

Cultural and Gender Differences in Colour Preferences among Tribal and Non-tribal Students

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The present study was aimed at assessing colour preference responses to single colours, in terms of how much they prefer or like the particular colour by looking at the colour stimuli from participants' perspective. In order to accomplish the aim of the present work, colour preference task was administered to 100 participants to determine individual colour preferences for 32 single colours. The obtained data was analyzed using descriptive statistics and multivariate analysis of variance. The results of this study found cultural and gender differences in colour preferences.

Keywords: Colour Preferences, Tribal, Non-tribal, Students.

Colour preference is the propensity for an individual or group of people to prefer one colour over others. Colour preferences explain how much an observer likes or dislikes a given colour. Colour preference denotes whether a colour is preferred by a group of viewers (Ou et al., 2004). The scientific study of colour preference has interested researchers for centuries. Beginning with Cohn (1894; cited in Ball, 1965), scholars have endeavored to understand colour preferences from various perspectives. Colour preferences have a substantial impact on human decision-making processes and consumer's purchasing behaviours. For instance, individuals, make everyday decisions based on their own preferences to aspects of the world around. Simple decisions like wearing this or that shirt, buying this or that mobile, all are influenced by available colour alternatives around us.

Colour preferences have been found to differ from individual to individual in prior studies and the differences in colour preference have been found to be systematic (Guilford & Smith, 1959; Ellis & Ficek., 2001; Palmer & Schloss, 2010). There were several studies across western countries from the beginning of the 19th century to till date committed to find the basis of colour preferences (Humphrey, 1976; Hurlbert & Ling, 2007; Ou et al., 2004), and to determine which

colours people like most (Eysenck, 1941; Palmer & Schloss, 2010).

Literature on colour preferences has suggested that a variety of factors are related to the occurrence of colour preferences, such as personality, culture, gender, age, and purpose of the product. The present study focuses on the roles of observer's cultural background, and gender in developing colour preferences. The reason to choose such variables is that these variables are referred as important and at the same time the literature has found conflicting results for these variables in the development of colour preferences. Thus, study of this kind is important in assessing how these variables are related to colour preferences in different culture.

Culture and Colour Preferences. Culture is an important element that carries certain lifestyles, food habits, beliefs, and values that influences people decision-making processes. Understanding the influence of cultural background in colour preference gives insight into the role of culture and colour in guiding the individual's interaction with their visual environment (Sorokowski, Sorokowska, & Witzel, 2014). The relationship between colour preferences and culture has long intrigued many researchers (Burkitt, Tala, & Low, 2007; Fushikida, Schloss, Yokosawa, & Stephen, 2009; Hurlbert & Ling, 2007; Madden, Hewett,

& Roth, 2000). The cross-national research on colour preference suggests cultural differences (Taylor, Clifford, & Franklin, 2013; Sorokowski, Sorokowska & Witzel, 2014). Although cross-national comparisons are the most common, significant cultural differences also distinguish groups within nations and societies (Stephens, Markus, & Phillips, 2014).

Though few studies (Eysenck, 1941) claimed universal preference order of some colours (blue, red, green, purple, orange, and yellow), differences in colour preference have been reported in a variety of individuals from a diverse cultural background (Choungourian, 1968, 1969; Hurlbert & Ling, 2007; Ou, et al., 2012; Ou, Luo, Woodcock, & Wright, 2004; Saito, 1994, 1996). Although culture is very often thought to be influential factor, findings regarding the relation between culture and colour preference are varied. One study (Taylor, Clifford, & Franklin, 2013) compared the colour preferences of British and Himba tribal participants from Namibia. British and Himba colour preferences were found to share few characteristics, and Himba colour preferences did not follow any cross-cultural pattern. Himba mainly preferred saturated over unsaturated colours with little variation of colour preferences across hues. Further, Sorokowski et al., (2014) also compared 108 Yali tribal and 200 Poland observers age between 19 to 59 years using twelve printed colour stimuli. Colour preferences found differed between two observers. Poland observers chose blue most often and yellow-orange least often as the favorite colour, whereas Yali observers chose red and yellow as the favorite colour. Like the Poland observers, they chose yellow-orange as their least preferred colour. When Al-Rasheed (2015) compared hue preferences for Arabic and English samples, found cultural differences in colour preferences for having preference maximum for the reddish colours for the Arabic sample, whilst for the English sample, preference is peak at blue-green region. In addition, it was found that preference is identical at green and green-yellow for Arabic and English, with preference minimum at green-yellow.

