THE DISCRIMINATION OF MASCULINITY AND FEMININITY WITH THE MOSAIC TEST

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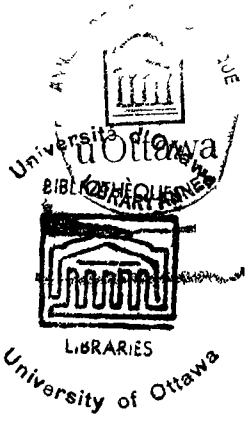

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CURRICULUM STUDIORUM

Gisèle Lalonde was born in Hull, Quebec, on September 5, 1928. Obtained the B.A. from the University of Ottawa in 1950, and entered the Institute of Psychology of the University in September 1950.

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INTRODUCTION

This study was an attempt to distinguish between masculinity and femininity with the Mosaic Test on the basis of 20 differential characteristics selected for their frequency of occurence. The concept originated with the observation that differences were found to exist between designs made by men and women wherein male protocols were usually made up of a single, complex design, whereas those of women often consisted of many, small, related designs which were frequently very simple. Furthermore, the literature on the Mosaic, reviewed in the first chapter of this study, indicated at least one finding pertained to differences between the two sexes, though this observation was not further substantiated by statistical data.

It was felt that if the above-noted factors were not merely due to chance, and that definite characteristics differentiated the two sexes, the Mosaic Test would be an ideal Mf tool. First, it would have the advantage of being a more rapid and simpler method than other masculinity-femininity tests, which are for the most part questionnaires and inventories, these having the usual attendant difficulties associated with paper and pencil tests of this type. However, with the Mosaic, the subject is simply required to make

whatever design appeals to him using the various shapes and colours at his disposal, an easy procedure rarely taking more than twenty minutes. A second factor was the strong possibility that this tool could possibly be a more reliable one than other existing Mf instruments, owing to the ease with which masculinity-femininity may be falsified on interest and personality inventories. This falsification, however, is somewhat less possible with projective devices because of their subtle character, a feature brought about through the use of unstructured material wherein the individual is not generally aware of the fact that he is projecting significant aspects of his personality, these reasons appearing sufficient enough to justify the inquiry.

The presentation of the problem includes a review of the literature dealing with the measurement of masculinity and femininity and with the Mosaic Test, this being followed by a statement of the research hypothesis. The experimental design is then presented, this involving a description of the Mosaic Test and the method used for scoring the test, followed by a mention of the selection of the population and the statistical methods employed for analysis of the data. Finally, the results of the study are presented and discussed.

CHAPTER I

THE MOSAIC TEST IN DIAGNOSIS

This study was intended to be an inquiry into the discriminatory ability of the Mosaic Test in the measurement of masculinity-femininity. It was felt therefore, that it would be of advantage to outline the previously reported research on the subject of masculinity and femininity, and to acquaint the reader with the Mosaic Test. In order to achieve this purpose, a review of the literature on both Mf and the Mosaic was completed; it was then possible to formulate the hypothesis of this research.

1.- Review of the Literature on Masculinity-Femininity.

Mf may be defined as follows: masculinity simply represents the existence of male traits whereas femininity is the presence of corresponding traits, but of an essentially female character. Consequently, Mf represents that tendency of any given individual to have a basic interest pattern of traits in the direction of the opposite sex. However, the chief concern here is the role played by the Mf Test in the selection of the population for this inquiry. In this respect, Hathaway stated that Mf is a measure of masculinity or of femininity of interest patterns, especially as these are determined by

the differences between essentially feminine males as contrasted to males in general. On the other hand, with women, Mf has a tendency to measure components of dominance-submission. Thus, high Mf males and low Mf females would be characterized by sensitivity and idealism, whereas low Mf males and high Mf females would be characterized by adventurousness, easy-going tendencies, physical strength and endurance[1].

The possibility of establishing the degree of masculine and feminine tendencies in an individual proved to be valuable, less specifically in completing the overall picture of an individual's personality, and more specifically for diagnostic purposes in detecting pathological disturbances of a sexual nature. Furthermore, a better knowledge of an individual's feminine and masculine tendencies are valuable in vocational guidance in that the interest patterns will greatly influence the type of occupation an individual would be best suited for.

In the past, the chief concern relative to this subject was the standardization of Mf test which measured the degree to which it existed in people, this having lead to a variety of investigations by a number of authors. The most common of these studies was the attempt to delineate the respective

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1 S.R. Hathaway, in Military Clinical Psychology, Department of the Army and the Air Force, T M 8-242 - AFM 160-45, 1951, p. 81 ff.

personalities of the two sexes largely through standardized inventories devised from interest and personality inventories. Of these, the Attitude-Interest Analysis Test by Terman and Miles represented probably the best-known inventory of masculinity and femininity. Other standardized inventories used for the same purpose included the Strong Vocational Interest Blank for Men, the Kuder Preference Record, the Minnesota Multiphasic Personality Inventory, the Guiford and Martin GAMIN Inventory, and the De Paw Adjustment Inventory, though none were as extensively evaluated in the literature as the Attitude-Interest Analysis Test noted above.

Those masculinity-femininity scales derived from the Strong Vocational Interest Blank for Men and from the Kuder Preference Record were somewhat similar, in that they were made up of items which measured an individual's interests. On the other hand, the MMPI, the De Paw Adjustment Inventory, and the GAMIN Inventory consisted of scales based on personality items[2].

The above considerations were mentioned in order to acquaint the reader with some of the previous work which has been done on the subject of masculinity-femininity, thus indicating the most common approach to the problem. In addition,

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2 J.C. Heston, A Comparison of Four Masculinity-Femininity Scales, Educational and Psychological Measurement, Vol. 8, No. 3, 1948, p. 376.

comparative studies determining the respective value of the tests just mentioned have also been reported at length in the literature. A comparison of Terman-Miles Attitude-Interest Analysis Test and the MMPI, reported by De Cillis, indicated a relatively low correlation between the two tests although both clearly differentiated the sexes quite satisfactorily. The conclusion was that both tests validly measured different aspects of masculine and feminine interests and attitudes[3]. Another comparison conducted by Heston involved the Strong Vocational Interest Blank for Men, the Kuder Preference Record, the MMPI, and the De Paw Adjustment Inventory. Results showed the MMPI to be the most effective delineator of masculinity and femininity, and also established the fact that it correlated highest with the three others, the reason being that the Multiphasic was composed partially of personality items, whereas the others were not[4]. In a similar study, Nance stated that the Strong Vocational Interest Blank for Men and the Guilford-Martin GAMIN Inventory correlated better with the MMPI than they did with each other[5].

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3 Olga E. De Cillis, and William D. Orbison, A Comparison of the Terman-Miles M-F Test and the M-F Scale of the MMPI, Journal of Applied Psychology, Vol. 34, No. 5, 1950, p. 338.

4 Joseph C. Heston, op. cit., p. 384.

5 R.D. Nance, Masculinity-Femininity in Prospective Teachers, Journal of Educational Research, Vol. 42, No. 9, 1949, p. 661.

Additional investigations included studies of sex differences based upon projective techniques and observation. However, it was ascertained that fewer researches had been done on this problem using these last two approaches. With the Rorschach, McFate and Orr observed that girls tended to give more responses than boys and used more colour variables, whereas a greater number of boys manifested anxiety[6]. Another research with the same test, but conducted by Schachter, revealed that men were predominantly coarctated whereas women tended to be more extratensive[7]. Again, in the House-Tree-Person technique, Buck observed only one possible indication of sex differences wherein designs made toward the left of the administration sheet seemed to be indicative of femininity rather than masculinity[8], a highly interesting consideration in view of this instrument's projective association with the Mosaic Test. Finally, on the Mosaic Test, Reiman observed that women appeared to make more abstract and scattered designs than men[9].

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6 Marguerite Q. McFate, and Frances G. Orr, Through Adolescence with the Rorschach, Rorschach Research Exchange, Vol. 13, No. 3, 1949, p. 311.

7 M. Schachter, Le facteur "sexe" et le test Rorschach, Acta Neurol. Psychiat. Belg., no Vol., no No., 1950, p. 157-158.

8 John N. Buck, Administration and Interpretation of the H-T-P Test, Beverly Hills, Western Psychol. Services, 1950, p. 37.

9 M. Gertrude Reiman, The Mosaic Test: Its Applicability and Validity, American Journal of Orthopsychiatry, Vol. 20, No. 3, 1950, p. 613.

In summary, this review of the literature on the subject of the measurement of masculinity and femininity has emphasized the fact that most attempts to investigate the problem of sex differences have been largely done through standardized questionnaires. It would therefore seem indicative that more investigations are needed in order to prove the worth of projective techniques in the measurement of masculinity-femininity, if only to establish their capacity in this connection.

2.- Review of the Literature on the Mosaic Test.

The Mosaic Test, introduced by Margaret Lowenfeld in 1929, was originally developed as an aid in educational and psychotherapeutic situations. Later it became useful for clinical differentiation between normal and neurotic individuals, in the diagnosis of mental deficiency and the various psychoses[10]. It had been Lowenfeld's intention to interprete the Mosaic Test in terms of personality as is done with the Rorschach, but observers noted that the tests were not interchangeable, rather, they were complementary. Thus, where the Rorschach delineated the basic structure of the personality, the Mosaic assessed emotional aspects[11]. This view was opposed

10 Margaret Lowenfeld, The Lowenfeld Mosaic Test, Journal of Projective Techniques, Vol. 16, No. 2, 1952, p. 200.

11 John Eldeskin Bell, Projective Techniques, New York, Longmans, Green and Co., 1948, p. 410.

by Wertham whose contention was that the Mosaic presented an unsatisfactory picture of the dynamic structure of the personality but was useful for diagnostic purposes, whereas the Rorschach was more revealing in the study of normal and neurotic personalities[12]. Carrying the comparison further, the Mosaic differed from the Rorschach in that the interpretation of the latter depended upon the relationships between the numerical scores for different categories, and in that there were no formal properties of the responses which could be directly perceived and evaluated[13]. The Mosaic Test also provides a greater opportunity to observe in a quick and direct way, the personality in spontaneous action, while the Rorschach gives an opportunity to see it in reaction to complex intellectual and emotional stimuli[14]. The Mosaic therefore, would seem to have some definite advantages over the other test, in that abnormalities in Mosaic patterns appear very early, are easily observable, and are little affected by superficial changes[15]. Furthermore, although the interpretation of the

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12 Frederic Wertham, in Projective Psychology, Lawrence E. Abt and Leopold Bellak, ed., New York, 1950, Knopf, p. 234.

13 Margaret Lowenfeld, The Mosaic Test, American Journal of Orthopsychiatry, Vol. 19, No. 3, July 1949, p. 549.

14 Hanna Colm, The Value of Projective Methods in the Psychological Examination of Children: The Mosaic Test in Conjunction with the Rorschach and Binet Test, Rorschach Research Exchange and Journal of Projective Techniques, Vol. 12, No. 4, 1948, p. 232.

15 B.L. Diamond, and H.T. Schmale, The Mosaic Test: An Evaluation of its Clinical Application, American Journal of Orthopsychiatry, Vol. 14, No. 2, 1944, p. 242.

test requires much experience, two factors adding to its value are independence of language, and simplicity and speed of administration.

As indicated previously, the Mosaic Test was originally developed almost exclusively in the educational and psychotherapeutic spheres, but somewhat less in diagnosis, the main diagnostic uses being for emotional disturbances and mental deficiencies[16]. To this end, in a study of patterns differentiating normal and neurotic individuals, Lowenfeld reported that neurotics made unsatisfactory attempts to reproduce normal patterns, the amount of failure ranging from complete incoherence to mild asymmetry[17]. Further, McCulloch and Girdner noted that simplicity and lack of colour harmony in patterns were produced by mental defectives. They also observed that with an increase in mental age, there was a corresponding increase in the complexity of the patterns as well as improvement in the colour balance[18]. The findings of this study were somewhat questionable due to inadequate sampling and a lack of precision characterizing the Mosaic productions. In a similar research, Shotwell and Lawrence

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16 Frederic Wertham, in Projective Psychology, Lawrence E. Abt and Leopold Bellack, New York, Knopf, 1950, p. 231.

17 Margaret Lowenfeld, op. cit., p. 547.

18 Thomas L. McCulloch, and John Girdner, Use of the Lowenfeld Mosaic Test with Mental Defectives, American Journal of Mental Deficiency, Vol. 53, No. 3, 1949, p. 493.

compared the designs made by brain-injured mental defectives with those of familial or undifferentiated defectives, and striking differences were observed in the number of pieces used, the reaction-time and the response time. Here it was noted that the brain-injured defectives began immediately without planning, and used a greater number of pieces, whereas the familial or undifferentiated defectives took longer to start, used fewer pieces, and finished more rapidly[19].

