PSYCHOLOGICAL AND GRAPHIC ASPECTS OF COLORS: INFLUENCE AND APPLICATION IN PRODUCT DESIGN

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ABSTRACT

Colors possess extraordinary ability to evoke feelings, memories and even influence the processes of enactment decisions. This interdisciplinary study brings together elements of psychology, the human psyche and art as science. From the soothing embrace of the cold blue color to the energetic liveliness of warm red, each color carries its own psychological weight, capable of shaping our mood and affect the way we interpret the world around us. It all starts when light enters the eye and passes through the photoreceptor cells in the retina, during which refraction occurs, where the magic of color perception happens. The brain then seamlessly integrates these signals, allowing us to perceive colors that make it up visible spectrum. Objects we see around us do not have real color and colors exist, but only as a visual sensation in our brain. The actual color of objects that our brain sees depends on the amount of light that will be received or reflected from the surface of objects. In this exploration of color psychology in this paper I will decode the language of shades, to discover the subtle and profound ways in which color will shape our perceptions and how they influence in decision making.

KEYWORDS

Psychology, graphic design, colors, brand, packaging

1. INTRODUCTION

Color psychology is a fascinating and multilayered field that explores the profound impact that colors can have on human emotions, perceptions and behaviors. Outside of visual stimulation, colors have an extraordinary ability to evoke feelings, memories and even influence decisionmaking processes. This interdisciplinary study combines elements of psychology, human psychology and art as science. From the calming embrace of cold blue to the energetic vibrancy of warm red, each color carries its own psychological weight, capable of shaping our mood and affecting the way we interpret the world around us [4].

Many research done by many psychologists suggests that colors can greatly affect the frame of the mind, behavior and anxiety level [3]. In this study of color psychology, I will try to decode the language of shades, discover the subtle and deep ways in which colors shape our perceptions and how they affect in our decision.

2. PSYCHOLOGICAL POWER OF COLORS

There is a large body of literature on the psychology of color. The research spans more than a century, covers a wide range of interests and exhibits varying degrees of methodological rigor. The topics of investment include: color reactions as functions of personality and psychopathology, physiological reactions to color, color preferences, color effects on emotions, color effects on behavior and reactions to color concepts [11].

Color theory is a field of study that explores how colors communicate with each other and how they can be combined to create aesthetic-pleasant experiences. It covers the principles and guidelines that artists and designers use to make informed decisions about color choices. Single color in isolation may incite preference responses, in actuality colors are rarely viewed in isolation. Color combinations involve more than one color stimulus being perceived simultaneously. This occurrence may evoke visual sensations that differ from those that result from a single color stimulus. Color combinations have not been studied as widely and intensively as colors in isolation [2]. Color harmony refers to the establishment of a pleasant color layout in design, creating a balanced and aesthetically pleasant visual experience [1]. Achieving color harmony involves choosing and combining colors in a cohesive way and improving the overall influence of design.

