THE D. A. P.: A VALIDATION STUDY

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ABSTRACT

A D.A.P.: A VALIDATION STUDY

by Nicholas J. Borrelli

The present study attempted to validate the clinical usefulness of the D.A.P. Test. It was hypothesized that the agreement between measures of personality characteristics as obtained through self-description and the D.A.P. is a function of psychopathology. Both measures of personality characteristics were obtained through the use of the Corsini Standard Adjective Q Sort. The first measure was obtained by asking S to sort according to how he saw himself; the second through judges' sorts based upon analysis of S's drawings.

A comparison of the average self-judge correlations of 20 orthopedic patients (alledgedly more accurate group) to those of 20 ulcer patients (alledgedly less accurate group) failed to reveal a difference significant at the .05 level. It was concluded that no support could be offered for the clinical usefulness of the D.A.P. in revealing S's personality characteristics.

Three difficulties with the present study were discussed, the first dealing with choice of Ss and the second and third with limitations of the Q-sort technique. In light of these difficulties some

suggestions were made for future research which might be involved in testing hypotheses similar to that of the present study.

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Machover maintains that important aspects of personality are revealed in human figure drawings (1949). Numerous studies have explored avenues suggested by Machover's theoretical position with particular attention being focused on her contentions regarding the relationships between qualitative features of drawings and specific personality characteristics of Ss. The results of these studies have rarely substantiated her claims (Swenson, 1957). While the techniques employed in these studies have varied, researchers seem to have overlooked the possibility of using S's introspective reports in their investigations. This approach, however, has been used productively with other projective devices (Wylie, 1961). Friedman (1955), for example, attempted to evaluate the accuracy of S's phenomenologically reported self-concept. The rationale used was that the greater the discrepancy between S's self-estimate and S's projected self qualities (i.e. characteristics of the heroes in S's T.A.T. stories), the less accurate was S's self-appraisal.

The present study proposed to test Machover's claim regarding the clinical usefulness of the D.A.P. by using a technique similar to that employed in the Friedman study. If the above claim is valid, then where S is inaccurate in his self appraisal, no necessary similarity would exist between S's self appraisal and a measure of S's personality characteristics as obtained through analysis of his drawings. Where S is more accurate in his self appraisal, a greater similarity would exist between these two measures of personality characteristics. A comparison of accurate and inaccurate groups in self appraisal was

expected to reveal differences in terms of the degree of correspondence between measures of personality characteristics as obtained through self-report and through analysis of S's drawings.

Method

Subjects.--According to psychoanalytic theory, peptic ulcers may be understood as the end result of repressed and chronically frustrated oral-receptive, demanding attitudes (Fenichel, 1945). On this basis it was assumed that peptic ulcer patients would be suffering from more severe and more inaccesible conflicts than orthopedic, but otherwise normal, patients. The former group was thereby thought to be less accurate in their self-appraisal than the latter group.

In accordance with the above rationale, the sample selected consisted of 40 hospitalized male patients: 20 peptic ulcer patients and 20 orthopedic patients. The former group consisted entirely of patients with the diagnosis of peptic ulcers. The latter group contained primarily patients with broken limbs, although the sample included two patients with back complaints. Both groups consisted of patients hospitalized at V.A.H. Dearborn, and were equated as to age, education and I.Q. (This information is presented in tabular form in Appendix C).

Materials.--The materials used consisted of the Standard Adjective Q Sort (SAQS) technique (See Appendix B), an 8-1/2 by 11-1/2 unlined pad and a number two pencil. The latter materials were provided for use on the D.A.P. test. All testing took place in S's ward physician's office with only E and S present.

Procedure.--In the first phase of the investigation S's cooperation was gained with the explanation that E wished to assess the value of an instrument with which S himself would have an opportunity to become acquainted later. S was then given the D.A.P. with instructions according to Machover (1949). Upon completion of this task, S was introduced to the Q sort procedure with the instructions provided by Corsini (1956) and asked to sort according to how he saw himself.

