THE RELATIONSHIP BETWEEN COLOR PREFERENCE AND SELECTED PERSONALITY VARIABLES

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THE RELATIONSHIP BETWEEN COLOR PREFERENCE AND SELECTED PERSONALITY VARIABLES

An Abstract

Presented to

the Graduate Council of

Austin Peay State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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by

Linda Lee Silvia

June 1977

ABSTRACT

The purpose of the present study was to investigate possible relationshps between color preference and personality characteristics. There has been little previous research in this area and the results have been conflicting.

Subjects were asked to complete two tasks: the Sixteen Personality Factor Questionnaire (16 PF), as a measure of personality variables; and a color selection task as an indicator of color preference. The subjects were 50 undergraduate/graduate students enrolled in Austin Peay State University, Clarksville, Tennessee, and ranged in age from 18 to 45.

The Brown-Mood Multi-Sample Median Test was used to compare color preference with scores on the 16 PF. Only one scale of the 16 PF, the intelligence scale (B), was significantly related ($p<.05$) to color preference. Subjects selecting tertiary colors tended to score higher, above the group median, in intelligence, although no one tertiary color was significantly related to the intelligence scale. This finding could possibly have resulted from chance.

The results of the present study are in contradiction to findings of previous studies. However, the present study and previous studies have been plagued by limitation in design. It appears to the present researcher that the

relationship between color and personality characteristics is ambiguous and in need of further research.

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June 1977

To the Graduate Council:

I am submitting herewith a Thesis written by Linda Lee Silvia entitled "The Relationship Between Color Preference and Selected Personality Variables." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Linda Rudolph
Major Professor

We have read this thesis and recommend its acceptance:

Garland E. Blair
Second Committee Member

William D. Dannenmaier
Third Committee Member

Accepted for the
Graduate Council:

Wayne C. Stamper
Dean of the Graduate School

ACKNOWLEDGEMENTS

The author wishes to express extreme gratitude to Kathy and Leo who accidently helped in selecting this topic.

The author also wishes to express gratitude to Dr. Linda Rudolph for her infinite amount of help during this study; to Dr. Garland Blair for his insurmountable knowledge of statistics; and to Dr. William Dannenmaier for coming through at the deadline.

I also want to express special appreciation to W.P.B. whose smile helped to get me through the rough days.

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CHAPTER I

INTRODUCTION TO THE PROBLEM

A review of the literature reveals that the research on color has been directed primarily toward studying the physiological effects of color (Hooke, Youell & Etkin, 1975; McGuire, Rand & Wurtman, 1973; Rauschecker, Campbell & Atkinson, 1973). However, there is some evidence indicating that certain personality variables may be related to color preference (Gotz & Gotz, 1975; Robinson, 1975) although the findings with regard to this relationship have been conflicting. Therefore, it is the purpose of the present study to further investigate this relationship between color preference, as indicated by a color selection task, and certain personality variables as measured by the Sixteen Personality Factor Questionnaire (16 PF) (Cattell, Eber & Tatsuoka, 1970).

Eysenck (1941) conducted a study to determine if there were dominate color preferences, and if there were differences in the color preferences between males and females, as well as differences in color preference due to the level of saturation of the colors. The 42 subjects for this study consisted mainly of black and white university males and females (in an equal number), as well as a few professional males and females and a few artists. Basically he found: (a) there is some general

agreement as to color preferences and their order of preference; (b) there does not appear to be any difference between males and females with regard to color preference; (c) there were no differences between the color preferences of the black subjects and the color preferences of the white subjects; and (d) there appears to be a relationship between types of colors preferred (saturated vs. unsaturated), i.e. tints and shades. Eysenck's study was a pioneer in the area of color preference, however, his purpose was to differentiate the color preferences of males and females and the effects of color saturation levels upon color preferences rather than to investigate the possibilities of differences in color preferences due to personality variables.

Wexner (1954) sought to investigate the relationship between mood-tone and color, hypothesizing that certain colors would be positively associated with specific mood-tones. Subjects for her study were 94 General Psychology students (48 females and 46 males) enrolled in Purdue University. Wexner found that certain mood-tones (i.e. "exciting") were associated with specific colors more frequently than with other colors. Specifically, she found there was a significant relationship between red and the mood tone "exciting-stimulating;" blue was significantly related to "secure-comfortable" and "tender-soothing;" orange with "distressed-disturbed;" yellow with "cheerful-

jovial;" and black with "powerful-strong-masterful" (p. 434). Wexner did not find a significant difference between the sexes for color-mood associations.

