The promise of color in marketing: use, applications, tips and neuromarketing

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ABSTRACT

In our daily lives, we are constantly exposed to many stimuli, some of which influence our behavior without full awareness. One of these stimuli is color. In particular, our purchasing decisions are guided by individual color preferences. Color preferences influence various daily tasks. For example, people make decisions within 90 s of their first interaction with products, and approximately 60-90% of the evaluation of a product is based solely on its color properties. However, these types of behavior often escape consumer awareness, so marketing may need the help of neuroscience. Thus, it is necessary to place color preferences at the center of marketing strategies. However, few attempts have been made to unify the literature on the contribution of different color characteristics and the role of consumer characteristics. This article reviews scholarly articles that focus on the use of color in marketing, identifying salient features and highlighting limitations. Practical implications and future directions for this area of research are outlined, with a particular interest in neuromarketing. The results obtained will be useful for both basic research and companies that want to operate consciously in the use of color.

1.Introduction

It is now known that people make decisions within 90 s of their first interaction with a product. Approximately 62-90% of the evaluation is based on color alone (Singh, 2006); some of these decisions are emotion-driven and, therefore, escape consumer awareness (Alsharif et al., 2021). In this particular case, one needs neuromarketing techniques, defined as the application of neuroscientific methods to analyze and understand human behavior in relation to markets and marketing exchanges (Lee et al., 2007). Optimizing the use of color in marketing is of paramount importance today, and several techniques have been employed to more accurately investigate the influence of color on consumer choices (Shaw & Bagozzi, 2018). To date, defining the term "color," giving it a definition acceptable to all stakeholders, is a very difficult challenge. Over time, color has been defined in a myriad of ways, and it is fair to say that no universal and definitive definition has yet emerged (Kuehni, 2012). To fully define or understand the phenomenon of color, it is important to distinguish two characteristics: the first relates to the physical nature of the stimulus encountered and the second relates to the response of the individual encountering the color (Hunt, 1978). In the latter case, color can be described as a perceptual phenomenon present in everyday life, capable of influencing mood and behavior based on the emotions it arouses (Babin et al., 2003; Yildirim et al., 2011). At this point, the study of color preferences is crucial for the vast majority of "social subjects" (Plack & Shick, 1974). For example, the influence of color on purchasing behavior has been extensively studied (Bellizzi & Hite 1992). Most research to date has focused on psychophysical descriptions, thus trying to describe how we perceive a given color by explaining its preference through wavelengths (Camgöz et al., 2002). In addition, the lack of scientific publications on the use of color in marketing is related to the fact that research and results in this field have retained the preservation of individual companies to gain an economic advantage over competitors (Bellizzi & Hite, 1992). More recently, several studies have sought to investigate individual differences in color preferences based on gender (Wilms & Oberfeld, 2018) and context (Palmer & Schloss, 2010). Therefore, it is of paramount importance to know the color variables well, because in marketing, an inappropriate choice of product or packaging color can lead to strategic failure (Czinkota & Ricks, 1983), in which context and target culture play an important role (Elliot & Mayer, 2012). However, to date, there have been mixed results on the contribution of color preference in marketing.

The objective of this paper is to review the available literature and classify items according to color and consumer characteristics used as independent variables, as well as according to the area of application (e.g., branding, packaging, etc.). The goal of this study is to show how consumer color preference is a key factor in marketing strategies, as we believe it is one of the most influential variables to be considered in this field, showing how in discussions such as marketing alone as a survey tool is not enough to identify all kinds of purchase decisions, which is because neuromarketing has often been discussed recently.

