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An Investigation of Certain Aspects of Human Figure Drawings as a Measure of Sociability of the Person

Vincent Boone Alig
Butler University

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Name of candidate:

Vincent Boone Alig

Oral examination:

Date July 17, 1951

Committee:

Charles C Josey, Chairman

W. A. Livingston

A B Conkle

Harold S. Fawcett

Winifred S. Grimes Ph D

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Major Professor Charles C. Josey

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AN INVESTIGATION OF CERTAIN ASPECTS OF HUMAN FIGURE DRAWINGS AS A MEASURE OF SOCIABILITY OF THE PERSON

A Thesis

Presented to

the Faculty of the Division of Graduate Instruction of

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In Partial Fulfillment

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by

Vincent Boone Alig

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CHAPTER I

PURPOSE OF THE INVESTIGATION

The Problem. For many years considerable interest has been shown in spontaneous drawing productions as related to personality study. However, little has been accomplished toward validating this measure as useful in the clinic, and even less has been done to demonstrate its usefulness with "normal" individuals. This study, therefore, is an attempt to determine whether or not certain aspects i. e., the manner in which the arms and hands are represented, in drawings of the human figure will objectively differentiate between social and non-social, "normal" individuals.

Need for the Study. Many examples may be found in the literature discussing the actual or potential significance of drawings in projecting the individual's personality. An extensive review by Goodenough and Harris (11) presents a bibliography of over 300 articles and books.

As early as 1926, when Goodenough (10) had successfully demonstrated the relationship between drawings of the human form and intellectual development of children, she suggested that this type of performance which is so closely related to the mental life of the individual may sometimes reveal psychopathic instability before it has manifested itself to any marked degree in everyday behavior. She believed that the drawings, if properly

understood, would contribute much to our knowledge of childrens' interests and personalities, and she expressed the need of developing a scoring system for this purpose.

Machover (13), Spoerl (17). Abt and Bellak (1), and many others agree that drawings of the human figure present a usable projective technique for interpreting personality, but admit that an objectively validated scoring procedure is sadly lacking. Perhaps this opinion may be summed up in the words of Holtzberg and Wexler (12):

> The clinical validity with which experienced workers have been able to make diagnostic as well as dynamic interpretations does not justify the adoption of this technique as a valid instrument particularly when others less qualified are attempting to use it. At the present time the technique remains more of an art than a science.

Organization. Chapter two will give a review of research in the area of human figure drawing with emphasis placed upon the representation of the arms and hands as portrayed in the drawings.

Chapter three will give the method of procedure by which the data was obtained. The criterion selected to measure sociability will be discussed also.

Chapter four will present the data including statistical treatment and tables of results.

Chapter five will summarize the findings and present conclusions.

CHAPTER II

HISTORY

It is our purpose here to review the interest as specifically developed toward the spontaneous drawings of the human figure and which has led to such statements in the literature as Abt and Bellak's (1), "If the hands are hidden, the subject is expressing contact difficulties," and that of Machover (13), "Considered functionally, the arms and hands are weighted with psychological meanings referring primarily to ego development and social adaptation." Although several investigations were reported concerning human figure drawings during the 19th century and the early part of the present century, it is believed Goodenough's work (10) had the greatest influence in stimulating further interest. Because of its importance in demonstrating the usefulness of the technique in personality study, a brief account will be given.

The Goodenough Draw a Man Test of intelligence for children is a non-verbal test utilizing only the child's single drawing of a man and is used chiefly with those from mental age four years to mental age ten years. Its reliability for a single unselected age group within this range is between .80 and .90, and the average correlation with the Revised Stanford Binet Scale for age groups within this range is .76. The test is easy to administer. It requires about ten minutes to give, and, with experience,

each paper may be scored in two minutes. The child is given a pencil and a piece of paper and instructed to, "Make a picture of a man. Make the very best picture you can." All questions are answered by, "Do whatever you think is best." There is no time limit. The drawings are scored on basis of fifty-one items being present or absent, the total raw score being the number of items present.

Goodenough reports that children up to ten years of age draw the human figure in preference to any other subject and that the child draws what he knows rather than what he sees, exaggerating the size of those items which seem interesting or important. She further explains that the child does not show all he knows about the subject in his drawing, but only those things which to him are so essential and characteristic that they occur without suggestion from the outside. An illustration of this fact is given by Clark(8) who had children of various ages draw a model of an apple with a hat pin stuck through it. The hat pin entered the apple on the side toward the children and emerged on the opposite side, so none of them could observe the pin as entering or leaving the apple exactly at the edge. In their drawings, however, most of the younger children showed the entire length of the pin extending through the apple, and those slightly older drew the pin entering on one side and emerging on the opposite side. Only the older children accurately represented the model in their drawings. Another illustration of this fact is that a three-year-old child can point to hair when asked to do so,

but one-half of the nine-year-olds in Goodenough's sample omitted hair in their drawings, although these same subjects included pipes, canes, hat bands, and other non-essential features.

