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Colours in clothes and psychological functioning: the impact on emotions and self-esteem

As cores nas vestimentas e funcionamento psicológico: o impacto sobre as emoções e a autoestima

Los colores en la ropa y funcionamiento psicológico: el impacto en las emociones y la autoestima

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ABSTRACT

Background: Colours are the object of study in various areas of humanitarian sciences, such as linguistics, cultural studies, and art. In psychology, the effects of colour on behaviour and emotional states are analyzed. The purpose of this research is to explore the preference for colours in clothes Indian students wear and report the results of the "Colour Challenge Week" project. **Methods**: Simultaneous mixed methods were used in this study: qualitative (a survey, documents analysis: students' reports) and quantitative (two standardized tests: The Rosenberg Self-Esteem Scale and the PANAS-SF). **Results**: The article introduces the survey results among 246 university students aged 18-22 from different states of India. It shows the colours black, white, and blue in clothes are of preference. Pearson's Chi-Square test was used to examine the Frequency distribution of values. To find the answer to the research question: "What is the impact of colours in clothes on students' emotions and self-esteem?" a thematic analysis of students' reports was performed. **Conclusions**: The exploration of this topic is far from complete and to uncover all relationships further intensive research is required. Future studies are recommended utilizing bigger sample sizes with a more equal proportion of males to females.

Keywords: thematic analysis; colour challenge; Navratri festival; symbolism; self-esteem.

RESUMO

Antecedentes: As cores são objeto de estudo em várias áreas das ciências humanitárias, como a linguística, os estudos culturais e a arte. Na psicologia, são analisados os efeitos da cor no comportamento e nos estados emocionais. O objetivo desta investigação é explorar a preferência pelas cores nas roupas que os estudantes indianos usam e relatar os resultados do projeto "Colour Challenge Week". **Métodos**: Neste estudo foram utilizados métodos mistos simultâneos: qualitativos (um inquérito, análise de documentos: relatórios dos alunos) e quantitativos (dois testes padronizados: a Escala de Auto-Estima de Rosenberg e o PANAS-SF). **Resultados:** O artigo apresenta os resultados do inquérito realizado a 246 estudantes universitários com idades compreendidas entre os 18 e os 22 anos de diferentes estados da Índia. Mostra que as cores preta, branca e azul são as preferidas no vestuário. O teste do qui-quadrado de Pearson foi utilizado para examinar a distribuição de frequência dos valores. Para encontrar a resposta à pergunta de investigação: "Qual é o impacto das cores do vestuário nas emoções e na autoestima dos estudantes?", foi efectuada uma análise temática dos relatórios dos estudantes. **Conclusões:** A exploração deste tópico está longe de estar completa e para descobrir todas as relações é necessária mais investigação intensiva. Recomenda-se a realização de estudos futuros com amostras de maior dimensão e com uma proporção mais equilibrada de homens e mulheres.

Palavras-chave: análise temática; desafio das cores; festival Navratri; simbolismo; autoestima.

RESUMEN

Antecedentes: Los colores son objeto de estudio en diversas áreas de las ciencias humanitarias, como la lingüística, los estudios culturales y el arte. En psicología, se analizan los efectos del color en el comportamiento y los estados emocionales. El objetivo de esta investigación es explorar la preferencia por los colores en la ropa que visten los estudiantes indios e informar de los resultados del proyecto «Semana del Desafío del Color». **Métodos:** En este estudio se utilizaron métodos mixtos simultáneos: cualitativos (una encuesta, análisis de documentos: informes de los estudiantes) y cuantitativos (dos pruebas estandarizadas: La Escala de Autoestima de Rosenberg y el PANAS-SF). **Resultados:** El artículo presenta los resultados de la encuesta realizada a 246 estudiantes universitarios de entre 18 y 22 años de distintos estados de la India. Muestra que los colores negro, blanco y azul en la ropa son los preferidos. Se utilizó la prueba Chi-cuadrado de Pearson para examinar la distribución de frecuencias de los valores. Para responder a la pregunta de investigación «¿Cuál es el impacto de los colores en la ropa en las emociones y la autoestima de los estudiantes?», se realizó un análisis temático de los informes de los estudiantes. **Conclusiones:** La exploración de este tema está lejos de ser completa y para descubrir todas las relaciones se requiere más investigación intensiva. Se recomienda la realización de futuros estudios con muestras de mayor tamaño y con una proporción más equitativa de hombres y mujeres.

Palabras clave: análisis temático; desafío cromático; festival Navratri; simbolismo; autoestima.