2.Theoretical Background on Color Preference

In the past, studies on color preference, or theories derived from them, have been described as confusing and contradictory (McManus et al., 1981). One of the first theories on the argument was proposed by Humphrey (1976) who claimed that color preferences derive from signals that colors transmit to organisms in nature and that their preferences come from signals that we define as "approaching" (for example, the colors of a flower attracting pollinating insects) or "avoiding" (for example, the colors of a poisonous toad that discourages predators) (Humphrey, 1976). Then, color preference is expressed through the mechanism of "natural selection". Hurlbert and Ling (2007) reinterpreted the theory proposed by Humphrey (1976), adding that color preference is based on innate behavioral adaptations (Hurlbert & Ling, 2007). They proposed an "innatistic" theory, suggesting that color preference is related to the human visual system as weightings on cone-opponent neural responses arising from evolutionary selection. According to the authors, the color vision system was adapted to improve performance on an evolutionarily important behavioral task, specifically highlighting gender differences in color preference (Ling et al., 2006). Ou et al. (2004) proposed an account based on the relationship between color and emotions, which they defined as "feelings evoked by both colors or color combinations' (Ou et al., 2004). Color emotions can be causally linked to color preferences if colors are preferred to the extent that the visualization of colored objects produces emotions (positive or negative) in the observer. The proposed theory considers gender differences in color preferences. The so-called ecological valence theory (EVT) is a coherent and complete theory of human color preferences (Palmer & Schloss, 2010). EVT incorporates previously cited theories but with some differences. Consistent with Humphrey 's (1976) and Hurlbert and Ling's (2007) ideas, EVT is based on the premise that human color preferences are fundamentally adaptive. This ecological heuristic is adaptable to the concept of survival, where the color provides a good/bad index of a given object, which makes the survival of the individual

easier. While Hurlbert and Ling (2007) refer to an evolutionary timescale (where genetic adaptations are inherited through generations), EVT seeks to incorporate the proposed theories, extending the range of potentially adaptive mechanisms to include individual organisms learning color preferences on an ontogenetic timescale. EVT also connects to emotion-based theory (Ou et al., 2004) by showing how environmental feedback is necessary for learning-based heuristics, and that color preferences are provided by the emotional results of color-relevant experiences throughout a person's life. EVT implies that the average preference for any color on a representative sample of people should be largely determined by their average effective responses to their corresponding colored objects. The more enjoyment and positive the effect that an individual receives from experiences with objects of a given color, the more the person will tend to appreciate that color. Therefore, people should be attracted by colors associated with salient objects that generally elicit positive emotional reactions, and should reject colors associated with salient objects that generally elicit negative reactions. To date, although different theories have been proposed to explain human color preferences, as well as the impact of a specific color on individual preferences and choices, existing controversies in the literature prevent the efficient application of knowledge about color preferences in marketing strategies (Schloss & Palmer, 2011).

The controversies in this field of studies are mainly due to the complexity of two aspects: the color and its properties on one hand (Bortolotti et al., 2022; Cohen, 2004) and the characteristics of the human being (Schloss 2015), such as demographic differences (gender and age) and cultural differences, little considered until a few years ago, on the other hand (Madden et al., 2000). As previous reviews have shown (Labrecque et al., 2010), for a long time, studies in this field have focused only on color hue, excluding other physical characteristics such as lightness. As seen in another review paper (Elliot, 2015), there are different difficulties and limitations in studies on color and psychological functioning, especially for the manipulation of color stimuli. The objective of this review is to demonstrate the importance of color research in marketing and consumer behavior, providing a new perspective by integrating previous theories regarding color preference. As a starting point, the extant literature is reviewed to generate a better understanding of how consumers perceive color and its influence on decision-making. Given many processes and the number of characteristics related to color, it is not difficult to believe that there is a huge variance in the types of experimental protocols and variables considered. To better understand how to use color in marketing it is necessary to consider

different variables, both individual and color-related characteristics; these variables must be considered because they significantly influence the preference for a given color. The variables that influence this process are described in detail below.