Other findings of Goodenough, namely the influence of artistic talent and the influence of art training on scores obtained on the Draw a Man Test, also support the possibility of this technique for studying personality. She was unable to find a single child younger than thirteen years who gave evidence of real talent, and after reviewing Champlin's Cyclopedia of Painters and Paintings, concluded that artistic talent, as such, is rarely, if ever, manifested in children and early adolescents, and that powers of analytic observation and memory for details are more important factors in producing high scores.

Comparisons of children's drawings from schools where art is taught in the primary grades with those where art was not taught have failed to show any consistent differences. However, direct training in drawing the human forms was found to have a positive influence on test scores. These groups produced stereotyped drawings which are not considered usable in clinical practice (1).

In connection with her belief that the drawings, "if properly understood, could contribute much to our knowledge of child interests and personality traits, "Goodenough lists four qualitative differences sometimes found in the drawings

which she thought might suggest psychopathy. They are:

1. Verbalist Type - containing a large amount of detail; but comparatively few ideas.

2. Individual Response Type - containing features inexplicable by anyone but the child.

3. Drawings showing evidence of flight of ideas, as when hair is only on one side or only one ear is drawn.

4. Uneven Mental Development - combination of premature and mature characteristics in a single drawing.

Following the publication of Goodenough's work, studies investigating the use of spontaneous drawings of the human figure as a projective technique of personality study may be divided roughly into two groups: 1) those done with children, and 2) those done with abnormal adults.

Berrien (5) used the Draw a Man Test with children who were patients in a state hospital. The children were divided into three groups according to diagnosis of: 1) mentally deficient, 2) post encephalitis, and 3) psychopathic. He found 17 items on the test scale were failed more frequently by the post-encephalitic children, two of these items were found which distinguished the psychopathic children from the mentally deficient. Berrien concluded that diagnostic differences appeared with particular items in the drawings.

Using the Goodenough Scale as a measure of social adjustment among child inmates of a state colony for mentally deficient, Brill (6) found nine items which differentiated the socially adjusted group from the maladjusted

group. Three of these items were concerned with the arms and hands (10a, 10c, and 14c). From his data he used those items having a critical ratio above 2.00 to develop an abbreviated scale of 20 items for measuring adjustment. However, he found that this scale was as valid as the complete scale in measuring intelligence. Since the two groups had been equated as to Binet mental age, Brill's results showed that the chances were 99 in 100 that the socially adjusted child would receive a higher score on his figure drawing than the maladjusted child.

If a child's ability to draw a man is related to his social adjustment, then it would seemingly follow that his ability would improve parallel to his adjustment improvement. Ochs (16) investigated this question. She used as subjects 124 child hospital patients having primary behavior disorders, and the hospital charts were used as criteria for behavior improvement. By this standard, 41.7% of the group improved. Of the improved group, 60% increased their scores on the Goodenough Scale, while 38% lowered their scores. For the unimproved group, only 27% increased their scores, while 71% lost credits. Of the 5 items most frequently omitted by the unimproved group, one (10a) concerned fingers. Thus Ochs found a small, but positive, correlation between drawing performance and adjustment.

Spoerl (17) in an effort to determine the degree

with which drawings may be identified with an individual's personality, had retarded children each draw several pictures which were then sorted by 164 untrained judges (college students) as to what pictures belonged to one "artist". Then the pictures were identified with character sketches of the children. The results showed that the drawings of a single child were consistently identified and matched, in most cases with the children. She concluded that personality may be judged from drawings provided that the personality had developed enough to be projected.

In this connection Brick (4) studied 200 children in art classes for a period of two years. Blind diagnoses were made of the children's personalities from a sequence of their drawings. Brick states, that through all age groups, avoidance of drawing human beings could always be observed in children who had difficulties in social relationships, and that these children escape in paintings of landscapes. However, a study of delinquent, retarded, and average public school children by England (9) showed that the institutionalized (maladjusted) children, when asked to draw the most important event of their life, drew more "social scenes" showing other individuals participating in some social situation. England suggests that the institutionalized children are more used to gangs and the constant presence of their companions.