Branding is one of the most important topics associated with color perceptions and is one of the areas where more attention should be given. So far, there have been numerous attempts to classify consumer responses in different colors. But in reality, the choice of color depends on the personal experiences that the individual translates into specific feelings that is awaken from color. However, there are broader messaging schemes that are associated with color perceptions. In a study called "The Influence of Colors in Marketing", researchers found that 90% of consumers' opinion on the product is based on color [9]. In terms of the role that color plays in branding, the results of another survey show that the relationship between brands and color basically refers to the appropriateness of the given color for a particular brand or whether a particular color is appropriate for what is sold. Another study, called "Exciting Red and Complementary Blue", also confirms how the intention to buy depends on the colors due to the effect they have on the way a brand is perceived, i.e. that colors affect how the consumer looks at the identity of the brand in question. The influence of colors in branding and marketing is significant and can have a deep impact on brand perception, consumer behavior and numerous other aspects of the company. The influence of colors in graphic design extends beyond ordinary aesthetics and plays a key role in message transfer, perception shaping and influence on audience responses. Designers use the psychological and emotional effects of colors to create visually attractive and communicative compositions. In the case of color perception, color is a product of the brain's interpretation of the visual sensory information that it receives [10]. One congenital ability that colors have is to evoke emotions. Warm colors such as red, orange and yellow can create a sense of energy or warmth, while cold colors such as blue and green convey calm, confidence and calm. Colors are also powerful communicators. They can be used to accentuate certain elements, focus the viewer's attention and convey the desired message. The cultural meaning of colors cannot be judged. Different cultures connect colors of different meanings and interpretations. Designers must be careful of these cultural shades, especially when creating designs for global audiences. The choice of colors in graphic design significantly affects accessibility and readability. Designers must take into account the contrast of colors, ensuring that the text is legible on the background. Colors contribute to creating a sense of depth and hierarchy in graphic design. The use of contrasting colors can establish a visual hierarchy, leading the viewer's eye through the elements of design. When highlighting brighter colors in graphic design, designers have the power to control spatial perception in the composition. In an era when designs are viewed on different platforms and devices, maintaining color consistency is

crucial. Designers must make sure that colors are displayed precisely on different screens, paying attention to the use of different color systems and preserving the brand's planned visual impact and identity.

3. GRAPHIC DESIGN IN PRODUCT PACKAGING

Why is Color important? Whether working on a logo, an advertisement, a branding campaign or just a simple business card, the colors your choose are equally as important as the information you include. In design, it is crucial to have a firm understanding on how color will effect the average consumer [8]. The display of open packaging is used in the design process and for easier and more transparent use of paints, squares are made that will contain the colors of the design. Typeface design can be distinguished by universal and typeface-specific characteristics. Universal design characteristics are subjective descriptions of the typeface and include characteristics such as symmetry, activity, and complexity. As such, universal design characteristics are holistic descriptions that rely on perception and could be used to describe a wide variety of stimuli. Typeface-specific design characteristics are graphemic descriptions of the fonts and include characteristics such as short/tall, serial/sans serif, and condensed/extended [5].

Figure 1. Chocolate packaging design

Figure 2 shows both designs and what they would look like if they were applied to real chocolate packaging. As a marketing tool, color attracts consumers and can shape their perceptions. Through color, a brand can establish an effective visual identity, form strong relationships with a target market, and position itself among competitors in the marketplace, as the classic case of Coca-Cola versus Pepsi illustrates [7].

Figure 2. Product packaging

4. COMPARATION, RESULTS AND ANALYSIS

To better understand the essence of this scientific work, I will compare two graphic designs, i.e. packaging for energy chocolate for active energy and healthy energy chocolate. The result in table 1 was obtained on the basis of a survey tested on a certain number of consumers in the markets in Bitola, Macedonia. The fonts used and similar colors are grouped together [6].

Table 1. Comparation of energy and healthy chocolate

Energy chocolate	Healthy chocolate
Emotion	
O Design colors cause a sense of dynamics, energy and increased physical activity. O Energetic yellow, orange and dynamic red colors are bold and picturesque, conveying a sense of enthusiasm and vitality. O Brown is a natural color, reminiscent of earth and soil. In the design of chocolate, this color conveys the natural origin of cocoa grains and the authentic nature of chocolate making processes.	O Colors cause a sense of relaxation, equilibrium and a peaceful state of the brain. O Gentle blue and green colors cause a sense of calm and serenity often associated with nature. O Muted violet color adds a touch of sophistication and introspection, while coffee color can cause a sense of enjoyment and comfort, emphasizing the satisfying qualities of the product.
Target group	
O The product is aimed at active lifestyle individuals who are looking for incentives for physical activity. O The color palette is designed to attract those who associate colors with energy.	O The product is intended for individuals who seek a moment of calm, serenity and stress relief. O The color palette aligns with consumers who prefer a peaceful lifestyle