Although Lowenfeld was the originator of the test, Wertham and Golden may be credited with its introduction as a diagnostic tool, and more specifically for the diagnosis of various psychoses. They discovered differential characteristics which, together with the findings of Diamond and Schmale have provided the basis for present methods of interpretation. They also defined 23 criteria which aided in the determination of characteristic patterns for schizophrenia, manic-depressive psychosis, mental deficiency and organic brain lesions[20]. Other less significant observations which they made, dealt with epilepsy, hypomania and neurosis. Diamond and Schmale made a somewhat less extensive but more systematic

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19 Anna M. Shotwell and Ernest S. Lawrence, Mosaic Patterns of Institutionalyzed Mental Defects, American Journal of Mental Deficiency, Vol. 56, No. 1, 1951, p. 166.

20 F. Wertham and L. Golden, A Differential Diagnostic Method of Interpreting Mosaics and Colored Block Designs, American Journal of Psychiatry, Vol. 98, July, 1941, p. 124-131.

research dealing with the above-mentioned syndromes, and not only confirmed, but added to Wertham and Golden's findings, thus strengthening the value of the instrument as a diagnostic tool. They noted that conditions in which the personality was more profoundly disordered, as in schizophrenia and organic brain syndromes, showed the most severe disturbance in the Mosaic gestalt[21]. They also observed significant differences between the colour responses of schizophrenics and those of manic-depressives, in that the schizophrenics entirely disregarded colour, using black and/or white exclusively[22]. Eysenck noted that dysthimics produced compact designs whereas hysterics produced scattered and abstract ones[23], further evidence of the test's discriminatory power. Also, in a study of the Mosaic held in conjunction with the Rorschach and the Stanford-Binet, Colm reported that the two projective techniques corresponded in most cases and proved to be advantageous when used with children. Whenever the Rorschach represented too strong a stimulus thus provoking blocking of reaction, and when children were unable to express themselves verbally, the Mosaic was found very useful as an

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21 B.L. Diamond and H.T. Schmale, The Mosaic Test: An Evaluation of Its Clinical Application, American Journal of Orthopsychiatry, Vol. 14, No. 2, 1944, p. 249.

22 Ibid., loc. cit.

23 H.J. Eysenck, Dimensions of Personality, London, Kegan, Paul, 1947, p. 238.

indicator of the degree of emotional withdrawal[24]. Furthermore, Colm's presentation was most interesting from the dynamic viewpoint, since much emphasis was cast upon an interpretation of the representations made by children as a mean of describing their personality.

Relative to validity and reliability, the results of a study by Himmelweit and Eysenck revealed that Mosaics and personality matching provided a better-than-chance success[25]. Kerr, who also attempted the establishment of validity via matching experiments[26], was criticized by Himmelweit and Eysenck on the ground that insufficient precaution was taken to insure unbiased results[27]. Reiman applied ten main characteristics derived from the literature to the Mosaic, and found them to be a valid criteria of emotional maladjustment. Other characteristics were also considered significant for mental deficiency, sex differences, age and cultural differences[28]. Mental deficiency was characterized by nonrepresentational content and lack of success; feminine designs by abstraction

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24 Hanna Colm, loc. cit.

25 H.T. Himmelweit and H.J. Eysenck, An Experimental Analysis of the Mosaic Projection Test, British Journal of Medical Psychology, Vol. 20, No. , 1945, p.

26 M. Kerr, The Validity of the Mosaic Test, American Journal of Orthopsychiatry, Vol. 9, No. , 1939, p.

27 M. Gertrude Reiman, op. cit., p. 600, citing Himmelweit and Eysenck.

28 Ibid., op. cit., p. 614.

and scatterness; age difference by incoherence, symmetry of form and colour, and indifference to colour; cultural differences by concreteness or abstraction of designs; this last observation being confirmed by Stewart and Leland who noted that patterns of American children were concrete, whereas those of English children were more abstract[29].

It will be seen that the number of studies on the Mosaic Test have been so few, that many adequate summaries of the literature have appeared from time to time, the most complete of which was provided by Dörken[30]. However, the bibliographical items selected for inclusion in this review were obtained from original sources, this providing more accuracy.

3.- The Hypothesis.

An extensive survey of the literature on the Mosaic indicated that only one observation had been made relative to sex differences. However, Reiman's observation has not yet been substantiated, and other signs were not studied. Since there were indications that the Mosaic Test might discriminate

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29 U. Stewart, and L. Leland, American Versus English Mosaics, Journal of Projective Techniques, Vol. 16, No. 2, 1952, p. 247.

30 Herbert Dörken, Jr., The Mosaic Test: Review, Journal of Projective Techniques, Vol. 16, No. 3, 1952, p. 287-297.

between masculinity and femininity, but that no comprehensive study of the problem had been effected, the following hypothesis seemed worth investigating: that characteristics of the Mosaic Test can be used in delineating between masculinity and femininity.

CHAPTER II

THE RESEARCH DESIGN

This inquiry into the discriminatory power of the Mosaic Test as a measure of masculinity-femininity, required the comparison of two series of designs: those produced by a definitely masculine group and those produced by a definitely feminine group. This comparative analysis required a definition of the 20 characteristics used as criteria; the choice of the population, and the statistical analysis of the data. Each of these steps were taken in order and have been described in the following pages, after a brief description of the Mosaic Test.

1.- The Mosaic Test.

a) Description of the Mosaic Test

The Mosaic Test originally obtained from Czechoslovakia by Lowenfeld in 1929, had been primarily designed as a means of studying the relationship between Eastern and South-Eastern European cultures and folkways. The selection of shapes and colours used in the test arose from a study of the main geometrical designs used in the national embroidery[1]. With this

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1 Margaret Lowenfeld, The Lowenfeld Mosaic Test, Journal of Projective Techniques, Vol. 16, No. 2, 1952, p. 200.

material, Lowenfeld saw the possibility of its use in estimating emotional stability as well as intellectual capacities, and noted that it could detect whether intellectual retardation was due to emotional blocking or to mental deficiency[2]. The test was mainly limited to children for educational purposes, but was later introduced by Wertham and Golden as a diagnostic tool.

The test material consists of a box containing 465 small, plastic pieces of five different shapes and six assorted colours, these being white, green, black, yellow, blue and red. Included in the test material is a rectangular tray on which the subject makes his design. Furthermore, a piece of brown paper similar to the tray in colour, is usually placed in the bottom of the tray in order to facilitate reproduction of the design upon completion of the test. For a more comprehensive description of the test material, the reader is referred to the notes of instructions included with the test material.

The instructions given those to which the test was administered were especially developed for American users by Lowenfeld and McCulloch. The reader is again referred to the test instructions accompanying the material[3], for the mode of

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2 Frederic Wertham, The Mosaic Test, in Projective Psychology, Abt, Lawrence E., and Leopold Bellack, ed., New York, 1950, Knopf, p. 230.

3 Margaret Lowenfeld, and Thomas L. McCulloch, Instructions for the Lowenfeld Mosaic Test, New York, Psychological Corporation.

instructing a subject taking the test. During the test situation, the examiner always observes the procedure, that is, which shapes and colours are first selected, as well as where the design is started. The time taken to complete the design is also noted. Once the design is completed, the significance of the production is usually discussed with the subject, relative to the title of the presentation, the planning, and the importance of colour and form. In the recording of designs, the customary approach was used; it consists of tracing around each tile with a sharp pencil and indicating the colour of the piece in the space traced. Later, each protocol was coloured with crayons in order to have an exact picture of the design made. All 100 protocols were reproduced in the same way, and the material so prepared was ready for observational analysis.

b) Method of Scoring the Mosaic Test.

The method for correcting the 100 mosaic designs obtained for this research was derived from that of Wertham and Golden. It was noted earlier in this study that these authors had set the basis for the interpretation of the Mosaic Test by defining 25 characteristics helpful in the study of patterns and of their diagnostic significance. These 25 characteristics were reduced to a smaller number, the reason for this being

that only the most objective and those that were the most likely to be found in normal patterns were selected. For this study, 20 characteristics were selected for observation and were grouped in somewhat the same way as suggested by Shotwell and Lawrence, who used the three following headings: 1) the formal aspect of the design; 2) the organizational features of the design; 3) the content and the feeling-tone of the design[4]. Grouped in the above manner, the 20 criteria are defined and illustrated in Appendix 2.*

2.- Selection of the Population.

In the selection of the population, the primary aim was to effectively control all possible variables with the exception of masculine-feminine tendencies. Since this investigation was in the nature of a pilot project, it was not considered necessary to compare paired groups representing the general population. Instead, preference was given to the use of matched samples which were obtained from a student population of the same type, of the same age range (18-25), and of the same educational level (college). From this group, a highly feminine and a highly masculine sample was chosen. The selection of such extremes was made in order to increase the possibility of observing the differences between masculine

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4 Anna M. Shotwell, and Ernest S. Lawrence, op. cit., p. 162.

and feminine patterns on the Mosaic Test. Because of this element of masculinity and femininity, the two samples were selected with the help of a recognized technique, preference going to the Mf scale of the MMPI. The reasons for this choice were that it was found to be as good a delineator of masculine and feminine traits as any other Mf test, and it was less time-consuming than its closest rival, the Terman-Miles Attitude-Interest Test; an item worth considering in the present situation, since the observer was allowed only the barest minimum time in which to administer the test.

In considering this masculine-feminine test, it will be noted that the Mf scale was not used in the contex of the MMPI. The 60 items composing the scale were extracted from the whole, and were presented as a separate questionnaire which included in addition to the 60 Mf items, 43 questions selected at random from the MMPI. The purpose behind this was an attempt to conceal the nature of the questionnaire as a precaution against possible falsification if the nature of the test had been known before answering it.

These 60 items consisted of 27 dealing with interests, and 33 others concerning personality, the latter being grouped as follows:

(a) 12 items expressing emotional feelings.
(b) 7 items indicating reactions to people.
(c) 5 items revealing the existence of sexual inversion.
(d) 9 items of a miscellaneous nature.[5]

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5 J.C. Heston, loc. cit.

The manner in which the test has usually been scored is such that a high raw score on the scale would indicate a deviation of the basic masculine interest pattern in the direction of the opposite sex. Thus, any score above 20.5 for men, and below 36.5 for women, would indicate opposite tendencies, these being Hathaway and McKinley's mean scores for their standardizing population. Relative to this matter, it must be pointed out that college men score higher on the Mf scale of the MMPI than the authors' norm[6]. This consideration was of value in the present inquiry, since it explained the observer's difficulty in finding a satisfactory group of college men who scored below 20.5. On the other hand, no difficulty was encountered in the selection of the female sample, since college women tend to score closer to the F norms of the standardized group than do college men to the M norms.

In selecting the population for this study, the questionnaire described on the previous page, of which a copy has been provided in the appendix[7], was administered to 201 male students and to 146 female students. Of the male population, those who fell below the critical score of 21 were

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6 Andrew L. Sopchack, College Student Norms for the MMPI, Journal of Consulting Psychology, Vol. 16, No. 6, 1952, p. 448.

7 Appendix 1, p. 43.

selected for the final group, whereas in the female population, women ranging above the critical score of 36 formed the other, final group.

In summary, the final population consisted of two groups of opposite sex, matched for age, educational level, and degree of masculinity and femininity as determined by the MMPI. The male sample included 50 college students from 18-25 years of age, and enrolled in the following courses:

(a) 10 students in pre-engineering.
(b) 10 students in engineering.
(c) 30 students at the faculty of Arts.

The female sample consisted of 50 women candidates also from 18-25 years of age, highly feminine, and enrolled in the following courses:

(a) 21 students at the faculty of Arts.
(b) 22 student teachers.
(c) 7 student nurses.

3.- The Statistical Analysis.

Once the designs included in this research had been examined according to the various characteristics defined previously, the material was submitted to statistical analysis in order to arrive at valid and reliable evaluation of the hypothesis. Since the general problem consisted of a study involving differences between the results of two groups, two types of results were obtained and thus called for two

different approaches:

(a) In dealing with results presented in absolute quantities, the significance of the difference between the means was found, this being accomplished by using the following formula:

$$D/\sigma^{d}M = \frac{M^{1} - M^{2}}{\sqrt{\sigma_1^2/N_1 + \sigma_2^2/N_2}} \qquad (1)$$

in which M_1 is the mean of the male group, M_2 is the mean of the female group, σ_1 is the standard deviation for the men, σ_2 is the standard deviation for the women, and N_1 refers to the number included in the male sample, whereas N_2 stands for the number of women forming the other group.