If drawings indicate differences in personality, how then might the socio-economic status of the child and the child's sex influence his or her performance? Goodenough (10) found several marked sex differences in performance on her test in respect to certain items being omitted or included in drawings (i. e., cupids bow mouth for girls and objects in mouth for boys) but she reported no gross differences from one culture to another. Weider and Moller (18) tested children of average intelligence (I. Q. 90-110) from different socio-economic levels to discover how the groups might differ in their performance. Here the children were not told to "draw a man" but to "draw a person;" then they were asked to make a second drawing of the opposite sex from that of the first drawing. The results showed that the child drew his own sex first in the majority of cases (97% for girls and 73% for boys) and that there was a reliable increase in items drawn by boys in lower socio-economic levels.

Thus we see that spontaneous drawings of the human figure have been shown to indicate some personality characteristics with groups of children; and that certain ways in which the arm, hand, and fingers have been represented, or not represented, have been correlated with adjustment of institutionalized children. But what about adults?

Many case history reports in the literature include the patient's drawings of human figures with diagnostic and dynamic interpretations supplied by the clinician. Machover and R. M. Wexler (14) in reporting a case of manic excitement, suggest in their analysis of the patient's drawings that shading of hands and clutching of articles represent guilt and dependency problems, respectively. Zucker (19) states that placement of the arms in figure drawing indicates the degree and quality of contact the drawer has with people: when the arms extend away from the body into the environment, better contact is suggested. She lists many other item interpretations, among them being hidden hands as indicative of evasiveness. Similar statements by Margolis (15) agree with the above, that the arms of a drawing represent social adjustment and that fingers suggest contact as against mitted hands. She also points out that a thickly drawn line represents a barrier between the individual and his environment.

The extensive use of this technique by clinicians is referred to by Bell (3) who includes certain items of human figure drawings believed to be of diagnostic value in his book, Projective Techniques. Greater emphasis is placed on this technique by Abt and Bellak (1) who present a summary of the diagnostic features of figure drawings area by area. In respect to the hands and arms they state:

> The hands and arms are contact and manipulatory organs of the body. If the hands are hidden,

> the subject is expressing contact difficulties or feelings of guilt for manipulatory organs. Shading suggests anxiety. Arms drawn close to the body may express passive or defensive feelings. Arms drawn away from the body may express externally directed aggressive needs. If finger nails, fingers, and joints are carefully sketched, the subject is either compulsive or expressing difficulties with the body concept. Closed fists suggest repressed aggression.

However, the most extensive analysis and treatment of the technique to date is presented by Machover (13). She analyzes human figure drawings detail by detail and suggests many possible deviations for each item and a diagnostic or dynamic interpretation. Individual cases are presented with interpretations i. e., short arms indicate lack of ambition, thin and weak arms signify lack of achievement, spear or talon-like fingers suggest overt aggression or paranoid tendencies, etc.

Nevertheless, these writers (1, 3, 11, 12, 13, 17) freely admit that no standardized scoring system has been validated and caution that the interpretation of any feature should take the total drawing into account.

Buck (7) in presenting a quantitative and qualitative scoring manual for his House-Tree-Person Projective Technique* also admits that its major disadvantage is its

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*A technique where the subject draws spontaneously a house, a tree, and a person from which personality diagnosis is attempted.

lack of objectivity and expresses hope that future experimental evidence will demonstrate the validity of many of the scoring points.

Investigations to develop a valid scale for scoring drawings by adults with respect to adjustment were made by Albee and Hamlin (2) and Holtzberg and M. Wexler (12). Albee and Hamlin designed a scale to judge the drawings of 21 schizophrenic, 21 anxiety neurotic, and 30 dental patients. They obtained a reliability of .89 for the scale for differentiating normal group (dental patients) from the schizophrenic group; a critical ratio of 3.68 was obtained. The anxiety neurotic group was differentiated from the normal group with a critical ratio of 5.54. However, the scale did not distinguish between the two abnormal groups. Possibly, the writers suggest, because the groups were composed of out-patients and not severe cases.

A check list of 174 items was used by Holtzberg and M. Wexler (12) in scoring figure drawings of normals and schizophrenics. Twenty-seven items were found to significantly differentiate between the two groups. Among these items were, 1) presence of arms, 2) arms behind back, 3) emphasis on outline of arms, 4) arms bent at elbows, 5) shading of arms, 6) presence of hands, and 7) object in hands. All of these items occurred more frequently in the normal group.

In view of the preceding studies, if the projective

technique of figure drawing will distinguish such gross deviations of personality, will they indicate differences of a lesser degree among normal groups? To explore this question this investigation was undertaken.

CHAPTER III

METHOD OF THE INVESTIGATION

Subjects. The subjects used in this study were sixty-nine college students of a beginning course in psychology. Twenty-four were women and forty-five were men. They did not include all the members of the class for the following reasons: 1) Several failed to put their names on their papers, 2) Some students were absent, 3) Some did not elect to present the data necessary to the study.

