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INTROVERSION - EXTRAVERSION
AND
COLOR PREFERENCES

By

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AND
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ABSTRACT

This study was to find the color preferences of 120 Middle East Introvert, Normal, and Extravert subjects with equal number of males and females in each group. The assignment of subjects to each of these groups was based upon the administration of the E Scale of the Maudsley Personality Inventory. The eight Ostwald color-paint hues (R, O, Y, YG, G, GB, B and P) on 10 X 10 cm. cards were presented using the method of paired comparison. Various extraneous variables regarding lighting, distances, and visual field were controlled.

The main findings were the followings:

- (1) There is not a single pattern of preferences for a group different from the others.
- (2) Female students show more agreement among themselves in their preferences than males.
- (3) GB, G, and B are mostly preferred, while Y, YG, and P are least preferred by nearly all the personality groups.
- (4) Except for the extravert males, all the personality groupings prefer cool colors.
- (5) There is no sex or personality difference in the warm-over-cool color preferences apart from an interact-

ion, whereby, males tend to prefer more warm-colors than females as one shifts from the Introvert to the Extravert dimension of personality.

The results of the present study were discussed in comparison with the previous findings and the limitations noted.

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CHAPTER I

INTRODUCTION

From the bulk of literature on color preferences, one hardly fails to recognize the impact of colors on human behavior. There are many reports concerning the color preferences of normal people and clinical patients, though only few of these are the result of controlled experimental situations in which the correlates of personality variables in color preferences are obtained. The assumption in most of the color preference studies is that colors have affective values for human beings, and that these affective values for color preferences will change with individual differences.

However, human beings differ from each other in many respects and not all differences will result in different color preferences. It could be that the extent to which individuals differ on a certain dimension determines whether they will prefer different colors.

This study is concerned with examining differences in color preferences expressed by individuals classifiable as Introverts, Normals, and Extraverts.

CHAPTER II

REVIEW OF THE LITERATURE

Early in the 1920's Rorschach realized that subjects characterized by affective lability and impulsiveness give many color (C) responses (20, p.31). More recently, Wexner showed the degree to which hues are associated with mood-tones. According to him, reds are viewed mostly as exciting, defending, and hostile; blues are more soothing, comfortable, and serene; orange is associated with disturbance, purple with dignity, and yellow with joviality; while black is despondent and masterful (22). Still more recently, Wright and Rainwater concluded that greater preferences for blue-green connote elegance, calmness, and coolness while yellow-red preferences connote more happiness, showiness, and forcefulness (24).

Wexner cites findings to show that there are cultural, biological, and learning factors influencing color-mood associations (22), while Murray and Deabler give evidence that socio-economic differences are of particular importance (16).

Besides the studies of color-affect associations, there are many studies concerned with individual diff-

erences in color preferences.

Several studies report that young children prefer mostly yellow and red, but gradually, as they grow older, they come to prefer blue and green more (17; 5, p.72; 2, pp.186-187). Generally, children like colors in the following order: yellow, pink, red, orange, blue, green, and purple. With maturity, however, the order of color preferences may change to red, blue, green, pink, purple, yellow, and orange (2, p.187).

Garth, from his cross-cultural studies, concludes that there are no "racial" differences in color preferences. His surveys included the color preferences of American white, Negro, Indian, Filipino, Japanese, and Mexican children. He found that the color preferences of first-grade children were strikingly similar, while differences gradually increased with education. Garth suggests that the differences found at adult levels in different "racial" groups could be due to "nurtural" rather than innate factors (11).

Ellis notes that primitive societies prefer brilliant hues of yellow-red, while more "civilized" cultures prefer colors other than yellow. He hypothesizes that the dislike for yellow could be a result of taboo put upon it by the Christian church as the symbol of sin and gaiety (6).

Sex differences in color preferences have been taken up in many studies, but these are inconclusive. Eysenck (7) and Warner (21) report definite differences between the color preferences of men and women, while Granger (12) did not find any marked difference. Despite these inconsistencies in findings, Cheskin says that "among men blue is the first choice, and red is the favorite of women", and that generally men prefer the cool while women prefer the warm colors (5, p.61).

There is much literature on the clinical value of color preferences. Birren, citing a number of references, says that manics prefer red, paranoids brown, schizophrenics blue, feeble-minded yellow, and anxiety neurotics green (2, pp.188-190; 3, pp.160-161). Cheskin, however, reports that the average person will prefer a variety of colors, usually complementary in nature, at different times in order to balance his "color diet" (5, p.74).

Birren, generalizing from different findings, concludes that introverts prefer "cool" (mostly greens and blues) while extraverts prefer "warm" (mostly reds and yellows) colors (2, pp.186-187; 3, p.172; 4, p.160). Just as the spectrum could be divided into "warm" colors of long wave-length and "cool" colors of short wavelength, human beings also tend to fall into two distinct groups

preferring either the warm or cool colors (2, p.186). The warm colors are associated with active and exciting moods while cool colors with passive and calming moods (2, p.187; 4, p.141).

Among others who have reported on the warm-cool differences in the color preferences of introverts and extraverts are Rickers-Ovsiankina and Jaensch.

Rickers-Ovsiankina claims that "the warm-color dominant subjects are characterized by an intimate relation to the visually perceptible world. They are perceptive and open to outside influences. They seem to submerge themselves rather readily in their social environment. Their emotional life is characterized by warm feelings, suggestibility, and strong effects. All mental functions are rapid and highly integrated with each other. In the subject-object relationship, the emphasis is on the object. The cold-color dominant subjects...have a detached, 'split-off' attitude to the outside world. They find it difficult to adapt themselves to new circumstances and to express themselves freely. Emotionally they are cold and reserved. In the subject-object relationship, the emphasis is on the subject. In short, the warm-color dominant subject is outwardly integrated type, the cold-color dominant subject is the inwardly integrated type" (19, pp.186-187).