(b) In dealing with percentages referring to the presence or absence of characteristics in each protocol, a first attempt was made to effect a comparison by way of the chi-square. Unfortunately, this method was not applicable to all classes of results. Although N was not below 30, obtained frequencies were often below 5, thus eliminating the use of the chi-square. Because of this also, no other formula was available to evaluate the significance of the difference between percentages. Consequently, a new approach was indicated, which necessitated the assigning of arbitrary scores to the items on the basis of the size of the differences in

percentages between the two groups. To this end, a score of .5 was given for every 5% of difference, and a series of assigned scores, presented in Table I, was set up. This preliminary step was followed by two operations: a) the Mosaic characteristics translated into scores could then be ranked according to their importance as diagnostic indicators of masculinity and femininity, and b) the possibility of finding a critical score was investigated through a study of the characteristics of the distribution.

Table I.- Assigned scores corresponding to the size of percentage differences obtained by male and female groups on 18 characteristics of the Mosaic Test.

Size of percentage differences		W	Size of percentage differences		W
+96	+100	+10.0	0		0
+91	+95	+9.5	-01	-05	-0.5
+86	+90	+9.0	-06	-10	-1.0
+81	+85	+8.5	-11	-15	-1.5
+76	+80	+8.0	-16	-20	-2.0
+71	+75	+7.5	-21	-25	-2.5
+66	+70	+7.0	-26	-30	-3.0
+61	+65	+6.5	-31	-35	-3.5
+56	+60	+6.0	-36	-40	-4.0
+51	+55	+5.5	-41	-45	-4.5
+46	+50	+5.0	-46	-50	-5.0
+41	+45	+4.5	-51	-55	-5.5
+36	+40	+4.0	-56	-60	-6.0
+31	+35	+3.5	-61	-65	-6.5
+26	+30	+3.0	-66	-70	-7.0
+21	+25	+2.5	-71	-75	-7.5
+16	+20	+2.0	-76	-80	-8.0
+11	+15	+1.5	-81	-85	-8.5
+06	+10	+1.0	-86	-90	-9.0
+01	+05	+0.5	-91	-95	-9.5
0		0	-96	-100	-10.0

CHAPTER III

DISCUSSION OF THE RESULTS

A description of the statistical method used to differentiate between masculinity and femininity was outlined in the previous chapter. A discussion of these findings will therefore follow in chapter III. All 20 characteristics are discussed relative to their importance, this being determined by the degree of difference between the frequency of each characteristic present in both male and female groups. The first characteristics to be mentioned are those wherein absolute quantities were compared by way of the $D/6^{d}M$ formula. Following this is a presentation of the remaining items ranked according to their value in weighted scores, these scores varying according to the differences between the two groups. This permitted the establishment of the most valuable characteristics as diagnostic indicators. Furthermore, the anticipation of the possible use of weights as a new method for scoring the Mosaic Test, led to an evaluation of this method for diagnostic purposes. Finally, an appraisal of the method used, in addition to a discussion of the most significant signs differentiating the two sexes, concluded this study of Mf as measured by the Mosaic Test.

1.- Differences Between the Means.

The first group wherein absolute quantities were discussed, included only two such factors, namely the time element and the number of pieces used in a design. The Table presented on the following page indicates that no results significant at the 1% level were obtained. However, Table II shows that the time element was significant at the 5% level, and that the number of pieces used was also very close to being significant at the 5% level. These results would therefore indicate that men as a rule take more time in completing a mosaic design than do women, and that they also tend to use a greater number of pieces in making their designs.

2.- Analysis of the Assigned Scores.

This approach consisted of giving a score to each of the remaining items on the basis of the difference in percentages between masculine and feminine groups, these being taken from Table I (cf.). When all scores had been found, the next step involved a ranking of the items according to the size of the scores in order to determine the most important characteristics which could discriminate between masculinity and femininity. The final stage of this method consisted of an investigation of the possibility of establishing a critical score.

Table II.- Significance of the differences between means of Male and Female groups for time taken and the number of tiles used by men and women on the Mosaic Test.

Characteristics	Groups	M	6	D	$D/6^{d}M$
Time (in minutes)	Male	29.70	10.85	5.80	2.1410
	Female	23.90	12.10		
No. Tiles	Male	49.10	28.88	10.54	1.9084
	Female	38.56	26.29		

a) Ranking of the Characteristics.

Frequency of the presence of the characteristics observed in Mosaic designs varied from one feature to the other. Consequently, assigned scores ascribed to each item varied according to the extent of the difference observed between the two groups, this giving a different value to each characteristic. Table III shows the list of items classified in order of significance, from the highest to the lowest possible score given to any particular detail. The positive scores are indicative of those characteristics most frequently encountered in male protocols, whereas negative scores infer that such items were usually seen in female designs.

An observable point in reference to the data presented in the accompanying Table is that none of the characteristics had been given a particularly high assigned score, the highest being ± 3.0. Since these scores were dependent upon the amount of difference of percentages between the two groups, it was therefore obvious that no element was strikingly specific to one group, thus limiting the use of these characteristics as accurate diagnostic indicators of masculinity and femininity. Nevertheless, it may be concluded that those features worth either a positive or a negative score of 3.0, 2.5 and 2.0 were valuable to a certain extent in differentiating the two groups and should be given some consideration.

Table III.- Ranking of 18 characteristics of the Mosaic Test according to their assigned scores (AS) based on the percentage differences between male and female groups.

Characteristics	%M	%F	D	A.S.
One design only	.96	.66	.30	+3.0
Compact design	.60	.30	.30	+3.0
Small integrated designs	.02	.32	-.30	-3.0
Pointed tiles	.50	.72	-.22	-2.5
Landscape (content)	.02	.18	-.16	-2.0
Flowers (content)	.00	.20	-.20	-2.0
Perspective	.10	.26	-.16	-2.0
Concrete design	.72	.58	.14	+1.5
F/C relationship	.16	.04	.12	+1.5
FC relationship	.60	.74	-.14	-1.5
Abstract designs (content)	.28	.42	-.14	-1.5
White tiles	.26	.18	.08	+1.0
Square shape	.24	.18	.06	+1.0
Coherence	.96	.88	.08	+1.0
Winged design	.20	.10	.10	+1.0
Square (content)	.06	.00	.06	+1.0
Totem pole (content)	.06	.00	.06	+1.0
Boat (content)	.06	.00	.06	+1.0
Airplane (content)	.06	.00	.06	+1.0
Diamond shape	.21	.28	-.07	-1.0
Plan	.52	.60	-.08	-1.0
Edge design	.40	.48	-.08	-1.0
Movement	.02	.08	-.06	-1.0
House and Person (content)	.00	.06	-.06	-1.0
Black tiles	.17	.13	.04	+0.5
Isoceles triangle	.15	.14	.01	+0.5
Equilateral triangle	.21	.18	.03	+0.5
Symmetry	.88	.84	.04	+0.5
Frame design	.08	.04	.04	+0.5
Centre design	.52	.48	.04	+0.5

Table III.- Ranking of 18 characteristics of the Mosaic Test according to their assigned scores (AS) based on the percentage differences between male and female groups.

Characteristics	%M	%F	D	A.S.
Extended design	.32	.30	.02	+0.5
Form only (F-C rel.)	.04	.00	.04	+0.5
House (content)	.06	.04	.02	+0.5
Person (content)	.02	.00	.02	+0.5
Animal (content)	.04	.00	.04	+0.5
House-Person-Animal (content)	.02	.00	.02	+0.5
Diamond (content)	.02	.00	.02	+0.5
Cross (content)	.08	.04	.04	+0.5
Star (content)	.08	.06	.02	+0.5
Letters (content)	.06	.04	.02	+0.5
Bridge (content)	.02	.00	.02	+0.5
Fireplace (content)	.02	.00	.02	+0.5
Raft (content)	.02	.00	.02	+0.5
Street car (content)	.02	.00	.02	+0.5
Sweater design (content)	.02	.00	.02	+0.5
Green tiles	.12	.15	-.03	-0.5
Yellow tiles	.12	.16	-.04	-0.5
Blue tiles	.13	.15	-.02	-0.5
Red tiles	.20	.23	-.03	-0.5
Right angle triangle	.18	.21	-.03	-0.5
Simplicity	.06	.10	-.04	-0.5
Color only (C-F rel.)	.04	.08	-.04	-0.5
C/F relationship	.18	.14	-.04	-0.5
Person and Animal (content)	.00	.02	-.02	-0.5
House and Tree (content)	.00	.04	-.04	-0.5
Living-room plan (content)	.00	.04	-.04	-0.5
Car (content)	.00	.02	-.02	-0.5
Crest (content)	.00	.02	-.02	-0.5
Candle (content)	.00	.02	-.02	-0.5
Heart (content)	.00	.02	-.02	-0.5

The outcome resulting from the statistical data consisted of the abstraction of those characteristics considered most significant in differentiating between masculine and feminine protocols. The most significant was that men usually produced a single, compact design, whereas women had a stronger tendency to make small integrated designs, scattered about the tray. Next significant was the fact that a greater number of feminine designs ended with pointed tiles, presented more perspective and represented flowers and landscapes.

Of less importance were those characteristics given an assigned score of 1.5. These included a slightly greater tendency for men to produce more concrete designs and select tiles for their form rather than colour, as opposed to women who gave preference to the colour of the tiles and to abstract designs. All other elements worth a positive or a negative score of 1.0 and 0.5 showed slight differences between the two groups, this being due either to the fact that they were about equally present in both groups, or that they were observed in very few cases.

It may be concluded, therefore, that in all findings presented herein, the only possible indicators of sex differences were as follows: a) Men generally produces a single, compact design; b) Women usually made many small integrated designs scattered about the tray; c) Women more frequently

ended their representations with pointed tiles; d) Women's designs more often represented landscapes and flowers and showed more perspective.

b) The Use of Assigned Scores in Diagnosis.

The final step was an evaluation of the possible diagnostic use of the assigned scores. To achieve this purpose, the 100 patterns were scored for the 18 characteristics, using the weight given each item in Table III. From this, total scores were calculated for each design, and a distribution of these total scores obtained was then effected in order to discover a critical score.

Furthermore, once the ranges and the means for the total scores obtained by male and female groups were established, the significance of the difference between the means was determined. As a result, the critical ratio thus obtained was found to be greatly important at more than .01 level of significance, determining the test as a valuable discriminator of masculinity and femininity when used with groups.

Table IV.- The ranges, means and σ of the total scores obtained by male and female groups.

Groups	Range		Mean	σ
Male	+12.0	-6.0	4.59	3.37
Female	+10.0	-10.0	-1.26	5.40

Table V.- The significance of the difference between the means obtained by the male and the female groups.

Groups	Means	σ	D	D/σ_{DM}
Male	4.59	3.37		
			5.94	6.50
Female	-1.25	5.40		

Table VI.- Distribution of the positive assigned scores (A.S.) obtained by male and female subjects, with the predictive value of masculinity of each score expressed in percentage.

Total positive A.S.	Frequency M	F	Predictive value of masculinity in %
12.0	1		100
11.5			100
11.0			100
10.5			100
10.0	1	1	67
9.5	3	1	71
9.0	2		78
8.5	3		83
8.0	1	1	71
7.5	3		82
7.0	4	1	82
6.5	3		84
6.0	3	1	83
5.5	1		83
5.0	1	1	81
4.5	3	2	78
4.0	4	2	77
3.5	1	3	72
3.0			72
2.5	2		74
2.0	1	2	71
1.5	3	2	70
1.0	1	2	68
0.5	1	2	67
0	4	2	67

Table VII.- Distribution of the negative assigned scores (A.S.) obtained by male and female subjects, with the predictive value of femininity of each score expressed in percentage.

Total negative A.S.	Frequency M	Frequency F	Predictive value of femininity in %
-10.0		3	100
-9.5		1	100
-9.0		1	100
-8.5		1	100
-8.0		1	100
-7.5		2	100
-7.0		2	100
-6.5		1	100
-6.0	1	1	93
-5.5		1	93
-5.0		2	93
-4.5			
-4.0		2	93
-3.5			
-3.0		1	93
-2.5		2	93
-2.0		2	93
-1.5	1	1	92
-1.0	2	1	86
-0.5		2	86

CONCLUSION

The attempt to delineate between masculinity and femininity with the Mosaic Test through the study of twenty characteristics observed in 100 protocols proved to be rather unsuccessful. None of the items studied were found to be important in differentiating the sexes, except for the time element which reached a 5% level of significance, thus showing that women take less time to complete a mosaic design. Other characteristics whose discriminatory power approached an acceptable level were:

1) Greater number of pieces used by men in making designs.
2) Multiplicity of small designs made by women as opposed to men's single design.
3) Looseness of feminine designs versus compactness of masculine designs.
4) Representation of flowers and landscapes mostly done by women.