The Criterion. In the absence of any clinical evaluation of the subjects, the F2-S scale of the Personality Inventory by R. G. Bernreuter, published by the Stanford University Press, Stanford University, California in 1931, was used as a criterion to measure their sociability. This measure was selected because reliable percentile ranks for sociability of college students are available. The ease of administration and availability of machine scoring methods were also considered.

Procedure. The Personality Inventory was administered during a regular class period. It was explained that honest answers were necessary and that the results would be confidential, but the choice of taking it was left to the subjects.

At a later class period drawings were collected from the students. Each was given a sheet of unruled, white paper, eight inches by eleven inches, and asked to "Draw a

whole person." These drawings were then collected and scored by a check list of forty-four items concerning the manner in which the arms and hands were represented (see Table I). These items were arrived at from suggestions and statements in the literature (1, 7, 10, 12).

Using the percentile scores obtained with the Bernreuter Personality Inventory, the subjects were divided into two groups labled non-social and very social. Since a low percentile score indicates sociability, the twenty-six subjects obtaining the lowest scores made up the "very social group," and the twenty-six subjects obtaining the highest scores made up the "non-social group." The data for the remaining seventeen subjects were set aside, since it was believed that subjects at the two ends of the scale would be more sharply discriminated. The number of subjects to be included in the "very social group" and the "non-social group" was set at twenty-six to facilitate statistical procedure.

The very social group contained six women and twenty men with an age range from eighteen to twenty-six years, the mean being 20.1 years. The percentile ranks on the Bernreuter Personality Inventory for this group ranged from 0 to 30. The non-social group consisted of nine women and seventeen men ranging from eighteen to thirty-nine years age, with a mean age of 21.5 years. The Bernreuter percentile scores for this group ranged from 58 to 100. These facts are set forth in Table A (see next page). It was assumed that the intelli-

gence of all subjects was average, or above, since they were all college students.

TABLE A

Data of Subjects by Groups as Differentiated by Bernreuter Scores.

	Very Social Group	Non-Social Group
Females	6	9
Males	20	17
Age Range	18 to 26	18 to 39
Mean Age	20.1	21.5
Percentile Score Range	0 - 30	58 - 100
Mean Percentile Score	14.9	81.6

The data of the figure drawings of the two groups, having been scored according to presence of the items on the check list, were treated statistically using the method of standard error of differences between proportions.

CHAPTER IV

DATA AND RESULTS

The forty-four items of the check list used to score the drawings are enumerated in Table I with an explanation for scoring each item. It will be seen that several of these items are mutually exclusive.

Tables II and III list the percentile scores obtained on the F2-S scale, Bernreuter Personality Inventory and the items from the check list present on the drawings by the same individuals for the social group and non-social group, respectively. This information is charted in Table IV for the social group and in Table V for the non-social group. Totals are included in these tables (IV and V) showing the number of items present for each drawing and the frequency of occurrence of each item for the group. The frequency of item occurrence is also given in Table VI.

In Table VI the frequencies of item occurrence are converted into proportions. Of course, these proportions may be converted into percents by multiplying by 100 (removing the decimal point). The t ratio for the standard error of difference between proportions of occurrence in the groups is shown for each item, and those where such differences would be expected to occur by chance alone 5% of the time or less are indicated. As is shown, four items were found to differentiate between the two groups "signi-

ficantly" at the 5% level of confidence and two items differentiated the groups "very significantly" at the 1.0% level of confidence. These items are listed in Table VII. Tables I through VII follow.

TABLE I

List of Items by Number

1. Stick Arm: single dimensional
2. Poor Proportion of Arms: obviously poorly shaped and out of proportion
3. Very Short Arms: arms less than length of the trunk, including hand
4. Very Long Arms: extending to knees or below
5. Absence of Arms
6. Arms Held Rigidly to Side: no space between arms and body line, no elbows indicated
7. Arms Placed Behind the Back: part hidden includes more than hands
8. Arms Held at a Distance from the Body: both arms hanging at an angle away from vertical
9. Arms Held over Head
10. Arms in Front of Body: obscure part of body front, one or both
11. Arms Perpendicular to the Body: at right angles and to the side of the body
12. Arms Misplaced in Relation to Shoulders: attached to body elsewhere
13. Line Emphasis on Outline of Arms: one or both
14. Arms Bent at Elbows: any angle suggesting bending
15. Shading of Arms: one or both
16. Muscular Arms: obvious emphasis on muscles
17. Absence of Hands: not hidden, no hand shown at end of arm
18. Hands Hidden: one or both
19. Hands Distorted: obviously, poorly shaped

TABLE I
(continued)