Gender and Colour Preferences. Preceding research on gender differences in colour preferences have proved more debatable.

Substantial amount of research reported gender differences in colour preferences (Dittmar, 2001; Kwallek, Lewis, Lin-Hsiao, & Woodson, 1996; Saito, 1996; Strauss, Schloss, & Palmer, 2013). Some investigators have found no gender differences, claiming that both men and women preferred blue (Eysenck, 1941; Granger, 1952), while few others have found gender differences with men preferring blue the most and women preferring red the most (Guilford & Smith, 1959; He et al., 2011).

In a study, Hurlbert and Ling (2007) revealed gender differences in colour preferences of British and Chinese participants. The Chinese had a stronger preference for reddish hues than the British participants, and it was reported that this divergence is due to cultural factors as red symbolize good luck in Chinese culture. Bonnardel, Beniwal, Dubey, Pande, and Bimler (2012) conducted a cross-national study to compare British and Indian participants and reported that the British and Indian males have similar preference for cool colours as compared to warm colours. Cultural differences were found only among female participants; in contrast to Indian females, the British females preferred lavender and relative disliking for orange colours.

More recently, Al-Rasheed (2015) suggested gender differences in colour preference between Arabic and English participants. For Arabic females, red-pink was the preferred region whereas purple/blue-green was the preferred region for English females. Male preferences appear to be similar for both the samples having high preference for blue-green region and a low preference for red-pink/purple region. On the other hand, several other studies have shown no significant gender differences in colour preferences (Camgoz, Yener, & Guvenc, 2002; Rosenbloom, 2006).

The aforementioned research is largely being conducted on western culture. However, no empirical studies were found, at the time of this study on Indian culture. Therefore, the relationship between cultural background, gender and colour preferences is far from being conducted and clarified within Indian population and needs further research. Hence, we compared tribal with a non-tribal students

living in Visakhapatnam district. The district has two distinct geographical regions. One along with coast and the interior called the plain area and the other with mountainous region fully covered by Eastern Ghats is called agency area. Of which, Kondadora, Bagata, Kondh, Valmiki, Porja, and Gadaba tribal communities are found predominantly. The economy of the tribal people has been primarily hunting-foraging and shifting cultivation. They also have their own dialects called 'Kuvi' or 'Kui' and Adivasi Oriya. In addition to their own dialect they speak Telugu. The melodious music and robust traditional dance forms i.e., *Mayura* and *Dimsa* are part of their unique cultural heritage. The tribal people who live in hilly regions have different cultural practices from the non-tribal who live along with coast and the interior. The present study is an attempt to examine whether colour preferences differed between the tribal and non-tribal cultures and how the colour preferences differed between male and female in the two cultures.

Method

Participants

Fifty tribal undergraduates from Govt. Degree Colleges, Araku and Paderu, and 50 non-tribal undergraduates from ABM Degree College, Narsipatnam participated in this experiment. All the participants' ages ranged from 18-21 years. For the tribal sample, there were 24 males with a mean age of 19.12 years (SD = 1.26), and 26 females with a mean age of 18.65 years (SD = 0.93). For the non-tribal sample, there were 20 males with a mean age of 19.10 years (SD = 1.25) and 30 females with a mean age of 18.86 (SD = 0.77). Participants were screened for Ishihara's tests for colour deficiency using 38-plates printed edition. Participants who were found to have normal colour vision were included in the study.

