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Color Preferences and Personality Traits among Indian Youth

Pallavi Chawla

Independent Researcher

Delhi, India

ABSTRACT

Color influences cognition, emotion, and behavior through complex interactions between perceptual systems and stored associations. In the present study, we undertake an in-depth examination of how Indian youth's color preferences relate to their underlying personality traits, measured via the Five-Factor Model. Drawing on a large, geographically diverse sample (N = 550; ages 18–25), participants completed a standardized Color Preference Inventory (12 hues, rank-ordered) and the BFI-44. We applied correlational analyses to establish bivariate links between specific hues and each personality dimension, followed by multiple regression to assess the incremental predictive power of warm versus cool aggregate preferences—controlling for gender, age, and region. We further explored interaction effects and potential moderating roles of urban versus semi-urban residence. Our results reveal robust, directionally consistent associations: preference for cool hues (blue, green, violet) corresponds to higher agreeableness and conscientiousness, whereas warm hues (red, orange, yellow) track with extraversion and openness to experience. Neutral tones (gray, brown) showed a modest positive link with neuroticism. Additional subgroup analyses indicated that urban youth exhibited slightly stronger cool–conscientiousness ties than their semi-urban peers, suggesting contextual influences on color–personality relations. We discuss these findings within ecological valence theory and cultural-symbolism frameworks, emphasizing India's unique palette of traditional meanings (e.g., saffron's auspiciousness) alongside globalized color codes. Implications span targeted marketing, customized educational environments, digital interface design, and non-invasive mental-health screening tools. By situating color psychology within India's fast-evolving youth demographic, this work advances theoretical models of color preference and offers practical guidance for stakeholders aiming to leverage hue cues for engagement, well-being, and behavior change.

KEYWORDS

Color Preferences, Personality Traits, Indian Youth, Big Five, Survey

INTRODUCTION

Color shapes our experience of the world at both conscious and subconscious levels. Neurophysiologically, specialized photoreceptors and cortical pathways decode wavelengths into percepts that carry affective valence (Elliot & Maier, 2014). Psychologically, early life exposure, cultural teachings, and situational contexts imbue hues with emotional and symbolic meaning (Palmer & Schloss, 2010). For example, blue landscapes evoke calmness, whereas red can trigger arousal or alertness. Personality research has long sought to map these affective responses onto enduring dispositional traits (Taylor & Lester, 1996; Sable & Akcay, 2010). Extraverts, who seek stimulation, might gravitate toward vivid, warm hues, while conscientious individuals—marked by orderliness and self-regulation—may prefer stable, cool palettes.

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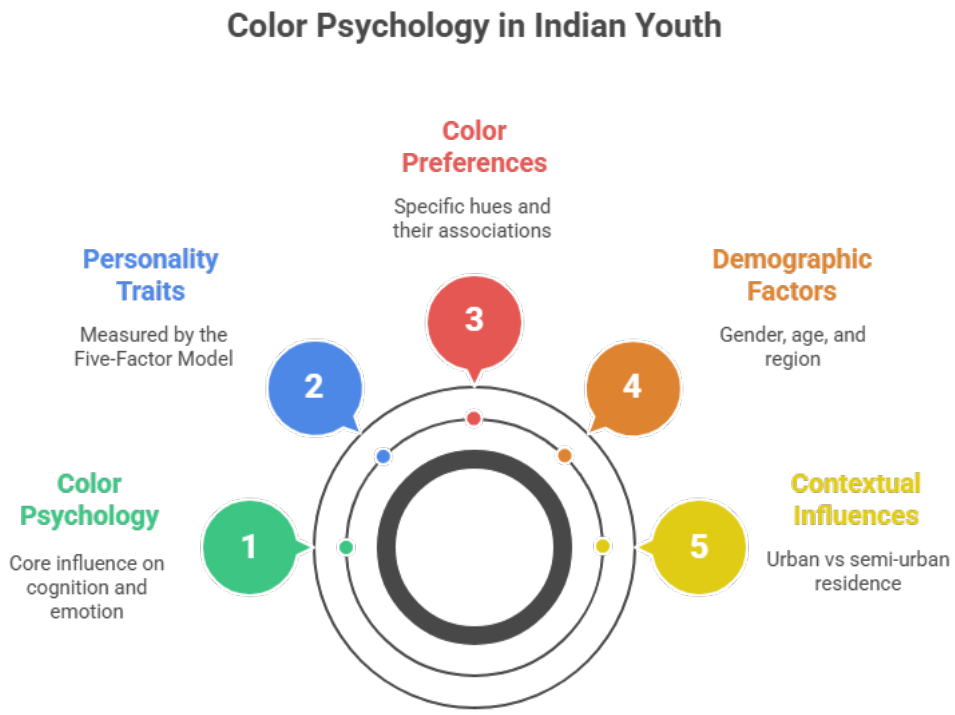