20. Line Emphasis on Outline of Hands: one or both

21. Shading of Hands or Fingers

22. Object in Hand

23. Jewelry on Wrist

24. Ring on Finger

25. No Fingers: one or both, not scored if hand absent

26. Line Emphasis on Any Finger

27. Less than Five Fingers: either hand, more than one

28. Poor Proportion of Fingers

29. Pointing Finger: hand clenched

30. Single Dimension Fingers

31. Presence of Only One Finger or Thumb

32. Presence of Finger Nails

33. Knuckles Represented on Hand

34. Mitted Hand: thumb may be shown

35. Hands in Pocket

36. Angle of Upper Arm from Body Less than 45 Degrees: includes those behind back and those rigid at side

37. Only One Arm Indicated: includes those with profile view where only one arm is shown

38. Only One Hand Indicated: includes profile views where only one hand is shown, those in pockets are scored as "indicated"

39. Arms Extending Forward from the Body: not crossed in front, one or both

40. Fist Clenched

TABLE I
(continued)

41. Elbow Bent with Forearm away from Body

42. Elbow Bent with Forearm toward Body

43. Hands behind Back: just hands

44. Arms at Vertical (at side) but Space between Body and Arm

TABLE II

Bernreuter Scores with Drawing Items for Very Social Group

Bernreuter Percentile Rank	Drawing Items from Table I
0	14, 27, 36, 41
1	3, 19, 21, 27, 28, 39
2	14, 26, 29, 33, 36, 41
3	3, 8, 19, 33, 36, 40
3	13, 16, 21, 22, 26, 27, 36, 44
3	1, 11, 12, 19, 27, 28, 30
7	3, 13, 19, 20, 26, 28, 36, 39
7	10, 14, 18, 20, 21, 22, 26, 31, 34, 35, 36, 42
7	14, 18, 19, 27, 28, 37, 38, 39, 36, 41
10	2, 4, 16, 17, 36, 44
12	3, 19, 20, 25, 27, 28, 36, 44
14	2, 13, 14, 15, 19, 28, 30, 42
15	8, 15, 19, 20, 25, 34, 36
16	3, 6, 18, 19, 20, 21, 26, 27, 28, 36, 37, 38
17	8, 19, 20, 25, 34, 36
17	14, 18, 21, 26, 36, 37, 38, 39, 41
18	1, 14, 19, 25, 36, 41
19	10, 14, 18, 20, 22, 27, 33, 36, 42, 43
19	14, 15, 16, 19, 20, 25, 27, 33, 34, 36, 39, 40, 41
20	13, 21, 33, 36, 40, 44

TABLE II
(continued)

20	3, 8, 19, 27, 28
22	19, 20, 25, 34, 36, 44
23	13, 14, 15, 18, 35, 36, 42
25	18, 14, 15, 20, 21, 22, 25, 34, 36, 37, 38, 39, 42
27	
27	3, 8, 19, 20, 31, 34, 36
30	6, 18, 20, 33, 36, 37, 38, 40

TABLE III

Bernreuter Scores with Drawing Items for Non-Social Group

Bernreuter Percentile Rank	Drawing Items from Table I
58	13, 14, 15, 18, 21, 26, 36, 39, 41
58	2, 15, 19, 21, 23, 32, 36, 44
58	13, 14, 15, 19, 20, 21, 22, 26, 27, 28
60	2, 13, 14, 18, 19, 20, 25, 34, 36, 37, 38, 39, 41
60	13, 14, 18, 22, 23, 27, 33, 36, 37, 38, 39, 41
63	2, 3, 19, 25, 34, 36, 44
64	14, 15, 18, 22, 27, 35, 36, 42
71	3, 10, 14, 19, 25, 34, 36, 42
73	2, 13, 14, 18, 36, 42, 43
74	2, 10, 13, 14, 17, 36, 42
75	2, 3, 20, 26, 28, 36, 44
77	2, 10, 14, 15, 16, 19, 26, 28
78	13, 14, 15, 17, 36, 42
83	8, 13, 15, 21, 31, 34, 36
84	14, 19, 25, 34, 41
85	13, 14, 19, 20, 21, 22, 25, 26, 27, 34, 42
87	13, 14, 15, 16, 18, 21, 22, 26, 27, 33, 39
88	2, 10, 14, 15, 19, 27, 28, 36, 42
88	14, 18, 21, 26, 33, 36, 37, 38, 39, 41

TABLE III
(continued)

89	10, 14, 15, 17, 19, 21, 25, 34, 36, 38, 42
90	10, 14, 15, 18, 21, 22, 26, 33, 35, 36, 42
92	3, 8, 19, 33, 36, 40
94	2, 13, 14, 15, 18, 35, 36, 37, 38, 42
94	7, 13, 14, 15, 18, 21, 26, 27, 36, 38, 42, 44
98	13, 14, 15, 18, 31, 35, 36, 37, 38, 42
100	13, 14, 18, 42, 43