The above mentioned results partially substantiated the observation made by Reiman on sex differences as indicated by the Mosaic Test. The present inquiry confirmed the fact that women generally made scattered designs as opposed to the compactness of men's designs. Also, women had a slightly greater tendency than men to make abstract designs, although this observation was not significant enough to consider it a differentiator of masculinity and femininity.

The next consideration dealt with was an attempt to evaluate a different method of scoring the Mosaic Test. Unfortunately, results indicated that only extreme assigned scores could clearly delineate between masculinity and femininity, thus labeling this method of scoring as unsuccessful. However, even though this scoring method was not effective in differentiating the sexes through the use of twenty characteristics, the possibility of its applicability in the differentiation of other traits should not be rejected. On the contrary, it was felt that further consideration should be given to this approach in future research with the test. The Mosaic Test undoubtedly has much to recommend it in diagnosis, but unfortunately cannot actually be used to its complete advantage until a suitable scoring method, or method of interpreting the test has been established and properly standardized.

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APPENDIX I

THE MASCULINITY-FEMININITY QUESTIONNAIRE DERIVED FROM THE MMPI

QUESTIONNAIRE

Date.....

Name..... Sex.....

Date of Birth..... Age.....

Occupation.....

Address..... Phone No.....

This questionnaire consists of numbered statements. Read each statement and decide whether it is <u>true as applied to you</u> or <u>false as applied to you</u>.

answers correctly marked

	T	F
A	■	
B		■

To mark your answers correctly, look at the example shown at the right. If a statement is TRUE or MOSTLY TRUE, as applied to you, blacken the letter T (see A at the right). If a statement is FALSE or NOT USUALLY TRUE, as applied to you, blacken the letter F (see B at the right). If a statement does not apply to you or if it is something that you don't know about, make no mark.

Remember to give YOUR OWN opinion of yourself. <u>Do not omit any answers if you can avoid it</u>. Make your marks heavy and black. Erase completely any answer you wish to change.

Remember, try to make <u>some</u> answer to every statement.

1. I like mechanics magazines..... T F

2. I have a good appetite..... T F

3. I think I would like the work of a librarian..... T F

4. I work under a great deal of tension..... T F

5. When I take a new job, I like to be tipped off on who should be gotten next to..... T F

6. I am troubled by attacks of nausea and vomiting..... T F

7. I would like to be a singer..... T F

8. I feel that it is certainly best to keep my mouth shut when I'm in trouble..... T F

9. At times I feel like swearing..... T F

10. I find it hard to keep my mind on a task or job..... T F

11. I seldom worry about my health..... T F

12. At times I feel like smashing things..... T F

13. I do not always tell the truth..... T F

14. I am a good mixer..... T F

15. I wish I could be as happy as others seem to be..... T F

16. I am very strongly attracted by members of my own sex..... T F

17. I used to like drop-the-handkerchief..... T F

18. I have often wished I were a girl (or if you are a girl) I have never been sorry that I am a girl..... T F

19. I get angry sometimes..... T F

20. I enjoy reading love stories..... T F

21. My feelings are not easily hurt..... T F

22. I sometimes tease animals..... T F

23. I think I would like the kind of work a forest ranger does. T F

24. Any man who is willing and able to work hard has a good chance of succeeding..... T F

25. I would like to be a florist..... T F

26. It takes a lot of argument to convince most people of the truth..... T F

27. Once in a while I put off until tomorrow what I ought to

30. I like to go to parties and other affairs where there is lots of loud fun..... T F

31. Sometimes when I am not feeling well I am cross..... T F

32. I am happy most of the time..... T F

33. I frequently find it necessary to stand up for what I think is right..... T F

34. I believe in a life hereafter..... T F

35. I enjoy a race or game better when I bet on it..... T F

36. Most people are honest chiefly through fear of being caught..... T F

37. My table manners are not quite as good at home as when I am out in company..... T F

38. I like dramatics..... T F

39. Often I can't understand why I have been so cross and grouchy..... T F

40. I like collecting flowers or growing house plants..... T F

41. I have never indulged in unusual sex practices..... T F

42. At times my thoughts have raced ahead faster than I could speak them..... T F

43. Criticism or scolding hurts me terribly..... T F

44. I like to cook..... T F

45. I certainly feel useless at times..... T F

46. I would like to be a soldier..... T F

47. I have the wanderlust and am never happy unless I am roaming or traveling about..... T F

48. I used to keep a diary..... T F

49. I cry easily..... T F

50. I like to know some important people because it makes me feel important..... T F

51. What others think of me does not bother me..... T F

52. I frequently have to fight against showing that I am bashful..... T F

53. I do not have a great fear of snakes..... T F

54. I am worried about sex matters..... T F

57. I have very few headaches..... T F

58. I like to visit places where I have never been before..... T F

59. I daydream very little..... T F

60. If I were a reporter I would like very much to report news of the theatre..... T F

61. I would like to be a journalist..... T F

62. In walking I am very careful to step over sidewalk cracks. T F

63. I have never had any breaking out on my skin that has worried me..... T F

64. I frequently find myself worrying about something..... T F

65. I think I would like the work of a building contractor... T F

66. I like science..... T F

67. It is not hard for me to ask help from my friends even though I cannot return the favor..... T F

68. I very much like hunting..... T F

69. Some of my family have habits that bother and annoy me very much..... T F

70. I should like to belong to several clubs or lodges..... T F

71. I like to talk about sex..... T F

72. I get mad easily and then get over it soon..... T F

73. I have been disappointed in love..... T F

74. I believe I am no more nervous than most others..... T F

75. I believe there is a Devil and a Hell in afterlife..... T F

76. I like to be with a crowd who play jokes on one another... T F

77. I usually expect to succeed in things I do..... T F

78. I was a slow learner in school..... T F

79. If I were an artist I would like to draw flowers..... T F

80. It does not bother me that I am not better looking..... T F

81. When in a group of people I have trouble thinking of the right things to talk about..... T F

82. When I leave home I do not worry about whether the door is locked and the windows closed..... T F

83. At times I am full of energy..... T F

85. Most people make friends because friends are likely to be useful to them..... T F

86. Once in a while I feel hate toward members of my family whom I usually love..... T F

87. If I were a reporter I would very much like to report sporting news..... T F

88. I have very few fears compared to my friends..... T F

89. I work under a great deal of tension..... T F

90. I am likely not to speak to people until they speak to me. T F

91. I liked "Alice in Wonderland" by Lewis Carroll..... T F

92. I have periods in which I feel unusually cheerful without any special reason..... T F

93. I wish I were not bothered by thoughts about sex..... T F

94. If several people find themselves in trouble, the best thing for them to do is to agree upon a story and stick to it..... T F

95. I think that I feel more intensely than most people do.... T F

96. There never was a time in my life when I liked to play with dolls..... T F

97. In school I found it very hard to talk before the class... T F

98. I get all the sympathy I should..... T F

99. I like parties and socials..... T F

100. I like adventure stories better than romantic stories..... T F

101. When someone does me a wrong I feel I should pay him back if I can, just for the principle of the thing..... T F

102. I like poetry..... T F

103. I am entirely self-confident..... T F

APPENDIX 2

ILLUSTRATIONS OF MOSAIC DESIGNS

Appendix 2

I. The formal aspect of the design.

(1) Number of pieces used:
The first stage was to count the number of pieces used to make the design. Normal designs would usually consist of a moderate number of pieces, or of many pieces.

(2) Choice of colours:
It was determined that the choice of colours was an important factor in the assessment of personality traits. The use of much blue and black being associated with depression, and the conspicuous use of red being indicative of excitability and impulsiveness. The exclusive use of white and/or black would be an indication of schizophrenia, whereas white used in conjunction with other colors would refer to cold intellection.
Here in each design the number of pieces of each colour was counted and related to the number of pieces used for the whole design, in terms of percentages.

(3) Choice of shapes:
One or several shapes may be used. As in (2), the number of pieces of each shape making up a design were counted and later transposed into percentages.

(4) Number of designs:
A pattern may consist of just one large design or of many small designs which may or may not be related to one another. In a concrete design were many objects were represented, each object was counted as one small design, even if only one tile was used. For example, in a design representing a living-room arrangement, if each piece of furniture consisted of one tile only, each would count as a separate design; the same would apply to a pot of flowers in which case the pot would be one design and each flower another. (Fig. 1 and 2)

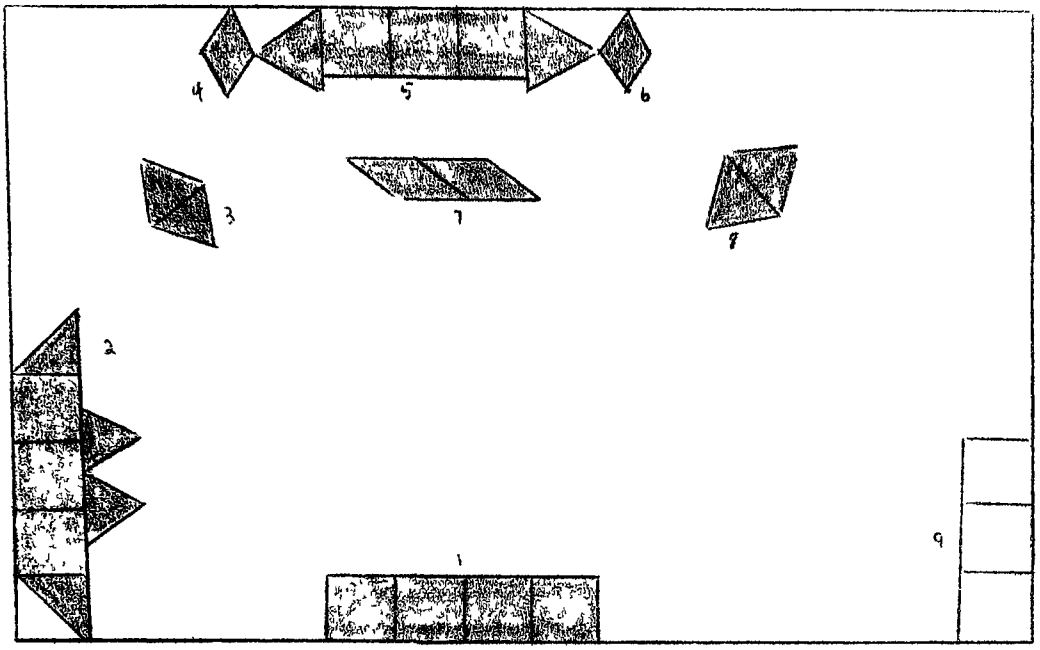

Fig. 1. Living-room arrangement

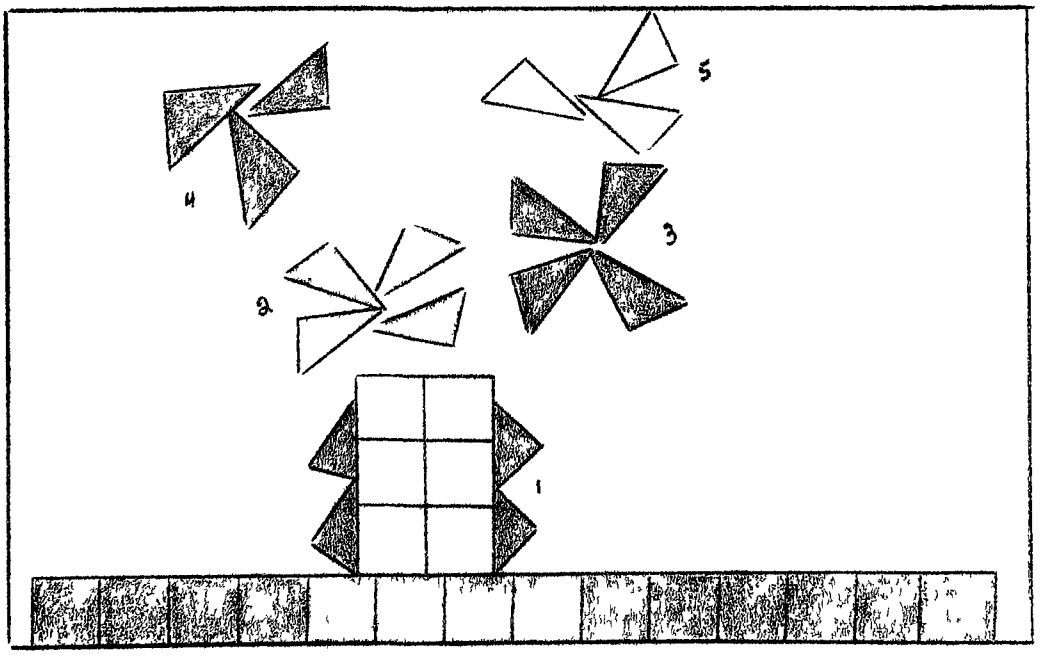

Fig. 2. Pot of flowers

II. The organizational features of the Mosaic design.

(1) Simplicity or complexity:
Normal designs usually have a certain complexity. Nevertheless, such designs do not necessarily imply the use of many pieces. A relatively simple design may be considered complex because of the colour arrangement. Simple designs would not only infer a representation of simple geometrical forms, a star, or a cross, but also refer to those designs which would require a minimum of organization in comparison to the other designs. (Fig. 3 and 4)