Stimuli

The colours used in the present study were eight chromatic colours i.e., red, orange, yellow, chartreuse, green, cyan, blue, and purple with four different 'cuts' (saturation-lightness levels) i.e., saturated (s), light (l), muted (m) and dark (d) making a sum 32 chromatic colours. The colours were generated through the Adobe®

Photoshop® CS5. Table 1 shows the chromatic scheme values of Red-Green-Blue and of Hue-Saturation-Brightness for 32 colours and grey background. Each stimulus colour was printed on a separate matte sheet of paper as square (3×3 inch each) against grey background. Participants viewed the colour stimuli from approximately 50 cm in the experimental room. The illumination within the room was under 3350 lux level and the colour temperature was 6500 K. Visual comfort conditions were satisfied by means of preventing glare and shadow on the observed colour stimuli. All target colours were displayed on a separate matte sheet of paper as square patches (3×3 inch each) against grey background.

Procedure

Participants were asked to rate how much they preferred each colour, on a seven-point Likert rating scale from *don't prefer at all* to *very much prefer*. There was no time limit on the response, but they were asked to give their response as quickly as possible.

Results

Cultural differences

Figure 1 illustrates the mean scores of colour preference for tribal and non-tribal cultures for (a) saturated (b) light (c) muted, and (d) dark 'cuts'. It can be seen that there appear to be differences in the colour preference curves for the two cultures. For the tribal sample, the preference peak is at the Saturated Red, and Saturated Blue, with a preference minimum at the Light Green and Muted Orange. For the non-tribal sample, the preference is highest at the Light Red followed by Saturated Purple, with a least preference for Muted Orange and Muted Yellow.

A one-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate cultural differences. Eight dependent variables were used from the each 'cut' (saturated, light, muted and dark): red, orange, yellow, chartreuse, green, cyan, blue, and purple. The independent variable was culture. There was a statistically significant difference between tribal and non-tribal participants on the combined 'saturated' dependent variables, $F(8, 91) = 2.67, p < .05$; Wilks' Lambda (Λ) = .81;

Table 1. The chromatic scheme values of Red-Green-Blue and of Hue-Saturation-Brightness for 32 colours and grey colour.

Colour		Red	Green	Blue	Hue	Saturation	Brightness
Red	Saturated	238	40	89	345	83	93
	Light	244	148	185	337	39	96
	Muted	207	117	143	343	43	81
	Dark	164	30	65	344	82	64
Orange	Saturated	244	147	34	32	86	96
	Light	251	202	162	27	35	98
	Muted	208	154	116	25	44	82
	Dark	160	89	43	24	73	63
Yellow	Saturated	252	230	0	55	100	99
	Light	254	233	154	47	39	99
	Muted	220	200	113	49	49	86
	Dark	160	151	50	55	69	63
Chartreuse	Saturated	178	209	53	72	75	82
	Light	224	233	152	67	35	91
	Muted	176	204	94	75	54	80
	Dark	126	155	63	79	59	61
Green	Saturated	97	191	1285	140	49	75
	Light	194	225	194	120	14	88
	Muted	125	200	143	134	38	78
	Dark	32	154	115	161	79	60
Cyan	Saturated	83	196	210	187	60	82
	Light	164	218	230	191	29	90
	Muted	130	205	210	184	38	82
	Dark	1	155	155	180	99	61
Blue	Saturated	93	162	217	207	57	85
	Light	170	193	227	216	25	89
	Muted	124	158	204	214	39	80
	Dark	55	125	185	208	70	73
Purple	Saturated	157	75	157	300	52	62
	Light	182	157	199	276	21	78
	Muted	163	112	168	295	33	66
	Dark	113	52	147	279	65	58
Grey		153	153	153	0	0	60

partial eta squared (η^2) = .19; 'light' dependent variables, $F(8, 91) = 4.56$, $p < .05$; Wilks' Lambda (Λ) = .71; partial eta squared (η^2) = .28; 'muted' dependent variables, $F(8, 91) = 5.76$, $p < .05$; Wilks' Lambda (Λ) = .66; partial eta squared (η^2) = .33, and 'dark' dependent variables, $F(8, 91) = 2.88$, $p < .05$; Wilks' Lambda (Λ) = .79; partial eta squared (η^2) = .20.