INTRODUCTION

In existing studies, the topic of colours is considered in different contexts. Various colours not only evoke physical, physiological, and aesthetic reactions, as stated by Burton (2009) but also cause particular intellectual reflexes and responses. Colours can transmit a message and have associations with a particular event while being perceived on a subconscious level. A part of studies in psychology have focused on the relationship between the effects of colours and emotional states, along with the psycho-diagnostics of colour (Gage, 1999).

Swiss psychiatrist Dr. Lüscher (2017) first presented his colour test in 1947 at the International Congress of Psychology in Lausanne, Switzerland. He believed that personality traits could be identified based on one's choice of colours. Cojocaru (2024) having analysed the works of the scholars who studied the phenomenon of colour and its influence on the human psyche, has come to the conclusion that colour exists both in the external, objective world of reality, as well as in the inner, subjective world.

Colours carry their attributed meanings and essence in various cultures. In Western cultures white is worn at weddings whereas in India it is a common colour for funerals. Holi, a Hindu festival of colour, spring and love is widely celebrated in India to symbolize a victory of good over evil. Kumar (2017) states that colours possess a multitude of meanings depending on the cultural context.

As the present research was aimed to investigate the influence of colours in clothes on emotions and self-esteem, the literature has also been widely reviewed to find out a correlation with the same. The relationship between clothing and self-esteem has been studied by several researchers and it was proved that self-image, and self-esteem are impacted by clothes. The importance of clothing in the building of self-concept and communicating information during social interactions was stated by Baumgartner (2012). Burnasheva and Suh (2020) declared that individuals prefer fashion items related to their self-image. The research involving Gen Z and millennial consumers showed they attempt to project their self-image through a fashion style that corresponds with their self-concept (Suh et al., 2018; Clarke & Braun, 2013). The role of clothing as a communicator of information during social interaction, as an aid in the establishment of self-identity, and its importance to college students was investigated by Daters (1990).

The study done in Delhi among Indian young adults showed a positive correlation between the minimalistic style of clothing and the individual's self-esteem levels, proving the fact that the type of clothing affects the way individuals feel about themselves (Jain, 2022). The author also states that every shade, material, and shape have a purpose. A person's identity, personality, qualities, self-esteem, ideals, views, values, or emotions can be reflected or expressed through their clothing as well.

Having investigated the existing literature on cultural symbolism, psychology of colours, their influence on mood, behaviour, and performance the following research gap was identified: the authors neither reported on the colour preference in clothes among Indian students nor they studied the impact of being challenged by wearing novel colours on emotions, interaction with peers and self-esteem. It is noteworthy Indian research itself is scarce on these topics. Therefore, this study *aims* to find out the preference for colours in clothes Indian students wear and determine the relationship between colours in clothes and the emotions they evoke as well as the impact on self-esteem.

The main *research questions* of this study are as follows:

RQ1. What are the colour preferences of Indian students in the casual clothes they wear?

RQ 2. What is the impact of colours in clothes on students' emotions and self-esteem?

As most of the previous research was conducted outside of India, this further validates earlier studies by involving the Indian population.

LITERATURE REVIEW

Colours are the object of study in various areas of humanitarian sciences, such as linguistics, psychology, culture, and art. They play a significant role in our lives. The researchers (Nurlelawati et al., 2012) reviewed and analyzed 40 colour studies selected from various disciplines discussing colour effects on human behaviour, working performances, moods, and emotions, thus confirming the significant interest of scholars in this domain.

In the research done by Muratbekova and Shamoi (2024), who studied colour-emotion associations in art, findings revealed strong associations between specific emotions and colours: gratitude strongly correlates with green and brown; orange with shame, yellow with happiness, and gray with fear.

Dou and Liu (2023) list the associations between particular colours and emotional response elicited from various studies: the black colour can be linked to sadness, negativity and immorality; yellow is linked to happiness; green is matched with envy and some pleasant emotions. The authors conducted a usage-based, cognitive-semantic study on relations between the metaphorical meanings of the Chinese colour term, *bái* "white", with the Behavioral Profiles approach.

Baniani's (2022) research done among Japanese students from elementary school to university concluded that children associate colours with emotions and they found out that red and blue hues were most favorite across all age groups.

Every day we consciously or subconsciously choose our outfit to wear at work or college or opt for a dress of a particular colour for a special occasion and festivals. Interior, clothes, landscape designers, and marketing experts widely use colours to influence the choice and attract customers. Colour helps in establishing brand recognition which has a significant impact on consumer purchasing behavior (Kumar, 2017).