In the second phase of the study each S's figure drawings were analyzed by two independent judges. On the basis of these individual analyses, and without knowledge of S's self-sort, the same 50 words were sorted by the judges in the same manner in which S had previously sorted these words for his self description. The final measure of S's personality characteristics from drawing analyses was based upon the sortings of both judges.

Results

The data which were subjected to statistical analysis consisted of three rectangular distributions of 50 words for each S. These Q-sort distributions represented S's self descriptive sorting and the two judges' sortings based upon their analyses of S's drawings. Pearsonian correlations (Corsini, 1956) were computed to determine the degree of relationship between S's self sort and the two judge-sort distributions for each S. The reliability estimate obtained by computing the average inter-judge correlation was .54. No significant differences were found between judges in terms of their average ratings for the experimental groups. (Refer to Appendix D for a tabular presentation of this data.)

In order to test whether group differences with regard to these correlations were significant, the self-judge correlations were transformed into z scores and the mean z score for the self-judge correlations of the two groups compared (Walker and Lev, 1953). The obtained mean z score of -.03 for the ulcer group as compared to the mean z score -.10 for the orthopedic group failed to reveal a difference significant at the .05 level.

Discussion

The hypothesis that the agreement between S's self-description of personality and judges' description based upon drawing analysis would be greater for the orthopedic group (more accurate Ss than for the ulcer group (less accurate Ss) was not substantiated. In view of this result, no support can be offered for the clinical usefulness of the D.A.P. in revealing S's personality characteristics. However, at least three difficulties with the present study must be mentioned as they bear upon the study's negative conclusion.

First, contrasting the orthopedic group to the ulcer group on the assumption that the former group was more accurate in self-appraisal than the latter, was perhaps not the wisest choice of comparison groups possible. In retrospect, it seems likely that the orthopedic's physical disability may well have activated conflicts about body image and body functioning which were as severe and hence as inaccessible as those of the ulcer group. Moreover, the dependent position of both types of Ss in the hospital situation would more likely make them become less sincere about describing themselves than usual. Hence, it is conceivable that the two groups would not differ as substantially on

accuracy of self-appraisal as originally assumed.

Second, in addition to the questionable reliability of the S.A.Q.S. for use on the D.A.P., the task of Q-sorting itself imposed a somewhat artificial character upon the judges' representation of S's personality structure. It required that the judges fragment the data obtained through drawing analysis to fit the descriptive adjectives of the Q-sort. Such compartmentalization is neither the way personality is organized, nor is it the manner in which clinicians usually organize information obtained from the D.A.P. Generally, clinicians seem to organize this data into integrated personality descriptions or global judgments about S's personality, e.g. neurotic versus psychotic adjustment etc. This type of an approach to personality description, however, differed markedly from the judgemental task required in the present study wherein judges were asked to fragment meaningfully interrelated D.A.P. data, which data otherwise is usually integrated by clinicians. Conceivably, such a departure from the usual and probably better approach, may have contributed considerably to both the meaningfulness and the accuracy of the judges' task in the present study.

Finally, mention should be made of one particular characteristic of the S.A.Q.S. as it bears upon the obtained inter-judge agreement. The S.A.Q.S. words tend to be phenotypic descriptions of personality features. In the event that one judge used them in their phenotypical sense, whereas the remaining judge tended to think about the genotypic implications of the words, this difference in conceptualization may well have contributed to low inter-judge reliability.

Future research aimed at testing hypotheses similar to that of the present study might do well to keep the above difficulties in view.

Where possible, clinical groups which differ more markedly with regard to severity of psychological impairment should be compared. Such a measure would make it more probable that the groups would differ in accuracy of self appraisal. Then too, where a judgemental task is required, it would seem advisable to take an approach more congruent with the way clinicians organize their impressions about personality. One possible means to overcome both aforementioned difficulties is to compare interview and D.A.P. impressions from the same Ss with the same clinician rendering both impressions according to some prearranged scheme or format. The design of the research would be set up in such a way that the clinician would not know which interview and D.A.P. protocals belonged to the same S. According to Reyher (1961), this procedure substantially improves reliability and validity coefficients.