Murray and Deabler (1957) also conducted a study investigating color-mood associations. These researchers based their study on Wexner's findings; however, they attempted to determine specific factors related to the color-mood associations. Their findings revealed a definite relationship between certain mood-tones and the colors with which they were associated. Using several groups of subjects (25 Louisiana State University students, 69 male nursing assistants at a VA center, and 108 unselected new male admissions to the neuropsychiatric division of the same VA center) plus the data obtained from Wexner's study with the Purdue University subjects, Murray and Deabler were able to find significant differences in color-mood associations between various socioeconomic levels and mental health status. However, some of the colors maintained a similar meaning for all groups, for example, all groups associated the mood-tones "exciting, cheerful, defiant, and powerful" with red; blue was associated with the mood-tones "secure, tender, and calm;" and black was associated with "distressed, despondent, and defiant." There were also differences found between the color-mood associations within the groups; for instance, the Purdue group associated

"distressed" and "defiant" with orange, while the other three groups did not make the association. Murray and Deabler also found differences between the university groups and the non-university groups. Non-university groups associated "dignified" with the color brown, and green with the mood-tone "cheerful," while the university groups did not make those associations. The authors suggest that these differences may be environmental and not innate.

According to Robinson (1975), the first theorist to hypothesize that color was a predictor of personality was F. Birren in his book, Color, published in 1963. Birren theorized that extraverts and introverts would prefer different colors as a function of their opposing personality traits. Robinson conducted his 1975 study to test the validity of Birren's hypothesis. Using 40 subjects from the University of Colorado, Robinson administered the Luscher Color Test, presented color slides, and asked the subjects to rate their level of extraversion. He found that introverts tended to select cool and calm colors, such as blue and green, while those subjects classified as extraverts tended to select warm and intense colors, i.e. red and yellow.

Heiss (1964) developed a theory to explain the differences in color preferences based on both psychological and physiological principles. Heiss theorized that

color affects the level of arousal and the level of arousal determines the color preference. However, Hooke, Youell and Etkin (1975) testing for the arousal level of color and its effect upon an individual's physiological make-up failed to support Heiss' theory. The subjects utilized by Hooke, et al. consisted of 60 undergraduate students enrolled in a general psychology course at Virginia Commonwealth University (30 males and 30 females). The authors found no significant difference between high and low arousal color preference (red and blue, respectively) and subsequent physiological measures; i.e. heart rate, galvanic skin response, and blood pressure.

An artist uses color to express his feelings and to project his emotions into his work. Thus, in such an instance, color could be considered an indicator of one's personality. Luscher (1969/1971) mentions Gaugin's works and how the artist's use of specific colors undoubtedly was influenced by his personality. Luscher took the concept of projecting one's personality into creative works and in 1948 developed the Luscher Color Test to support his hypothesis. The 1948 version of the test consisted of 73 color patches of twenty-five different hues and shades. Somewhat later Luscher revised his color test to include only eight color patches, and now states that although the shorter form does not yield as complete a description of the individual's personality it still

provides an adequate personality profile. Luscher believed that a tremendous amount of knowledge concerning an individual's personality as well as his physiological make-up could be determined by interpreting the individual's color preferences. According to Luscher, "the resulting test-protocol affords a wealth of information concerning the conscious and unconscious psychological structure of the individual, areas of psychic stress..." (p. 17).

There are two main points Luscher considers important. First, he feels that the meaning of the color is universal, with each color maintaining a general psychological and physiological meaning called "structure." Secondly, he feels that emotional and physiological reactions to the color changes from person to person and are very subjective measurements. Luscher calls this the "function" of the test. In summary, he feels that each color has a specific and universal meaning, although every individual will react differently to the color because of differences in physiological and emotional factors.