The intriguing paper (Xue et al., 2024) explores the relationship between colour brightness, saturation, and gender stereotyping. It is found that the formation of gender stereotypes in children's clothing is related to people's different expectations for the temperament and behaviour patterns of children of different genders.

Objects of fashion have a semantic nature that is reflected in language. Zabolotna (2019) investigated the semantics of fashion colour palettes. The author evaluated colour adjectives in fashion texts which are modified according to the seasons, colour warmth, depth, saturation, transparency, homogeneity, iridescence as well as colour compatibility, emotional impact on the viewer, associative and metaphoric description of the colour. For instance, while purple is associated with regality in Europe, it signifies excessive spending in China. The colour white implies purity in the United States and the Middle East, but in Japan and China, this colour is associated with death and mourning.

A significant contribution has been made by the scholars researching subcultures (such as goths, emos, etc.), their essence, values, image, items, and symbolic meaning of colours in clothes they wear and the ways of behavior (Klein, 2003; Simon & Kelley, 2007; Schmitt, 2011; Williams, 2012; Wibrinda, 2021; Darchen et al., 2023). The dominant black colour symbolizes pain, depression, pessimism, despair, and suffering.

Navratri festival is celebrated in India annually. It lasts for 9 days and is dedicated to the Hindu Goddess Durga. Every day is devoted to a particular colour during this festival. The nine colours symbolically represent different forms of the Goddess. Women, girls, and children in some states of India wear a defined colour of dress during each day of Navratri (Rajendran, 2022).

Seven chakras (the word is derived from Sanskrit and means wheel or circle of life) in our body are represented by distinct colours. The energy centers correspond with certain emotions and physical body parts. Recognizing each colour's meaning is useful when it comes to channeling colours in everyday life to indicate emotions and healing (Harding, 2018). The colours of chakras: red, orange, yellow, green, (light) blue, indigo, and purple (or violet) are like those of a rainbow.

Kudrya-Marais and Olalere (2022) performed a case study of colour symbolism in the Hindu community in South Africa. They suggest that colours are connected to gods, planets, and chakras in Hindu teachings. Most of the participants in the aforementioned study chose red, yellow, and blue as the main colours used in Hindu practices. The colour black as identified by the interviewed people has connotations of evil, anger, darkness, and death in Indian culture. Metaphorical usage of colours as associations with the aging process was analyzed by Soroka (2023). The colours rose and burgundy were mentioned by the participants of the survey to express romantic connotation. Pavey (2009) researched the symbolism of colours across religions and cultural societies. It was concluded that each culture has its colour associations which can change over time.

Guéguen (2012) experimented with colour red and its influence on people's behaviour. One research involved women hitchhikers. It was found that the women wearing red solicited a higher response in the number of male drivers who stopped to offer a ride. The second study showed that red lipstick enhanced waitresses' tips (Guéguen & Jacob, 2012). The red colour was associated with positive emotions in the work done by Jonauskaite et al. (2020).

Clothes that people wear can also communicate a lot: from status to individual personality. Sheng (2023) in the article devoted to a new fast spreading trend in China of virtual outfit analyses the importance of clothing in general. Clothes are the language of a person's body. The author reports that clothes generate a new social image for the wearer, enabling him or her to interact with the outside world while simultaneously reflecting the wearer's inner ego. Clothing has been connected with our feeling of honor and our desire to be respected by others. The researcher states that most people seek positive feedbacks. Modern young people as a result of the differences in their personalities desire to stand out when they dress.

According to Tombs (2006), fashion affects both our self-concepts and our internal feelings. The clothes' function has changed over time. Lee (2005) studied the ways clothes affect psychological processes like self-esteem. Other researchers investigated how a person's self-image is mirrored by their clothes (Kwon, 1991; Masuch & Hefferon, 2014). It is considered

that the clothes we wear have an interpersonal and intrapersonal effect that extends to some psychological processes (Adam & Galinsky, 2012).

Sharma et al. (2024) conducted research among youth between 18 and 24 years of age studying for professional courses in colleges of Udupi, Karnataka. The outcomes proved that body-image, appearance contingent self-worth, and self-compassion are positively related to each other.

Khare et al. (2012) did a study to understand the fashion clothing involvement of Indian women concerning collective self-esteem, concluding that it is influenced by age, importance to identity, and public esteem. Their research involved 397 women from five different cities of India in their offices, colleges, and malls environment. The results showed that wearing outfit from prestigious fashion brands significantly increased participants' self-esteem.