Summary

The present study attempted to validate the clinical usefulness of the D.A.P. Test. It was hypothesized that the agreement between measures of personality characteristics as obtained through self-description and the D.A.P. is a function of psychopathology. Both measures of personality characteristics were obtained through the use of the Corsini Standard Adjective Q Sort. The first measure was obtained by asking S to sort according to how he saw himself; the second through judges' sorts based upon analysis of S's drawings.

A comparison of the average self-judge correlations of 20 orthopedic patients (alledgedly more accurate group) to those of 20 ulcer patients (alledgedly less accurate group) failed to reveal a difference significant at the .05 level. It was concluded that no

support could be offered for the clinical usefulness of the D.A.P. in revealing S's personality characteristics.

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APPENDIX A

Background Research

In the 14 years since the publication of Machover's monograph, many studies have aimed at validating Machover's interpretive hypothesis about drawing features in the D.A.P. Swenson (1957), after an exhaustive review of the literature until 1956 concluded, however, that while there was modest confirmation of some of Machover's hypotheses regarding group trends, there was little evidence for the value of the instrument for individual diagnosis. He did concede, however, that the D.A.P. had some usefulness as a gross indicator of adjustment.

More recently, many other studies have been undertaken whose intent has been to evaluate the clinical usefulness of this instrument. The bulk of these are reviewed below.

Research Related to the Body-Image Hypothesis

The basic assumption underlying D.A.P. interpretation is that when asked to draw a picture of a person, S will respond by drawing a picture which symbollically represents himself. This is called the body image hypothesis.

Kamano (1960) sought to investigate the body image hypothesis by determining whether human figure drawings represent the drawer's perception of himself, an idealized figure or an unfavorable one by using the semantic differential technique. To do this 45 hospitalized

schizophrenic females drew a same-sexed figure. They then rated the drawing together with the concepts ideal-self, actual-self and least-liked-self which were presented in counterbalanced order on a set of 15 bipolar scales. The results showed that Ss tended to draw a figure which represented themselves much more than an ideal or unfavorable one. This was interpreted as supporting the hypothesis that human figure drawings do represent the drawer's perception of himself.

Lakin (1956) reasoned that on the basis of observations and theory regarding human figure drawings and their relations with self-concept and body image, certain formal characteristics of drawings would reflect aspects of change in self-concept and body image as a result of age. The drawing characteristics studied were area, height and centeredness. Comparing the drawings of 24 institutionalized elderly persons with those of 25 third-graders confirmed the hypothesis. The aged Ss produced more constricted, shortened and less adequately centered figures than the third graders. The finding was viewed as supporting the validity of the view that the central variables of self-concept and body image are reflected in human figure drawings.

McGuire and Moss (1962) asked a group of 50 Ss containing normals, deaf Ss and clinicians, to match the cartoons and captions of William Steig. The importance of this task, the authors point out, was that Machover had singled out these drawings as highly meaningful caricatures of body language interpretable in terms of hypotheses applicable to the D.A.P. The results disclosed that Ss correctly matched cartoons and captions at a high level of significance ($p = < .0001$). However, the authors note several important qualifications: (A) clinicians were not demonstrably more capable than bright normal Ss in matching (B) statistical

significance was largely contributed by only 6 of 32 cartoons; and (C) generally there was no relation between S's confidence in his matchings and objective correctness.

In the Murphy study (1957), the D.A.P. was administered to 53 male and 35 female adults who were applicants for employment at a state colony. Drawings were rated for sexual differentiation and graphic maturity. The results showed that females differentiated female figure drawings from male figure drawings more adequately than did males, although there was little difference in graphic maturity between the two groups. Results were interpreted as suggesting that same-sex human figure drawings of adults tend to be self-portraits rather than an index of degree of identification with appropriate sex role.

