Influence of Color Therapy in Alleviating Academic Stress in High School Students

Abstract:

Aim: Color Therapy as a powerful communication tool possesses the potential to impact emotions, moods, and psychological reactions. This study delves into the significance of colors and their influence on academic stress levels. The research aims to investigate the efficacy of color therapy, specifically utilizing blue and yellow, in alleviating academic stress among high school students.

Study Design: Purposive sampling method of research was used.

Place and Duration of Study: Saket MGM Senior Secondary School, Vidisha, near Bhopal (MP). The study took almost three months including data collection, one month 8 hours daily (excluding Saturday and Sunday) intervention.

Methodology: The sample comprised 150 high school students whose academic stress levels were initially measured by Academic Stress Scale by Kim. Subsequently, students exhibiting moderate to extreme stress levels were exposed to a color intervention and again the stress level was observed. The data was analyzed through Student's t-test.

Result: The findings of the study revealed a substantial reduction in academic stress levels among students after exposure to blue and yellow color therapy. The accompanying statistical analysis, with a significant *p*-value of less than 0.01, underlines the robust evidence of this positive change.

Conclusion: The results suggest that employing specific colors in educational settings may offer a viable and non-intrusive approach to addressing academic stress among high school students. Implications of the study are discussed.

Key words: Color Therapy, High School Students, Academic Stress.

1: Introduction:

Color Therapy is a fascinating and multifaceted field of science that explores the intricate relationship between colors and human psychology. The people get affected both physiologically and psychologically through colors **(1).** Beyond being merely a visual experience, it is capable of profoundly influencing moods as well as emotions **(2, 3).** It

serves as a powerful tool for communication, projecting one's personality and identity **(4).** .The colors around us affect how we feel and act, influencing our moods and guiding our behavior**(5, 6. 7, 8).** Colors, too have many emotional impacts, explicitly, temperature, strong and weak, hard and soft, and active and calm **(9).**

1.1 Perception of Color:

Perception of color is a complex process influenced by various factors. One of the key determinants of color perception is Color Context. The cultural and societal context plays a significant role in shaping the meaning and interpretation of colors. Specific colors with distinct emotions or symbolism lead to diverse perceptions of color **(3).**The perception of colors is also influenced by a complex interplay of factors, including linguistic relativity, individual differences, environmental factors, psychological and emotional associations, and social and cultural symbolism. Benjamin Whorf's linguistic relativity hypothesis suggests that language can shape how individuals perceive and categorize colors, while personal experiences, memories, and preferences further contribute to individual differences in color perception. Additionally, environmental factors such as climate and geographical location can impact color perception, as can psychological and emotional associations with specific colors. Moreover, colors often carry social and cultural symbolism, representing various concepts, ideologies, or group affiliations within a society. Together, these factors contribute to the rich and nuanced ways in which colors are perceived and interpreted by individuals and communities.

1.2 Academic Stress:

Academic stress refers to the emotional, cognitive, and physical strain experienced by individuals engaged in educational pursuits. Stress is influenced by multiple factors, stemming from a variety of sources**(10, 11).** It's more than just a passing unease; it's a complex persistent and complex challenge that profoundly affects students, impacting their well-being, academic performance and future opportunities. Studies reveal that academic stress adversely affects student's health, **(12, 13, 14).** As society places a growing emphasis on educational achievement and competitiveness, the prevalence of academic stress has surged, making it imperative to comprehensively examine its origins, manifestations, and potential mitigation strategies. As a result, students may experience anxiety, depression, and other related disorders, impacting their social, emotional, and academic well-being.
Colors can have a significant impact on our physical, emotional, and psychological well-being, and understanding their effects can help us manage stress more effectively. Colors

have been identified to directly link with an individual's mental well-being, emotions, and the presence of emotional or psychiatric imbalances/disorders **(15).**Blue is often associated with calmness and serenity **(16).** Being surrounded by blue hues or spending time in environments with blue elements can promote relaxation and a sense of tranquility. Green is linked to nature and has a refreshing and rejuvenating effect. It is known to promote feelings of balance, harmony, and renewal. Being in natural surroundings or incorporating green elements in one's environment can aid in stress reduction **(17).** Yellow is a warm and cheerful color, associated with positivity and optimism. It can uplift the mood and promote feelings of happiness and energy **(18).** White signifies purity and cleanliness, and it can create a sense of spaciousness and simplicity. A clutter-free and white-themed environment can promote a sense of calm and clarity.Neutral colors like beige, gray, and taupe can provide a sense of stability and balance. They can serve as a calming backdrop and complement other more vibrant colors. So to see the impact of presence of blue and yellow color in reducing academic stress of high school students, this study was conducted with the hypothesis thatBlue and yellow colors will have a significant impact on the academic stress levels of high school students.