Gotz and Gotz (1973, 1974, 1975) have conducted several studies to investigate color preferences in relation to certain personality characteristics. In their 1975 study they administered the Maudsley Personality Inventory to 190 art students (gifted and otherwise) enrolled at the Academy of Fine Arts Dusseldorf, Germany. From this personality test they extracted the three

characteristics of extraversion, introversion and neuroticism. Their results indicated that extraverts and ambiverts preferred primary and secondary colors while introverts preferred the tertiary colors and achromatics. However, they did not find a significant relationship between color preference and neuroticism.

There have been several studies which reported conflicting results; for example Welsh (1970) found that contrary to popular belief, there was a tendency for "intuitive" subjects to prefer red, while the subjects categorized as impulsive selected red as their least favorite color. Welsh's sample consisted of 179 boys and 223 girls enrolled in a summer program for gifted and talented art students. Possibly their results could have been influenced by the sample selected.

Another study reporting contradictory results was conducted by Spiegel and Spiegel (1971). Undergraduate students (55 male and 55 female) enrolled in lower level psychology courses at San Fernando Valley State College were administered the Manifest Anxiety Scale, the Spiegel Personality Inventory, and the Brentwood Color Test. Spiegel and Spiegel found that female subjects preferred brighter colors, more highly saturated colors, and preferred violet more and green less than the male subjects. While previous studies have found no sex differences, these researchers found significant

differences between the color preferences of their male and female subjects.

There have been many color tests devised which purport to evaluate an individual's personality; for example, the Brentwood Color Test, the Pfister Color Pyramid Test, as well as the Luscher Color Test. However, all these tests would seem to lack enough data to support their effectiveness as valid measures of personality.

In light of these contradicting findings, it is the purpose of the present study to investigate the possible relationship between color preference and personality characteristics. The present study will utilize the 16 PF for measures of personality and nine color cards (three primary, three secondary, and three tertiary) as an indicator of color preference. Similar classifications were used in the 1975 Gotz and Gotz study.

CHAPTER II

METHOD

The Sample.

Fifty subjects were solicited as volunteers from undergraduate/graduate psychology courses at Austin Peay State University, Clarksville, Tennessee. The sample included four graduate students and 46 undergraduate students; the undergraduate subjects were both psychology and non-psychology majors, and all graduate students were enrolled as psychology majors. There were 15 male and 35 female students included in the study, ranging in age from 18 to 45 years.

Instrumentation.

The treatment consisted of two tasks: the completion of a paper and pencil personality survey, the 16 PF, and the selection of the subject's preferred color from nine different colored discs mounted on 3" x 5" white index cards. The colors were classified according to three categories: three primary colors (red, blue, yellow); three secondary colors (green, violet, orange); and three tertiary colors (yellow/green, green/blue, yellow/orange). The color discs were constructed from tempra paint.

The 16 PF was selected as the measure of personality characteristics because the test provides a stable measure

of personality characteristics and is widely used in the literature as an indicator of personality. Most of the support for the 16 PF stems from the fact that its scales have been derived from factor analysis. According to Burton (1971), the validity of the 16 PF is such that the test could be used as a criterion for establishing validity for any other personality test. When comparing the 16 PF with the Edwards Personality Preference Scale (EPPS) Burton found that the two tests differ significantly on seven factors and the author felt that the EPPS was not as pure a measure of personality as the 16 PF. Cowden, Pacht and Bodemer (1970) also conducted a study with inmates in the Wisconsin State Reformatory comparing the 16 PF with the Minnesota Counseling Inventory (MCI). They found the 16 PF to be slightly superior to the MCI in discriminating between various background factors, personalities, and eventual dispositions. Cowden, Schroeder and Peterson (1971) compared the California Psychological Inventory (CPI) with the 16 PF using 143 delinquent boys who were admitted for the first time at the Wisconsin School for Boys at Wales, Wisconsin. Their results indicated that the 16 PF is slightly superior in differentiating types of psychopathology, adjustment, and background factors, although there were no marked differences in the relative effectiveness as personality measures. According to M. Lorr's review in Buros' sixth edition of the Mental Measurements

Yearbook, the 16 PF appears to be the best test of personality that is factor-based.

Procedure.

Before subjects signed up for a testing date and time they were informed that the experiment consisted of two tasks: a color selection task, and a paper-pencil test. The subjects were assured that their answers on the tests would be kept confidential and that they could maintain their anonymity by using only their student numbers. Subjects were offered extra credit in the class from which they were solicited for their participation in this study.

