

COLORE MOTION

C+E:

The link between colors and emotions

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Study Proposition

The proposition that guided our study offered that Color is a language acting as an instrument of meaning creation by evoking emotional associations [aggression, passion, joy, etc.] in a consistent way. Our study was set to examine among other things the relationships between color and emotions to better understand the impact of color. In the following report we demonstrate empirically that people link colors and emotions in a consistent way suggesting the possible existence of a Color Language and building a knowledge base that can be employed strategically by business leaders.

Assumptions

Our initial thought was that there may exist a Color Language, implicit and subliminal and yet

shared and influential, a language that we can tap and use in a deliberate way. We also assumed that such Color Language is emotional in nature. By that we mean that color is associated with emotions more so than any other communication vehicle. We looked for existing Color research that can support, or else refute our assumptions but found only few studies that present a fragmented view on popular intuitive notions of color, for example that Red equals aggression and Yellow equals happi-

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ness. While some hold these two examples as powerful truths we were cautious and often uncomfortable with the deficiency of empirical foundation to support this knowledge.

Research Goals

We decided to study color-emotion associations to validate, solidify and advance our Color knowledge. In particular, we looked to test the proposition of color-language by identifying existing color – emotion associations within and across cultural contexts so that we can better understand the universal as well as the contextual associations of color.

A word about the study of emotions

Color, we assumed is articulated through emotions. What specific emotions exist has been a controversial topic for a long time. There are over 350 words for emotions appearing in dictionaries of the English language, yet dictionaries of other languages may contain as few as ten such words. Even words for such basic emotions as anger or sadness are not universal. At the same time, there is a great similarity in emotion categories across different cultures and languages. Plutchik [2003] was the first to introduce the concept of primary emotions as categorizing method similar to that of primary colors in physics where the combination of three primary colors can produce an-infinity of color. Along this line any and all emotions that have ever been experienced can be produced by the combination of only the few primary emotions produced by the brain. While the research on emotion presents a diverse set of definitions and frameworks most researchers differentiate between Primary and Secondary emotions as well as Positive and Negative ones. Our research on current understandings of how color is linked with emotions shows the following key themes:

Color psychologists have identified that people are responding to colors as meaning cues often times in a universal fashion [Birren, 1950].

Color is most commonly associated with affective rather than intellectual stimuli. This finding is based on the learning that color and visual elements activate the right side of the brain responsible for creativity and affection, while printed words activates the left-brain responsible for rational thinking and logic.

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	Positive Emotions		
Secondary Emotions	Optimism Anticipation Awe	Joy Ecstasy Love Amazement Admiration Trust Surprise Interest Vigilance	Primary Emotions
	Pensiveness Boredom Distraction Apprehension Remorse Submission Annoyance Disapproval Contempt	Sadness Grief Disgust Anger Fear Loathing Rage Terror	
	Negative Emotions		

Table 1: Emotion Typology based on accumulation of existing emotion conceptualizations.

color wheel are called ‘warm’ while those in the blue and green range are referred to as ‘cool’ associating each with two moods.

Table 1 above summarizes the emotions we chose to use.

Methodology

The sample included gender-balanced color professional and non-professional respondents [n = 177] representative of US population between the ages of 18 - 55. All subjects were pre-tested for color blindness to determine their qualification to participate on the study. Participants answered a close ended questionnaire that asked them to asso-



Figure 1: Color Palette Employed

ciate a pre-determined set of emotions and colors.

All questions on the questionnaires provided an actual color sample to which respondents asked to refer when answering each question to maintain homogeneity in color presentation and common reference point across the sample.

