vs. red) on anxiety and demonstrated that the pink background made individuals less anxious than the red.

In addition to the physiological and emotional influences of color, people may have stored memories of color meanings and symbolizations. For example, research showed that people associate black with evil, death, and immorality (Frank and Gilovich 1988; Sherman and Clore 2009) and blue with sadness (Elliot and Maier 2007). Moreover, based on the theory of semantic memory, Labrecque and Milne (2012) explored the relationship between color and brand personality and found that different colors are associated with different brand personalities (e.g., red with excitement and blue with competence). Research further indicates that color can be symbolic of certain meaning association that is both referential and embodied (Sundar and Kellaris 2015b). In light of such research demonstrating that color can influence consumer perception in a cognitive, emotional, or cognitive dimension, we contend that when it comes to health perceptions, hues can contribute to important health and taste inferences.

Because individuals vary in their evaluations of visual information to inform judgments, we make the following predictions. Firstly, we predict that valence information inherent in color cues influence both taste and health inferences related to a product. Color is known to influence not only health but also taste perceptions (Mai, Symmank, and Seeborg-Everfeldt 2016). Although color has been predominantly associated with taste and flavor perception, we contend that hues of color actually inform a global evaluation of health and taste perceptions of a product. Specifically, the colors red and orange are positively related to sweetness and non-citrus fruity flavor (Koch and Koch 2003). Therefore, this hue, we propose, can be associated with taste and, more importantly, a negative health valence or taste (refer to the negative association of health and taste presented by Raghunathan, Nayyar and Hoyer 2006). Further, we contend that the green hue is positively associated with health perceptions given its association with vegetation and so forth (Wierzbicka 1990). Such associations are based on a universal human experience. Nevertheless, we note that individual differences that influence product perceptions influence perceptions related to product evaluations. Concerning this, we evaluate the role an individual difference of CVPA plays in perceptions of a product.

Centrality of Visual Product Aesthetics

Given that most products on the market have similar functional attributes, it is assumed that they meet consumers' basic functional need for a product. Therefore, package and product design can be a critical factor for prompting consumers to select a product among a variety of similar product options. Bloch, Brunel, and Arnold (2003) define CVPA to quantify this emphasis of design in individual product selection. According to their definition, CVPA is "the overall level of significance that visual aesthetics hold for a particular consumer in his/her relationships with products" (Bloch, Brunel, and Arnold 2003, p. 551). CVPA includes individuals' ability to recognize and categorize the product, and the intensity and valence of individuals' reactions to the design aesthetics of the product. Moreover, it defines the extent to which individuals emphasize the product aesthetics in terms of product evaluation (Bloch, Brunel, and Arnold 2003). Therefore, individual differences in CVPA, we contend, influence how consumers make inferences from the color of packaging. The way in which visual preference heuristics (Townsend and Kahn 2014) support the importance of visual presentation of a product is related to this. We predict that the influence of the individual difference in CVPA intensifies the effect of color on taste and health-related inferences.

Pilot Study

The core objective of the pilot study was to determine whether consumers made spontaneous associations with food positioning and color.

Method

Participants, Design, and Procedure. Participants ($N = 159$, 50.9% female; $M_{age} = 36.37$) were recruited through an online panel and received monetary compensation for participating in the study. The guise of this study was that a new brand, Bubble Cola, was to launch a new product. Participants were randomly assigned to one of two shopping scenarios. In one scenario, participants were asked to select the healthier option. In the other scenario, participants were asked to select the tastier of the two options. Subsequently, they were presented with two new can designs. The first design featured the logo of Bubble Cola on a red can and the other the logo of Bubble Cola on a green can (see Appendix A). After participants indicated their choice, demographic information was collected.

Results

A logistic regression analysis with color (0 = green; 1 = red) as the dependent variable and scenario as the predictor variable revealed a significant effect of scenario on the selection of can color ($\beta = -2.38$, $SE = .38$, $Wald = 38.68$, $Exp(B) = .093$, $p < .001$). Table 1 illustrates this effect.

Participants were almost two and a half times more likely to select the green can in the healthy scenario than in the tasty scenario ($\chi^2(1) = 43.95$, $p < .001$). More specifically, 82.5% (66 of 80) selected the green can in the healthy scenario, whereas 69.62% (55 of 79) selected the red can when presented with the tasty scenario ($\chi^2(1) = 46.42$, $p < .001$). The results suggest that whether a person is motivated to find a healthy or a tasty drink can influence the selection of a specific type of packaging. In the next study, we were interested in determining whether the actual presentation of products in a specific color would influence the health and taste perceptions of the product itself.