TABLE IV

Drawing Items Charted with Respect to Bernreuter Scores of Very Social Group

Items	Bernreuter Percentile Rank																								
0	1	2	3	5	3	7	7	7	10	12	14	15	16	17	17	18	19	19	20	20	22	23	25	27	30	Totals
1					x											x										2
2									x		x															2
3	x		x			x				x			x							x				x		7
4									x																	1
5																										0
6													x												x	2
7																										0
8			x									x		x						x				x		5
9																										0
10							x										x									2
11					x																					1
12					x																					1
13				x		x					x								x			x				5
14	x		x				x	x			x				x	x	x	x				x	x			11
15											x	x						x				x	x			5
16				x					x									x								3
17									x																	1
18							x	x					x		x		x					x	x		x	8
19	x		x		x	x		x		x	x	x	x	x		x		x		x	x			x		15
20						x	x			x		x	x	x			x	x			x		x	x	x	12
21	x			x			x						x		x				x				x			7
22				x			x										x						x			4
23																										0
24																										0
25										x		x		x		x		x			x		x			7
26		x		x		x	x						x		x						x		x			6
27	x	x		x	x			x		x			x				x	x		x						10
28	x				x	x		x		x	x		x							x						8
29		x																								1
30					x						x															2
31							x																	x		2
32																										0
33		x	x														x	x	x						x	6
34							x					x		x				x			x		x	x		7
35							x															x				2
36	x		x	x	x		x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	22
37								x					x		x								x		x	5
38								x					x		x								x		x	5
39	x				x			x							x				x			x				6
40			x															x	x						x	4
41	x		x					x							x	x		x								6
42							x				x						x					x	x			5
43																	x									1
44				x					x	x									x		x					5
	4		6		8		8		10		8		7		6		5		13		5		7		7	
		7		6		7		12		7		8		12		9		10		6		5		13		8