(2) Compactness or looseness:
In compact designs all pieces touched one another, whereas in loose designs space was left between the pieces. (Fig. 5 and 6)

(3) Coherence or incoherence:
Normal patterns were usually coherent in that a good design had been achieved. Incoherence would consist of a failure to achieve the design intended, or it would be a representation of an unorganized "all-over pattern" more-or-less filling the whole tray. (Fig. 7 and 8)

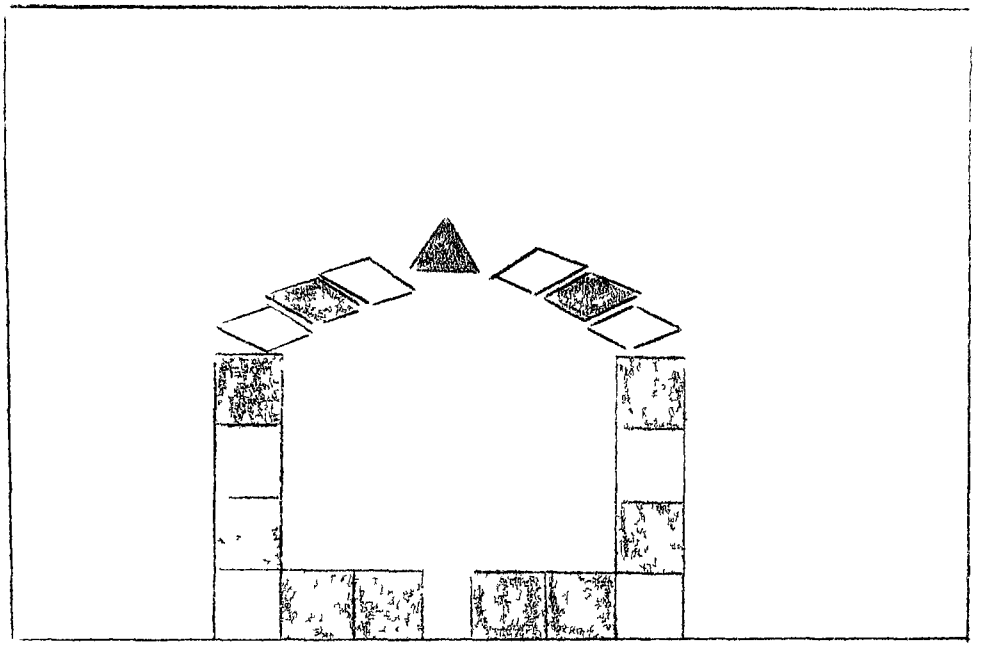

Fig. 3. Simple representation of a house

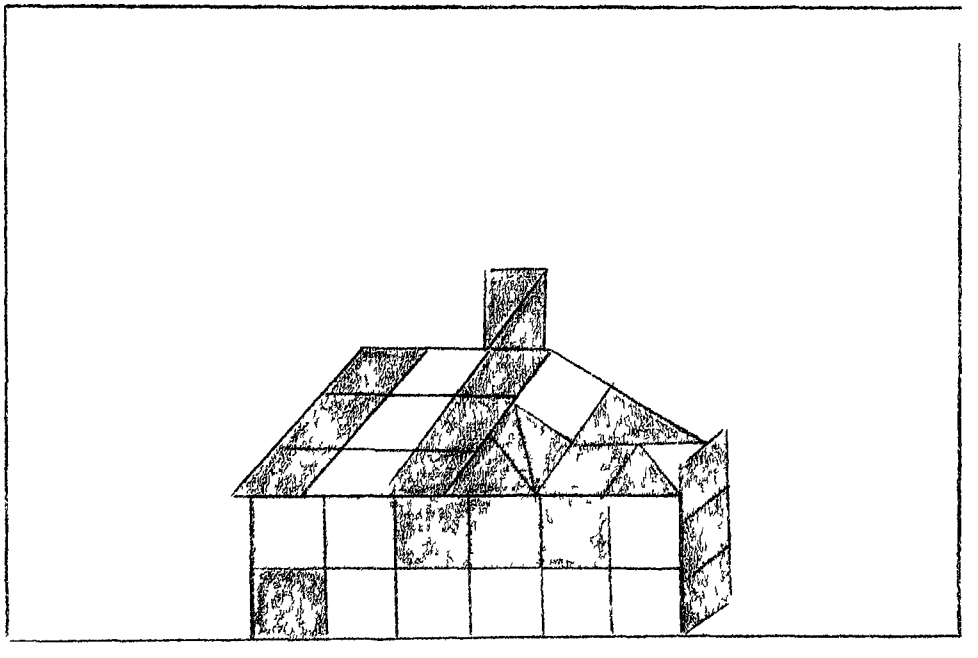

Fig. 4. Complex representation of a house

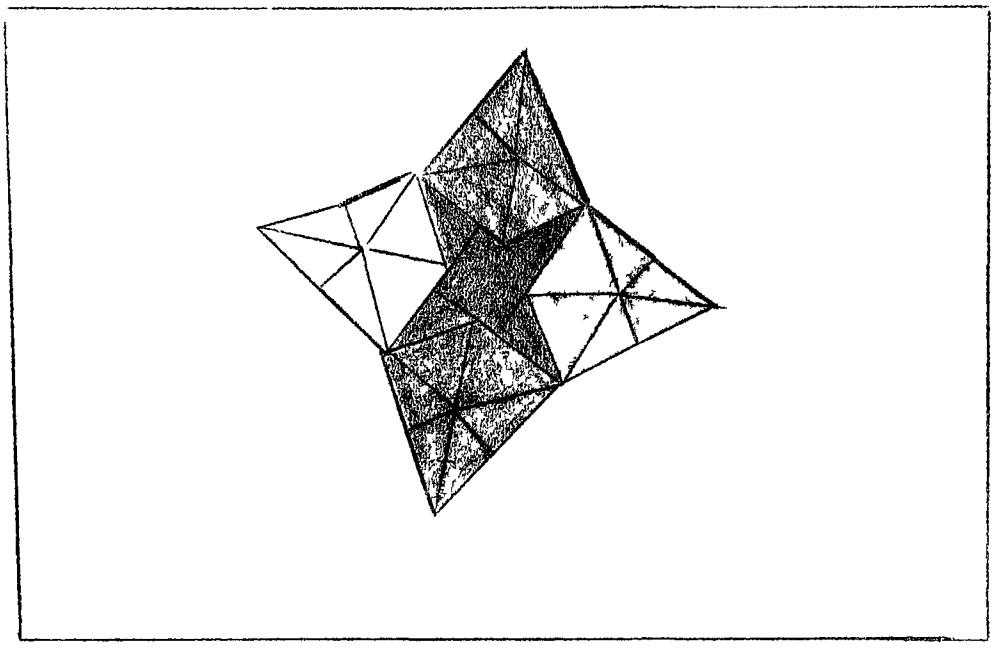

Fig. 5. Compact design

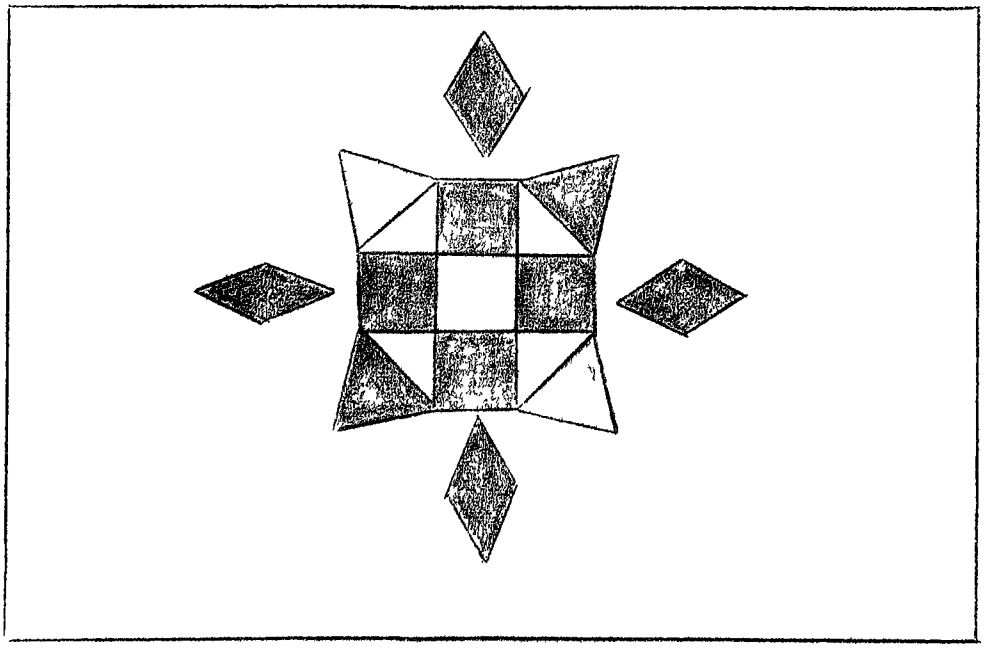

Fig. 6. Loose design

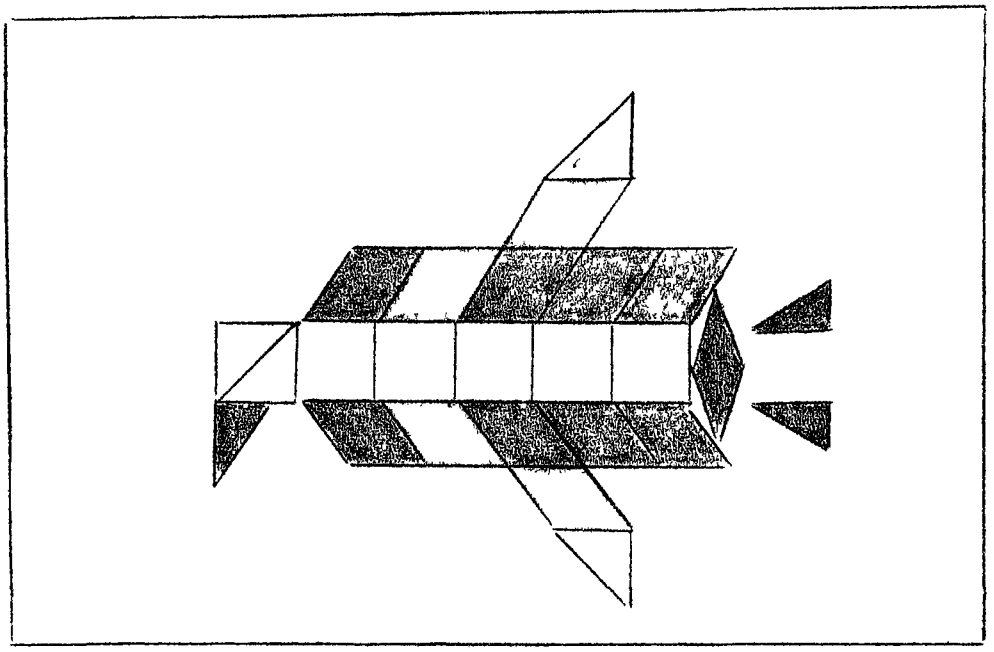

Fig. 7. Coherent design

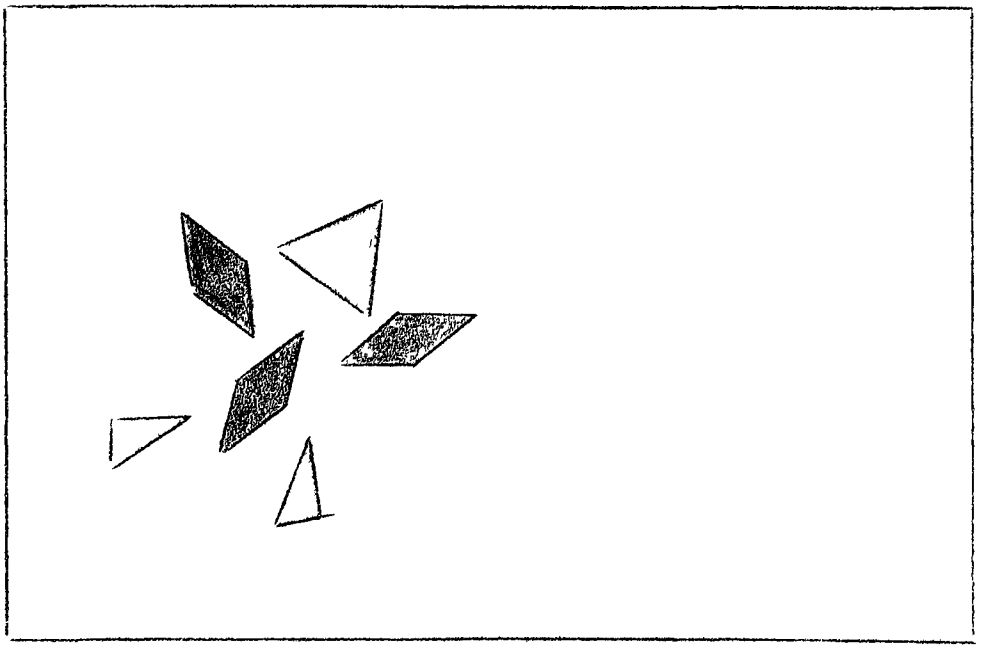

Fig. 8. Incoherent design

(4) Symmetry or assymmetry:
In almost any good design, symmetry was found to be present in some degree as a constructive factor of organization. On the other hand, it may be completely absent or merely suggested. In this study, concern was given to the presence or absence of symmetry expressed in form or in colour, or in both. (Fig. 9 and 10)

(5) Integration of small designs:
In protocols where there were small designs, some were closely associated in such a way as to form a well-organized whole, whereas others were entirely unrelated to each other thus indicating a failure of integration of character in the individual. (Fig. 11 and 12)

(6) Plan:
The inquiry revealed whether a "raison d'être" had been made before starting the test, even if modifications of the preliminary plan occurred during the testing situation. On the other hand, some were observed to begin the test without any definite design in mind, and it was only the placement of a few pieces on the board which became suggestive of a certain design.