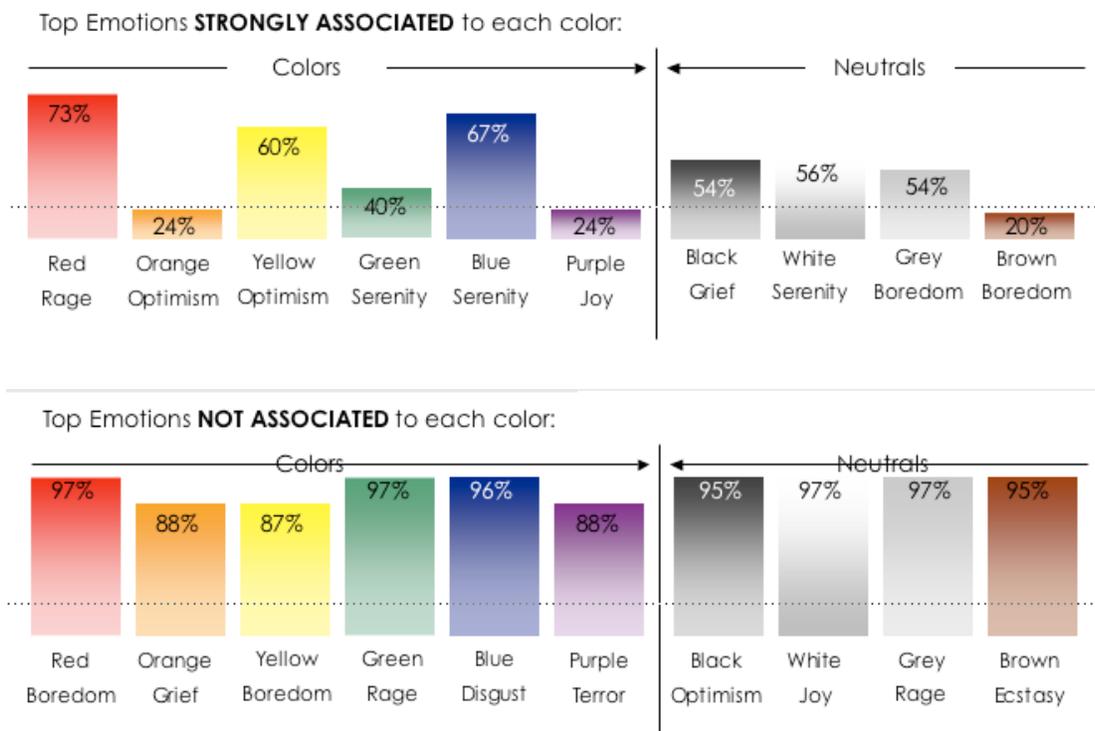


Figure 2: Findings of Color-Emotion associations and no-association

The Palette for this research was made of the following 10 colors: red, orange, yellow, green, blue, and purple as well as neutrals black, white, brown and Gray. These colors were selected as they are consistent with other empirical studies that test colors as well as expanding existing tested palettes to include neutrals as a point of contrast.

Key Learnings

There is evidence to suggest that Color is an emotional language that both professionals and non-professionals speak in a consistent and for the most part similar way. The key upon which this argument of Color as a Language is built is the consistency of emotion association per color found in this study. Overall, people ascribe emotional associations to Red that are different from those assigned to blue for example, but are consistent across a significant body of respondents within the US culture sampled in this study. As the definition of a language talks about the systematic quality that language possesses to communicate ideas or feelings by the use of conventionalized signs, sounds, gestures, or marks having understood meanings we see Color as adhering to this definition's characteristics.

Some colors have stronger emotion links than others and overall there is a stronger consensus on

what a color is “not associated” with than what it is “associated” with. This aspect of the data that shows additional level of consistency of color-emotion association strengthen our suggestion to view color as a language:

‘Colors’ are associated with positive emotions while ‘Neutrals’ (with the exception of white) are associated with negative emotions. Moreover ‘Colors’ appear on the Positive Side of the grid, while ‘Neutral’ appear on the Negative side. Finally ‘Neutrals’ live below the line in the negative emotion space, except for White. These findings too point to the consistency of ‘meaning structure’ in the proposed Color Language.

Some colors are age, gender and educational/professional sensitive while others are not.

Age: Red and Purple are viewed more positively by respondents over the age of 29. Orange is seen as more peaceful by respondents under 29. Yellow, Green and Blue show no age relationship.

Gender: Red, Yellow and Orange are perceived more negatively by men than by women. Blue is viewed as more emotionally “active” by men. Black is viewed more positively by men than by women. Green, Purple,

White, Grey and Brown show little gender differences.