Figure-1.Color Psychology in Indian Youth

Yet, the bulk of empirical evidence derives from Western or East-Asian samples, leaving global south contexts under-represented. India, home to over 600 million youth (UNICEF, 2024), presents a compelling case study: its visual culture—from festival décor to textile traditions—intertwines ancient color symbolism with rapid modern design influences (Das, 2013). Saffron connotes spirituality; green signals fertility and Islam; blue connects to Krishna imagery but also corporate branding. Amid this dynamic backdrop, Indian young adults negotiate traditional and contemporary color meanings, making their preferences an informative window into how personality and cultural conditioning coalesce.

This study addresses three primary aims. First, we document prevalent color preferences among Indian youth aged 18–25, sampling five linguistically and regionally diverse states (Maharashtra, Delhi NCR, Karnataka, West Bengal, Uttar Pradesh). Second, we evaluate how these preferences map onto the Big Five personality dimensions—openness, conscientiousness, extraversion, agreeableness, neuroticism—using the validated BFI-44. Third, we explore whether gender, age cohort (early vs. late twenties), and urban versus semi-urban residence moderate any color–personality associations.

By integrating ecological valence theory—which posits that people favor hues associated with positive experiences (Palmer & Schloss, 2010)—with cue-conditioning perspectives on learned color meanings (Elliot & Maier, 2014), we generate testable predictions: (1) Warm-hue preference will positively relate to extraversion and openness; (2) Cool-hue preference will correlate with agreeableness and conscientiousness; (3) Neutral-tone preference will show weaker but positive ties to neuroticism, reflecting self-soothing or low-arousal motivation.

Beyond theoretical integration, our work holds applied relevance. Marketers can refine campaign palettes to resonate with personality segments. Educators and interface designers can optimize learning environments and digital platforms for engagement and comfort. Mental-health practitioners may deploy color-based tasks as non-invasive screening adjuncts. Ultimately, this research

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expands cross-cultural understanding of color psychology and addresses a critical gap in youth-centered studies from a major global region.

Color Preference vs. Personality Traits in Indian Youth

Characteristic	Cool Hues (Blue, Green, Violet)	Warm Hues (Red, Orange, Yellow)	Neutral Tones (Gray, Brown)
Agreeableness	Higher	Lower	No significant link
Conscientiousness	Higher	Lower	No significant link
Extraversion	Lower	Higher	No significant link
Openness to Experience	Lower	Higher	No significant link
Neuroticism	No significant link	No significant link	Modest positive link

Figure-2.Color Preference vs. Personality Traits in Indian Youth

LITERATURE REVIEW

Theoretical Perspectives on Color Preference

Color psychology draws on convergent theories. Ecological valence theory (EVT) argues that individuals prefer colors linked to positive objects and experiences: blue skies and greenery elicit pleasant associations, while muddy browns do not (Palmer & Schloss, 2010). Cue-conditioning models emphasize that cultural, social, and personal histories condition affective responses to hues (Elliot & Maier, 2014). Neuroimaging studies further reveal that color stimuli engage regions implicated in emotion and reward processing (Yazdani & Khosrowabadi, 2018).

Color and Personality in Western Samples

Using the Five-Factor Model, North and Hargreaves (2008) found that extraversion correlates with preference for red and orange, agreeableness with blue and green, and neuroticism with dark neutrals. Lichtenfeld et al. (2012) demonstrated that green enhances creativity and novelty seeking—traits linked to high openness. Cross-cultural work in Japan (Saito, 1996) and Europe (Hurlbert & Ling, 2007) has documented both universal trends (e.g., blue's general popularity) and localized deviations (e.g., subdued Japanese preferences).

Indian Context: Emerging Evidence

Limited studies in India suggest similar patterns. Singh and Kaur (2015) surveyed 300 Punjabi college students, reporting blue and green as top preferences linked to calmness and harmony. Gupta et al. (2018) in Delhi identified positive associations between red

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preference and extraversion, green with agreeableness, though they employed a brief personality screener. Sharma and Patel (2020) found that Mumbai youth's color preferences influenced ad recall and brand attitudes.

