



Responding To Color

Our home may be a place to relax, to retreat from stresses in our environment, to join in activities or to work. Planning our surroundings to meet needs begins with trying to understand how color affects us. Color may affect what we appear to see, our emotions, and even our safety, but do we really understand it?

Few people see two colors alike. One person may see more yellow in red even under the same light. We not only may see color differently, but our color vision changes.

Color, Vision and Age

The way we perceive colors changes as we age. An increase in accuracy of color discrimination occurs between the ages of two and six. Generally, it is not until age fifteen that youth can discriminate colors as accurately as adults. Peak discrimination occurs between about ages 20 to 30 years and then may become less accurate and glare sensitivity may increase, especially around age 65.

Scores on color matching tests show a 70% decline by age 60 and an additional 56% change by age 80. There is a decrease in the ability to distinguish different colors at the blue end of the spectrum where colors are closely related. This is thought to be due to the yellowing of the eye lens. Older persons tend to perceive bright, deep colors as lighter. They are able to see yellow, orange, and red more easily than darker colors at the blue end.

A mixture of bright primary colors and pastels may provide stimulus for those with reduced discrimination. Color contrasts can be used to indicate changes in ground levels, for control devices, and other safety purposes. Judging distances between steps may be difficult if the landing, stairs and walls have the same hue, value and intensity.

Color and Emotions

People attach different meanings to colors. The psychological basis for understanding color and its influence on emotions is not well understood. There is no simple explanation for the interaction of color and emotional response.

Some evidence suggests that the light of different colors enters the eye and indirectly affects the hypothalamus, which in turn affects the pituitary gland. The pituitary gland controls the hormone

levels and perhaps thus our moods.

Some experiments have suggested that color may influence our emotions. One experiment showed that in a room colored in red light, time was overestimated while in green or blue light, time was underestimated. In another study, workers lifting black boxes complained they were too heavy; but when the boxes were painted green they felt lighter. During the Middle Ages, Blackfriars Bridge in London, a gloomy black structure, was noted for its record number of suicides until the bridge was painted bright green.

However, attempts to establish scientifically the effects of color on the mind have not been conclusive. Reactions to color may be very individual and due to associations. Red walls may reassure some while causing discomfort for others.

Color and our Physical Reactions

When we get reactions in an all red room, is it a physical response, an emotional response, the result of learning or a combination?

For example, infant jaundice is treated with the use of blue light. In one study, patients suffering from Parkinson's Disease had a tendency to worsen in presence of red, while green seemed to improve the condition.

One explanation suggests that light may reach the hypothalamus that controls nerve centers and body functions such as heart action and respiration. The wave length and energy of each color varies with the intensity and this in turn affects us in different ways.

Color may bring about a reflex action on the vascular system, but this may be brought about through feelings and emotions. Some studies indicate that red tends to increase perspiration, excite brain waves and raise the blood pressure, pulse rate, and respiration. Noticeable muscular reaction or tension and greater frequency of eye blinks result. Blue tends to have a reverse effect by lowering blood pressure and pulse rate. Brain waves tend to decline and skin response is less. Reactions to orange and yellow are similar to red, but less pronounced. Reactions to violet are similar to blue.

However, the effects of color appear to be temporary. When exposed to strong areas of any color, there generally is an immediate reaction that can be measured with an instrument, but after a length of time, body response may fall to or below normal. So whether or not red is an "exciting" color may depend on the length of time a person is exposed to it.

The relationship of color hue, intensity and value is also not understood and may enter into the effects. Warm colors may calm one person and excite another. Cool colors may stimulate one person and calm another. Red or green may elevate blood pressure or quicken the pulse rate, or the reverse. Some color authorities suggest that emotional excitements indicated through the physical changes in blood pressure, pulse frequency and rhythm are the result of association of colors with memories.

Color Preferences

Children up to age three tend to prefer bright, primary colors over pastels, and favor bright luminous colors such as red, orange, pink and yellow. Color is preferred over black. Red is preferred during early preschool years. Interest in cooler colors increases as children grow older and preferences for high intensity decreases.

A greater liking for the colors in shorter wavelengths such as blue and green than for colors of longer wavelengths such as red, orange, and yellow comes with maturity. The majority of adults prefer blue and indicate less preference for yellow or yellow-red. Some researchers suggest the order of preference by adults as blue, red, green, violet, orange and yellow.

Later in life, our color preferences may again change. Studies of people from ages 65 to 90 indicate they prefer bright colors to pale pastels. This may relate to the physical changes in the eye.

Hues may also influence behavior. One study indicated that work production rate increased eight percent when the men's rooms were painted a ghastly electric green to reduce lingering.

Choosing one preferred color does not mean that someone would want a majority of that color in his environment– but that it has a special meaning in comparison to the other colors.

Color Associations

Emotions are commonly associated with various colors, but these associations vary among individuals and cultures. Some research indicates red, yellow and orange are associated with excitement, stimulation and aggression. Blue and green are associated with calm, security, and peace. Yellow is associated with cheer and joyfulness; and purple with dignity and sadness. Black, gray and brown are associated with strength, sadness and depression. These color associations may be the result of learned responses. For instance, in China red is associated with good luck and is commonly considered a good color for brides.

Certain musical sounds and instruments are often associated with various colors. Violins may be associated with the color brown, flutes with blue and brass with red. Artists have often been fascinated with color use. Painters of the Impressionist period such as Monet and Renoir worked with the color effects of lighting at various times of day. Expressionist painters used colors to help express emotions.

Color associations are complex. The value and intensity of a color changes the associations. Studies have shown that in rooms of strong, intense colors perceived excitement is increased. Weak colors give an impression of calmness regardless of hue. For example, calm can be reflected in warm hues. Pale, dull peach may appear calmer than bright, intense green.

Associations may relate to how we view our environment and may stimulate our other senses. For example, color suggests warmth and coolness. Persons in a blue-green room in one study felt that

59 degrees F. was cold, but in the red-orange room, the temperature had to fall from 52 to 42 degrees F. before people reported being cold. In another study, people tended to set the thermostat four degrees higher for comfort in a blue room than in a red room.

Due to color associations, a noisy environment may be experienced as noisier if painted in glaring yellows and reds. Experiments have shown that a given sound appears to have different intensities in the same room when wall colors are changed.

The ability of color to change or influence human response is questioned by some. Individual response to color may be too complex to allow for a simple interpretation. Despite the controversy in research, there remain associations, preferences and to some extent individual physical and psychological responses to color. Although no absolute relationships have been established, research has shown that certain general reactions are common to many people. These may be learned, the result of past experiences, or physical effects.

What does this mean to us as we plan our environments? In using color, extensive monotony can lead to under-stimulation and therefore anxiety, and extreme complexity to over-stimulation. A balanced approach and a variety of color is suggested. One color does not satisfy all the physical and emotional needs in our environment.

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