Study 1

The core objective of this study was to capture the difference in taste perceptions of products caused by the two specific hues of color. In addition, we were interested in evaluating the effects of individual differences of CVPA on both taste and health perceptions of products packaged in different hues.

Method

Participants, Design, and Procedure. Participants ($N = 120$, 45.8% female; $M_{age} = 36.10$) were recruited through an online panel and participated in the study in exchange for monetary compensation. Participants were randomly assigned to one of three conditions (package color: control vs. red vs. green) in a between-subjects experiment. The guise used in this study was that participants were evaluating the advertising campaign for a new brand of chocolate called Flav's Milk Chocolate.

Procedures and Dependent Measures

Participants were informed that they were to review an advertisement featuring a new package design for Flav's milk chocolate bar. Then, they were asked for their individual perceptions of the taste of the chocolate on a two-item measure, "How decadent is this product?" (anchored: 1 = not very decadent; 7 = very decadent) and "How chocolaty is this product?" (anchored: 1 = not very chocolaty; 7 = very chocolaty). Both these measures were adapted from Sundar and Kardes (2014). Subsequently, global perceptions of taste were captured on two more measures, "How tasty do you think this product is?" (anchored: 1 = not very tasty; 7 = very tasty) and "How enjoyable do you think this product is?" (anchored: 1 = not very enjoyable; 7 = very enjoyable). These measures were adapted from Mai, Symmank, and Seeborg-Everfeldt (2016). In addition, the measure of CVPA and, finally, demographic information were captured.

Results

Taste Perceptions pertaining to Chocolate. An ANCOVA with color was conducted, and a composite CVPA score ($n = 94$) predicting taste perceptions pertaining to chocolate ($r = .73$) was calculated. There was a main effect of color ($F(2, 114) = 4.66$, $p < .01$) such that the product packaged in red was seen as significantly tastier ($M = 5.48$, $SD = 1.11$) compared to either the product with white packaging ($M = 5.03$, $SD = 1.29$) or green packaging ($M = 5.26$, $SD = 1.19$). This was qualified by a significant interaction of packaging color with CVPA score ($F(2, 114) = 4.59$, $p < .01$). A spotlight analysis indicated that participants were influenced more by the effects of color in packaging when they had a higher CVPA score ($F(2, 114) = 3.49$, $p < .05$) such that the product in red ($M = 5.55$, $SD = 1.27$) was seen as tastier than the product in either white ($M = 5.27$, $SD = 1.90$) or green ($M = 5.33$, $SD = 2.08$). This contrast was not significant for individuals with lower CVPA scores ($p = .11$).

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Colors can elicit a myriad of physiological, emotional, and cognitive reactions (Valdez and Mehrabian 1994), and the use of color influences consumer perceptions regarding a product or a brand (see Labrecque, Patrick, and Milne 2013). In fact, research indicates that color can influence judgments such as those concerning ethical views (De Boek, Pandhare, and Van Kenhove 2013; Sundar and Kellaris 2015a, 2015b). Specifically in the realm of food and beverages, studies reveal that color has a major influence in taste perceptions and other sensory characteristics (e.g., sweetness, saltiness, flavor identification and intensity, aroma), thus affecting food acceptability, choice, and preference (Clvdsdale, 1993).

However, when it comes to the use of color and associations with health, we have limited understanding of the effects of color cues used in packaging. One area of inquiry indicates that brightness can contribute to health inferences and at the same time influence perceptions of taste negatively (Mai, Symank, and Seeborg-Elyerfeldt 2016). Such research is consistent with research in non-food related areas that inform health inferences (Hammond et al. 2009; Hammond and Parkinson 2009; Bansal-Travers et al. 2011). Nonetheless, we know that in addition to brightness, hue and saturation are other attributes of color that influence not only consumer perception but also, more importantly, the inferences consumers make. We situate the current research on the effects of hue on spontaneous health inferences consumers make in this context.

In the current paper, we examine the potential role of hues adopted in packaging that influence health and taste associations surrounding a product. Specifically, by investigating the role of individual differences of centrality of visual product aesthetics (CVPA), we demonstrate that using visual information regarding a product influences the effect of color on taste inferences. Surprisingly, this individual difference influences the effect of color on health inferences in a rather contradictory manner. In addition, we present the theoretical implications, strategic implications in advertising, and areas of focus for future research.