Despite the plentiful studies, the issue of preferences of colours in everyday clothes among Gen Z Indian students and the impact of being challenged by wearing novel colours on emotions, interaction with peers and self-esteem still remain unexplored. The present research provides an opportunity to address these questions.

METHODOLOGY

Design and participants

The study was conducted in two phases. During the *first phase*, participants filled in a questionnaire in a Google form where they were asked their gender, age, school of study in the university, and their favorite (at least 3) colours in clothes. The data collected in this stage helped to find out the answers to the first research question: What are the colour preferences of Indian students in the casual clothes they wear?

A random sample of individuals was recruited. 246 students of O.P. Jindal Global University participated in the survey: 189 females, and 57 males, aged 18-22 (M = 20.08), from different states of India (e.g. Haryana, Odisha, Rajasthan, Kashmir). Pearson's Chi-Square test was used to examine the Frequency distribution of values (colours).

The *second phase* was conducted with 51 students (males – 6, females – 45) who were doing a 3-credit elective course "Personal Development and Self-Care through Arts" during the fall semester of 2023 (a convenience sample). The experiment was performed where the students did a project on the psychology of colour titled "Colour Challenge Week". They received the following instructions:

1. Wear clothes of different colours during the week (including those which you never or seldom wear) and make journal entries.

   What colours were you wearing?

   How did you feel?

   How did others interact with you?

   Verdict

2. Write a report. The following outline was suggested for the report: Introduction: What are your favorite colours in clothes (up to 3 colours) and their meaning in psychology? Describe what you were wearing during the week, your feelings and people's reactions. Write your Insights/Verdict/ Conclusion.

The idea of the project was inspired by the author of "The Little Book of Colour" Haller (2019), and by an aforementioned Hindu festival – Navratri.

Hall and Rist (1999) suggest that by combining interview, observation, and document analysis methods (methodological triangulation) in qualitative research more valid data can be obtained. Simultaneous mixed methods were used in this study: *qualitative* (survey, documents analysis (students' reports) and *quantitative* (two standardized tests: The Rosenberg Self-Esteem Scale and the PANAS-SF were applied before and post students' "Colour Challenge Week" projects.

Instruments

In the 10-item Rosenberg Self-Esteem Scale (RSES), the students were presented with statements (such as "I take a positive attitude toward myself") to which they had to respond on a four Likert scale from "strongly agree" to "strongly disagree". Scores varied from 10 to 40. The total score is divided into three levels: Low (10–25), Medium (26–29), and High (30–40). The higher scores indicated higher levels of self-esteem. RSES is widely used for measuring self-esteem (Jordan, 2020), and it can be used universally across cultures.

The Positive and Negative Affect Schedule (PANAS) was developed in 1988 by psychologists Watson et al. (1988). It is used as a psychometric scale to show the relationship between positive and negative affect within certain personality traits. The participants are asked to indicate the extent they have felt the way over the past week. The scale is comprised of 20 words that describe different emotions and feelings (interested, distressed, upset, excited, etc.). A 5-point Likert scale is then used for scoring: 1. Very Slightly or Not at All. 2. A Little. 3. Moderately. 4. Quite a Bit. 5. Extremely. Scores can range from 10 to 50 for both the Positive and Negative Affect, with the lower scores representing lower levels of Positive/Negative Affect and higher scores representing higher levels of Positive/Negative Affect. The PANAS displays a very good internal reliability that is consistent with Cronbach alpha coefficient scores ranging from 0.86 to 0.90 for the Positive Affect Scale and 0.84 to 0.87 for the Negative Affect Scale (Magyar-Moe, 2009). PANAS-SF or short form is a more concise version of the original measurement.

The findings were derived from a large set of qualitative data collected from the students' reports. QDA Miner Lite V.3.0 (a qualitative analysis software) was used for the analysis of the textual data to answer the second research question: What is the impact of challenging colours on students' emotions and self-esteem? Inductive coding made it possible to get a complete, unbiased look at the themes throughout the students' reports on the "Colour Challenge Week" project. One Sample Student's t-test was used to analyze the results of the Rosenberg Self-Esteem Scale (RSES) and The Positive and Negative Affect Schedule (PANAS-SF) before and after the experiment.

