

# The Power of Color: Understanding Its Influence in Psychology and Interior Design

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**Abstract.** The convergence between color psychology and interior design has gained significant recognition in recent decades. Understanding how color choices influence emotions and human behavior is essential for creating spaces that not only capture the eye but also evoke specific emotional responses in occupants. This article synthesizes key theories and findings from scientific studies, focusing on the central role of color psychology in enhancing comfort, well-being, and the overall ambiance of interior environments. The methodology employed includes a comprehensive literature review, anchoring this research in the works of eminent scholars who have provided a strong framework for understanding the profound impact of colors on emotional and psychological perceptions within indoor spaces. In the realm of interior design, color not only shapes a space's character but also influences physical and emotional states. Dr. Chaudhary et al. (2023) further elucidate the emotional responses evoked by different colors, from red's association with energy to blue's calming effect. [1] These emotional responses underscore the significant influence of color choices on moods and perceptions, highlighting the importance of color selection in various aspects of design and daily life. In conclusion, this study establishes a profound connection between colors and human emotions, emphasizing their pivotal role in shaping residential and workplace environments. A comprehensive understanding of the emotional and atmospheric impact of color is imperative in interior design, providing valuable insight for professionals and enthusiasts alike.

**Keywords.** Color psychology, interior design, emotions, human behavior

## 1. Introduction

The intersection of color psychology and interior design has gained significant attention over the past few decades. Comprehending the profound impact of color choices on emotions and human behavior represents a foundational pillar in the art of crafting spaces that extend beyond mere visual allure. Such spaces have the remarkable ability to evoke highly specific emotional responses in their inhabitants. This captivating subject matter has undergone extensive scrutiny in numerous scientific studies that explore the complex and multifaceted relationship between colors and the emotional experiences of individuals in interior environments. In this article, we will embark on an exploration of select key theories and discoveries unearthed by these scientific inquiries, with an unwavering focus on highlighting the pivotal role of color psychology. This role transcends the realm of aesthetics; it fundamentally enhances comfort, well-being, and the overall ambiance that envelops interior environments.

## 2. Methodology

This section outlines the methods used to carry out the research that combines the fundamental

principles of color psychology with the practice of interior design. The methodologies encompass both methodological strategies and a comprehensive literature review, indicating that this paper is based on previous investigations conducted by esteemed authors in the field.

The initiation of this research project involved a comprehensive literature review that encompassed studies in color psychology and interior design. Eminent scholars, including Leatrice Eiseman and Angela Wright, have played a pivotal role in providing a solid framework for understanding the influence of colors on the emotional and psychological perceptions associated with indoor environments (Eiseman, 2012; Wright, 1997). In addition, scholarly works, such as the study conducted by Kwallek et al. (1997) and the research carried out by Hidayetoglu et al. (2018), have highlighted the importance of color selection in relation to ergonomics and comfort in indoor environments.

## 3. Types of Colors

Color can be described from two distinct perspectives - objectively, by considering the principles of chemistry, physics, and physiology; and subjectively, by considering the concepts explored in

psychology.

### 3.1 Color Theorists

The foundation of color theory can be traced back to the ancient Greek philosopher Empedocles (492-431 B.C.). He astutely observed his surroundings and deduced that color, contrary to common belief, is not an inherent property of the objects themselves but rather a sensory perception experienced by the observer. Color is what enables us to articulate and describe what we perceive.

Aristotle (384-322 B.C.), another Greek philosopher, took a significant step forward in elucidating the composition of colors. In his seminal work "De Coloribus," he ventured to explain the interrelation of colors. Aristotle proposed that all colors originate from the interplay of sunlight, fire, and varying proportions of light and the absence of light.

During the Renaissance period, the renowned artist Leonardo da Vinci expressed his ideas on color theory in his famous treatise "Treatise on Painting" (1651). Da Vinci asserted that black and white are indeed qualified as colors and identified white, yellow, green, blue, red, and black as primary colors. He astutely observed that colors exhibited contrasting effects when juxtaposed, and that direct opposites intensified each other.

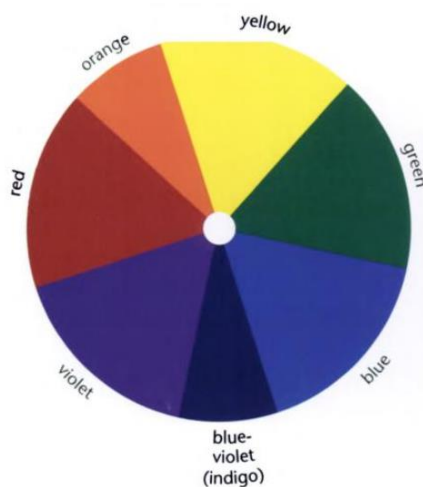


Fig. 1 - Newton's color wheel

Sir Isaac Newton (1643-1727) made groundbreaking strides in the understanding of color in the realm of physics. He shifted the focus from perception to the physics of color. Newton's experimentation with prisms revealed that white light, when refracted, diverged into an array of colors: red, orange, yellow, green, blue, indigo, and violet. He astutely recognized white light as a composite of all spectral hues and conceptualized the first color wheel. (Fig. 1)