Conceptual Framework

De Boek, Pandhare, and van Kenhove (2013) note that colors are associated with valence of emotion. Specifically, colors such as red and green often are paired, as green conveys positive emotions and approach responses, whereas red promotes negative emotions and avoidance responses (De Boek et al. 2013). When it comes to judgments regarding health, there is evidence that color can affect consumer inferences (Mai, Symank, and Seeborg-Elyerfeldt 2016). Mai and colleagues observed that one aspect of color, namely brightness, has the potential to inform spontaneous inferences surrounding health. Lighter colors, they noted, cue a perception of the healthiness of a product.

Nevertheless, we know that color has different facets that influence consumer perceptions. Color is a product of three aspects: hue, brightness, and saturation (Sundar and Kellaris 2015b). Hue is a prominent attribute of color experience, and the three basic hues are red, blue, and yellow. This quality of a color corresponds to the distinctive, discernable wavelength (Zelanski and Fisher 1989, p. 16). Brightness (also referred to as lightness or value) is how light or dark a color is perceived. In technical terms, lightness is defined by the perceived brightness of a non-white object compared to a perfectly white one, and it can be measured with a photometer, which simulates the perception of human vision (Kuehn 2013, p. 39). The term “value” also is used to indicate this attribute: the lighter or darker the color, the higher or lower the value. Saturation, or chroma, indicates how far a color is from gray of the same lightness—it is the

Global Evaluations of Taste. An ANCOVA with color was conducted, and a composite CVPA score predicting global evaluations of taste ($n = 93$) was calculated. There was a main effect of color ($F(2, 114) = 4.66, p < .01$) such that the product packaged in red was seen as significantly tastier ($M = 5.60, SD = 1.21$) than either the product with white packaging ($M = 5.15, SD = 1.29$) or green packaging ($M = 5.15, SD = 1.32$). This was qualified by a significant interaction of packaging color and CVPA score ($F(2, 114) = 4.66, p < .01$). A spotlight analysis indicated that participants were influenced more by the effects of color used in packaging when they had a higher CVPA score ($F(2, 114) = 5.21, p < .01$), such that the product in red ($M = 5.95, SD = 1.27$) was seen as tastier than the product in either white ($M = 5.27, SD = 1.95$) or green ($M = 3.00, SD = 1.73$). This contrast was not significant for individuals with lower CVPA scores ($p = .19$).

Discussion

Generally, we found support for our hypothesis predicting the influence of hue of packaging on taste perception. Results showed that participants perceived chocolate with red packaging as tastier than the chocolate with green or white packaging. This also was true for global evaluations of taste such that the chocolate packaged in red was seen as tastier than the chocolate packaged in white or green. In addition, the spotlight analyses showed that participants with higher CVPA scores are more likely to be influenced by the color of packaging than individuals with lower CVPA scores. That is, people with higher CVPA scores indicated that the product with red packaging was tastier than the product with white or green packaging, while people with lower CVPA scores did not. Therefore, we found a moderating role of individual differences of CVPA.

In this sense, Study 1 provides initial evidence of the relationship between hue and taste perceptions: red packaging makes individuals perceive the product as tastier. This result is consistent with previous findings of a strong relationship between red and a sweet flavor (Koch and Koch 2003). In Study 2, described in the section that follows, we examined the influence of hue on health perceptions.

Study 2

The purpose of Study 2 was to examine the effect of color on the health perceptions of the product. In addition, we were interested in evaluating the effect of the individual difference of CVPA on consumer perceptions.

Method

Participants, Design, and Procedure. Participants ($N = 160$; 41.9% female, $M_{age} = 35.96$) were recruited through an online panel and participated in the study in exchange for monetary compensation. Participants were randomly assigned to one of two conditions (package color: red vs. green) in a between-subjects experiment. The experiment was conducted under the guise of a new product launch to gauge consumer interest in the product.

Procedures and Dependent Measures

The stimuli used in this study were similar to those used in the pilot study. Participants were shown an image of a new brand, Bubble Cola, that corresponded to their randomly assigned condition. They were asked to rate the healthiness of the food product (unanchored: very unhealthy/very healthy; not very important to a healthy diet/extremely important to a healthy diet; not very nutritious/extremely nutritious; Ma, Alkawadi, and Grewal 2013). Following this, perceptions of health contributions of the food product were captured on two items (anchored: help me stay fit/does not help me stay fit; helps/does not help me stay slim; adapted from Mai, Symmank, and Seeberg-Elverfeldt 2016). In addition to capturing product-level inferences, healthiness perceptions of the brand were also captured. Following this, and similar to Study 1, the measure of the CVPA and demographic information were captured.