2.Methodology:

2.1: Sample: Total 150 students ranging from 17 to 18 years of age participated in the study of which total number of boys was 78 and girls were 72. All the participants were from Saket MGM Senior Secondary School, Vidisha (MP), near Bhopal. They all did not have any previous history of diagnosed psychiatric disorders, and all provided their consent to be included in the study. It was made assured to them about maintaining the confidentiality.

2.2: Design: Purposive sampling method of research and Student's t-test was used as the statistical tool for hypotheses testing in the study.

2.3: Variables:

Independent Variable: Blue and Yellow color

Dependent Variable: Academic stress

2.4: Measure: Standardized Academic stress scale**(appendices 1)** by Rajendran and Kaliappan was used to measure the academic stress of students. The scale was originally

developed by Kim in 1970 and later it was adapted to Indian conditions by Rajendran and Kaliappan (1990). The academic stress scale comprises of 40 items. Each item had five alternatives varying from the response 'No Stress' to 'Extreme Stress'. The tool has established content validity and item validity as well as reliability of 0.82.

2.5: Procedure: The study involved 150 high school students from classes 11th and 12th who were selected based on specific inclusion criteria using purposive sampling. To ensure clarity, the respondents were provided with a well-explained questionnaire, and they took approximately 15 minutes each to complete it. After the pre-test, individual scoring was done on each participant's questionnaire, and their overall academic stress occurrence was quantitatively classified into moderate, high, and extreme stress categories. Participants falling under no stress and slight stress categories were excluded. Color therapy intervention was then introduced to remaining 100 participants who had moderate, high and extreme stress, involving the use of yellow and blue pens while studying and surrounding them with yellow and blue posters in the classroom. This exposure to colors lasted for 8 hours daily, five days a week, for a month. After completing the intervention, the same 100 participants were given the academic stress questionnaire again to assess the impact of color on their stress levels.

3: Results:

The scoring of the test was done according to the manual and raw scores were obtained. The scores were coded and tabulated as per the objectives of the study. Data was analyzed by Student's t-test method.

Table-1: Pre-test (Before intervention) and Post-test (After intervention) score of students' academic stress.

Category	No. of participants	Pre-test mean score	Post-test mean score	t-value	*P*
Moderate stress	48	84.83	38.89	19.43**	<0.01
High stress	29	113.37	46.37	23.26**	<0.01
Extreme stress	23	145.13	52.91	34.92**	<0.01

Table 1 The provided tabular data underscores a substantial enhancement in academic stress levels consequent to the implementation of a color therapy intervention within the context of high school students. Within the delineated stress stratifications – moderate, high, and extreme – the observable alterations in pre-test and post-test mean scores reflect notable enhancements.

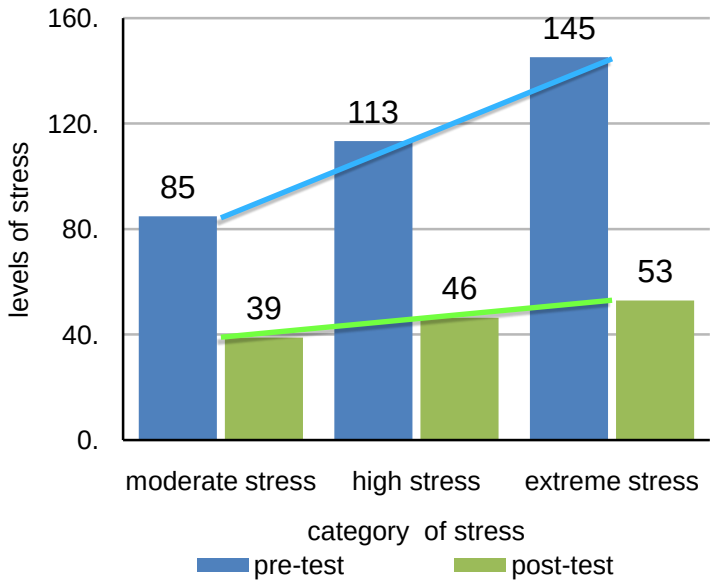

Figure-1: Comparison of students pre-test (Before intervention-blue color) and post-test (After intervention- green color) scores of academic stress in the categories of moderate stress, high stress, and extreme stress.