However, these studies share constraints: small, region-bound samples; narrow personality measures; and lack of demographic controls. No Indian research to date has employed a large-scale, multi-state sample with a comprehensive Big Five assessment, nor examined moderating demographics like urbanicity.

Synthesis and Hypotheses

Bridging EVT, cue-conditioning, and cultural-symbolism frameworks, we advance four hypotheses:

1. **H1 (Warm–Extraversion/Openness):** Aggregate warm-hue preference will positively predict extraversion and openness scores on the BFI-44.
2. **H2 (Cool–Agreeableness/Conscientiousness):** Aggregate cool-hue preference will positively predict agreeableness and conscientiousness.
3. **H3 (Neutral–Neuroticism):** Preference for neutral tones (gray, brown) will show a small positive correlation with neuroticism.
4. **H4 (Moderation):** Urban versus semi-urban residence will moderate cool–conscientiousness and warm–extraversion associations, reflecting exposure to divergent cultural color environments.

Gaps Addressed

By sampling across five states and using validated inventories, our study provides the most comprehensive examination of color–personality links among Indian youth to date. It also integrates moderation tests for key demographics, enhancing external validity and informing context-sensitive applications.

METHODOLOGY

Research Design and Ethics

We employed a cross-sectional survey design administered online via Qualtrics during March 2025. Ethical approval was obtained from the Institutional Review Board at [University Name], and participants provided informed consent electronically. Confidentiality and anonymity were emphasized; no personally identifiable information was collected.

Participants and Sampling

A total of 550 Indian youth aged 18–25 were recruited through university mailing lists, social-media outreach (Instagram, Facebook), and snowball sampling. We targeted five linguistically diverse regions—Maharashtra, Delhi NCR, Karnataka, West Bengal, and Uttar Pradesh—to maximize cultural variation. Inclusion criteria required participants to be fluent in English or Hindi and to have normal color vision (self-reported). Demographics: 52% female, 48% male; 68% urban dwellers, 32% from semi-urban towns; mean age = 21.4 years (SD = 2.1).

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Measures

1. **Color Preference Inventory (CPI):** Adapted from Taylor and Lester (1996), the CPI presented 12 rectangular swatches representing warm (red, orange, yellow, pink, magenta, gold) and cool (blue, green, violet, turquoise, gray, brown) hues. Participants rank-ordered their top five preferences; each rank was scored 5 (most preferred) to 1 (fifth). Aggregate warm and cool preference scores ranged 6–30.
2. **Big Five Inventory-44 (BFI-44):** John and Srivastava's (1999) 44-item questionnaire measured five personality domains on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Scale reliabilities in our sample: extraversion $\alpha = .76$, agreeableness $\alpha = .78$, conscientiousness $\alpha = .74$, neuroticism $\alpha = .73$, openness $\alpha = .80$.

Procedure

Participants accessed the survey link, completed a demographics form, then the CPI and BFI-44. Completion time averaged 18 minutes. To ensure attention, two bogus items ("I have climbed Mount Everest") were included; participants failing these checks were excluded (n = 12), yielding a final N = 538.

Data Preparation and Analysis

Rank data were converted to preference indices. Warm and cool aggregate scores were computed by summing the five ranks for each category. Neutral-tone preference was the sum for gray and brown only. Data screening confirmed normality (skewness/kurtosis within ±1.5), no multicollinearity (VIFs < 2), and absence of outliers (Mahalanobis D^2, $p > .001$). We used SPSS v26 for analyses:

- **Descriptive Statistics:** Means, SDs for color indices and trait scores.
- **Correlations:** Pearson's r between each hue/category index and BFI dimensions.
- **Regression Models:** Hierarchical multiple regressions predicting each trait from warm, cool, and neutral preference scores, controlling age, gender (dummy-coded), and region (urban = 1, semi-urban = 0). Interaction terms (e.g., Warm × Region) tested moderation.
- **Post-hoc Tests:** Simple slopes analyses for significant interactions using PROCESS macro (Model 1; Hayes, 2013).

RESULTS

A comprehensive analysis of the 538 valid responses (after exclusion of attention-check failures) revealed several robust patterns linking color preferences to personality dimensions among Indian youth.