Results

Healthiness Perceptions of the Product. An ANCOVA with color was conducted, and a composite CVPA score ($n = 95$) was calculated to predict perceptions of healthiness ($n = 94$). There was a main effect of both colors ($F(1, 156) = 5.42, p < .05$) such that the product packaged in green was seen as significantly healthier ($M = 2.10, SD = 1.35$) than the product in red packaging ($M = 1.80, SD = 1.27$). In addition, the main effect of CVPA score was significant ($F(1, 156) = 5.39, p < .05$). This was qualified by a significant interaction between packaging color and CVPA score ($F(1, 156) = 4.25, p < .05$). A spotlight analysis indicated that, consistent with Study 1, the effect of color persisted only for individuals with a higher CVPA score ($F(1, 156) = 6.19, p < .01$). However, we found that

the product in red was seen as healthier ($M = 3.00, SD = 2.26$) than the product in green ($M = 1.48, SD = .76$). This contrast was not significant for individuals with lower CVPA scores ($p = .46$).

Health Contributions of the Product. An ANCOVA with color was conducted, and a composite CVPA score predicting health contributions of the product ($n = 98$) was calculated. There was a main effect of both colors ($F(1, 156) = 6.67, p < .01$) such that the product packaged in green was seen as significantly contributing to better health ($M = 2.24, SD = 1.58$) in comparison to that in the red packaging ($M = 1.87, SD = 1.46$). Moreover, the main effect of CVPA score was significant ($F(1, 156) = 8.34, p < .001$). This was qualified by a significant interaction between packaging color and CVPA score ($F(1, 156) = 5.29, p < .05$). A spotlight analysis indicated that the effect of color persisted only for individuals with higher CVPA scores ($F(1, 156) = 4.19, p < .05$), with the product in red seen as healthier ($M = 3.40, SD = 2.48$) than the product in green ($M = 1.94, SD = 1.50$). This contrast was not significant for individuals with lower CVPA scores ($p = .49$).

Healthiness Perceptions of the Brand. An ANCOVA with color was conducted, and a composite CVPA score was calculated on perceptions of brand healthiness ($n = 94$). There was a main effect of both colors ($F(1, 156) = 7.33, p < .01$) such that the brand with the green packaging was seen as significantly healthier ($M = 2.25, SD = 1.55$) than the brand with the red packaging ($M = 1.95, SD = 1.49$). Furthermore, the main effect of CVPA score was significant ($F(1, 156) = 6.70, p < .01$). This was qualified by a significant interaction of packaging color with CVPA score ($F(1, 156) = 6.32, p < .01$). A spotlight analysis revealed that, once again, the effect of color persisted only for individuals with higher CVPA scores ($F(1, 156) = 4.19, p < .05$), with the brand with the red packaging seen as healthier ($M = 3.40, SD = 2.48$) than the brand with the green packaging ($M = 1.94, SD = 1.50$). This contrast was not significant for individuals with lower CVPA scores ($p = .49$).

Discussion

From the results, we found support for our hypothesis predicting the influence of hue of packing on health perceptions: green packaging will make people view a product as healthier. Consistent with the results obtained in the pilot study, the main effects showed that participants perceived the new brand of cola with green packaging as healthier than the cola with red packaging. Likewise, this was true for brand-level health perceptions such that the brand of cola packaged in green was seen as healthier than the brand of cola packaged in red.

However, this effect was reversed when the individual difference of CVPA was considered. Spotlight analyses showed that participants with higher CVPA scores indicated that the cola with red packaging was healthier than the cola with green packaging, and this effect did not appear for participants with lower CVPA scores. What this suggests is that rather than intensify the effect of color, high CVPA scores meant individuals were inclined to think of the red hue as healthier. This finding needs further investigation. While previous research demonstrated that having green product labels can make people perceive products as healthier than those with red labels (Schuldt 2013), our results show that individual differences such as CVPA can moderate the effect of green packaging. We discuss our findings and their implications in the section that follows.