Wiggenhorn (1957) sought to investigate changes in human figure drawings as a function of changes in self-concept. The D.A.P. was administered to stress and nonstress groups before and after the stress condition. The results indicated that the redrawn figures for the stress group showed several changes in the drawings corresponding to lowered self-concept as measured by personal ranking sheets, while the reinforced group did not.

Despite some confirming evidence from the above studies, at least two studies did not support the hypothesis that human figure drawings are valid projections of the drawer. Silverstein and Robinson (1956) obtained human figure drawings from 22 children in the chronic stages of poliomyelitis on the assumption that the drawings would reflect the child's physical disability. The drawings were studied by three different methods to determine whether the disability was reflected. Although by inspection more than 3/4 of the Ss appeared to represent

their disability either directly or indirectly, a comparison of disabled children's drawings with those of normal controls showed a nonsignificant number of significant differences between the two groups on a series of 55 scoring signs. It was noted that even judges experienced in the diagnostic use of figure drawings were unable to differentiate the drawings of the two groups at a level better than chance.

In the Wacks and Zaks study (1960) the drawings of 30 males with spinal cord injury were analyzed according to 24 criterian and compared to the drawings of 30 controls, i.e. chronically ill, long term, hospitalized male veterans comparable to the experimental group in age, education and length of illness. While it was expected that the physically disabled would represent their disability in their drawings, in most respects there were no significant differences between the two groups in body image. The authors point out however, that failure to find pronounced differences may be a reflection of general degree of disturbance in psychological functioning in any chronically ill patient.

These few studies suggest that the assumption regarding the figure drawn as a valid projection of the drawer is at best equivocal.

Diagnostic Use of the D.A.P.

General.--Lubin (1959) was interested in seeing if the D.A.P. could discriminate between stable and unstable negro psychiatric aides. Stability was defined in terms of having remained at the job for a period of at least one year. The first drawing of each newly hired negro aide was scored according to a 100 item check list. A comparison of stable and unstable aides disclosed that only in test-taking attitude did the two groups differ unequivocally.

Staltz and Colthrop (1961) sought to discover whether clinicians could predict intelligence, sociability and emotional adjustment from figure drawings. Three clinicians rated the drawings of 60 fourth graders on a nine point scale. The clinicians were able to predict intelligence, but were unsuccessful in predicting sociability and emotional adjustment.

Hardy (1960), using a global approach, investigated the relationship between emotional maladjustment as it is classified into diagnosis and figure drawings. Fifteen judges representing 3 levels of figure drawing analysis experience sorted the drawings of 90 adult males (i.e. normals, neurotics and psychotics) both separately and as a battery using the global approach. The following results were obtained: (A) although all judges showed significant ability to identify drawings, it was the correct identification of psychotics that significantly contributed to differentiation; (B) diagnostic errors were less prevalent when diagnostic range increased; (C) a linear trend between judging experience and correct identification was shown; and (D) the use of a drawing battery reduced the validity of figure drawings as a diagnostic tool. The authors conclude that the results tend to negate the use of figure drawings as a general tool for assigning adjustment level, but support their value in the hands of an experienced clinician.

Sherman (1958) collected 52 sets of male and female figure drawings from hospitalized psychiatric patients and nursing assistants, both groups equivalent in age and I.Q. Psychologists experienced in drawing analysis then judged the drawings as to patient or nonpatient status while commercial artists evaluated the drawings for artistic merit. The following conclusions were reached: (A) psychologists were unable to distinguish between patient and nonpatient drawings;

(B) a significant relation was found between art quality and judged adjustment status. Sherman advises in view of these results that psychologists obtain some independent measure of drawing ability when evaluating drawings.