2.1. Physiology of Color perception

The perceptual process involves the subjective processing of a stimulus; in short, color exists only in the mind; that is, it is a highly subjective experience that creates strong individual differences (Helm & Tucker, 1962). This can be described as a perceptive, highly subjective response to light entering the eye directly from self-luminous light sources, or indirectly from light reflected by illuminated objects (Brainard & Maloney, 2011). Without going into too much detail, color vision requires the presence of at least two types of photoreceptors (cones and rods) with different spectral sensitivities; more precisely, cones, which are photoreceptors that distinguish in three categories, S (short) cones that are particularly sensitive to short wavelengths, M (medium) cones that are particularly sensitive to wavelength averages, and L (long) cones, sensitive to long wavelengths. Each color can be described in terms of three main attributes: hue, saturation, and lightness (Wong 2010). Hue is identified as the color family or name of the color (e.g., red, green, purple), which is a measure of a color's purity or the intensity or weakness of the color, and lightness is the tint (darkness) or hue (clarity) of a perceived color (Jagnow, 2010). The perceptual process, in all its complexities, influences affect, cognition, and behavior, but the reverse is also true; that is, affective, cognitive, and behavioral states can influence the perception of color (Elliot & Maier, 2012).

2.2. Color and culture

One of the variables that strongly influences the preference for a given color, also modulating the meanings it carries, is culture of reference (Taylor et al., 2013). Culture is the foundation of our lives and lifestyles. The behavior of human beings has a direct impact and reflects their cultural aspects of human beings. Asian, Middle Eastern, European, and American cultures have rich values that make people living in those counties unique to each other. These cultures retain their beliefs and associations with colors to show the value of each culture individually, which makes the preference for color a culture-dependent factor and not a universal factor (Taylor et al., 2013), although there may be some similarities (Yokosawa et al., 2016). In some cultures, religion plays a significant role as a factor influencing culture (Soma and Saito 1997). It can be concluded that,

currently, the use of color in marketing is not universal because of the individual variables underlying culture and color preference. To better understand the cultural "macro-category" we should study in detail other individual characteristics, such as age and gender because within the same culture there are individual differences related to color preference and make it a highly subjective process.

2.2 *Color and gender*

In marketing, attention must be paid to gender differences in preferences for certain colors. In this regard, several studies have been carried out that have found empirical evidence, albeit with some differences between them (Silver et al., 1988; Ellis & Ficek, 2001). In this field, one of the first major discoveries was that females showed a greater preference for warm colors (red, pink, yellow, etc.) than males, and males showed a greater preference for cold colors (blue, green, etc.) than females (Helson & Lansford, 1970). More recent works by Hurlbert and Ling (2007) showed that females prefer reddish shades and do not like greenish-yellow tones significantly more than males do. These gender differences in shade preference could be explained by cultural differences (Al-Rasheed 2015). A very relevant study has obtained differences related to the gender of the participants in their experiment, but more importantly, note that they tried to identify differences in color preference in sexual orientation, and did not find significant differences between heterosexual and homosexual/bisexual of both sexes. In other words, homosexual/bisexual males and females essentially showed the same color preference configuration as their heterosexual counterparts. These studies support the idea of Ling and Hurlbert's (2007) claim of a universal sex difference, which means that women universally prefer redder shades than the background. However, today, there is still a long way to define a universal color preference and apply it to marketing without damaging the company.

2.3 *Color and age*

Contextual factors significantly influence older consumers' decision-making (Yoon et al., 2009). In this field, different studies have confirmed a change in color preference during aging (Gaines & Little, 1975). Different results suggest that color preference changes during adulthood (Dittmar, 2001). These changes seem to be a reversal of the trend reported in literature for children. The change in color preference in the elderly could be attributed to alterations in color discrimination and visual images, yellowing of the lens, and decreased function of the blue cone mechanism with aging. Other results. Jain et al. (2010) showed that the color preference of an older person is different from that a of younger person. The determinants of color preference were the attributes of chroma and lightness in the older and younger groups, respectively. In this field of study, marketing strategies should be targeted at a specific age, given the difference in color preferences throughout life.