Rickers-Ovsiankina remarks that Jaensch quite independently reached the same conclusions about red-yellow versus blue-green dichotomy, and that people can be grouped into two categories, "namely into those more sensitive to the warm end of the spectrum and those more sensitive to the cold end" (14, p.138).

In this review, the finding generally agreed upon is that the yellow-red colors are regarded mostly as "warm" or exciting, while the green-blue colors are viewed as "cool" or calming. People with different personalities are considered to have different preferences for warm and cool colors. For example, some authors, like Birren, Rickers-Ovsiankina, and Jaensch, state that introverts prefer cool while extraverts prefer warm colors.

CHAPTER III

THE AIM OF THE STUDY

The aim of the present study was to find differences in color preferences of males and females classified as Introverts, Normals, and Extraverts. Some of the more specific hypotheses that this study was attempting to test were the followings:

(1) Males and females in a personality classification would show agreement in their color preferences.

(2) Males and females in a personality group would have a "warm-cool" color preference different from the others;

(a) Introvert males and females would prefer cool colors,

(b) Extravert males and females would prefer warm colors,

(c) Normal males and females would show no particular preference for warm or cool colors.

Personality Variables

The selection of the Introvert, Normal, and Extravert subjects was based on the E Scale of the Maudsley

Personality Inventory (8). Individuals classified as Introverts were those who got a score of 12 or less on this scale, Normals those with between 20 and 28, while Extraverts were those with scores 36 or more. Eysenck had found no significant difference between the sexes on the E Scale of the M.P.I. (9). Besides, the M.P.I. has been given to Lebanese adult males in 1964 and the results obtained were similar to Eysenck's original standardization group (1).

According to Eysenck and Rachman, "the typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He tends to plan ahead, 'looks before he leaps', and mistrusts the impulse of the moment. He does not like excitement, takes matters of everyday life with proper seriousness, and likes a well-ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and does not lose his temper easily. He is reliable, somewhat pessimistic and places great value on ethical standards" (10, p.19).

The characteristics of an extravert person are as follows: "The typical extravert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself.

He craves excitement, takes chances, often sticks his neck out, acts on the spur of the moment, and is generally an impulsive individual. He is fond of practical jokes, always has a ready answer, and generally likes change; he is carefree, easy going, optimistic, and 'likes to laugh and be merry'. He prefers to keep moving and doing things, tends to be aggressive and loses his temper quickly; altogether his feelings are not kept under tight control, and he is not always a reliable person" (10, p.19).

However, to Eysenck and Rachman, these descriptions are not to be taken as caricatures of the 'perfect' introvert or the 'perfect' extravert, because the majority of the people (normally) fall somewhere in between the two extremes on a scale (10, p.20).

Color Variables

The color preference stimuli were eight Ostwald hues, namely: red, orange, yellow (brilliant yellow), yellow-green (leaf-green), green (sea green), blue-green (turquoise), blue, and purple (13). These eight colors were chosen because they were thought to represent the different colors of the spectrum.

To make the warm-cool color distinction, the colors were divided into two groups, so that those relating to the long-wavelengths (red, orange, yellow, and yellow-green) were considered "warm", and those

to short-wavelengths (green, blue-green, blue, and purple) were considered "cool".

Despite this dichotomy between warm-cool colors, one can recognize that the yellow-green is less "warm" and the purple less "cool" than the others in their respective groups. The exact delineating points between the warm and cool colors upon the "color-circle" is not clear in the literature. For Cheskin, "the warm colors are yellow, yellow-green, orange, yellow-orange, orange-red, brown, ivory, beige, buff and all other colors that are predominantly yellow and red in hue ... The cold colors are blue, green-blue, blue-green, violet-blue, violet-red, purple and all other colors that are predominantly blue in hue" (5, p.60)⁺. Birren is less explicit about the colors at boundary points and mentions that "the red, orange, yellow region of the spectrum is warm. The green, blue, violet region is cool" (2, p.209).

The warm-cool color comparisons comprised the pairing of each of the four warm colors with each of the four cool colors, i.e., 16 pairs.

+ My underlining.

CHAPTER IV

METHODS

Materials

The study materials could be grouped under three main headings: those pertaining to (1) the preference colors, (2) the questionnaire, and (3) the color-blindness test.

(1) The Preference Colors: The color preference stimuli were eight Ostwald hues: red, orange, yellow (brilliant yellow), yellow-green (leaf green), green (sea green), blue-green (turquoise), blue, and purple (13). Samples of these colors are given in Appendix I. These were Reeves Temperablock water colors painted on 10 X 10 cm. white cards. Each one of these eight colors was paired with each of the other seven colors, so that there were 28 pairs in all. The colors in each of these pairs were assigned randomly to a fixed lateral position (left or right) on larger grey square cards, and these were held 10 cm. apart by a ply-wood strip. To limit extraneous visual stimuli, an Ostwald neutral grey stand was constructed as shown in Figure 1.