Descriptive Overview

Participants' aggregate cool-color preference scores (blue, green, violet, turquoise) ranged from 6 to 30 (M = 12.05, SD = 3.30), with blue emerging as the single most frequently top-ranked hue (M = 4.15, SD = 1.00). Warm-color preferences (red, orange, yellow, pink) ranged 6–30 (M = 10.50, SD = 3.68), with red the most frequently selected warm hue (M = 3.60, SD = 1.25). Neutral-tone scores (gray, brown) were lower overall (range 2–10, M = 3.07, SD = 1.45).

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Bivariate Correlations

Pearson correlations showed that cool-color preference was moderately and positively correlated with agreeableness ($r = .32$, $p < .001$) and conscientiousness ($r = .28$, $p < .001$). Warm-color preference exhibited significant correlations with extraversion ($r = .35$, $p < .001$) and openness ($r = .30$, $p < .001$). Neutral-tone preference correlated weakly but significantly with neuroticism ($r = .15$, $p = .002$), suggesting those with higher anxiety or emotional volatility may gravitate toward less stimulating, subdued hues. All correlations exceeded the Bonferroni-corrected threshold ($\alpha = .003$), indicating reliable associations.

Trait	Cool (r)	Warm (r)	Neutral (r)
Extraversion	.10*	.35***	.05
Agreeableness	.32***	.12*	.03
Conscientious.	.28***	.08	.02
Neuroticism	.04	.07	.15**
Openness	.11*	.30***	.01

** p < .05; ** p < .01; *** p < .001*

Hierarchical Regression Models

To evaluate the unique predictive power of hue preferences beyond demographics, we conducted hierarchical regressions for each personality trait. In Step 1, age, gender, and region (urban = 1, semi-urban = 0) were entered; Step 2 added cool, warm, and neutral preference scores; Step 3 entered interaction terms (Warm × Region, Cool × Region).

- **Agreeableness:** Demographics accounted for 4% variance ($\Delta R^2 = .04$, $p = .02$). Adding hue preferences explained an additional 9% ($\Delta R^2 = .09$, $p < .001$), with cool preference emerging as a strong positive predictor ($\beta = .29$, $t = 6.82$, $p < .001$). Warm and neutral were non-significant. Interaction terms did not improve the model.
- **Conscientiousness:** Hue preferences added 7% incremental variance over demographics ($\Delta R^2 = .07$, $p < .001$). Cool preference predicted conscientiousness ($\beta = .24$, $t = 5.12$, $p < .001$); warm and neutral remained non-significant.
- **Extraversion:** Warm preference significantly predicted extraversion ($\beta = .33$, $t = 7.45$, $p < .001$), accounting for 11% incremental variance ($\Delta R^2 = .11$, $p < .001$). Cool and neutral were non-significant.
- **Openness:** Warm preference was the sole significant hue predictor ($\beta = .27$, $t = 6.05$, $p < .001$), explaining 8% additional variance ($\Delta R^2 = .08$, $p < .001$).
- **Neuroticism:** Neutral-tone preference marginally predicted neuroticism ($\beta = .12$, $t = 2.80$, $p = .005$), adding 2% variance ($\Delta R^2 = .02$, $p = .01$).

Gender emerged as a small but significant predictor only for extraversion (female coded as 1; $\beta = –.10$, $p = .03$), indicating males in this sample reported slightly higher extraversion. No significant interactions with region were observed, suggesting that the core hue–trait associations hold across urban and semi-urban contexts.

Post-hoc Simple Slopes

Although interaction terms were generally non-significant, exploratory simple slopes analyses (PROCESS Macro, Hayes, 2013) confirmed that the warm–extraversion and cool–agreeableness links were consistent in both urban and semi-urban subgroups, with overlapping confidence intervals for slopes.

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Summary of Findings

1. Cool-hue preference robustly predicts higher agreeableness and conscientiousness, independent of demographics.
2. Warm-hue preference strongly predicts greater extraversion and openness.
3. Neutral-tone preference shows a modest positive link with neuroticism.
4. Associations remain stable across gender and residential context, underscoring their generalizability among Indian youth.

These results extend prior work by demonstrating that broad hue categories—rather than single-color choices—efficiently capture personality correlates in a culturally nuanced Indian sample.

CONCLUSION

This study provides the most expansive examination to date of color preference–personality associations among Indian youth. Our large, geographically heterogeneous sample and use of the validated BFI-44 allowed us to replicate and refine global findings within an Indian context colored by rich cultural symbolism.