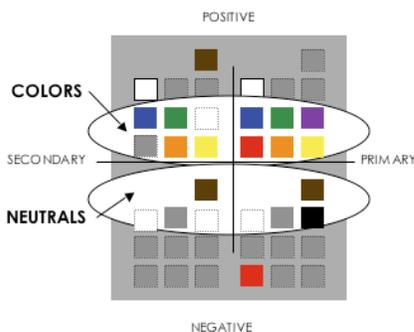


Figure 3: Differences in Color-Emotion association between 'Colors' and 'Neutrals'

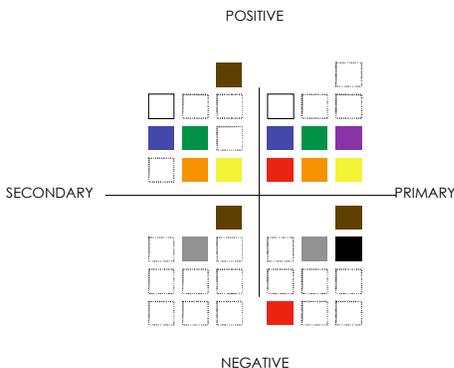


Figure 4: Brown's Color-Emotion associations?

Professionals: Orange and Yellow are viewed as being more passive by non-professionals. Blue is viewed as being more passive by the professionals. Green and White are viewed more positively by professionals. Purple, Black, Grey, and Brown exhibit little to no difference in associations for professionals versus non-professionals

Specific Color- Emotion links

a. **Brown** shows an un-focused color-emotion link being present in 3 of 4 quadrants. Purple and Black are highly focused orientation living in one quadrant only. Primary emotions can be used to summarize all colors, as there is differences between the top and bottom of the picture, but not much differences from the right and left sides.

b. **Orange and Yellow Orange/Yellow:** Sister Colors - Orange shadows Yellow with both colors sharing the exact same emotions, in the same order of strength of association. Important to note that Orange is not a 'bridge' color between Yellow and Red as it is taking the emotional associations of Yellow only.

c. **Blue and Green:** These colors appear to be a very strong relationship between Blue and Green. Each shares the same top three strongly associated emotions of Serenity, Trust and Optimism. While Green's physical properties may suggest it being a bridge between Blue and Yellow the data suggests otherwise: here Green appears to shadow Blue's emotional links, only.

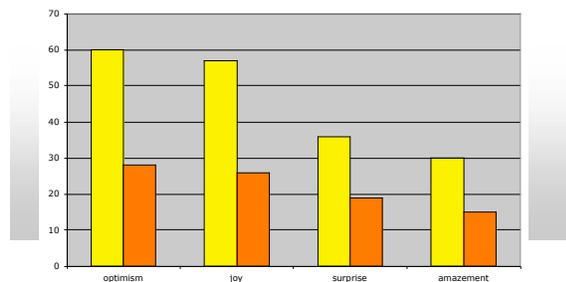


Figure 5: Yellow - Orange shared meanings

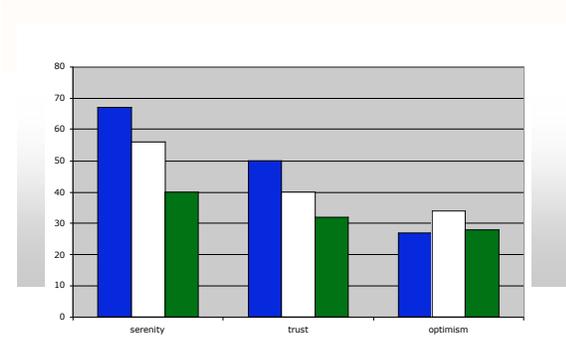


Figure 6: Blue - Green Yellow - Orange shared meanings

Conclusions

Our research provides preliminary support to the existence of Color Language by identifying a consistent association-base of color and emotions, an association that corresponds to the definition of Language as a systematic means of communicating ideas or feelings by the use of signs, sounds, gestures, or marks having understood meanings, or

the suggestion by objects, actions, or conditions of associated ideas or feelings. While our findings enjoy statistical significance and theoretical validity, their generalizability is challenged given that our data was generated using a U.S. based sample that may be socially-clustered and thus relatively homogenous especially when compared to populations across the world. To establish that color is a language is to assume that the color-emotion links are universal, or else, it requires that we identify the different dialects of such language and the sources of differences that may very well be social and influenced by cultural values and norms. A related issue that serves to demonstrate this point involves color preferences as by now we have enough evidence that suggests that preferences are culture specific and so we need to be careful in making untested claims with regard to the universality of Color in general. Further research should examine similar Color-Emotion associations across cultural contexts to determine the extent to which a color language is a universal phenomenon or culturally contingent one.

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