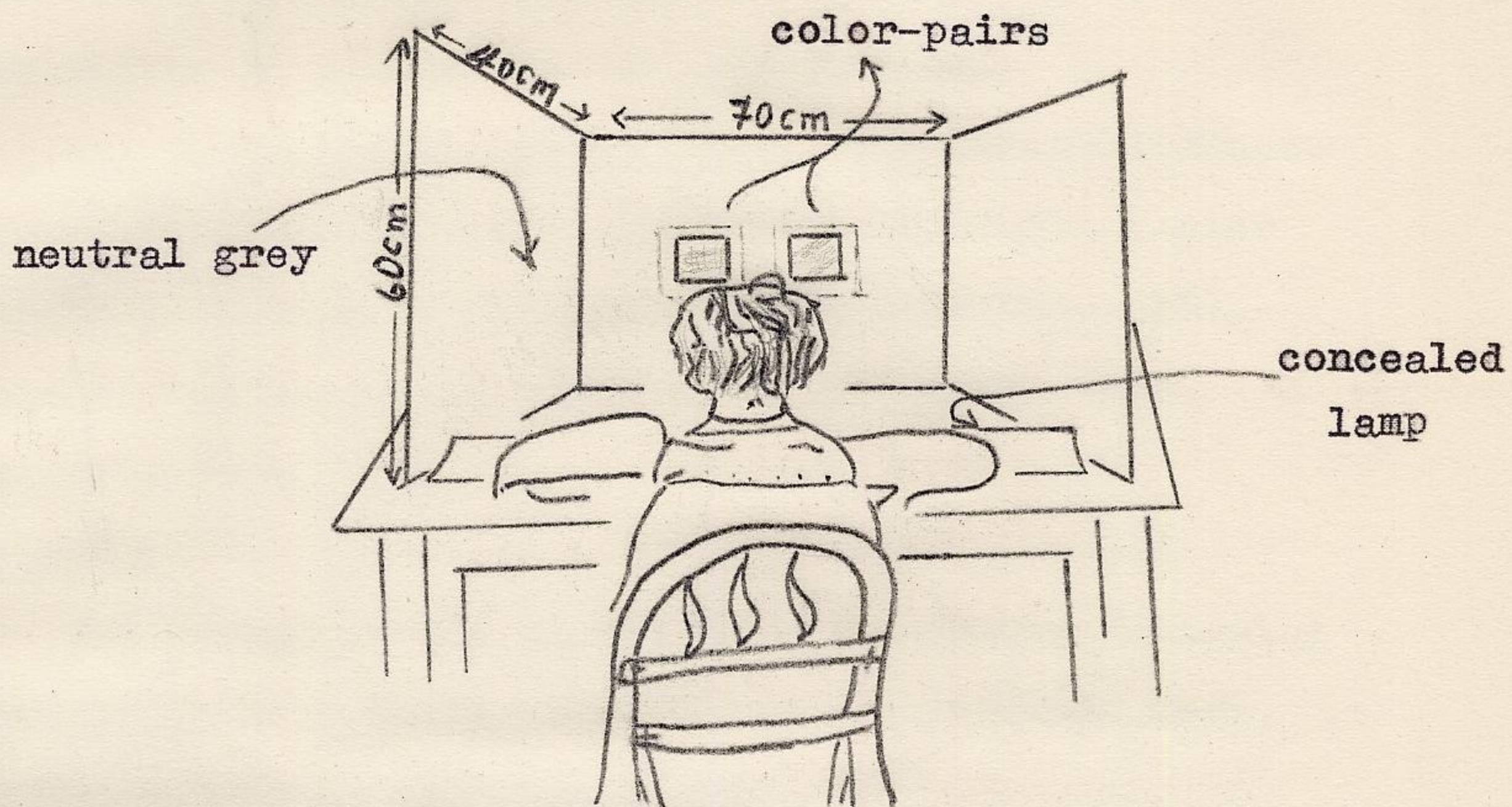


FIGURE 1: THE NEUTRAL GREY STAND.

The front wall of the stand had two openings behind which the color-pairs were displayed. The light falling upon the paired colors was mainly that of a concealed 15 watt fluorescent lamp fixed on the table at a distance of 50 cm. in front of the openings.

(2) The Questionnaire: The questionnaire was the E (**I**ntroversion-**E**xtraversion) Scale of the Maudsley Personality Inventory (8). The Scale is reproduced in Appendix II. Only the 24 E Scale items were reprinted with a minor modification of the original instructions. The "?" alternative in each response alternatives was eliminated to force a choice of "Yes" or "No" to each

item. These modifications were introduced for the convenience of administration and scoring.

(3) The Color-Blindness Test: The color-blindness test consisted of a set of pseudo-isochromatic plates for the detection of red-green color-blindness (18). These plates were used because they were the only available ones.

Procedure

The procedure was in three parts, in the following order: (1) the E Scale, (2) the color-blindness test, and (3) the color preference test.

(1) The E Scale: The E Scale of the M.P.I. was given to the subjects individually, in small groups of less than 10 at a time, or a whole class (less than 30) at a time. The subjects were asked not to write their names, but to ^{give} their age, sex, religion, and nationality. The subjects read the instructions for themselves, but they were assisted with terms they could not understand. No other help or inter-subject discussion was allowed.

The E Scale was divided at points, so that those who obtained a score of 0-12 were classified Introverts, 20-28 Normals, and 36-48 Extraverts. Only those who fitted into these categories were given further tests of color-blindness and color preferences.

(2) The Color-Blindness Test: The second stage of the experiment constituted the presentation of the color-blindness test individually. In accordance with the instructions accompanying the test plates, those who made four or less errors in detecting the numbers on the plates were considered of normal color vision and were then given the color preference test.

(3) The Color Preference Test: The third stage was the determination of the color preferences of the subjects. The presentation order of the 28 color-pairs was randomized after every 10th subject had taken the test. No time limit was given for expressing a preference between the colors in each pair. The instructions given to each subject was as follows:

Here I have a set of colors in pairs. You are supposed to tell me in each paired comparison the color you prefer over the other. Sometimes you might feel that you prefer both equally, but you will make a special effort to tell me which, though slightly, you prefer more than the other.