Research ethics

This study is considered minimal risk. All participants gave their written consent and were aware of the right to withdraw without detriment. The confidentiality of their personal data and provided information was also ensured. Participants were informed about the goals and scope of the study, possible risks and benefits that may arise as a result of their participation

RESULTS AND DISCUSSION

During the *first phase*, participants filled in a questionnaire in a Google form where they were asked about their favorite colours in clothes. The data collected in this stage helped to receive the answers to the first research question: What are the colour preferences of Indian students in the casual clothes they wear?

Living in India the author has been admiring all the beauty and amazing shades of flowers, blossoming trees as well as colour palette of saris. Looking at the variety of bright hues one can assume that this is culturally driven and expect mentioning of such colours as red, orange, pink, purple, lilac, etc. to be the favorites in clothes among university students. However, the results of the survey conducted with 246 university students showed the colours black, white, and blue to be in preference. Pearson's Chi-Square test was used to examine the Frequency distribution of colours. 75,2 % of the surveyed students (n=185) chose the colour black as their favorite in clothes they wear daily. 125 participants mentioned white which comprises 50,8 %. The colour blue was chosen by 114 university students. The frequency distribution of the mentioned colours during the first phase of our study is presented in Table 1.

Table 1. Frequencies of favorite colours in clothes in Indian university students

Colour	black	white	blue	pink	green	red	brown	purple	grey	yellow	beige	orange
Number	185	125	114	58	43	40	29	24	22	18	16	12
Percentage (%)	75.2	50.8	46.3	23.6	17.5	16.3	11.8	9.8	8.9	7.3	6.5	4.9

Source: created by the authors of the research

To find the answer to the second research question: "What is the impact of challenging colours on students' emotions and self-esteem?" – a thorough thematic analysis of students' reports was performed. Thematic analysis is the process of identifying patterns or themes within qualitative data (Maguire & Delahunt, 2017). Braun and Clarke (2006) distinguish between a top-down or theoretical thematic analysis, that is driven by the specific research question(s) or the focus, and a bottom-up or inductive one that is more driven by the data. Our analysis was driven by the data from students' reports and was more bottom-up. Inductive coding made it possible to identify the themes in the students' journal writings on the "Colour Challenge Week" project.

Braun and Clarke (2006) suggest a six-phase framework for conducting a thematic analysis: Step 1: Become familiar with the data. Step 2: Generate initial codes. Step 3: Search for themes. Step 4: Review themes. Step 5: Define themes. Step 6: Write-up.

The first step in any qualitative analysis is reading the transcripts, so all students' reports were studied thoroughly. A qualitative analysis software QDA Miner Lite V.3.0 was used for the analysis of the textual data, which were imported from Word and pdf files submitted by the participants. Further the on-screen text coding was performed and patterns were identified. We discussed them and developed some preliminary ideas about codes. We worked through each transcript of text that seemed to be relevant to our research question. Afterwards we modified the codes which were organized into broader themes: Benefits, Impact on mood & emotions, and Impact on self-confidence. The students emphasized positive experience gained by doing the project. Moreover, the participants mentioned how wearing some challenging colours influenced their behaviour, thoughts, mood, and emotions. Performing the project made students feel brave, stimulated them and increased their confidence (Table 2). The Indian students who were doing the project "Colour Challenge Week" emphasized the unique experience they had while performing it (Figure 1). They mentioned that it made them leave their comfort zone but the reaction and compliments from their peers generated a positive effect. Most participants reported that they would continue to experiment with colours in clothes in the future as well.

Table 2. Thematic analysis of students' reports (brief introduction)

Theme	Text
Benefits	This experiment motivated me to try wearing colors that I usually avoid.
	I feel encouraged to explore and experiment with more colors going forward.
	It gave me insights into my own personality and how react to various colours on my own body.
	Colours actually affect us, enhancing our productivity, motivation, and overall wellbeing with each colour that uplifts, inspires, and supports us.
	Colors are a useful medium to convey expressions about oneself.
	it gave me an opportunity to exploit my closet and for the first time I wore different colours spread across the week.
	wearing different colours every day of the week, regardless of how they made me feel, also boosted my creativity on many levels.
Impact on mood & emotions	choice of dress color can affect my emotions.
	wearing colors such as red and yellow made me happier.
	for the first time I was conscious of the impact my dress's colour has on my feelings.
	noticed how my behaviour, thoughts and emotions are influenced by the colours around me and what colour I am wearing and how it empowers me and lifts my mood or makes me sad or insecure about myself; overall it was really insightful to see how colours have an effect on everything.
	I am also feeling happier and rejuvenated; felt empowered, joyous, serene, powerful.
	wearing green and pink which made me feel cheerful and interact with new people.
	mere colour can have such a profound impact not only on a person's moods and emotions but also on the way that they are perceived by others.
Impact on self-confidence	also noticed how colours along with the vibe of the outfit (formal or casual) impact our confidence.
	black makes me confident; I feel more self-assured…
	the colours I'm wearing as long as they make me feel confident and make me feel myself…
	I am feeling more confident after doing this and I will surely not be shy to try out a new colour or outfit now.
	the significance of different colours when it comes to self-image and how it affects confidence…
	made me feel brave and stimulated me and even increased my confidence.
	gave me confidence in my ability to style outfits and present myself.