Singer (1958) sought to answer the question of whether variations in human figure drawings provide a reliable and valid personality measurement. His sample consisted of 102 male psychiatric patients. Ss were given both the M.M.P.I. and the D.A.P. Four drawing features were evaluated on a 3 point scale, (1) head to trunk ratio; (2) vertical size of figure; (3) clothing versus body emphasis; and (4) vertical placement of figure. These features were related to specific hypotheses based on postulates by drawing analysis experts. A point biserial correlation was computed between each M.M.P.I. item answered "true" and the drawing features. Only head to trunk ratio and vertical size of the figure were significantly related to variations in M.M.P.I. items response after cross-validation. It was concluded that these drawing features may have some meaningful possibilities in personality measurement.

A part of the Wallon study (1959) had as its purpose to test the validity of the D.A.P. as an index of broad levels of adjustment. Drawings were obtained from 25 normal, 25 neurotic and 25 psychotic adult males and then given to 5 experienced clinicians to assign to 3 diagnostic groups. Four of 5 judges achieved a number of successes which exceeded chance at or beyond the .03 level of probability; collectively, the judges exceeded chance at the .001 level. Despite this, however, less than half the judgements for any one judge were in agreement with the criterion.

The D.A.P. and Sexual Deviancy.--Machover has advanced several hypotheses about the significance of the first-drawn figure on the D.A.P. and its relation to sexual adjustment. Brown and Tolor (1957), after reviewing 28 pertinent studies came to the following conclusions: (A) Normal adults of both sexes draw their own respective sexes first in making human figure drawings. Adult males make the first drawing a male more frequently than females make the first-drawn figure a female. The average figures for drawing the same-sex figure first for normal college students are 91% for males and 63% for females. (B) Male and females with behavior disorders make like-sexual figures more frequently than they draw figures of the opposite sex. (C) What little evidence is available indicates that the great majority of male homosexuals don't draw opposite-sex figures first; this is contrary to the popular belief that drawing the opposite-sex first is indicative of homosexuality. There is no information whatever concerning the relation between female homosexuality and sex of the first-drawn figure. (D) There is much confusion in the studies of children. When these are taken as a whole, nearly equal proportions of boys and girls draw a figure of their own sex first. (E) Analysis of human figure drawing characteristics, apart from the sex of the figure as such, may provide important data about homosexuality and psychosexual identification. The authors conclude "There is no convincing evidence that adequacy of psychosexual identification or adjustment is reflected in choice of sex in human figure drawings. At present the only valid conclusion is that the basis or significance of drawing a person of the opposite-sex first is not known."

More recently, Vilhotti (1958) too has come to a negative

conclusion about a popular interpretation regarding sex of the first-drawn figure. He compared the drawings of 50 male homosexuals to 50 male non-homosexuals. All Ss were mentally defective. Vilhotti concludes that the sign of drawing a female figure first as diagnostic of male homosexuality is not useful in differentiating homosexuals from nonhomosexuals in institutionalized mental defectives.

Fisher (1959) examined the D.A.P. test performances of 277 male and 232 female psychiatric patients and 32 male sexual deviates for the sex of the first-drawn figure. In both the male psychiatric sample and male sexual deviate sample 88% of Ss drew the male figure first, while in the female psychiatric group, 62% of the Ss drew the female figure first. The data indicated that male and female psychiatric patients and male sexual deviates do not differ significantly from normals in the sex of the first-drawn figure. This finding was interpreted as supporting the earlier conclusions of Brown and Tolor (1957) regarding the lack of evidence to support the interpretive hypothesis on sex of first-drawn figure.

Grams and Rinder (1958) investigated the validity of 15 signs in figure drawing which Machover had listed as predictive of homosexuality. Fifty adolescent inmates were divided, on the basis of homosexual experience, into two groups matched for age, I.Q., race and schooling. Their drawings were given to three psychologists to score for signs of homosexuality. None of the signs were found to have individual validity. To determine the predictive significance of the 15 signs taken as a whole, the total number of signs present in a drawing were correlated with homosexuality and nonhomosexual experience. Again the signs studied failed to validly predict to criterion.