Whenever considered necessary, a part of the instructions was repeated.

Subjects

The subjects who did the color preference test were 120 students from the different schools of the American University of Beirut. They were selected so

that there were 20 males and 20 females in each of the Introvert, Normal, and Extravert categories. Eighty-five of the subjects were Lebanese while the rest were of Syrian, Jordanian, or Palestinian nationality. Seventy-five per cent were Christians while the others Moslems. The age range was between 17 and 28 years, the mean 20.6. Moreover, males and females in each group did not differ significantly on the E Scale scores. This was tested by the Wilcoxon Rank Sum Test (23). The range and average scores for each group is given in Table 1.

TABLE 1
THE RANGE AND MEAN SCORES ON E SCALE
OF M.P.I. FOR EACH GROUP.

	Introvert		Normal		Extravert	
	Male	Female	Male	Female	Male	Female
Mean	10.8	10.8	25.9	24.6	38.5	38.9
Range	6-12	4-12	22-28	22-28	36-44	36-44

CHAPTER V

RESULTS

The analysis of the data is to be considered under two headings: (1) Findings within each color-pair preferences, and (2) Findings within warm-cool color preferences.

Findings Within Individual Color-Pair Preferences

To find the preferences within individual color-pairs the Binomial Test was applied. Tables 2_a through 2_f present the specific color preferences in each of the 28 pairs for males and females under the three personality classifications. The significant preferences are marked with asterisks. Fifteen or more choices of one member of a color-pair is significant at the .05 level, while sixteen or more is significant at the .01 level. The colors are abbreviated to their first letters.

One of the main characteristics of the results in Table 2 is that females in all the groups have more significant preferences than males. Table 3 shows the extent to which males and females agree in their preferences within their respective group.

TABLE 2

NUMBER OF TIME COLOR j WAS PREFERRED OVER COLOR i BY MALES AND FEMALES BELONGING TO THE THREE PERSONALITY CLASSIFICATIONS.

2_a: Introvert Males (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	7	7	12	13	15 ^x	12	6	
	O	13	--	6	12	13	17 ^{xx}	12	7	
	Y	13	14	--	15 ^x	14	18 ^{xx}	14	7	
	YG	8	8	5	--	12	14	11	4 ^{xx}	
	G	7	7	6	8	--	14	11	4 ^{xx}	
	GB	5	3	2	6	6	--	5 ^x	4 ^{xx}	
	B	8	8	6	9	9	15	--	3 ^{xx}	
	P	14	13	13	16	16	16	17	--	
		68	60	45	78	83	109	82	35	

2_b: Introvert Females (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	10	3 ^{xx}	6	16 ^{xx}	18 ^{xx}	16 ^{xx}	9	
	O	10	--	9	7	18 ^{xx}	17 ^{xx}	15 ^x	10	
	Y	17	11	--	13	19 ^{xx}	19 ^{xx}	18 ^{xx}	12	
	YG	14	13	7	--	16 ^{xx}	16 ^{xx}	16 ^{xx}	13	
	G	4	2	1	4	--	16 ^{xx}	10	1 ^{xx}	
	GB	2	3	1	4	4	--	5 ^x	2 ^{xx}	
	B	4	5	2	4	10	15	--	3 ^{xx}	
	P	11	10	8	7	19	18	17	--	
		62	54	31	45	102	119	97	50	

2_c: Normal Males (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	12	11	11	13	15 ^x	12	11	
	O	8	--	7	6	13	14	11	7	
	Y	9	13	--	11	11	13	10	10	
	YG	9	14	9	--	12	14	11	10	
	G	7	7	9	8	--	10	12	9	
	GB	5	6	7	6	10	--	11	7	
	B	8	9	10	9	8	9	--	6	
	P	9	13	10	10	11	13	14	--	
		55	74	63	61	78	88	81	60	

2_d: Normal Females (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	7	6	7	14	17 ^{xx}	11	6	
	O	13	--	9	3 ^{xx}	15 ^x	12	12	5 ^x	
	Y	14	11	--	10	16 ^{xx}	15 ^x	15 ^x	10	
	YG	13	17	10	--	17 ^{xx}	18 ^{xx}	15 ^x	10	
	G	6	5	4	3	--	14	6	5 ^x	
	GB	3	8	5	2	6	--	7	5 ^x	
	B	9	8	5	5	14	13	--	4 ^{xx}	
	P	14	15	10	10	15	15	16	--	
		72	71	49	40	97	104	82	45	

2_e: Extravert Males (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	13	11	13	11	13	9	5 ^x	
	O	7	--	8	6	12	11	7	4 ^{xx}	
	Y	9	12	--	6	12	14	10	4 ^{xx}	
	YG	7	14	14	--	13	15 ^x	7	7	
	G	9	8	8	7	--	10	6	4 ^{xx}	
	GB	7	9	6	5	10	--	7	6	
	B	11	13	10	13	14	13	--	5 ^x	
	P	15	16	16	13	16	14	15	--	
		65	85	73	63	88	90	61	35	

2_f: Extravert Females (N=20)

		R	O	Y	YG	j	G	GB	B	P
i	R	--	7	6	7	17 ^{xx}	17 ^{xx}	10	3 ^{xx}	
	O	13	--	8	5 ^x	18 ^{xx}	18 ^{xx}	11	5 ^x	
	Y	14	12	--	7	15 ^x	17 ^{xx}	15 ^x	7	
	YG	13	15	13	--	18 ^{xx}	20 ^{xx}	14	9	
	G	3	2	5	2	--	12	4 ^{xx}	1 ^{xx}	
	GB	3	2	3	0	8	--	2 ^{xx}	1 ^{xx}	
	B	10	9	5	6	16	18	--	1 ^{xx}	
	P	17	15	13	11	19	19	19	--	
		73	62	53	38	111	121	75	27	

+ Significant at .05 level.