Totals

TABLE V

Drawing Items Charted with Respect to Bernreuter Scores of Non-Social Group

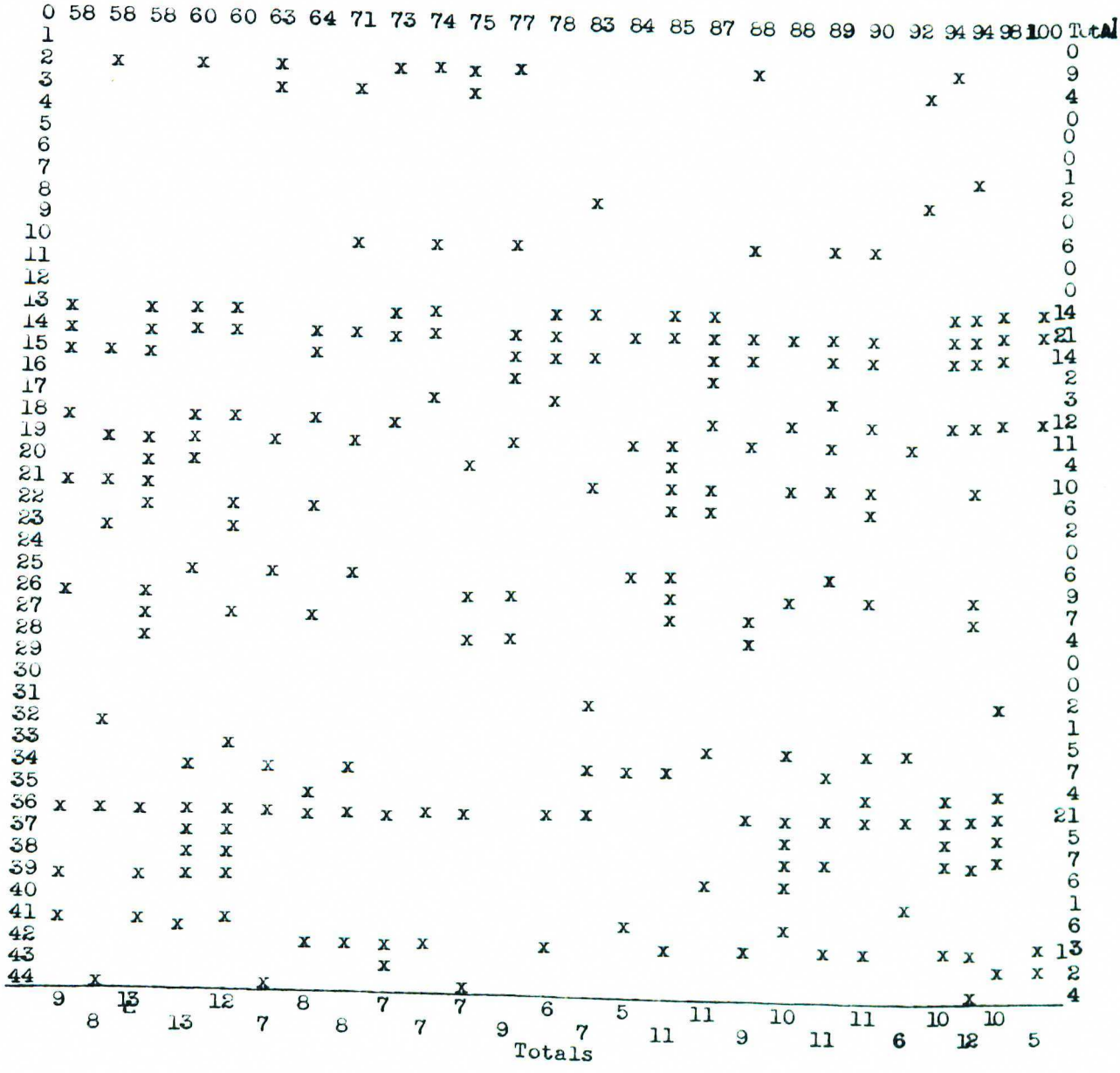

TABLE VI

Table of Standard Error of Proportion of Item Occurrence between Very Social and Non-Social Groups ($N_1 = N_2 = 26$)

Item Number	Very Social f	Very Social p	Non-Social f	Non-Social p	t Ratio	Probability
1	2	.08	0	.00	1.6	
2	2	.08	9	.35	2.45	less than 5%
3	7	.27	4	.15	1.09	
4	1	.03	0	.00	1.03	
5	0		0			
6	2	.08	0	.00	1.6	
7	0	.00	1	.03	1.03	
8	5	.19	2	.08	1.18	
9	0		0			
10	2	.08	6	.23	1.53	
11	1	.03	0	.00	1.03	
12	1	.03	0	.00	1.03	
13	5	.19	14	.54	2.92	less than 5%
14	11	.42	21	.84	2.21	less than 5%
15	5	.19	14	.54	2.80	less than 1.0%
16	3	.12	2	.08	0.5	
17	1	.038	3	.12	1.14	
18	8	.31	12	.46	1.12	
19	15	.58	11	.42	1.16	
20	12	.46	4	.15	2.58	less than 5%

TABLE VI
(continued)

Item Number	Very Social f	p	Non-Social f	p	t Ratio	Probability
21	7	.27	10	.38	.85	
22	4	.15	5	.19	.384	
23	0	100	2	.08	1.6	
24	0		0			
25	7	.27	6	.23	.33	
26	6	.23	9	.35	1.0	
27	10	.38	7	.27	.846	
28	8	.31	4	.15	1.4	
29	1	.04	0		1.03	
30	2	.08	0		1.6	
31	2	.08	2	.08	0.0	
32	0		1	.04	1.03	
33	6	.23	5	.19	.356	
34	7	.27	7	.27	0.0	
35	2	.08	4	.15	0.8	
36	22	.88	21	.84	.415	
37	5	.19	5	.19	0.0	
38	5	.19	7	.27	.69	
39	6	.23	6	.23	0.0	
40	4	.15	1	.04	1.39	
41	6	.23	6	.23	0.0	
42	5	.19	13	.50	2.49	less than 5%
43	1	.04	2	.08	.62	
44	5	.19	4	.15	.385	

TABLE VII

Items Significantly Differentiating between the Two Groups

Item	Group of greater occurrence	Level of confidence
2. Poor Proportion of Arms	non-social	5%
13. Line Emphasis on Outline of Arms	non-social	1%
14. Arms Bent at Elbow	non-social	5%
15. Shading of Arms	non-social	1%
20. Line Emphasis on Outline of Hands	very social	5%
42. Elbow Bent, Forearm toward Body	non-social	5%

Considering the possibility that some of the items on the check list might contain general factors (i. e., line emphasis, shading, etc.) which might discriminate between the two groups more than the individual items by themselves, various items were grouped under these general factors. The frequency with which each group of items was represented in the drawings, either by a single item or combination of items of the group, was determined and set forth in Table VIII with the proportions and t ratio of differences. Although none of these combinations differentiated between the groups to a degree which is statistically significant, a greater trend for those of the non-social group to exclude drawing the hand (items 17 and 18) is suggested.