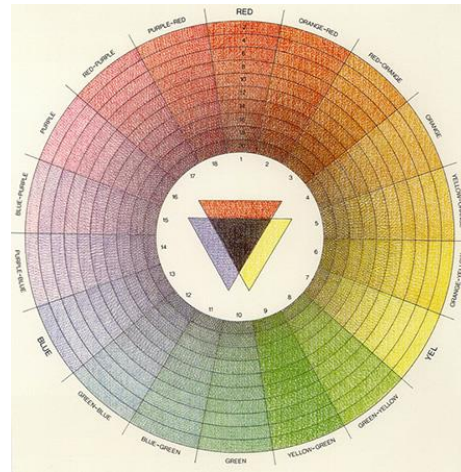


Fig. 2 - Harris's color wheel

In "The Natural System of Colors" (1766), Moses Harris (1730-1785) identified red, yellow, and blue as the primitive colors, also known as primary hues. Harris's work further revealed that the combination of these primary colors results in the formation of secondary colors - orange, green, and purple. He organized his color wheel into 18 equal-hue divisions, each meticulously graded by value, transitioning from light to dark. (Fig. 2)

While there are numerous other influential figures in the study of color theory, this serves as an introductory exploration of the evolution of the color wheel and its foundational principles.

## 4. Color Psychology and Interior Design

### 4.1 The Impact of Color Psychology

Within the realm of normal functioning, the psychophysiological influence of color emerges as a significant factor in everyone's daily life. These color-induced effects typically manifest in varying degrees of physical and emotional states, ranging from heightened alertness to fatigue, elation to depression. The emotional perception of color is intertwined with its associative influence [8].

In the grand tapestry of interior design, color assumes a pivotal role in shaping the character of a space. Its integration across the entire design spectrum, from the choice of colors used in the overall interior design to accessories and furniture, harmonizes the visual identity (Birren, 2013).

Cross-cultural studies have revealed that certain colors such as green, white, and blue enjoy widespread appeal and carry relatively consistent meanings across nations (Gage, 1999). Blue, for instance, signifies official business and often induces a soothing mood. Green invokes associations with the environment and freshness, though in professional contexts, it denotes inexperience. White conveys cleanliness, elegance, and the essence of a

sanitized environment [11].

Wexner's study in 1954 delved into the connections between color and mood. Participants were presented with colored cards and tasked with associating them with different emotional states. Cool colors like blue and purple were linked to calmness, serenity, and comfort, whereas warm colors like red, orange, and yellow were associated with excitement and stress. However, it's worth noting that this study only involved colored cards, not actual environmental settings.

Furthermore, there exists a preference for bright, warm colors among children, while adults tend to favor cooler colors with medium saturation, and older individuals gravitate towards achromatic colors with pastel tones [8].

## 4.2 Colors Role in Interior Design

In the realm of interior design, numerous factors influence the choice of color schemes, including a room's purpose, size, configuration, lighting, orientation, and the duration of occupancy. Psychological comfort hinges on the harmonious interplay of visually pleasing conditions and the functional organization of space [8].

Extensive research substantiates the notion that individuals react distinctively to various colors, with colors capable of evoking a wide array of emotional states. Colors exert a profound impact on people, influencing their habits and overall lives significantly. Each person possesses a unique palette of favorite colors that reflects their personality [13].

Interior spaces represent three-dimensional canvases entirely immersed in color. Consequently, interior color experiences diverge markedly from other forms of color utilization. In the world of interior design, color wields an unparalleled, emotive, and enigmatic influence (Beer, 1992). As psychologist Beer once noted, "Rarely does the psychological aspect of an appearance in nature exert as potent an influence as it does with color. No one encounters color and remains indifferent. We are instinctively and emotionally moved; we experience sympathy or antipathy, pleasure or disapproval upon perceiving color."

Several pivotal factors come into play when selecting colors for interior spaces, contingent upon the room's intended function. The choice between warm, cool, or neutral tones can be influenced by factors such as climate, orientation, activity, and user preferences. Some color theorists posit that emotional responses to color and form follow predictable patterns. Texture and surface characteristics also bear the potential to influence human emotions [15].

From the cited studies, it becomes evident that color occupies a central role in people's lives, exerting

profound effects on their minds, bodies, and emotions. Colors, akin to individual needs, possess the ability to evoke a diverse spectrum of moods and emotions due to their psychological associations and cultural significance [1].