++ Significant at .01 level.

TABLE 3

COEFFICIENTS OF AGREEMENTS, u , (15) IN
 COLOR PREFERENCES FOR MALES AND FEMALES
 IN THE THREE PERSONALITY GROUPS.

	Introvert	Normal	Extravert
Males	0.141 ⁺	0.010	0.154 ⁺
Females	0.308 ⁺	0.163 ⁺	0.324 ⁺

+ x^2 values of u significant at .01 level.

Minimum possible u value -0.053;

Maximum possible u value +1.000.

In Table 3, only Normal males tend to disagree in their preferences, while all the others tend to show agreement of preferences in their respective grouping. The difference in agreements seems mainly due to the sex factor, because, as mentioned earlier, males and females in each group did not differ significantly on their E Scale scores.

It is also interesting to note in Table 2 that there is not a significant preference of purple over another color, while mostly greens, blue-greens, and blues are preferred over other colors in all of the classifications. This tendency is also shown in Table 4.

TABLE 4

THE ORDER AND PERCENTAGE OF COLOR PREFERENCES FOR MALES AND FEMALES IN EACH OF THE PERSONALITY CLASSIFICATION.

Order Of Pre- ferences	Introvert		Normal		Extravert	
	Male	Female	Male	Female	Male	Female
1st	GB (19.5%)	GB (21.2%)	GB (15.7%)	GB (18.6%)	GB (16.1%)	GB (21.6%)
2nd	G (14.8%)	G (18.2%)	B (14.5%)	G (17.3%)	G (15.7%)	G (19.8%)
3rd	B (14.6%)	B (17.3%)	G (13.9%)	B (14.6%)	O (15.2%)	B (13.4%)
4th	YG (13.9%)	R (11.1%)	O (13.2%)	R (12.8%)	Y (13.0%)	R (13.0%)
5th	R (12.1%)	O (9.6%)	Y (11.2%)	O (12.7%)	R (11.6%)	O (11.1%)
6th	O (10.7%)	P (8.9%)	YG (10.9%)	Y (8.8%)	YG (11.2%)	Y (9.5%)
7th	Y (8.0%)	YG (8.0%)	P (10.7%)	P (8.0%)	B (10.9%)	YG (6.9%)
8th	P (6.2%)	Y (5.5%)	R (9.8%)	YG (7.1%)	P (6.2%)	P (4.8%)

Table 4 gives the order and percentage of each color preference for males and females under each of the personality classifications.

It is evident from the above ordering that GB, G, and B are mostly preferred in most of the groups, while Y, YG, and P are least preferred. It will be also noted that there is no gross sex or personality difference in the above ordering.

Findings Within Warm-Cool Color Preferences

As mentioned in Chapter 2, R, O, Y, and YG are the warm, while G, GB, B, and P are the cool colors. There were 16 warm-cool color-pairs. Table 5 gives the frequencies and percentages of warm-cool color preferences for each personality group. To determine the significant preferences, the Critical Ratio Test was applied to the proportions of warm-cool color preferences. It was found that only the warm-cool preferences of the Extravert males did not differ from chance, while males and females in all other groups tend to prefer cool colors to the warm. Further, to determine whether the extent to which warm-cool colors are preferred differs significantly for each of the personality classifications, a 3 X 2 analysis of variance was applied on the total number of warm-over-cool preferences of each group. The results are presented in Table 6.

TABLE 5

WARM-COOL COLOR PREFERENCES FOR MALES AND FEMALES UNDER THE THREE PERSONALITY CLASSIFICATIONS.

(16 warm-cool color-pairs; 20 males and 20 females in each group; 320 warm-cool preferences for all males or females in each personality group.)

Color	Introvert		Normal		Extravert	
	Male	Female	Male	Female	Male	Female
Warm	131 (40.9%)	72 (22.5%)	133 (41.6%)	112 (35.0%)	166 (51.9%)	106 (33.6%)
Cool	189 ⁺ (59.1%)	248 ⁺ (77.5%)	187 ⁺ (58.1%)	208 ⁺ (65.0%)	154 (48.1%)	214 ⁺ (66.9%)

+ Critical Ratio significant at .01 level.

TABLE 6

ANALYSIS OF VARIANCE; THE EFFECT OF PERSONALITY AND SEX VARIABLES ON WARM-OVER-COOL COLOR PREFERENCES.

Source of Variation	Sum of Squares	d.f.	Mean Square	F	P
Personality Variable	60.44	2	30.22	2.44	NS ⁺
Sex Variable	163.32	1	163.32	13.20	NS ⁺
Pers. & Sex Variables	24.74	2	12.37	4.13	<.05
Error	341.50	114	2.99		
Total	590	119			

+ Tested against 'interaction' (Personality and Sex Variables) Mean Square.