Source: created by the authors of the research

Figure 1. Colour challenge week photos

Source: The student's reports (written consent for publication was obtained)

One-Sample Student's t-test was used to analyze the quantitative data gathered by applying the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) and The Positive and Negative Affect Schedule (PANAS-SF) before and after the experiment.

To ascertain if there was a significant change from baseline, we compared the mean difference between the pre- and post-intervention scores to a test value of 0 using a one-sample t-test (Table 3). To determine if the mean difference between the pre- and post-intervention ratings was statistically different from zero in our study, the one-sample t-test was used.

We especially wanted to find out if there was a statistically significant change from the baseline, and 0 indicates that there was no change, thus we chose this test value of 0. We acknowledge, however, that a dependent (paired) sample t-test would be more appropriate to account for the paired character of the data because we are comparing scores before and after the intervention within the same group. With the paired t-test, the within-subject changes are more accurately analyzed because the mean of the differences is directly compared. Thus, it may become the source for our future investigations.

Table 3. One-Sample Student's t-test

| | Test Value = 0 | | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
					Lower	Upper
Rosenberg self-esteem scale (before)	40.550	50	.000	27.58824	26.2217	28.9548
Rosenberg self-esteem scale (after)	49.485	50	.000	31.35294	30.0803	32.6255
PANAS-SF positive (before)	31.619	50	.000	33.01961	30.9221	35.1172
PANAS-SF positive (after)	38.042	50	.000	37.27451	35.3065	39.2426
PANAS-SF negative (before)	27.817	50	.000	26.15686	24.2682	28.0456
PANAS-SF negative (after)	27.131	50	.000	19.45098	18.0110	20.8910

Source: created by the authors of the research

To process the received data, the scores of both tests were coded into low, medium, and high levels. Calculations were performed using SPSS Statistics 21.0 (Table 4).

Table 4. The results of the Rosenberg Self-Esteem Scale (RSES) before and after the experiment

| Levels | Before the experiment | | After the experiment | |
	Frequency	Percent	Frequency	Percent
Low	15	29.4	6	11.8
Medium	17	33.3	10	19.6
High	19	37.3	35	68.6
Total	51	100.0	51	100.0

Source: created by the authors of the research

As can be seen from the table, the percentage of participants who had a low level of self-esteem decreased by approximately 2.5 times after the experiment (from 29,4% to 11,8%) whereas the percentage of students with high levels increased by 1.8 times and comprised 68,6 % after the experiment. This testifies the positive influence of colours in clothes students wear on their self-esteem which was also supported by the results of the qualitative data collected from the students' reports mentioned previously (Table 2). The results of PANAS-SF before and after the experiment are introduced below (Table 5).

Table 5. The results of PANAS-SF before and after the experiment

| Levels | Positive affect | | | | Negative affect | | | |
| | Before the experiment | | After the experiment | | Before the experiment | | After the experiment | |
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Low	4	7.8	2	3.9	12	23.6	36	70.5
Medium	29	56.9	14	27.5	35	68.6	14	27.5
High	18	35.3	35	68.6	4	7.8	1	2.0
Total	51	100.0	51	100.0	51	100.0	51	100.0

Source: created by the authors of the research

The term *affect* in PANAS refers to the emotions or feelings that a person might experience and display, in terms of how these emotions influence him or her to act and make decisions as described by Riopel (2019). The PANAS measures both positive and negative emotions for participants from week to week as they engage in everyday life (Magyar-Moe, 2009).

It can also be used as a tool for charting the immediate effects of therapy as well as any outcomes associated with positive psychological exercises, interventions, or activities. The scale is comprised of 20 words that describe different positive and negative emotions and feelings.

Our intervention in the form of a "Colour Challenge Week" project demonstrated a significant change in both positive and negative affect. The percentage of the participants with a high level of positive affect increased approximately twice and with a high level of negative affect reduced by almost 4 times (from 7,8% to 2.0%) after the experiment.