2.4 *Color and context*

In this case "context" means the entire space, place, and combination with which the color is associated. What is interesting in the field of marketing is how to use the color in the most "universal" way possible to obtain a purchase, as it is well known that when the same color is used in different contexts, the perception of that color can change radically. This aspect has been studied very carefully by psychologists, as in the case of the "theory of color in context" (Elliot, 2015; Elliot & Maier, 2014), which is designed to be a broad model of color and psychological functioning that can be used to explain and predict the relationships between color, cognition, and behavior (Elliot & Maier, 2007). The theory of color in context is based on six main assumptions: (1) color has a meaning, (2) color vision influences psychological functioning, (3) color effects are automatic, (4) color meanings (and related responses) have two sources: learning and biology, (5) the relationship between perception and color influences cognition and behavior that are reciprocally interrelated, and (6) color meanings and effects are context-specific. This is the most accredited and comprehensive theory that can be applied to marketing.

2.5 *Color association*

Color and its association with products act on human bodies, minds, and emotions, influence mood and feelings, trigger deep and subtle responses at the subconscious level of the consumer, trigger both top-down and bottom-up attention processes, influence thinking, stimulate action, and provoke reactions (Park & Smith, 1989). Color can irritate or soothe, increase blood flow pressure or suppress appetite, and suppress appetite. It has been found that satisfying consumers' color expectations are beneficial to brand quality by increasing processing fluidity and facilitating product category identification (Labrecque & Milne, 2012). This creates color-product expectations in the consumer's mind, which I would dare to index as "congruent category" and "incongruous category". The colors in packaging can conform to the intuitive meaning that color has for a given product category. According to the theory of categorization, individuals tend to organize their external environment based on their previous experiences (Knapp & Anderson, 1984; Rehder, 1986). That is, based on knowledge accumulated within a given conceptual domain, people form cognitive categories

over time or sets of expectations, which are then used to determine how future experiences will be learned (Sujan & Bettman, 1989).

2.6 Color in Marketing

As we now know, color preference is an automatic mechanism (Kareklas et al., 2014), even if it is very complex to explain, especially when all the variables involved are taken into account, or more simply when several colors are used in opposition to each other (Deng et al., 2010). Colors and their use seem to be very controversial and certainly not universal (Elliot, 2015; Taylor et al., 2013). On these points, various authors have tried to devise a theory, starting from Newton and Gothe, who were among the first to propose the "chromatic circle" (Vendler, 1995). Since then, chromatic circles have been used as a tool to understand chromatic relations and create harmonious combinations of colors. The chromatic circle, which has been the basis of various studies (Camgöz et al., 2002), clearly shows the distinction between warm and cold colors, which are complementary and similar. This is useful nowadays in the world of marketing, as will both color preference and the color used in different fields of marketing applications. The lack of scientific results related to color in the context of marketing has given rise to several speculations, including the private use of results that are not disclosed by many companies (Bellizzi & Hite, 1992). There have been some advances in research, although from companies in the color consulting industry, although in recent years there has been an increase in research in this field. Although the nature of the experiments is not entirely scientific, the results seem to be generally shared by marketing professionals, which makes them applicable. Some applications of color in marketing have been reviewed according to the guidelines of the PRISMA model (Page et al., 2020). Different inclusion and exclusion criteria were used for article selection (Figure 1).
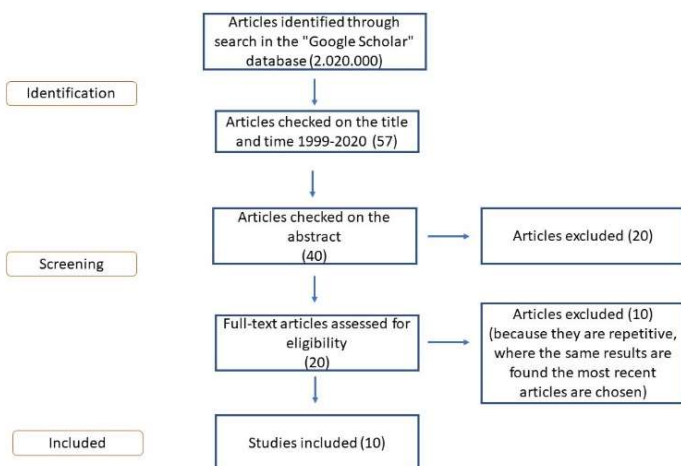