From Table 6 one can see that the only significant outcome is the interaction between the personality and sex variables ($P < .05$). This interaction effect is presented in Figure 2. Here we see that there is a tendency for Introverts to prefer less colors that are "warm"

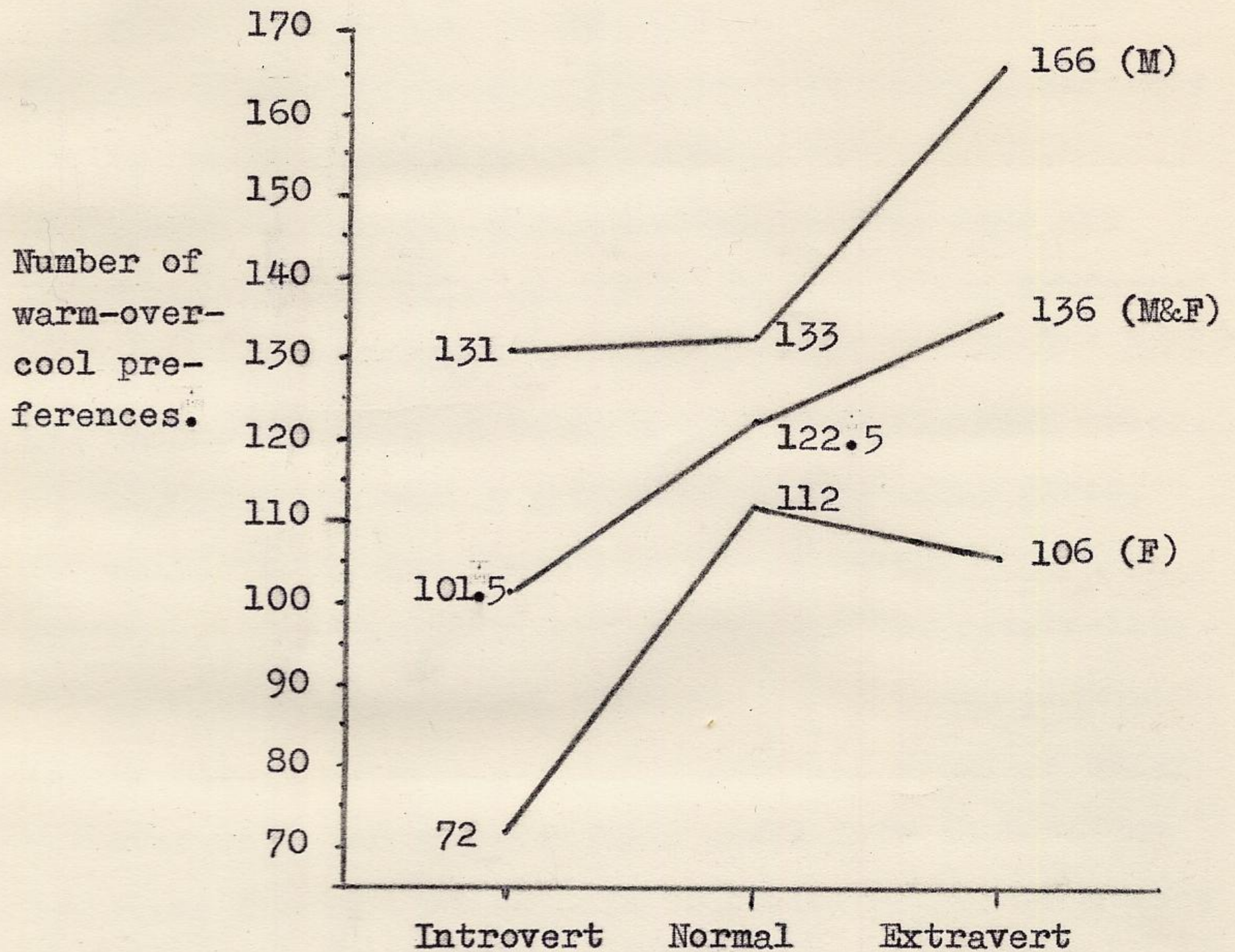


FIGURE 2: PREFERENCES FOR WARM COLORS AS A FUNCTION OF PERSONALITY TYPE AND SEX.

than Extraverts, and that there is a tendency for males in all the groups to prefer more colors that are "warm" than females. However, neither the sex difference nor the difference between the personality groups is significant apart from the interaction.

In a nutshell, the main findings are the followings:

- (1) There is no single pattern of preferences for a group different from the others.
- (2) Female students show more agreement among themselves in their preferences than males.
- (3) Purple is never preferred significantly over any other color, while mostly G, GB, and B are preferred over other colors.
- (4) In the ordering of total preferences for each color, GB, G, B are mostly preferred in the order given, while Y, YG, and P are least preferred.
- (5) Except for the Extravert males, all the personality groupings prefer cool colors.
- (6) No sex or personality difference was found in warm-over-cool color preferences apart from an interaction, whereby, males tend to prefer more warm-colors than females as one shifts from the Introvert to the Extravert dimension of personality.

CHAPTER VI

DISCUSSION

The aims and expectations set up in Chapter II for the present study were based mainly upon the previous findings, which were cited in the review. The results obtained, however, are at variance with the expectations in many respects. Some of these are discussed below.

First, the present findings do not agree with Birren's formulation of first and last choice in color preferences of adults. According to Birren, red and blue compete for first choice among adults, while orange is always the last (2, p.187). The present results indicate that the most preferred color in the Middle-East is blue-green, while orange tends to hold a middle position in most of the groups. Birren believes that the preference for blue-green (or turquoise) "unmistakably indicates an exacting and discriminating individual" (2, p.197), because mostly people like blue or green without drawing a fine distinction between these two. Such people, he maintains,

hold high opinions of themselves and tend to be, in psychoanalytic term, narcissists (2, p.197). But one wonders if such a description would apply to the general population of the Middle East.