The positive emotions and feelings caused by wearing clothes of definite colours were mentioned in students' reports as well: "wearing colors such as red and yellow made me happier"; "wearing green and pink made me feel cheerful"; "when I wore red colour, I felt very energetic and more alive"; "I felt pretty when I wore pink colour and it's a very soothing colour too"; "pink makes me feel good and comfortable and the people around me notice me in bright colours"; "green calms me down", etc.).

DISCUSSION

The results of this research showed the interest of the participants in the effects of colours in the clothes they wear. Most students mentioned the direct impact on their mood, emotions, self-perception, and confidence. Before the assignment of "Colour Challenge Week" was suggested, the students who were doing the course "Personal Development and Self-Care through Arts" were equipped with the basic knowledge of the psychology of colours. They also discussed their perception of various colours. It was quite surprising to receive the results of the survey on the preferences for colours in clothes.

Having studied the findings of the research done on Indian culture (Kumar, 2017; Harding, 2018), and based on personal observation the authors of this paper could have hypothesized that students preferred to wear bright colours of chakras and avoid black colour as it has connotations of evil, darkness, and death in Indian culture. However, the study identified a leading position of the colour black.

Some explanations from the participants are as follows:

"*Even though psychology states that black may come off as intimidating, oppressive, or cold, I love wearing Black because of how sophisticated it looks. A few other psychological effects that I have personally experienced and agree with are security and emotional safety, black feels like the safest colour to wear as it hardly stands out. I wear tracks of this colour on a nearly daily basis as it feels the most comforting and familiar and safe. Black goes with everything, and you can't go wrong with it*".

"*Black for me is a very stable colour and I wear it when I don't want to put in a lot of effort but still want to look neat and put together. Black also gives me a lot of confidence*".

"*The colour black is frequently associated with power, sophistication, and elegance. People who prefer black as their favorite colour may value these qualities and feel more confident and in control when they are surrounded by it. Black can also represent mystery and rebellion. People who prefer black may be drawn to its edginess and use the colour to express themselves or stand out from the crowd*".

"*I believe that this colour is wrongly associated with negativity and power. Whereas, for me, black is a colour that goes with everything and anything. It can make any other colour look glassier and bold. I feel very confident when I wear black. I mostly like it because it hides my insecurities which results in making me happy*".

Similar ideas can be found in the research done by Jain (2022), "Take the little black dress, for instance. The fabric of your choosing will also evoke specific attributes, such as satin or silk that symbolize richness and opulence, just as the color is linked to elegance, sophistication, and power. A person's choice of clothing can be influenced by how they feel about themselves, and the clothes they choose to wear can also have an impact on how they feel about themselves".

51 Indian students (males – 6, females – 45) who were doing a 3-credit elective course "Personal Development and Self-Care through Arts" during the fall semester of 2023 were involved in the second phase of our research. The current distribution, which consists primarily of females, is a limitation due to recruitment challenge that was made available for this study. We have carefully taken into account this imbalance in our experiment, even though we accept that it may have an impact on how broadly applicable our findings are. Future research will look into effects specific to gender or try to enlist a more representative group. Despite this drawback, we think the findings offer insightful information about the topic under study.

The thematic analysis of the participants' reports on "Colour Challenge Week" project demonstrated the impact of various colours on students' moods, emotions, feelings, and self-confidence, which supports the findings of the previous

research (Gage, 1999; Kaya & Epps, 2004; Tsunetsugu et al., 2005; Solli & Lenz, 2011; Nurlelawati et al., 2012; Lombana & Tonello, 2017; Günes & Olguntürk, 2020).

Hong et al. (2024), who studied the "red effect" mentioned that most research suggested that red enhanced attractiveness. The participants of our experiment pointed out the similar correlation: "wearing colors such as red made me happier; my friends paid me compliments when I was wearing a red dress".

The quantitative data received by applying the Rosenberg Self-Esteem Scale (RSES) and the PANAS-SF in our study justify the relationship between the effects of colours and emotional states, colours and self-esteem. The authors define self-esteem in the following way: "(it) is how much we like ourselves and how much we value our self-worth, importance, attractiveness, and social competence" (Plotnik & Kouyoumdjian, 2011).

In general, today's teens think quite highly of themselves and believe they will achieve extraordinary success in their personal and work lives. One reason for this is that parents praise their children more than in previous generations (Twenge & Campbell, 2008). The results of the Rosenberg Self-Esteem Scale (RSES) in the presented research can also support this point of view as 33,3% of Gen Z participants from Indian university demonstrated a medium level of self-esteem and 37,3% – a high level even before the intervention.