Figure 1. Inclusion and exclusion criteria

The selection of the articles was made by Google Scholar, being the source with the most results obtained, the selected articles have passed three phases; the first phase "Identification," where the articles containing the keywords "Color in Marketing" are selected, a search that is refined by selecting the keywords in the title and narrowing the publication period from 1999 to 2021. The second phase of "Screening," provides for the selection of articles based on the relevance of the work to the proposed review, in two ways, first, by reading the abstract of the reviewed work, articles that do not meet these parameters or that are unclear are excluded, second, all articles that have passed the first phase are read and will be discussed later (Table 1.); older articles that had a common result obtained from more recent work, articles with repetitions, or unclear were excluded.

Summary Review of major "Color in the Marketing", literature Organized by Area.

Citation	Area	Independent Variables	Dependent Variables	Major Findings
(Chattopadhyay et al., 2002)	Color and Culture	Hue	Products choice	The results of the work suggest that most aspects of color preference are likely to be culturally universal and applicable across cultural groups and marketing contexts.
(Farzan & Alamtalab Poshtiri, 2016)	Color Packaging	Hue	Products choice	The results show that color is the main factor influencing consumer perception and understanding of the concept and effect of colour in consumer behaviour.
(Hunjet & Glogar, 2016)	Color and Brand	Hue	Brand	The results show the combination of color and distinct corporations and brands influences their perceived wealth, authority, social influence and recognition.
(Kauppinen-Räisänen, 2013)	Color and Brand; Packaging	Hue	Color choice	The study contributes to the field in terms of summarizing the existing knowledge and highlights aspects for marketers and managers to consider in their attempts to develop brand identity, and the brand-color correlation.
(Labrecque & Milne, 2012)	Color and Brand	Hue, saturation, value	Brand	The results of the work show how color properties influenced brand personality, the colour matching of the package and the brand personality profile increased purchase intention.
(Lee & Rao, 2010)	Color in store	Hue	Store choice	The results show the difference in trust associated with blue and green, and that store choice is highly correlated with the difference in trust.
(Mohebbi, 2014)	Color and Brand; Packaging	Hue	Products choice	The results are additional evidence that graphics and color play a key role in promoting product sales.
(Park et al., 2017)	Color and Brand	Hue	Brand awareness	The results suggest that the use of colors have a positive effect on consumer purchase intentions if consumers are able to develop familiarity and affection for stores.
(Paulsen, 2020)	Color and Brand	Hue	Brand-emotion	Survey results, show how to determine exactly what emotions consumers feel with each color associated with a brand. Although the sample size was large.
(Tamba-berehoiu et al., 2010)	Color Packaging	Hue	Products choice	The results show that companies with higher sales used fewer blue-based colors in the color composition of their packaging, and also smaller amounts of green. The colors that were least affected by turnover value were red-based colors.

Note: this table and related discussion in the text summarizes research in which color is considered the focal variable. This table and discussion are not meant to be exhaustive of all research that may include color as a minor variable of interest.

Table 1. Summary Review of major "Color in the Marketing", literature organized by area.

2.7 Color used in store

For "color used in-store" refers to two categories of approaches related to marketing, the first is packaging and the second is the colors used in-store design. The color of packaging attracts consumers' attention, creates aesthetic experiences, and gives symbolic value to a