(7) Time:
The time element was recorded from the moment the instructions were completed until the subject indicated that he had finished the test.

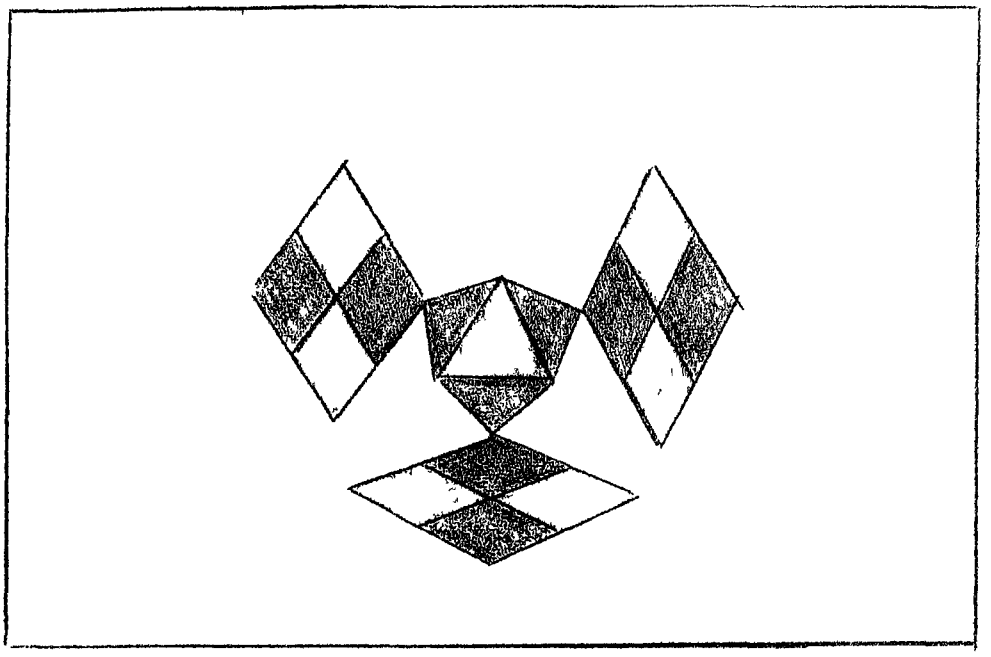

Fig. 9. Symmetrical design

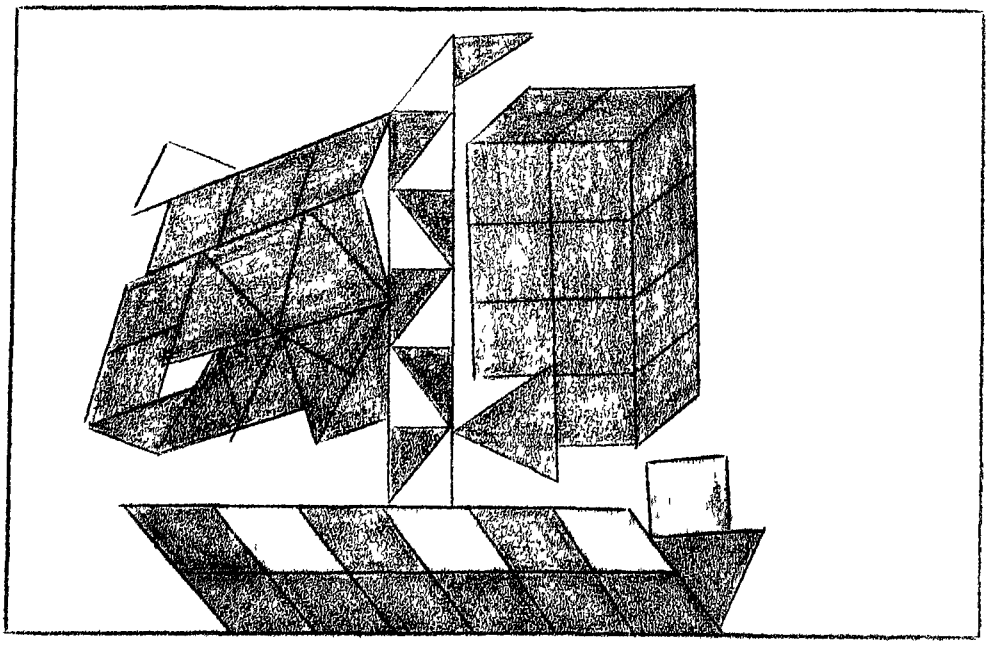

Fig. 10. Asymmetrical design

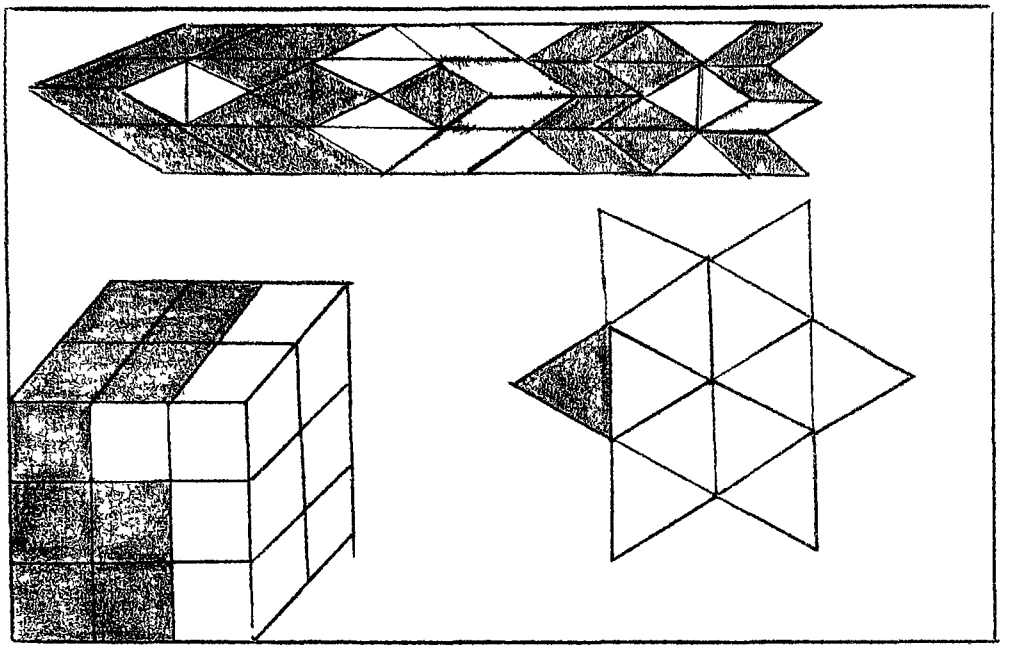

Fig. 11. Unrelated small designs

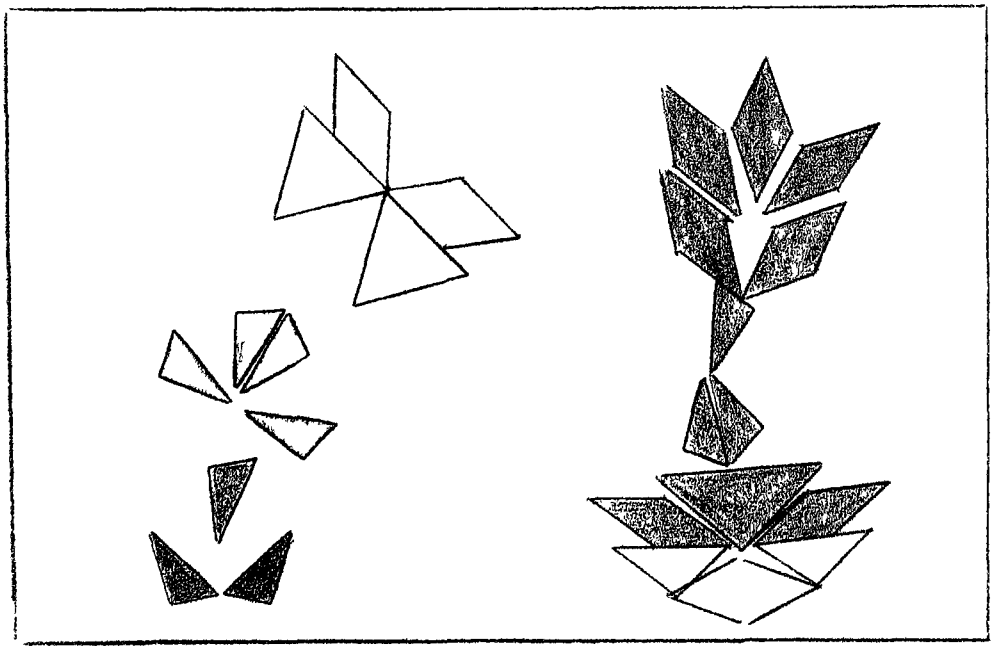

Fig. 12. Related small designs

III. The emotional aspect and the content of the designs.

(1) Concreteness or abstraction:
A concrete design would be one that represented a definite, concrete object, or that was intended to represent one. As a general rule the mosaics tend to lend themselves more easily to abstract designs than to concrete ones.

(2) Position of the design within the frame of the tray:
The relationship of the design to the tray was found to be of great importance as an indicator of personality traits. The normal design would be usually started in the middle extending outward in all four directions. If the design started in the centre and pointed out to the left, it would indicate paranoid tendencies or concern with the past experiences. Designs made at the top would show optimism whereas those made at the bottom would show pessimism or depression. Edge designs and frame designs would indicate emotional disturbances such as fear, anxiety, and insecurity.
Consideration here was given to whether the designs were centered, frame designs, or edge designs.

(a) Centre designs:
All designs, small or large, not considered as an edge or a frame design were included in this category.