Branding	
O Thickened and dynamic colors strengthen the brand's identity focused on energy and movement. O Design elements such as sharp angles, chocolate design, background and bold typography convey the message of excitement.	O Gentle and muted colors contribute to the brand's identity focused on calmness and balance. O Design elements include chocolate illustrations, gentle shapes and symbols associated with relaxation, promoting a sense of well-being.
Visual hierarchy	
O Energetic colors can be used to create a dynamic visual hierarchy. O Thickened typography and picturesque graphics can guide the viewer's attention, conveying a sense of urgency.	O The soft color palette provides a peaceful and balanced visual hierarchy. O Important information can be presented in a way that is easy to eyes, fostering a pleasant viewing experience.
Purchase intention	
O Colors are designed to attract consumers who are looking for a product to increase energy when performing certain activities. O The design aims to convey a sense of emergency, affecting purchasing decisions for those with dynamic lifestyles.	O The calming color palette is likely to appeal to consumers looking for a product that is consistent with a more careful lifestyle. O Design can evoke a sense of trust and security, encouraging buying for moments of self-care.
Cultural interpretations	
O Warm colors such as orange and yellow can have associations with energy and vibrancy. O In some cultures, red symbolizes energy and happiness, and in other caution or danger.	O Gentle blue and green are often associated with calmness and relaxation. O Muted violets can be understood as a color of luxury or thinking.
Visibility	
O Energetic yellow, orange and dynamic red colors attract attention, providing high visibility and making the product stand out. O Brown can add depth and emphasis without threatened the overall design.	O Gentle blue and green colors make the background calm, providing a visually calming experience. These colors improve the visibility of text and design elements. O Muted violets and brown colors can add depth and contrast to the design itself.
Readability	
O The colors of the high contrast font are key to the picturesque yellow, orange and red backgrounds. O Thickened typography improves readability in a dynamic and energetic context. O Coffee color can increase readability without mixing with the theme of high energy.	O Careful choice of font colors versus blue and green are essential for optimal readability. O Darker colored blue text can provide contrast compare to background text O Violet and brown improve the readability of the text by creating a visual interest.

Comparing the two graphic designs in terms of color psychology is a process that focuses on nuanced and influential ways in which color choice affects perception and response. Analyzing different color palettes and design elements provides a deeper understanding of how visual stimuli can cause specific emotions, resonate with the target audience and transmit intended messages to the product or brand.

Through this comparative research, designers gain insight into the psychological nuances that colors wear in the foreground. The importance of such analysis lies in its ability to form strategic decisions, ensuring that the choice of color is consistent with the desired emotional responses and effectively conveys the essence of the product. Whether it's the calming shades of healthy energy chocolate or the picturesque tones of energy chocolate for active energy, each color choice plays a key role in shaping visual identity and overall design success. This comparative approach contributes to the wider field of design psychology, emphasizing the importance of choosing colors as a powerful tool in design creation.

5. CONCLUSIONS

Research on the psychological and graphic aspects of colors in graphic design reveals a rich record of influences that extend beyond ordinary aesthetics. Entering the historical and cultural dimensions of colors, we discover their deep-rooted meaning in shaping social perceptions and expressions. The influence of colors in branding and marketing further emphasizes their importance on consumer behavior and brand identity building. The carefully curated color palettes of iconic brands serve as proof of the deep role that colors play in establishing recognition, fostering emotional connections and communicating the values of the brand. In the field of graphic design, colors appear as powerful communicators, who guide the viewer's eye, establish a hierarchy and create visual narratives that resonate with a diverse audience.

Comparing two graphic designs in terms of color psychology offers valuable knowledge of how color choice affects emotions, resonates with the audience and conveys the brand's messages. This analysis informs strategic decisions, ensuring that colors align with the desired answers and effectively convey the essence of the product. Color selection plays a key role in shaping visual identity and design success. This comparative approach contributes to the psychology of design and emphasizes the profound impact of color selection in creating visually attractive and emotionally resonant designs.

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