brand (Garber et al., 2000; Kauppinen-Räisänen & Luomala, 2010; Labrecque & Milne, 2012). Product packaging is an essential component for communicating the meaning of the brand to consumers. Especially at the time of purchase, packaging has been identified as the most important vehicle for communication (Underwood & Klein, 2002; Van Rompay et al., 2014). Many researchers in the field (Veryzer & Hutchinson, 1998) argue that color is an essential feature of packaging design and a prominent component of the visual identity of the product (Garber et al., 2000; Labrecque & Milne, 2012). Similarly, the literature indicates that consumer categories' perceptions incorporate specific expectations about the color options that branded packages typically employ within a given category (Bottomley & Doyle, 2006; Labrecque & Milne, 2012). This trend towards categorization creates a norm for the use of color in packaging. For the use of colors in-store design several studies have examined the use of color in a store and identified how it can affect the customer's stay in the store and the purchase of products. Babin et al. (2003) suggested that color and lighting are important factors in purchasing intention. They applied two colors, blue (450 nm) and orange (590 nm), and two light sources (soft and bright). A blue interior was associated with more favorable ratings and greater purchasing intentions, but the use of soft lights with an orange interior canceled out its negative effects, and perceived price equity was higher. Changes in the physical characteristics of a store are related to consumers' mood, perceptions, and buying time. Crowley (1993) stated that color affects both the affectivity and excitement of consumers. There is a U-shaped relationship between excitement and wavelength, where extreme wavelengths evoke greater excitement. Barli and colleagues show how color influences the time spent in a store and influences purchasing behavior; for example, green color influences the time spent in the store and has positive effects on the purchase of the product (Barli et al., 2012). We have just seen how color is widely used and studied these two aspects of "color used in-store," but the use of color in marketing is not limited to this.

2.8 *Color and brand*

According to Hsieh et al. (2004), a successful brand image allows consumers to identify the needs that the brand meets and differentiates the brand from its competitors, and consequently increases the likelihood that consumers will buy the brand". are important in the process of building a brand for the first time. Companies use a brand to create an experience and association, and color allows consumers to identify their corporate identities. Some companies now live off their colors; an important example is Coca-Cola, just thinking of Coca-

Cola and we immediately think of red, or the opposite, if we think of red and we have to associate it with a brand in an almost automatic way we associate it with the famous brand mentioned above; this is just an example of how color can leave a positive memory on a brand (Caivano & López, 2007).

2.9 *Color and trend*

One of the most difficult aspects to predict for a company is certainly the fashion trend; it is often associated with colors that become boring or obsolete with the passage of time (Blumer, 2017). Predicting color preference for a specific product is crucial for companies dealing with trends or time-dependent consumer products. In this regard, different models have been proposed that attempt to anticipate a preference for a given color. The first model, "Autoregressive Integrated Moving Average" (ARIMA), is a method based on the integration of self-regression and moving averages (Makridakis & Hibon, 1997). Second, an artificial neural network (ANN) model is a computational model. It imitates the structure and function of biological neural networks (Gurney et al. 1997). Each ANN consists of an interconnected group of artificial neurons that can automatically adapt their structure and parameters to learn data such that the ANN can model sophisticated data relationships by mapping the input data to the output data. the last one The Extreme Learning Machine (ELM) (Huang et al., 2004) is a variation of ANN. In a typical three-layer feed-forward backpropagation ANN, the parameters in the structure are tuned in the learning process. This model (thanks to the creation of an algorithm) is believed to be much faster than ANN. Given the complexity and unpredictability of fashion trends in the preference for a given color, in this field, the data until now appear very confused.

3. Concluding Remarks

The results obtained from various studies in this field are very controversial; some authors believe that human responses to colors are stable (Amsteus et al., 2015). Therefore, they are applicable to everyone, while in reality, several individual differences make the use of color in marketing a very delicate point and not to be underestimated, and the responses and preferences to colors vary depending on culture, gender, and age (Elliot, 2015). The problem with research in the field of color in the context of marketing is that the results obtained from scientific work when applied in a more ecological and "real" context are often not confirmed or even denied. Any company before launching a product, opening a store, and proposing a new brand should implement and conclude research related to the choice of colors and