(b) Edge designs:
Here were considered all those designs which came into contact with the raised rim of the tray. The degree of contact may vary from only a few pieces touching the side of the tray to those designs coming into contact with the margin on all four sides of the tray. These would be usually referred to as "margin-bound" designs. (Fig. 13)

(c) Frame designs:
Whenever there was a smaller design in the centre with pieces all around forming a frame, such designs were referred to as "frame" designs. This frame design may or may not touch the edge of the tray. (Fig. 14)

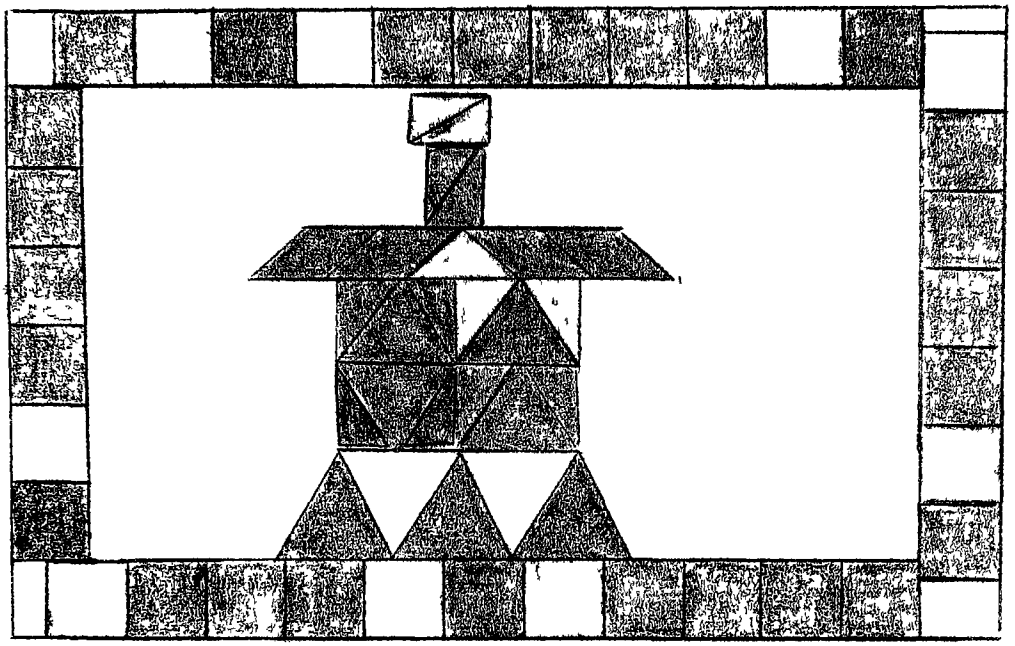

Fig. 13. Edge design

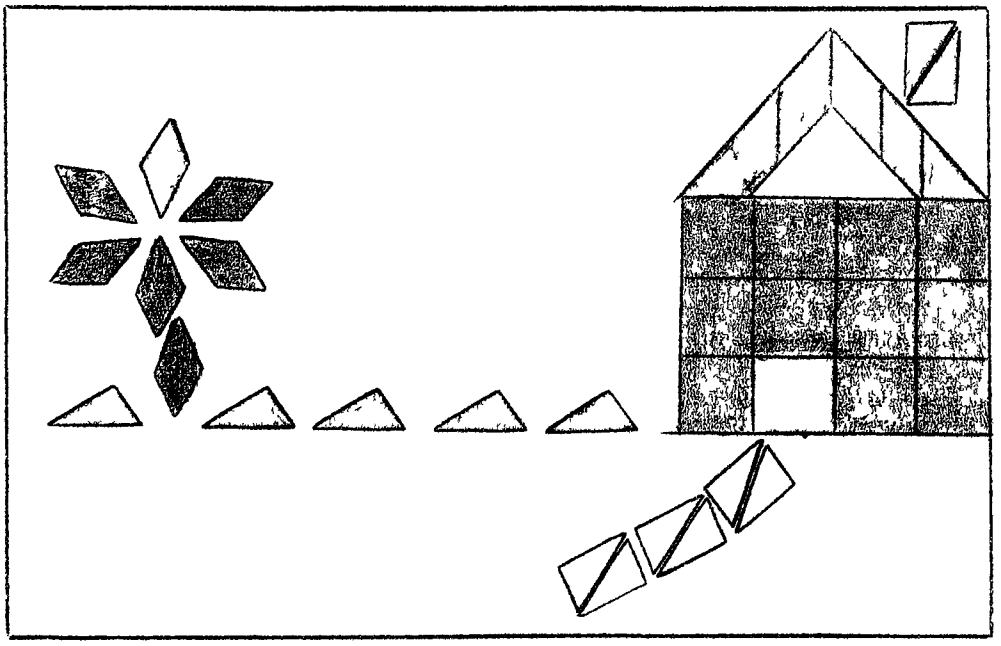

Fig. 14. Frame design (also an edge design)

(3) Proportional relationship between Mosaic designs and the tray:

This characteristic was inspired by Buck, the originator of the House-Tree-Person Drawing Test, who related the drawings made to the size of the sheet, and observed that a relatively tiny drawing was indicative of a subject with feelings of inadequacy and possibly withdrawal tendencies, whereas a too large design which tended to press out against the border denoted feelings of environmental constriction with concomitant over-compensatory action or fantasy; the aggressiveness may be acted out or may be internalyzed, depending on the content upon which the emphasis was placed.

This same rule may be applied to the Mosaic Test as a whole, in which case the design would be related to the tray. Whenever the design pressed out against the edge of the tray, giving the impression of incompleteness and that it should extend beyond the tray, the same interpretation mentioned above by Buck could be applicable. Relative to aggressiveness, the content of the design would very well indicate whether it had a tendency to be acted out, or whether it was internalized, this depending upon the representation of the design, the colours, and the shapes of the tiles. (Fig. 15 and 16)

(4) Presence of movement:

Here movement was considered in somewhat the same manner as Wertham's "dynamic" designs in which some motion would be indicated as for example smoke coming out of a window. Figures 17 and 18 are that of two designs representing individuals; one indicates movement whereas the other is static. It should be noted here that motion was considered only in those designs which were concrete representations, whereas abstract ones which might have suggested some action were left out because of the element of subjectivity which the writer wished to exclude here.