While the above studies have largely failed to support Machover's position, some supportive evidence is forthcoming from the two studies below.

Frank (1955) asked 18 male and 56 female normal college students to draw a picture of a whole person. The first drawing of 16 males and 38 females were of a figure of the same sex as themselves. This result was interpreted as supporting Machover's assumption that drawing a person of the opposite sex first indicates a problem of sexual identification.

Finally, in the Whitaker study (1961), 236 males referred to a court clinic were rated on the characteristics homosexuality and effeminancy by a clinician on the basis of life history interviews. Each S was then given an extended D.A.P. in which he chose the sex of two of the three figures drawn. (In the extended D.A.P., after the usual procedure of having S draw two figures, the second figure being of the opposite sex as the first, S is then instructed to draw a third figure where again he has the option of choosing the sex of the figure drawn.) The results were seen as supporting the hypothesis that psychosexual identity is projected into free choice drawings. However, the author noted that the psychometric signs were not more efficient overall than the base rate in predicting the criterion characteristics.

The D.A.P. and Paranoid Pathology.--Among the most prominent features of a paranoid's drawings, according to Machover, is emphasis on eyes and ears. The studies cited below deal with these variables.

The Reznikoff and Nichols study (1958) attempted to check the usefulness of 26 drawing indicators of paranoid pathology which were

compiled from Machover's list of indicators and the authors' clinical experience. Upon comparing the drawings of 30 paranoid and 30 non-paranoid patients, they found that of the 26 indicators, only emphasis on outline of eyes and over-all heavy line quality occurred more frequently in the paranoid group. However, as this result could occur by chance, the groups were compared for the total number of indicators present in individual drawings. No significant differences between the two groups were found.

Ribler (1957) selected 20 pairs of D.A.P. test protocals from a V.A. hospital files to determine whether judged eye and/or ear emphasis could differentiate paranoid schizophrenics from unclassified schizophrenics, anxiety neurotics and normals. The protocals were submitted to four judges independent of each other. Although inter-judge reliability was adequate, the judges could not differentiate the drawings of paranoids from the other groups on the basis of eye-ear emphasis.

The Griffith and Peyman study (1959) used a somewhat different approach than usual. Its purpose was to relate eye-ear emphasis to the trait ideas of reference. The drawings of 18 Ss were selected which showed both eye and ear emphasis and compared to the drawings of a control group of 51 Ss. Two clinicians were asked to select the drawings of Ss having ideas of reference. The results confirmed the hypothesis that one could judge ideas of reference from eye-ear emphasis. The authors conclude, however, that eye-ear emphasis on the D.A.P. is valid, but inefficient for predicting ideas of reference.

Psychopathy and Aggression.--Craddick (1962) was interested in the value of the D.A.P. for predicting psychopathy. The drawings of a

man by 28 male psychopathic prisoners and 28 male college students were compared in terms of characteristic features which Machover suggested as indicators of psychopathy (i.e. large drawings, two drawings centrally located or shifted to the left side, shading evidenced, person in drawing shown with a hand in a pocket). None of the features differentiated the two groups except shading which was in the opposite direction as expected, the college population evidencing more shading than the psychopathic group.

Goldstein and Moss (1957) studied the effects of experimentally induced feelings of aggression on figure drawing in terms of four variables, line pressure, figure size, a group of seven specific drawing details (i.e. slash-line mouth, detailed teeth, spiked fingers, clenched fists, nostril emphasis, squared shoulders, toes in non-nude figures and overall subjective judgement of aggression.) Induced aggression was interpolated between two figure drawing presentations. They found that of the four variables, only the seven specific drawing details as a group significantly related to aggression. The authors state that a dichotomy appeared to have formed, with non-significant results being found in the areas measuring aggression in the form of psychomotor tension and with significant results being found in the areas in which aggression is expressed symbolically.