analyze the preferences of its consumers according to age, gender, and culture of interest; this should be done before launching a product because the wrong choice of color can have a negative and disastrous impact on the image of the product and the company. Let us try to summarize all of these points in Figure.2 to make graphically clear and simple reactions between the various aspects of color and the various marketing contexts proposed.
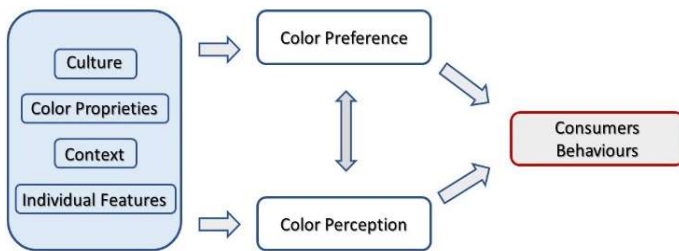

Figure 2. "Hypothetical model"

One could think of "universalization of color preferences" in global/international marketing strategies, in fact in the historical era in which we find ourselves with the reduction of territorial barriers and progress in communications, both through social networks and television programs, should facilitate the homogenization of the use of colors throughout the world; making it easier for companies to select the most effective color. This hypothesis could be a double-edged sword for companies by making color marketing strategies simpler globally on the one hand, but on the other hand, it would make all "competing" companies similar by depersonalizing them. As this is a hypothesis, the extent to which color can become standard for a given geographical point depends on how much companies are striving to adopt such strategies during this period, and to what extent. It is hoped that this general framework will clarify crucial points for future interventions in this field.

4. Neuromarketing and future research direction

Having shown the weaknesses regarding the difficulty of using color as a stimulus (especially in research on color and psychological functioning) we can see how applying them to marketing and the choices made by a potential consumer depends on many variables, and makes the whole thing very complex. The development of new technologies in the production and delivery of color (e.g., increasing of colors, digital color screens, and lower production costs) have altered the role that color plays in our lives, thanks to the variety of subjects and researchers from various fields, such as physicists, psychologists, and economists (just to name a few) are

going to meet a more global vision of "color", which for now is still in its infancy but sees before it a great margin of development; this is also thanks to neuroimaging techniques that are very useful for the understanding of human behavior. Another interesting approach could be to use a multisensory approach, as shopping experiences are influenced by different senses in combination (Elder & Krishna, 2021). A "modern change" that must be examined with updated research. Undoubtedly, color research is critical to the advancement of marketing and presents a promising area of growth for marketing practices. From an innovative marketing perspective, the use of color in marketing strategies can be significantly improved and optimized with the help of neuromarketing. Neuromarketing is a relatively new and rapidly growing field of study that combines the disciplines of neuroscience, psychology, and marketing to understand how consumers process and respond to marketing stimuli. It uses various tools and techniques, such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), eye-tracking, and skin conductance response (SCR), to measure and analyze the neural and physiological responses of consumers to marketing messages. One of the key benefits of neuromarketing is that it provides insight into consumer behavior that goes beyond self-reported data and conscious responses, allowing marketers to gain a deeper understanding of the unconscious drivers of consumer behavior, such as emotions and motivations. This can help brands better understand the impact of color on consumer perception and decision-making, and make more informed decisions on color selection and placement in marketing campaigns. For example, neuromarketing research has shown that different colors can evoke different emotions and stimulate different parts of the brain, which can influence consumer perception and behavior. Red, for example, has been shown to stimulate the brain's attention center and evoke feelings of excitement and energy, while blue is often associated with calmness and stability. By understanding the emotional impact of different colors, brands can select the most appropriate colors for their marketing campaigns to create the desired emotional response in consumers.

In conclusion, neuromarketing offers a valuable tool for marketers looking to understand and optimize the impact of color in marketing. By utilizing the latest advancements in psychology and neuroscience, neuromarketing can provide a more comprehensive and in-depth understanding of consumer behavior, allowing brands to make informed decisions on color selection and placement, resulting in more effective and impactful marketing campaigns.

5. Conflict of interest declaration

Nothing to declare

6. Funding source declaration

Nothing to declare

7. Short biography of the authors

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