The subjects were asked to report to a testing room where they were met by the examiner. The first 25 subjects were directed to a smaller testing room and instructed to follow the written directions on the front cover of the 16 PF testing booklet. Once they had completed the first task they were asked to select the one color that they liked best from a display of nine colors. The color preference was then recorded on their test answer sheet. The remaining 25 subjects were given identical instructions, however, they were given the tasks in reverse order. Unless the subject asked a particular question, no further help was given.

The color cards were placed on a 3 x 3 display block before the subjects made their selection. To control for

position of color, the cards were shuffled and replaced before each subject made a selection.

CHAPTER III

RESULTS

The Brown-Mood Multi-Sample Median Test (BMMSMT) was used for analysis of results. It was indicated because the data were nominal and because the data to be analyzed were derived from a multi-population. Scores on the 16 PF for each of the 16 scales were compared with the color preference category (i.e. primary, secondary, and tertiary) from which the color choice was selected. Table 1 outlines the comparisons between the 16 scales of the 16 PF and the color preferences.

The results of the analysis indicated that only one scale of the 16 PF was significantly related ($p<.05$) to color preference, the "B" scale which purports to measure level of intelligence. Further analysis with the BMMSMT of this relationship between color preference and the intelligence scale revealed the color category, tertiary, was significantly related to the intelligence scale. Subjects who picked a tertiary color as their color preference tended to fall among those scoring higher on the intelligence scale of the 16 PF, that is, above the median for the entire test group.

The BMMSMT was also used to compare the second-order factor, exvia-invia (extraversion-introversion), of the

16 PF with color choices. The data did not yield a significant difference between the level of extraversion or introversion and color preference.

CHAPTER IV

DISCUSSION

In view of conflicting results found in the literature investigating the relationship between color preference and personality, it is not surprising that the results of the present study conflict with some previous findings. Unlike Gotz and Gotz (1975) the data did not yield a significant difference between color preference and scores for the second-order factor of introversion-extraversion on the 16 PF. Neither did the present study substantiate Robinson's (1975) contention that introverts select cool and calm colors, while extraverts tend to select warm and intense colors.

It is interesting that the present study found a significant relationship between scale B of the 16 PF (level of intelligence) with color preference. The subjects who selected tertiary colors tended to score above the median on the intelligence scale. However, further analysis revealed that no one of three tertiary colors used in the present study was significantly related to this scale. None of the literature reviewed found a significant relationship between tertiary colors and a scale of intelligence. This finding could possibly have resulted from chance and should be interpreted with caution.

There are several reasons why this study may have failed to yield significant results for the other scales on the 16 PF. First of all, the color discs were constructed of tempra paint. Although the experimenter tried to construct the discs to appear neutral (that is, void of any saturations), it cannot be concluded that the discs represented the "true" colors. Several subjects stated that the red disc was not bright enough and that the orange disc did not appear to be a true orange. The inability to construct neutral color discs may be the cause for much of the discrepancies between the results of previous studies, as well as with this study.

A second explanation that may account for the differences between the present study and previous studies with regard to the introversion-extraversion factor stems from the decision to use the college norms for the 16 PF scales. Although all the subjects were college students, many of the subjects' ages were well above the mean age for the college norm group.

A third explanation accounting for the differences in results of the present study may be the limited sample size. Although 50 subjects were solicited as volunteers for this study, a larger sample may have yielded more information.

It appears to the present researcher that the relationship between color and personality characteristics

is ambiguous and in need of further research. Inasmuch as color is an integral and important part of daily lives, it would seem worthwhile to replicate existing research, attempting to overcome the limitations within these studies. It would also seem worthwhile to test new and more divergent hypotheses relative to the influences of and relationships between color and other variables.

CHAPTER V

SUMMARY

The purpose of the present study was to investigate possible relationships between color preference and personality characteristics. There has been little previous research in this area and the results have been conflicting.

Subjects were asked to complete two tasks: the Sixteen Personality Factor Questionnaire (16 PF), as a measure of personality variables; and a color selection task as an indicator of color preference. The 16 PF was selected as a measure of personality based on its reliability, validity and widespread use in the literature.