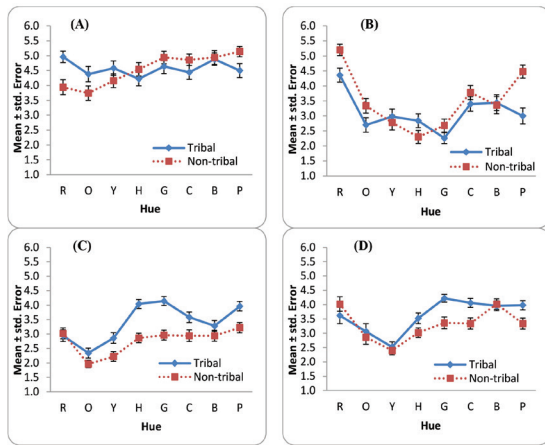


Figure 1. Cultural differences. Means of colour preferences are shown along the y-axis. The x-axis represents stimulus colours. Preference ratings for single colours (A) saturated (B) light (C) muted and (D) dark 'cuts'. Error bars represent the standard errors of the means (SEM).

When the results for the dependent variables were considered separately for each 'cut', only eight differences reached statistical significance, using a Bonferroni adjusted alpha level of .006. Saturated Red, $F(1, 98) = 10.33, p < .006, d = 0.65$, Light Red, $F(1, 98) = 7.94, p < .006, d = -0.56$, Light Purple, $F(1, 98) = 18.47, p < .006, d = -0.86$, Muted Chartreuse, $F(1, 98) = 27.52, p < .006, d = 1.05$; Muted Green, $F(1, 98) = 26.25, p < .006, d = 1.02$; Muted Purple, $F(1, 98) = 9.15, p < .006, d = 0.60$, Dark Green, $F(1, 98) = 12.23, p < .006, d = 0.70 = .11$ and Dark Cyan, $F(1, 98) = 8.24, p < .006, d = 0.58$. The significant differences in mean values between the groups were moderate to very large according to Cohen's (1988) guide to interpreting effect size.

Gender differences

Figures 2, 3 shows the colour preference curves by plotting the mean preference for male and female observers respectively, for tribal vs. non-tribal for (a) saturated (b) light (c) muted, and (d) dark 'cuts'. For tribal males, the peak preference appears to be at saturated green and yellow, and preference minimum at light green and muted orange, whilst for non-tribal males the peak preference appears to be at saturated green and blue, with a preference minimum at muted orange and yellow. For tribal females, the peak preference appears to be at saturated blue,

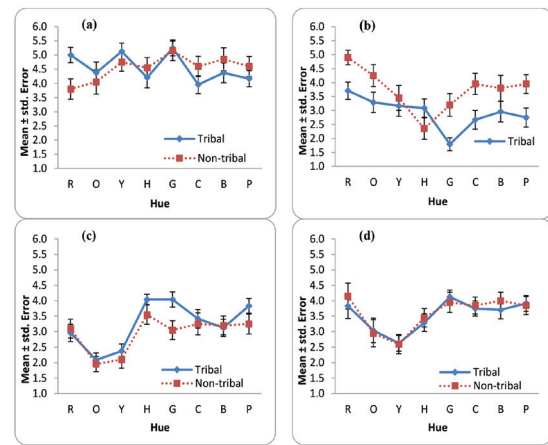


Figure 2. Gender-specific colour preferences across cultures. Means of colour preferences for tribal and non-tribal are shown for male participants. Preference ratings for single colours (A) saturated (B) light (C) muted and (D) dark 'cuts'. Error bars represent the standard errors of the means (SEM).