General Discussion

The results of the three studies provide strong support for the relationship between hue and taste and health inferences. In the pilot study, we used two packaging options for a new brand of cola as our stimuli and demonstrated that people generally consider products in green packaging as a healthier option than products in red packaging. In terms of taste inferences, participants showed that they consider products in red packaging tastier than products in green packaging. Study 1 replicated the findings of the pilot study in that participants perceived the chocolate with red packaging as tastier than the chocolate with green or white packaging. This held true for global evaluations of taste. In addition, we found that only the participants with higher CVPA scores viewed products with red packaging as tastier than the products with white or green packaging. Lastly, in Study 2, we used the same stimuli as in the pilot study and demonstrated that participants generally perceived green packaging as healthier. However, on both product and brand levels, participants with higher CVPA scores viewed the cola with red packaging as healthier than the cola with green packaging, and this effect did not occur in participants with lower CVPA scores.

Theoretical Contribution

Previous research on color has shown that colors have numerous effects on human physiology, emotion, and cognition. Nevertheless, the link between these physiological, emotional, and cognitive effects of colors on consumers

remains unknown. Using semantic network theory, we explained how consumers make health-related inferences based on visual information obtained from packaging on both product and brand level.

Our findings can contribute to the literature by showing that red is associated with taste perceptions and green with healthiness perceptions. In addition to the research showing strong associations between color, meanings, and symbolizations (Elliot and Maier 2007; Frank and Gilovich 1988; Labrecque and Milne 2012; Sherman and Clore 2009), results from our study demonstrate that certain colors (e.g., red and green) are strongly associated with perceptions of taste and healthiness.

Furthermore, our research extends the research on individual differences of CVPA in that we demonstrated that CVPA intensifies the effect of color on taste inferences and plays a moderating role in healthiness inferences. Considering that CVPA is the level of importance that individuals give to design, our findings in Study 2 provide evidence that general associations between color and inference may not always work.

From the standpoint of color social semantics (Kress and van Leeuwen 2002), there are three main approaches to the meaning of color: color symbolism, color naturalism, and color as affect and effect (van Leeuwen 2011, p. 15). Color naturalism can help us to understand the green association with health and, to an extent, with numerous positive aspects of the naturalness concept, such as "acceptable," "benign," "safe," and "wholesome" (Nuffield Council on Bioethics 2015).

From a naturalistic point of view, green could have initially received these meanings not by cultural conventions or rules (as is currently the case) but by way of evoking and replicating the world as it appears to the eye: forests and fields, vegetables, and some fruits are green. Moreover, extending the idea to comprehend the association of red with tastier foods, various tasty fruits are red and orange-red when ripe and best to be eaten.

Managerial Implications

The studies have shown that the use of green is an efficient way of conveying health perceptions about a product or a brand. Nevertheless, companies should be cautious about the indiscriminate use of green as a healthiness marker on brand identity elements such as logos, packages, and advertising, which can cause mistrust in consumers' minds: they will soon become skeptical, regardless of the healthy qualities of a product. In this regard, Coke is already being accused of "health washing" in reference to the greenwashing practice of the "cynical use of environmental themes to whitewash corporate misbehavior" (Greenpeace 2008). Coke Life contains fewer calories than regular Coke, but it is still a soft drink with no nutritional benefits that contains an adult's full recommended daily allowance of sugar—this, it is not really a healthy product (Dean 2015).

Another important implication for brand managers, designers, and advertising agencies pertains to the different results of green association within subjects with different CVPA scores. As green does not have the same connotations of healthiness for all subjects, it may be interesting to create brand materials and campaigns combining the color green with other visual elements such as splashes with text, seals, icons, and photographs in addition to textual and audiovisual resources. This is even more pertinent in the case of products not strongly connected to the category of healthy products (i.e., hedonic products) and disruptive launches.

Future Research

This research has shown consumer responses to hypothetical brand packaging. Future studies could investigate the effects of green color on valuable and strong-equity brands, an especially relevant matter for healthy (re)positioning challenges, such as the one McDonald's is experiencing (Mourdoukouta 2013).

Similarly, future studies could verify different demographics and characteristics of study subjects (e.g., education, income, culture). For example, considering that the same color, or combination of colors, can have antithetical connotations even at the same time and place (Gage 1999, p. 34), cross-cultural studies discerning the cultural influences of the meaning of colors could be useful. For example, how would green and red affect Eastern consumers? In addition, individual differences such as CVPA may be examined in future as contingency variables moderating health or taste perceptions in different categories (e.g., luxury, hedonistic, hi-tech products).

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