Baron and Byrne (1991) stated that self-esteem is subject to change in response to outside factors, such as other people's reactions, performance, and expectations. We could observe a similar trend mentioned in the students' reports. They noted that conducting the project was quite challenging but the positive, encouraging reaction and compliments from peers enhanced their self-confidence.

A lot of things from our childhood form a foundation for self-esteem. It is very important to mention that India is a very diverse country with various religions, customs, and traditions which directly or indirectly influence the development of self-esteem. Gender, social background, relationships in a family, and even skin colour have their influence. Undoubtedly, it is impossible to impact a self-esteem level only by wearing bright colours in clothes. Moreover, self-esteem in adults is stabler and harder to influence, but a positive shift can happen. A complex of activities involved in a performance of "Colour Challenge Week" project (journaling, wearing different colours, and being conscious of various items of clothing, self-reflection, and peer support) produced a positive impact.

This study extends the previous research by investigating the impact of colours in clothes on people's moods, emotions, and self-esteem. As most of the previous research was conducted outside of India, this further validates earlier studies by involving the Indian population.

CONCLUSION

In conclusion, the presented research aimed to find out the preference for colours in clothes Indian students of Gen Z wear daily and report the results of the "Colour Challenge Week" project performed as an assignment in the elective course "Personal Development and Self-Care through Arts" taught in Jindal Institute of Behavioural Sciences, O.P. Jindal Global University.

The article introduced the results of the survey conducted among 246 university students (189 females, 57 males), aged 18-22 from different states of India. It showed the colours black, white, and blue in clothes are in preference among Indian students. Pearson's Chi-Square test was used to examine the Frequency distribution of values.

To find the answer to the second research question: "What is the impact of colours in clothes on students' emotions and self-esteem?" – a thematic analysis of students' reports was performed. A qualitative analysis software QDA Miner Lite V.3.0 was used to examine the textual data. Inductive coding made it possible to get a complete, unbiased look at the themes throughout the students' reports on the "Colour Challenge Week" project. The following themes were derived: Benefits, Impact on mood & emotions and Impact on self-confidence. The participants mentioned how wearing some challenging colours influenced their behaviour, mood, emotions, and self-esteem. Performing the project made students feel brave, stimulated them, and increased their confidence. Indian students (n=51) who were doing the project "Colour Challenge Week" emphasized the unique experience they had while performing it. One Sample Student's t-test was used to analyze the results of the Rosenberg Self-Esteem Scale (RSES) and the Positive and Negative Affect Schedule (PANAS-SF) before and after the experiment.

The percentage of participants who had a low level of self-esteem decreased by approximately 2.5 times after the experiment (from 29,4% to 11,8%) whereas the percentage of students with high level increased by 1.8 times and comprised 68,6 % after the experiment. This testifies the positive influence of colours in clothes students wear on their self-esteem.

The intervention in the form of a "Colour Challenge Week" project demonstrated a significant change in both positive and negative affect which can be judged from the quantitative data received from the PANAS-SF analysis. The percentage of the participants with a high level of positive affect increased approximately twice and with a high level of negative affect reduced by almost 4 times (from 7,8% to 2.0%) after the experiment.

This research supports the results of previous studies on the influence of colours on people's emotions and enriches the scientific literature by adding the findings of the impact of various colours in clothes on self-esteem among students in Indian culture. Further research could expand on this by involving participants with a more equal proportion of males to females.

Limitations and future research

Unfortunately, there was an unequal distribution of students in terms of gender who enrolled in the course and participated in this experiment (6 males, 45 females). Therefore, the data obtained from them were not compared. Based on the findings of this research, it is suggested that further research be conducted utilizing sample sizes with a more equal proportion of males to females. The sample size of 246 is small in terms of giving a general reflection of society as well. Future research could expand on this. Considerably more work will need to be done to produce a more thorough examination of effects of various colours in clothes and their connection with people's emotions and self-esteem. In this vein, future research may delve into the effectiveness of such interventions and their long-term impact on establishment of self-identity. The role of clothing and colours as communicators of information during social interaction can be explored in our further studies with a wider age category of participants

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C. elaboration of figures and tables:	30%	30%	40%
D. drafting, reviewing and writing of the text:	40%	30%	30%
E. selection of bibliographical references	30%	40%	30%
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