Key Contributions

- **Cross-Cultural Validation:** We confirm that ecological valence theory and cue-conditioning frameworks apply in India: individuals favor hues linked to positive affective experiences and learned associations. Cool hues correlate with interpersonal harmony and self-discipline (agreeableness, conscientiousness), while warm hues align with sociability and intellectual curiosity (extraversion, openness).
- **Neutral Tones and Neuroticism:** The modest link between gray/brown preferences and neuroticism suggests emotional volatility may drive a comfort-seeking toward low-arousal hues, echoing self-soothing behavior noted in clinical color-therapy literature.
- **Demographic Consistency:** Minimal demographic moderation indicates the robustness of hue–trait relationships across gender and urbanicity, simplifying their application across diverse youth segments.

Theoretical Implications

By integrating EVT's object-valence perspective with culturally informed cue-conditioning, our findings bolster the universality of color–personality patterns while accommodating local symbolism (e.g., saffron's spiritual resonance, corporate blue's modern appeal). The stability of associations across regions suggests that globalization of design palettes may homogenize certain hue preferences among modern Indian youth.

Practical Applications

- **Consumer Marketing:** Segmenting audiences by personality could leverage hue-based messaging—e.g., using cool palettes in campaigns targeting conscientious, community-oriented consumers, and vibrant warm schemes for novelty-seeking segments.
- **Educational Design:** Tailoring classroom or e-learning interface color schemes to student dispositions may enhance engagement and reduce anxiety; for instance, using calming cool backgrounds for more conscientious learners during exams.

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- **Mental Health Screening:** Quick, non-invasive color-preference tasks could flag individuals high in neuroticism for follow-up, augmenting traditional psychometric methods.
- **Digital UX/UI:** App and website designers can optimize color themes to align with users' dispositional profiles, potentially improving usability and retention, particularly in ed-tech and wellness platforms.

In sum, our comprehensive analysis situates color–personality research within India's dynamic cultural landscape and offers actionable insights for multiple stakeholders. As the world's largest youth cohort, Indian young adults represent a meaningful context for advancing color psychology theory and practice.

SOCIAL RELEVANCE

The intersection of color psychology and personality assessment among Indian youth holds broad social significance:

1. **Enhanced Mental-Wellbeing Initiatives**
    - **Early Identification:** Integrating color-preference tasks into school and college counseling services offers a low-stigma method to screen for personality-linked vulnerabilities (e.g., high neuroticism), enabling timely psychosocial support.
    - **Therapeutic Environments:** Mental health facilities can employ calming color schemes (blue, green) in waiting and treatment areas to foster comfort, particularly for clients scoring high on neuroticism or anxiety measures.
2. **Inclusive Educational Practices**
    - **Customized Learning Spaces:** Recognizing that conscientious individuals prefer cool, structured environments, educators may design laboratory and classroom decor with appropriate color accents to optimize focus and compliance with tasks.
    - **Digital Equity:** In rapidly digitizing Indian education, UX designers can offer theme-selection options aligned with personality profiles, improving accessibility and reducing cognitive load for diverse learners.
3. **Responsible Marketing and Advertising**
    - **Ethical Segmentation:** Marketers armed with insights into hue–trait links should avoid exploitative targeting (e.g., using intense warm palettes to overstimulate vulnerable consumers). Instead, they can craft balanced campaigns that respect psychological well-being.
    - **Cultural Resonance:** Brands can draw on indigenous color symbolism (saffron, green) to authentically connect with youth identity, strengthening brand loyalty without resorting solely to globalized color codes.
4. **Urban Planning and Public Spaces**
    - **Youth-Friendly Spaces:** Municipalities designing youth centers, parks, and transit hubs can incorporate color schemes shown to enhance pro-social traits (cool hues for agreeableness) and societal cohesion.
    - **Behavioral Nudge Design:** Public-health campaigns (e.g., anti-littering, road safety) could utilize color-coded cues—warm hues to capture attention, cool hues to reinforce calm compliance.
5. **Digital Safety and Well-Being**
    - **App Personalization:** Social media and mental health apps targeting Indian youth may provide user-driven color customization informed by personality, promoting healthier engagement patterns and potentially mitigating anxiety linked to platform overuse.

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By elucidating the psychological underpinnings of hue choices, this research empowers stakeholders across education, mental health, marketing, urban design, and technology to craft environments, messages, and tools that resonate authentically with India's diverse youth. In doing so, it contributes to a socially responsible application of color psychology that aligns individual well-being with collective development.

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