Another contradiction between the present findings and those mentioned earlier is found in the warm-cool color preferences. It was expected that the Introverts would prefer cool while Extraverts warm colors. In the present finding, nearly all the groups preferred cool over warm colors. However, in the warm-over-cool preferences, one could see a tendency for Extraverts to prefer more warm-colors and for Introverts more cool-colors. Thus one could reformulate the statement of the hypothesis in terms of 'degree' and 'tendencies', rather than a clear-cut distinction between warm-cool color preferences as suggested by Birren, Rickers-Ovsiankina, and Jaensch.

Lastly, one could relate the results of this study to the controversy of sex differences in color preferences. A noticeable result was that females tended to show more agreement among themselves than males in each group. Apart from this, no marked sex difference was found in the order of color preferences or in the warm-cool color

distinctions. However, contrary to Cheskin's claims, females showed a tendency to prefer more colors that are cool than males. With these limited findings, it is felt that the present study could not shed much light on the controversy of sex difference in color preferences.

In comparing the findings of this study with those obtained mostly in the United States, one should consider the differences in the cultural setting between the two. Besides, it is worth mentioning some of the limitations of the present study.

(1) The colors used/ⁱⁿthis study are not changed on the three psychological dimensions of color, namely hue, brightness, and saturation. The colors used were only the Ostwald primary hues and their intermediates. The painting of these colors on the cards was responsible for some minor inconsistencies in their texture. Interesting results could have been obtained by manipulating the other two dimensions also, but this was outside the scope of the present study.

(2) The classification of the subjects into the Introvert, Normal, and Extravert groups was arbitrary. Perhaps, one could get more clearcut results if the classification of the Introverts and Extraverts were

was limited to more extreme subjects on the E Scale.

(3) The samples of subjects considered in this study are heterogenous, despite the restrictions put by its design. The countries from which the subjects come are well recognized for the existing ethnic or subcultural groups within them. However, the data could provide some general findings disregarding the 'nurtural' effects.

(4) Lastly, it should be recognized that the findings apply mainly to the experimental setting and that the application of these to practical life situations should consider a variety of other factors, such as the association of a color preference with a particular object rather than another.

CHAPTER VII

SUMMARY

The literature concerning the affective value of color preferences and the modification of these with individual differences is reviewed. The color preferences of 120 Middle East Introvert, Normal, and Extravert University subjects were obtained. No particular restriction was put in selecting subjects from different ethnic groupings, such as Armenians, Arabs, Moslems, Christians, as the interest was to find some overall results disregarding these differences.

The aim of the study was to find the characteristic color preferences of each of these personality groups and observe any intergroup differences.

In order to reach objective conclusions, various extraneous factors were controlled. The assignment of subjects to each of the three personality categories used was based upon the administration of the E Scale of the Maudsley Personality Inventory. The age range extended from 17 to 28, mean 20.6. The acceptance of subjects was limited to Lebanese, Syrian, Jordanian,

and Palestinian students. An equal number (20) of males and females were accepted under each of the personality classifications. To insure the normal color-vision of the subjects the "Pseudo-Isochromatic Plates" for the detection of red-green color-blindness was administered.

Eight Ostwald hues on 10 X 10 cm. cards were presented using the method of paired comparisons under controlled conditions with respect to lighting, distances, and visual field. Other precautions included the randomization of lateral position of each color in each pair and the randomization of presentation order of 28 color-pairs for each ten consecutive subjects taking the test. The instructions were given uniformly to each subject and whenever necessary some parts repeated for clarification.

The findings were described under two main headings:

(1) Findings within individual color-pairs: The findings suggest that there is no specific pattern of color preferences for each personality grouping, except that females under all classifications tend to show more agreement in their preferences than males. However, the overall picture for all the groups is that purple is never preferred significantly over another color, while mostly greens, blue-greens, and blues are preferred over the rest of the colors.

In the ordering of total preferences, for individual colors, again all the groupings show more or less similar results, in that, GB, G, and B are mostly pre-

ferred in the order given, while Y, YG, and P are least preferred.

(2) Findings within warm-cool colors: The findings within the warm-cool color preferences indicate that except for the Extravert males, whose preference did not differ from chance, all the other groupings prefer cool colors.

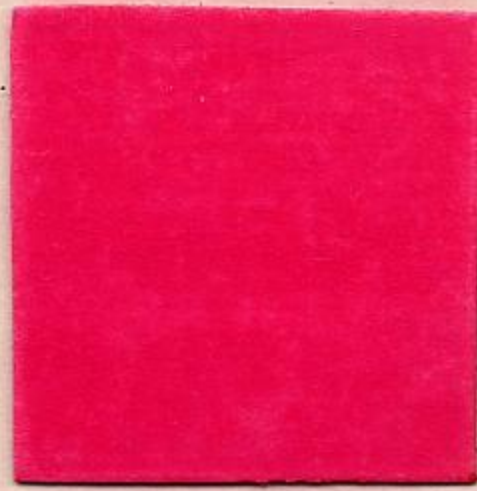
No significant difference was found between the three personality^{groups}/and between the sexes on the warm-over-cool preferences apart from an interaction between the personality and sex variables. The tendency was that males prefer more warm-colors than females, as one shifts from Introvert to Extravert classifications.