TABLE VIII

Frequency and t Ratio of Difference for Combinations of Items

Items	General Factor	V.S.* f	V.S.* p	V.S.* f	V.S.* p	t
2,19,28	Poor Proportion	16	.62	15	.58	.29
3,4	Arm Length	8	.31	4	.15	1.4
6,45	Arm Verticle	7	.27	4	.15	1.39
6,10	Body & Arm in Same Area	4	.15	6	.23	.74
7,44	Arms or Hands Behind Back	1	.04	3	.12	1.14
13,20,26	Line Emphasis	14	.54	18	.69	1.12
15,21	Shading	11	.42	16	.62	1.47
17,18	Hands Absent or Not Showing	9	.35	15	.58	1.73
23,24	Jewelry	0	.00	2	.08	1.6
25,27,31	Number of Fingers	17	.65	14	.54	.82
32,33	Knuckles and Nails	6	.23	6	.23	0.0

*V.S. = Very Social Group, N.S. = Non-Social Group

CHAPTER V

CONCLUSIONS

Discussion. Of the six items shown in Table VI to significantly discriminate between the two groups, it is interesting to note that four of them, items 13, 14, 15, and 20, are also among those found by Holtzberg and Wexler (12) to differentiate between normals and schizophrenics, since they occurred in drawings by the normal group at a significantly higher frequency. No suggestion of similarity between the subjects of these studies is intended, by this statement. Distinguishing personality differences among normal individuals is obviously quite a different thing from distinguishing abnormals from normals, since the existence of a severe maladjustment may render an abnormal person incapable of responding to the technique in the same manner as a normal person. Nevertheless these facts do strongly support the conclusion that the above items present discriminating characteristics of personality projection. The fact that items 5, 7, 17, 18, 21, 22, and 28 were also found to be significant by Holtzberg and Wexler is also notable. Several of these items (5, 7, 21, 22) occurred either at such low frequency or equal frequency in the groups in this study that no discriminative value was found (see Table VI). Items 17 (Absence of Hands, not Hidden) and 18 (Hands Hidden) also failed to show a significant difference in frequency of occurrence as separate items, but when

grouped together they do show a trend toward occurring more frequently in the non-social group (see Table VIII).

In interpreting the results of this investigation the measuring criteria must be considered. First there is always the possibility that the individual may answer the items on the Personality Inventory in a manner he believes will be acceptable, rather than give answers reflecting his true attitudes or feelings. Such "loading" would probably yield a favorable score (social group). Nevertheless, such behavior in itself is evidence of social awareness and adaptability, and this phenomenon would not seem evident in a group obtaining high unfavorable scores (non-social group).

A second factor to consider in respect to this study is the wider score range (43 percentile points) for the non-social group as compared to the range of scores for the social group (31 percentile points) and the fact that only 28 percentile points separated the two groups on the Bernreuter Scale. If the gap between the groups were increased to 50 percentile points perhaps other drawing items would be found to significantly discriminate between the two groups. However, in the present study this procedure would have made the samples so small as to be inadequate for statistical analysis.

Conclusions. In view of the data and the above discussion, the following conclusions may be drawn from this

investigation.

1. The manner in which college students represent the arms and hands in spontaneous drawings of the human figure, varies qualitatively with their sociability as measured by the F2-S Scale of the Bernreuter Personality Inventory.

2. Specific items were found to discriminate between the two groups more sharply than general techniques of drawing. The fact that outlines are emphasized in the drawings is in itself not significant, but where the outline is emphasized is important.

3. The chances are 99 in 100 that persons scoring high, i. e. unfavorable score, on the F2-S Scale of the Bernreuter Personality Inventory will more frequently emphasize the outline of the arms and shade the arms in their drawings of a human figure than will persons who score low on this scale.

4. Persons obtaining unfavorable sociability scores will more frequently draw arms in poor proportion and indicate elbows, usually with the forearm directed toward the body, than will those who obtain favorable scores. This may be expected 95 chances in 100.

5. In drawing a human figure, the hand outline will be emphasized more often by persons with favorable sociability scores 95 times in one hundred.

Recommendations for Further Study. This investigation points to the possibility of using the "Draw a Person"

projective technique for personality measurement of normal people and of developing a standardized scale for this purpose. To accomplish this a check list, including items for the total drawing, should be used on a large sample of drawings of adult subjects. The subjects could be grouped with respect to certain aspects of personality as determined from a battery of standardized tests and observations, etc. Such items in the drawings as were found to differentiate the groups could then be set up in a scale and weighted according to the critical ratio of their discriminating significance. In this manner perhaps a scale could be devised for children; another for normally adjusted adults, and another for maladjusted adults.

The problem as stated in Chapter I may be answered affirmatively. The review of work done by others in Chapter II shows that human figure drawings have been used as a projective technique of personality diagnosis with children and with emotionally maladjusted adults. The procedure of investigating its use with "normal" individuals is set forth in Chapter III, and the results compiled in Chapter IV, the interpretation of which is stated above.

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