3.1: Discussion:

Moderate Academic Stress: The data for students experiencing moderate academic stress reveals a substantial reduction in stress levels following the color therapy intervention. The pre-test mean score of 84.83 indicates that these students were grappling with notable stress related to their academic performance (Table 1). However, after undergoing the intervention, their post-test mean score plummeted to 38.89 (Table 1). This stark decline highlights the effectiveness of the color therapy intervention in alleviating moderate academic stress. The accompanying statistical analysis, with a significant *p*-value of less than 0.01 (Table 1), underlines the robust evidence of this positive change.

High Academic Stress: For students encountering high academic stress, the initial pre-test mean score of 113.37 demonstrated a considerable burden of stress associated with their studies. Subsequent to the color therapy intervention, their post-test mean score dropped remarkably to 46.37. This substantial decrease in stress levels underscores the success of the intervention in addressing high academic stress. The exceptionally high t-score of 23.26, along with the *p*-value of less than 0.01 (Table 1), provides strong statistical backing for the effectiveness of the color therapy intervention in reducing high academic stress.

Extreme Academic Stress: Among students facing extreme academic stress, the pre-test mean score of 145.13 indicated an alarming level of stress that could have detrimental effects on their academic performance and overall well-being. After participating in the color therapy intervention, their post-test mean score demonstrated a remarkable decline to 52.91. This drastic reduction showcases the intervention's efficacy in mitigating extreme academic stress. The associated t-score and *p*-value, both less than 0.01(Table 1), reinforce the significance of this change, offering compelling evidence of the intervention's impact. The study **(19)** also supports that color therapy has an impact on reducing stress levels.

4: Conclusion

It can be clearly revealed that the color therapy intervention has a substantial positive impact on reducing academic stress levels of high school students' (Figure 1). Across all three categories of stress - moderate, high, and extreme - there were remarkable reductions in stress levels following the intervention.

These findings underscore the effectiveness of color therapy as a viable intervention strategy for mitigating academic stress among high school students, regardless of the initial severity of their stress. The consistent and significant improvements observed across all stress categories suggest that color therapy has the potential to alleviate academic stress. This study provides valuable insights into the practical application of color therapy in educational settings and highlights its promise as a holistic approach to address the growing issue of academic stress among students.

5: Iimplications of the study

The implication of this research extend beyond the confines of this study, pointing towards the importance of exploring alternative therapeutic interventions in education to support students in managing stress and fostering a conducive learning environment. Further research and continued exploration of such interventions can contribute to the development of comprehensive strategies to promote the mental and emotional well-being of students, ultimately enhancing their educational experiences and outcomes.

Authors Contributions:

Ananya Tiwari, SeemaVijayvargiya and Bhupinder Singh.
All the three authors have contributed in this research work.

Consent:

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

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APPENDICES(1)

NAME: _____ GENDER:_____ AGE:_____
QUALIFICATION:_____

INSTRUCTION: This scale consists of 40 items describing the stress in your institution/school life from various sources. The level of stress you feel for each item can be indicated by marking a mark in the bracket given against each statement. If you feel low stress put a tick mark in the first bracket (NS), Slight stress in the second (SS), Moderate stress in third (MS), High stress in the (HS) and you feel Extreme stress put a tick mark in the 5th bracket.

S.NO. STATEMENT (NS) (SS) (MS) (HS)(ES)

1) Teachers make too many extra demands on students.

2) Poor interest in some subjects?

3) Progress reports to parents

4) The teacher is not humorous towards us.

5) Lack of concentration during study hours.

6) Difficulty in remembering all that is studied.

7) Worrying about examinations.

8) Lack of self-confidence

9) The teacher do not listen to our ideas.

10) Conflict with friend/school authority.

11) Teachers give more punishment in class.

12) Worry about results after exams.

13) Hesitate to ask teacher for detailed explanation.

14) Biased attitude of the teacher

15) In adequate space or a room for study at home

16) Not knowing how to prepare for examinations.

17) Lack of assertiveness in the class.

18) Lack of opportunity to meet teachers.

19) Teacher shows social economic status on student

20) Slow in getting along with the curriculum.

21) Exam papers are tough and not valued well.

22) Unable to complete the assignment in time

23) Lack of communication between teacher and student

24) Monotonous teaching style by teacher

25) Not enough discussion in class

26) Lack of mutual help among classmates

27) Lack of fluency while speaking language other than mother tongue.

28) Difficulty in public speaking

29) The teacher is fast and does not use blackboard.

30) Teacher lacking interest in students.

31) Examination syllabus is too heavy in subjects

32) Feeling of inferiority

33) Unable to discuss academic failure with parents

34) Not able to grasp the subject matter

35) Incomplete and confusing study material

36) Eleventh hour preparation for examination

37) Importance of subject matter

38) Difficulty in adjusting with opposite gender

39) Inadequate subject knowledge of the teacher

40) Inadequate Laboratory and library facilities