Only one scale of the 16 PF, the intelligence scale (B), was significantly related ($p<.05$) to color preference. Subjects selecting tertiary colors tended to score higher, above the median for the test group, in intelligence, although no one tertiary color was significantly related to the intelligence scale. This finding could possibly have resulted from chance.

The results of the present study are in contradiction to findings of previous studies. However, the present study and previous studies have been plagued by limitation in design. It appears to the present researcher that the

relationship between color and personality characteristics is ambiguous and in need of further research.

REFERENCES

Birren, F. Color. New York: University Books, 1963.

Bradley, J. V. Distribution-Free Statistical Tests. New Jersey: Prentice-Hall, Inc., 1968.

Burton, D. A. A factor analysis of the Edwards Personal Preference Schedule and 16 PF in a psychiatric population. Journal of Clinical Psychology, 1971, 27, 248-251.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. Handbook for the Sixteen Personality Factor Questionnaire (16 PF). Illinois: Institute for Personality and Ability Testing, 1970.

Cowden, J. E., Pacht, A. R., & Bodemer, O. A. The 16 PF vs. the MCI in a group testing program of reformatory inmates. Journal of Clinical Psychology, 1970, 26, 510-513.

Cowden, J. E., Schroeder, C. R., & Peterson, W. M. The CPI vs. the 16 PF at a reception center for delinquent boys. Journal of Clinical Psychology, 1971, 27, 109-111.

Eysenck, H. J. A critical and experimental study of colour preferences. American Journal of Psychology, 1941, 54, 385-394.

Gotz, K. O., & Gotz, K. Introversion-extraversion and neuroticism in gifted and ungifted art students. Perceptual and Motor Skills, 1973, 36, 675-678.

Gotz, K. O., & Gotz, K. Color attitudes of art students and university students: I. imagined colors. Perceptual and Motor Skills, 1974, 38, 63-70.

Gotz, K. O., & Gotz, K. Color preferences, extraversion and neuroticism of art students. Perceptual and Motor Skills, 1975, 41, 919-930.

Hooke, J. F., Youell, K. J., & Etkin, M. W. Color preference and arousal. Perceptual and Motor Skills, 1975, 40, 710.

Lorr, M. A review of the 16 PF. In Buros, O. K. (Ed.), The Sixth Mental Measurement Yearbook. New Jersey: Gryphon Press, 1965.

Luscher, M. The Luscher Color Test. (I. Scott, Ed. and trans.). New York: Pocket Books, 1971. (Originally published, 1969.)

McGuire, R. A., Rand, W. M., & Wurtman, R. J. Entrainment of the body temperature, rhythm in rats: effect of color and intensity of environmental light. Science, 1973, 181, 956-957.

Murray, D., & Deabler, H. Colors and mood-tones. Journal of Applied Psychology, 1957, 41, 279-283.

Rauschecker, J. P. J., Campbell, F. W., & Atkinson, J. Colour opponent neurones in the human visual system. Nature, 1973, 245, 42-43.

Robinson, C. Color preference as a function of introversion and extraversion. Perceptual and Motor Skills, 1975, 40, 702.

Schaie, K. W. & Heiss, R. Color and Personality. Berne: Huber, 1964.

Spiegel, D., & Keith-Spiegel, P. Manifest anxiety, color preferences and sensory minimizing in college men and women. Journal of Clinical Psychology, 1971, 27, 318-321.

Welsh, G. S. Color preferences of gifted adolescents. Sciences de l'Art, 1970, 7, 55-61. (Abstract)

Wexner, L. B. The degree to which colors (hues) are associated with mood-tones. Journal of Applied Psychology, 1954, 38, 432-435.

TABLE 1

Chi squares between 16 PF scales and color preference

16 PF Scale	n[a]	Chi Square
First-Order Factor		
A	41	4.2782
B	50	6.5264*
C	48	3.2097
E	47	.2169
F	48	.4277
G	42	2.4120
H	46	1.4071
I	44	1.6750
L	42	.4338
M	44	1.0523
N	46	1.9346
O	45	1.4580
Q_1	42	.2046
Q_2	45	2.1883
Q_3	50	.1744
Q_4	43	.7599
Second-Order Factor		
Exvia-Invia	47	.0752

*p<.05

a_n for each scale varies inasmuch the technique for analyzing data requires that any score falling on the median be discarded.