APPENDICES

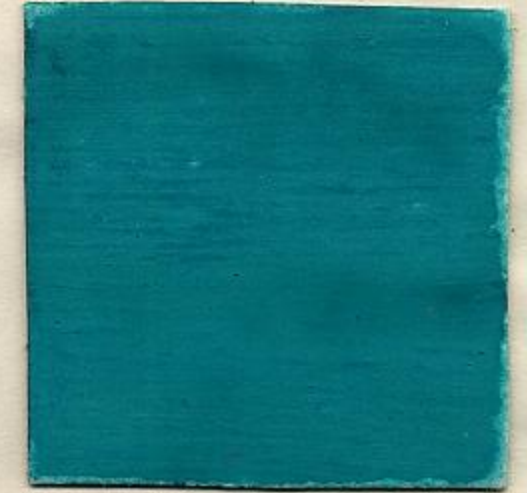
APPENDIX I

SAMPLES OF COLORS (OSTWALD HUES) USED
IN THIS STUDY

Red (R)



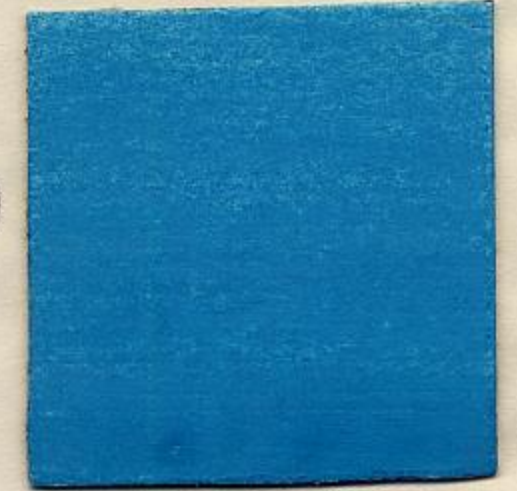
Green (G)
(Sea Green)



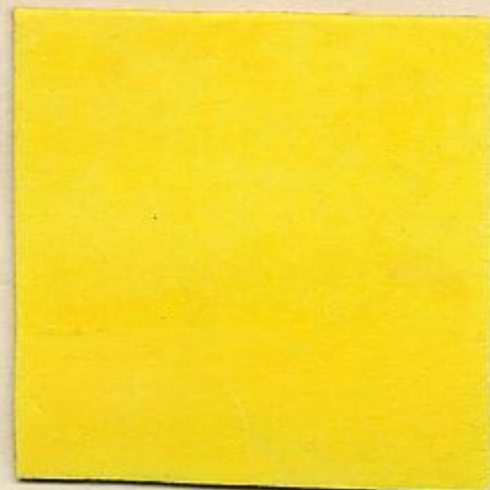
Orange (O)



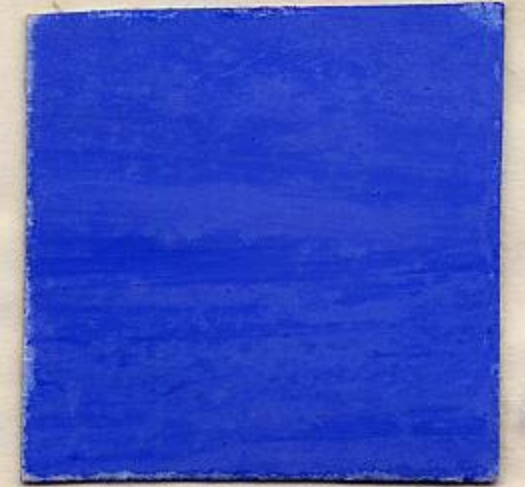
Blue-Green(GB)
(Turquoise)



Yellow (Y)
(Brilliant
Yellow)



Blue (B)



Yellow-Green(YG)
(Leaf Green)



Purple (P)



Neutral Grey



APPENDIX II

THE E SCALE OF THE MAUDSLEY PERSONALITY
INVENTORY

Age Sex
Nationality Religion

INSTRUCTIONS

There are no Right or Wrong answers to this Questionnaire. Just give your opinion as honestly as you can.

Look at the first statement below. It says: "Are you inclined to limit your acquaintances to a select few?" Decide whether this is TRUE or FALSE as applied to you. If it is True, put a ring round the word "Yes" at the extreme of the statement, like this: Yes

If it is False, put a ring round the word "No", like this: No

Where you find it hard to decide whether a statement is true or false, you can usually make up your mind that it is a little nearer to one than the other and deal with it accordingly.

Now proceed in the same way for all the statements.

Work as quickly as you can. You will not have time to spend several minutes on each. Make up your mind quickly and pass on to the next statement.

+ + +

1. Are you inclined to limit your acquaintances to a select few ? Yes No
2. Do you prefer action to planning for action ? Yes No
3. Do you nearly always have a "ready answer" for remarks directed at you ? Yes No
4. Are you inclined to be quick and sure in your actions ? Yes No
5. Are you inclined to take your work casually, that is, as a matter of course ? Yes No

6. Do you like to mix socially with people ? . . . Yes No
7. Are you inclined to be shy in the presence of
the opposite sex ? Yes No
8. Are you inclined to be overconscientious ? . . Yes No
9. Do you like to play pranks upon others ? . . . Yes No
10. Do you ever take your work as if it were a matter
of life or death ? Yes No
11. Can you usually let yourself go and have a
hilariously good time at a gay party ? Yes No
12. Are you inclined to keep quiet when out in
a social group ? Yes No
13. Would you rate yourself as a talkative indivi-
dual ? Yes No
14. Would you be very unhappy if you were prevented
from making numerous social contacts ? Yes No
15. Are you happiest when you get involved in some
project that calls for rapid action ? Yes No
16. Do other people regard you as a lively individual? Yes No
17. Do you generally prefer to take the lead in
group activities ? Yes No
18. Would you rate yourself as a happy-go-lucky
individual ? Yes No
19. Would you rate yourself as a lively individual? Yes No
20. Do you like to have many social engagements ? Yes No
21. Is it difficult to "lose yourself" even at a
lively party ? Yes No
22. Do you like work that requires considerable
attention to details ? Yes No
23. Are you inclined to keep in the background on
social occasions ? Yes No
24. Do you usually take the initiative in making
new friends ? Yes No

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