Summary

On the whole, the evidence presented in this review does not seem to support Machover's claims regarding the value of the D.A.P. as a diagnostic tool. Although the studies reviewed have employed a number of different approaches, from attempts to validate individual signs to

the more global attempts at evaluation, throughout all, the D.A.P. comes through, at best, with only questionable validity. Despite these difficulties, the D.A.P. continues to enjoy a great deal of popularity as a diagnostic instrument. Perhaps this is due, as one writer states, to the fact that it ". . . proves to be no worse than any other common personality assessment procedure (Blum, 1954 pg. 125)."

APPENDIX B

The Standard Adjective Q-Sort (Corsini, 1956)

Characteristics.--The S.A.Q.S. consists of 50 personal adjectives printed on cards which may be sorted for perceptions of self and others. These 50 adjectives are laid out in a rectangular distribution of ten columns of five words each. With the help of a special table provided in the manual, any two sorts may be correlated to obtain an index of similarity.

The word list itself has been devised so that it contains items which are familiar to adults of average intelligence. In addition, steps were taken by the author to keep the list free of ambiquity, and stereotyped words and to insure that there was representation of the seven major areas or factors of personality. Finally, every word has a favoribility index which represents the favoribility ratings of 25 adult subjects.

Reliability.--The reported test-retest reliability for two college groups for self-sort a week apart was .81 for females and .79 for males (Corsini, 1956). No other reliability estimates are available at present.

Validity.--Few validation studies on this instrument have been reported to date. However, Corsini (1956), summarizing two of his own investigations, makes a reasonable case for the usefulness of the

S.A.Q.S. in marriage counseling. Using the Burgess Happiness Test as the criteria, the S.A.Q.S. was demonstrated to have a predictive efficiency of .75 as a measure of marital adjustment.

Instructions.--"Here are 50 cards, each with a word that can be used to describe people. You are to lay these cards out on the table in such a manner that you can see all of them in ten piles or columns, five words in each column-pile. Those words that will be in the last column to the left are those that you think describe you least . . . and the five words in the pile to the extreme right will be those that you think describe you best. The other words you will distribute in the same manner in terms of how well they describe you. Before you finish, look over all of the words to make sure that as they go to the right they describe you better and better (Corsini, 1956)."

S.A.Q.S. Word List

Life Style

1. Daring
2. Cautious
3. Aloof
4. Adventurous
5. Secretive

Intelligence

6. Foresighted
7. Witty
8. Shrewd
9. Imaginative
10. Original
11. Resourceful
12. Clever
13. Clear-Thinking

Emotional Stability

14. Responsible
15. Dependable
16. Self-Controlled
17. Moderate
18. Persevering
19. Jealous
20. High-Strung
21. Nervous

22. Suspicious

23. Immature

Dominance

24. Aggressive

25. Forceful

26. Independent

27. Stubborn

28. Dominant

29. Outspoken

30. Submissive

31. Dependent

Activity

32. Quick

33. Hasty

34. Hurried

35. Talkative

36. Active

Social Sensitivity

37. Warm-Hearted

38. Soft-Hearted

39. Gentle

40. Appreciative

41. Discreet

42. Unselfish

43. Insensitive

44. Sensitive

45. Sarcastic

Mood

46. Easy-Going

47. Calm

48. Worrying

49. Emotional

50. Excitable

APPENDIX C

Table I

Means and Standard Deviations for Ulcer and Orthopedic groups on age, education, and I.Q. N = 20 in each group.

	Orthopedic		Ulcer	
	Mean	S.D.	Mean	S.D.
Age	40.90	9.62	40.85	8.24
Education	8.85	3.08	9.15	1.80
I.Q.	99.60	14.96	99.75	13.95

APPENDIX D

TABLE II

Inter-judge comparisons on average Q sort ratings for Ss.

Group	z Value
Ulcer	.464*
Orthopedic	.331*

*Differences non significant at .05 level.

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