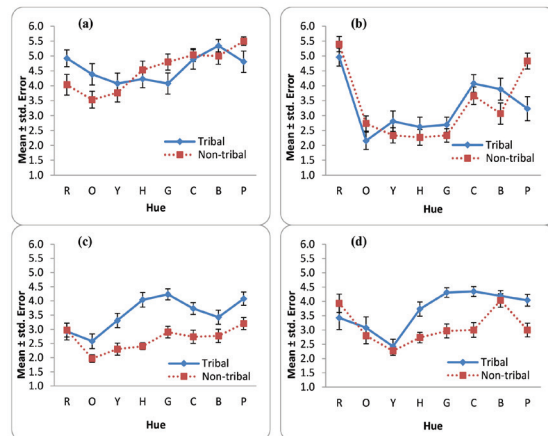


Figure 3. Gender-specific colour preferences across cultures. Means of colour preferences for tribal and non-tribal are shown for female participants. Preference ratings for single colours (A) saturated (B) light (C) muted and (D) dark 'cuts'. Error bars represent the standard errors of the means (SEM).

with a least preference at light orange, whilst for non-tribal females the peak preference appears to be at saturated purple, with a preference minimum at muted orange.

To investigate if males and females were differed in the variables examined, a one-way MANOVA was performed. The same eight

variables as used in cultural difference testing were used as dependent variables from each 'cut' with gender as an independent variable. There was a significant difference between males and females only on combined saturated dependent variables, $F(8, 91) = 4.09, p < .05$; Wilks' Lambda (Λ) = .73; partial eta squared (η^2) = .26 and light dependent variables, $F(8, 91) = 5.36, p < .05$; Wilks' Lambda (Λ) = .68; partial eta squared (η^2) = .32.

When the results for the dependent variables were considered separately for each 'cut', only four differences reached statistical significance, using a Bonferroni adjusted alpha level of .006. These were Saturated Yellow, $F(1, 98) = 10.42, p < .006, d = 0.65$, Saturated Purple, $F(1, 98) = 7.92, p < .006, d = -0.56$, Light Red, $F(1, 98) = 10.15, p < .006, d = -0.63$, and Light Orange, $F(1, 98) = 14.89, p < .006, d = 0.76$. The significant differences in mean values between the groups were all moderate according to Cohen's (1988) guide to interpreting effect size.

Discussion

This study examined cultural and gender differences in colour preferences. The study predicted that the both tribal and non-tribal preference for colours would be different. This prediction is based on previous research indicating that Himba tribal participant's preference for saturated colours over unsaturated colours with little variation of colour preferences across hues. Though, British and Himba colour preferences were found to share few characteristics, and Himba colour preferences did not follow any cross-cultural pattern (Taylor, Clifford, & Franklin, 2013). In addition, Yali tribal were found to prefer red and yellow, whilst Polish observers preferred blue as the favorite colours, and both the groups chose yellow-orange as their least preferred colour (Sorokowski, Sorokowska, & Witzel, 2014).

This study results show that there are differences in colour preferences between tribal and non-tribal participants (Fig. 1). Tribal participants preferred saturated red and blue as the most, whereas light red and saturated purple for the non-tribal. These cultural differences are in line with past research (Taylor et al. 2013 & Sorokowski et al., 2014).

When males and females are considered separately, it was found that tribal males

preferred saturated yellow as their favorite colour and non-tribal males preferred saturated blue as the most preferred colour, despite similar preference for saturated green in both groups. Non-tribal participants' preference for saturated blue was in line with previous studies (e.g., Palmer & Schloss, 2010; Saito, 1996; Sorokowski et al., 2014). Tribal participants' preference for yellow was also in accord with previous studies (Sorokowski et al., 2014). Tribal females choose saturated blue as the favorite colour and non-tribal females on the other hand preferred saturated purple as the most, and regardless of colour appearance attribute both the groups of females disliked orange most. In the present study one notable finding was regardless of cultural and gender differences the saturated colours were more preferred than any other colour appearance attributes.

Limitations of the Study

It is important to note limitations to the study. As noted in the introduction, research has revealed many factors that influence an individual's colour preferences, including culture, gender, age, experience of the individuals, context, and personality types. This study focused on only two of these factors, specifically culture and gender. This study has not focused on the other factors that may have influenced participant's colour preferences.

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