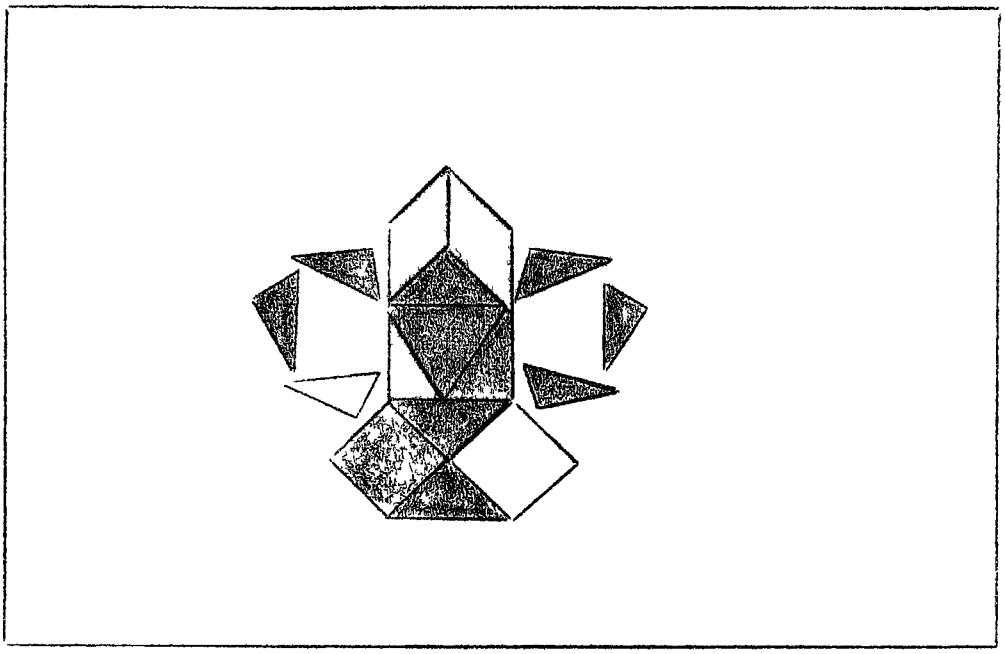

Fig. 15. Small design

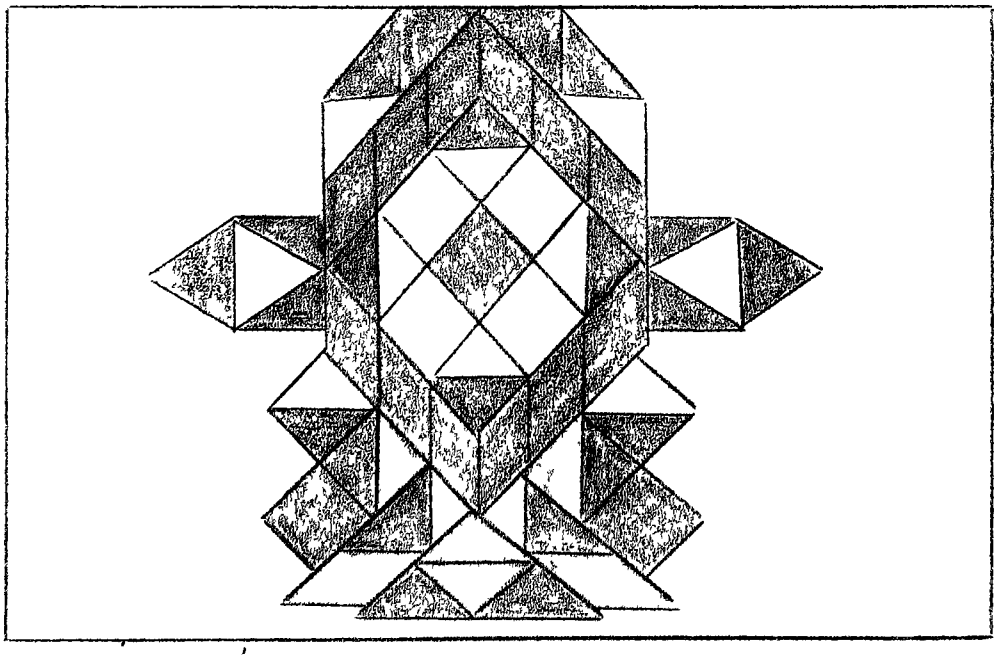

Fig. 16. Design pressing out against the top edge

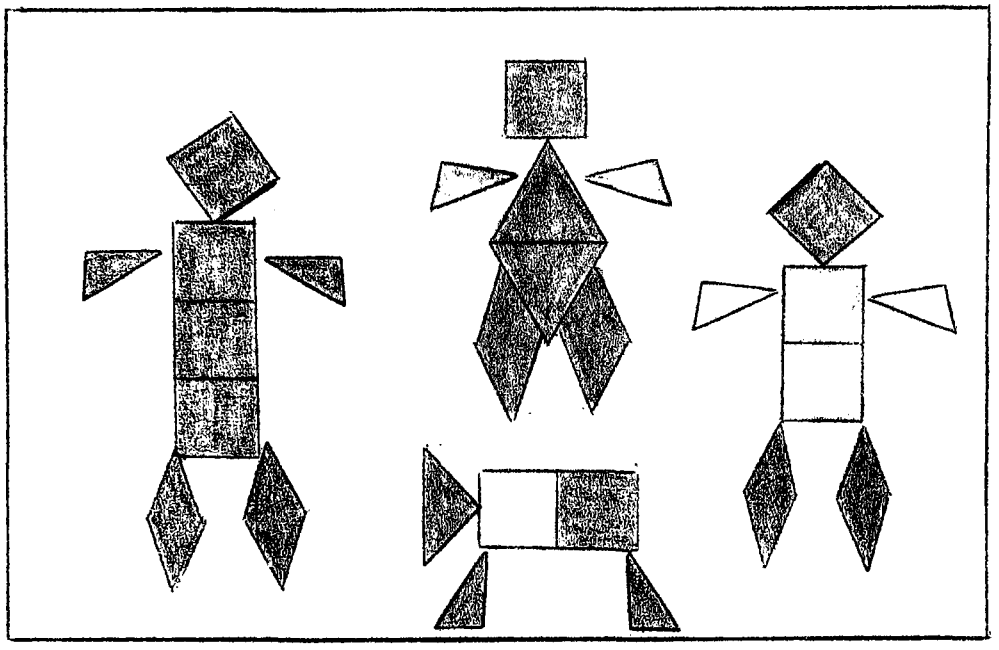

Fig. 17. Static representation of people

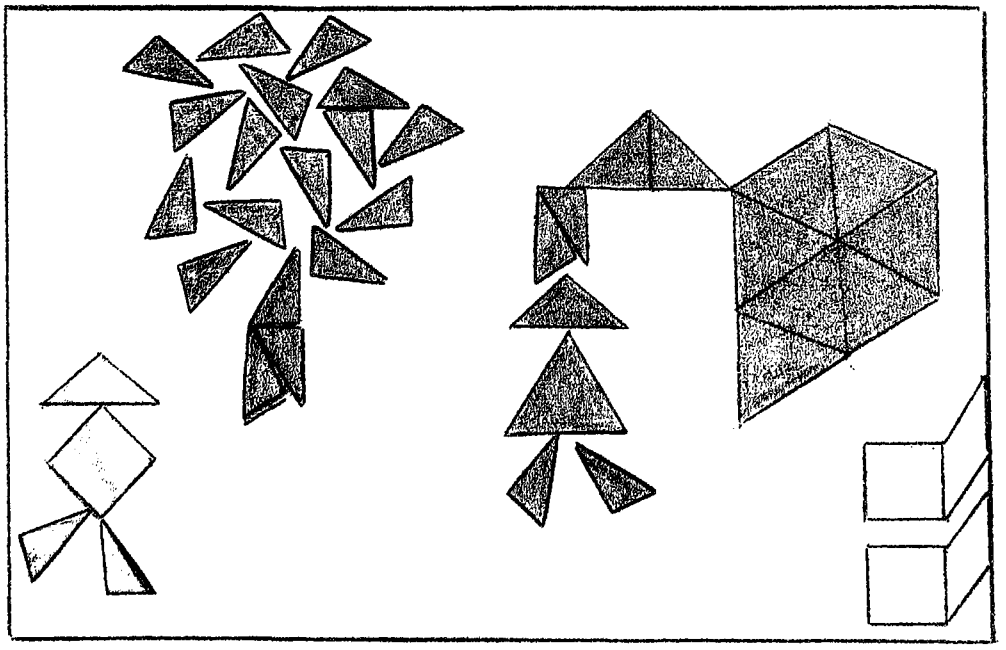

Fig. 18. Dynamic representation of people Perspective is also present in this design

(5) Perspective:

Two elements were considered here:

(a) The subject may have tried to achieve a three dimensional design merely by suggesting proximity and distance, this being done by the different size of the small designs and their arrangement on the tray. For example a pattern representing a house, a tree and a person would indicate perspective on the basis of the placement of these designs on the gray. As illustrated in Fig. 18, the house would seem to be the farthest, the tree nearer, and the individual nearest.

(b) The impression of the three dimension may also be achieved by placing a few pieces on top of the others. This type of third dimension has been usually referred to as "piling" and has been reported to be found mostly in schizophrenics.

In Fig. 19 representing an airplane, the subject managed to suggest the vertical part of the tail by placing an extra piece on the top of the other pieces.

(6) Winged designs:

A winged design has been so called when identical sides proceed from an unrepeated centre. (Fig. 20)

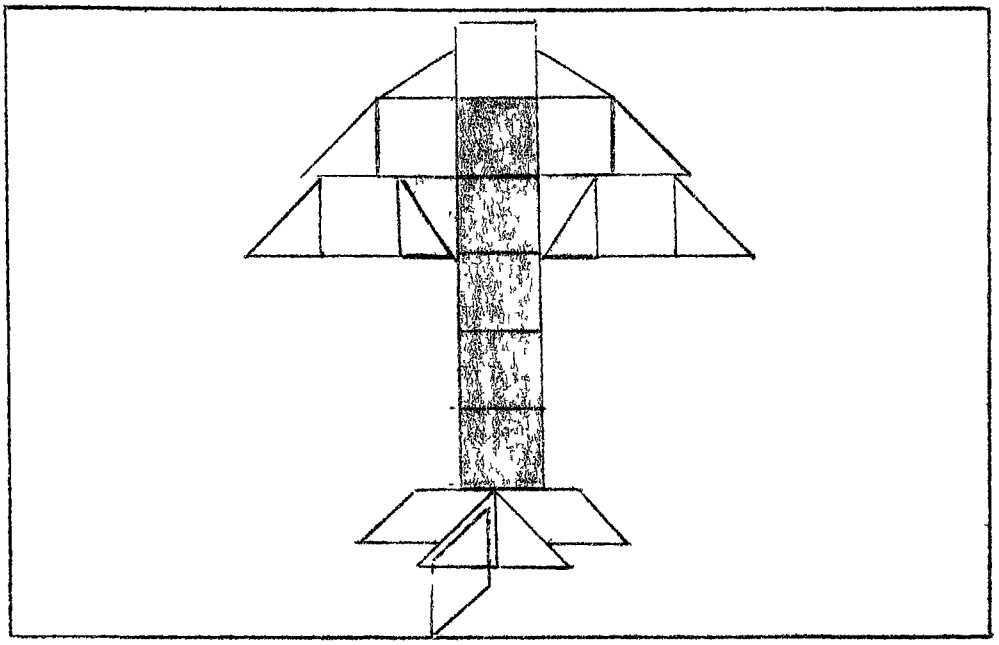

Fig. 19. Design where "piling" shows perspective

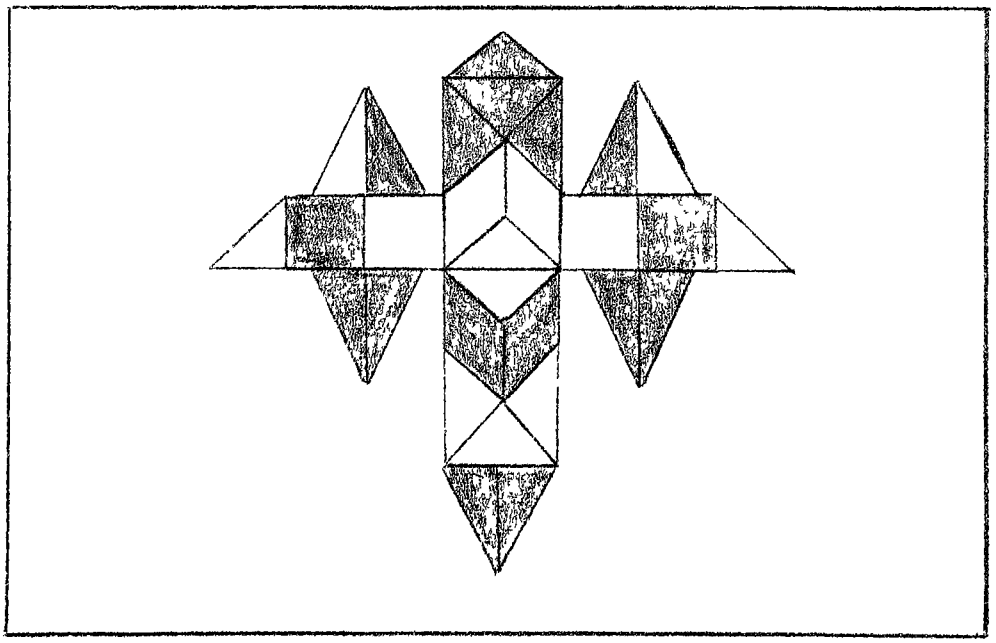

Fig. 20. Winged design

(7) Pointed tiles:
A design ended with many pointed tiles had been observed to be indicative of aggressiveness, wherein when aggressiveness could not be manifested, the pointed tiles were covered up, the space between the points being filled by other pieces. Consideration was given to the presence or absence of pointed tiles in ending the design. (Fig. 21)

(8) Content:
The Mosaic Test has been associated with both abstract and concrete designs. When concrete representations were made, different meaning had been given to the different representations. Airplanes, warships, guns, and other openly aggressive designs would show emotional "growing up" struggle. Representation of a house would indicate the need for greater security, and animals would be symbolic of the individual's feelings about his parents, siblings or himself. Arrow designs symbolize repressed aggression. Here consideration was given to the frequency of occurence of the designs made.

(9) Form-colour relationship:
The inquiry gave information as to whether the pieces used in making the designs were selected primarily for colour or for form, or for both equally.

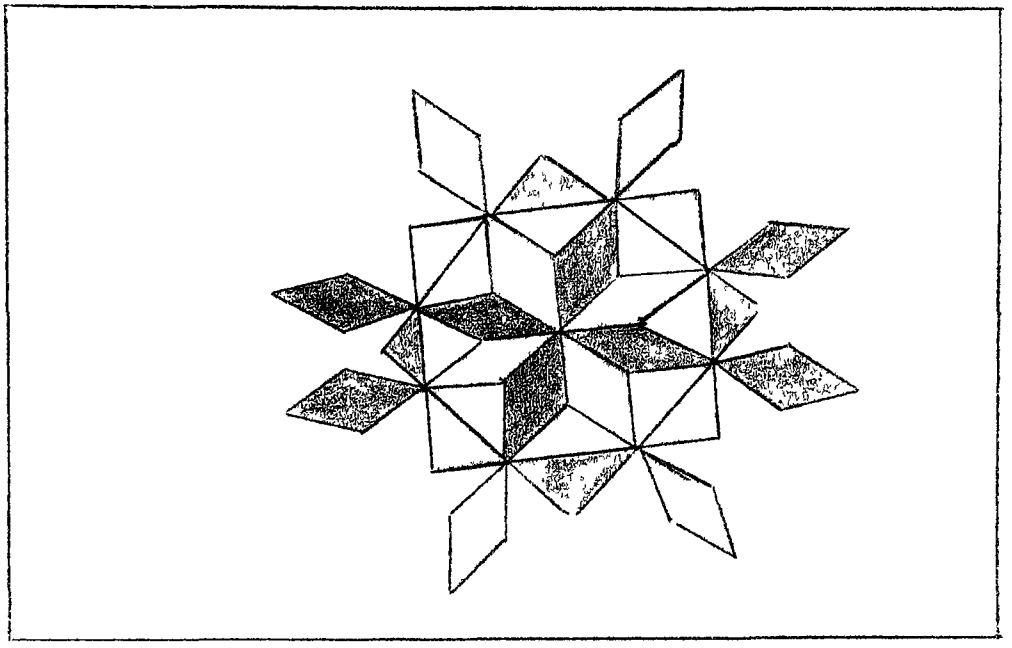

Fig. 21. Design ended with pointed tiles

APPENDIX 3

ABSTRACT OF

[redacted]
Discrimination of Masculinity and Femininity
with the Mosaic Test

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[redacted]
Discrimination of Masculinity and Femininity with the Mosaic Test

An inquiry into the discriminatory power of the Mosaic Test as a differentiator of masculinity and femininity was attempted through the use of twenty characteristics found in mosaic designs. It was felt that some of these characteristics could vary between male and female designs significantly enough to differentiate between masculinity and femininity on the basis of their presence or absence. In the investigation of the hypothesis two groups of college students were used. Both male and female samples ranged in age from 18 to 25, and represented extreme masculinity and extreme femininity on the basis of the results obtained on the Mf scale of the MMPI.

The twenty characteristics to be observed in the 100 protocols and serving as criteria in the present study, were defined and then submitted to analysis. Two statistical methods were employed depending upon the type of data obtained. Results presented in absolute quantities required the establishment of the significance of the difference between the means. The other results indicating the presence or the absence of each characteristic in all designs were obtained by assigning

arbitrary scores according to the size of the differences in percentages between the two groups. This phase permitted the ranking of the characteristics according to their importance as diagnostic indicators, and also suggested a method of scoring the Mosaic Test by establishing critical scores.

The final results were disappointing in that none of the twenty characteristics were highly significant in differentiating the sexes. The most significant item at a 5% level was the time element crediting women for taking less time than men to complete a mosaic design. Other characteristics whose discriminatory power approached an acceptable level were:

1) Greater number of pieces used by men in making designs.
2) Multiplicity of small designs made by women, as opposed to men's single designs.
3) Looseness of feminine designs versus compactness of masculine designs.
4) Representation of flowers and landscapes mostly done by women.

The attempt to formulate a scoring method was also unsuccessful for individual diagnostic purposes since no absolute critical score could be established. Only extreme, total assigned scores could unmistakebly differentiate the sexes, thus proving this method to be somewhat weak when used for individual diagnostic purposes. On the other hand, if groups were compared, this method was found highly significant in differentiating masculinity from femininity.