## 4.3 The Emotional Impact of Colors

Dr. Chaudhary et al. (2023) expound upon the various emotional responses that different colors can evoke: [1]

**Red:** Often associated with energy, passion, and excitement, although excessive exposure to red may lead to heightened anxiety, restlessness, or even aggression.

**Blue:** Frequently linked to calmness and tranquility, with lighter shades promoting relaxation and peace. In some contexts, blue can also evoke feelings of sadness or melancholy.

**Green:** Tied to nature and renewal, green can evoke harmony, freshness, and rejuvenation. It also signifies balance and stability, creating a sense of equilibrium and well-being.

**Yellow:** Typically associated with happiness and positivity, conveying optimism and joy. However, excessive yellow may lead to restlessness or irritation.

**Purple:** Linked to creativity and imagination, purple can inspire artistic thinking. Darker shades convey elegance, luxury, and sophistication.

**Orange:** A color of energy and enthusiasm, orange evokes excitement and a zest for life. It is often seen as playful and vibrant, encouraging social interaction.

**Pink:** Often associated with tenderness and care, pink evokes warmth and affection. Lighter shades can have a soothing effect, promoting a sense of calm.

**Black:** Linked to sophistication and power, black evokes elegance and seriousness. In certain contexts, it may be associated with darkness or sadness.

**White:** Represents cleanliness, purity, and simplicity, conveying openness and clarity. However, white can sometimes be perceived as sterile or empty, leading to feelings of detachment.

**Brown:** Associated with earthiness and reliability, brown evokes feelings of stability and comfort. In some contexts, it may be seen as dull or unexciting.

These emotional responses to color underscore the profound impact that color choices can have on our moods and perceptions, making color selection a critical consideration in various aspects of design and daily life.

## 5. Conclusion

In summary, this study unequivocally establishes a profound connection between colors and human emotions, underscoring the pivotal role of emotions in shaping the design of residential and workplace environments. Within the field of interior design, possessing a thorough comprehension of the emotional and atmospheric impact associated with particular colors becomes imperative. This study, in a systematic fashion, thoroughly investigates the primary colors commonly employed in design, providing invaluable insights into their intricate relationship with emotions and the overall ambiance they create.

## 6. References

- [1] Dr. Chaudhary V., Sharma V. Psychological Imprints of Color on Mood: A Study on Young Adult Females. *Remittances Review*. 2023; 8(4): 3362 – 3370.
- [2] Kwallek N., Woodson H., Lewis C. M., Sales C. Impact of three interior color schemes on worker mood and performance relative to individual environmental sensitivity. *Color Research & Application*. 1997; 22(2): 121 – 132.
- [3] Feisner E. A. *Colour*. Laurence King Publishing, London; 2006. 182 p.
- [4] Hidayetoglu M. L., Yildirim K., Cagatay K. The effects of training and spatial experience on the perception of the interior of buildings with a high level of complexity. *Scientific Research and Essays*. 2010; 5(5).
- [5] Aristotle, *De Coloribus*. Loeb Classical Library, Cambridge (Mass.) and London; 1936. 42 p.
- [6] Da Vinci L. *Treatise on Painting*. Giacomo Langlois, Paris; 1651. 156 p.
- [7] Harris M. *The Natural System of Colors*. Laidlers, London; 1766. 8 p.
- [8] Олексіївна К. А. COLOR SYMBOLISM IN INTERIOR DESIGN. *Інноваційні тенденції підготовки фахівців в умовах полікультурного та мультлінгвального глобалізованого світу (Innovative trends in the training of specialists in the conditions of a multicultural and multilingual globalized world Congress)*. 2023: 268 – 273.
- [9] Birren F. *Color Psychology and Color Therapy: A Factual Study of Influence of Color on Human Life*. Martino Fine Books, Connecticut, 2013. 312 p.
- [10] Gage J. *Color and Culture: Practice and Meaning from Antiquity to Abstraction*. University of California Press, Berkeley, 1999. 335 p.
- [11] Alnasuan A. Color Psychology. *American Research Journal of Humanities and Social Sciences*. 2016; 1(1): 6 p.
- [12] Wexner L. B. The degree to which colors (hues) are associated with mood-tones. *Journal of Applied Psychology*. 1954; 38(6), 432 – 435.
- [13] Krstić H., Radelović D. Color as a powerful tool in interior design. *Proceedings Third international science conference Balkan color*. 2013: 568-575.
- [14] Beer U. *Was Fabenuns Veraten (What Color Tells Us)*. Stuttgart: KreuzVerlag, 1992.
- [15] Pile J. F. *Color in interior design*. McGraw-Hill, New York; 1997. 320 p.