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A Study of Some Parameters of the Q-Sort Technique in a Homogeneous Population of Normal Subjects.

Gene Francis Ostrom

Louisiana State University and Agricultural & Mechanical College

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A STUDY OF SOME PARAMETERS OF THE Q-SORT TECHNIQUE IN A HOMOGENEOUS POPULATION OF NORMAL SUBJECTS

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy in The Department of Psychology

by

Gene F. "Ostrom
A.B., The George Washington University, 1953
M.A., The George Washington University, 1956
January, 1962
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Mrs. Vera M. Foil who good naturedly and savingly was agreeable to type into the wee hours of the mornings to meet the deadlines imposed by a sometimes lagging student. That student is very appreciative.
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ABSTRACT

The purpose of this study was to investigate the main and interaction effects of four parameters of the Q-Sort technique upon some dependent variables commonly used in self concept research. The parameters chosen for evaluation were ones that had been subjected to numerous variations without knowledge of effect in previous research. These parameters were: A) number of sorting categories as seven, nine, and eleven; B) number of statements as fifty, one hundred, and one hundred and fifty; C) type of distribution employed as platykurtic and mesokurtic; and D) wording of instructions as explicit and ambiguous. The dependent variables were based upon the interrelationship between five distributions of ratings on the same set of personal referent statements. The five ratings were made on the following bases: 1. self concept, 2. ideal-self concept, 3. social desirability, 4. positive self-regard, and 5. adjustment.

A 3 x 3 x 2 x 2 analysis of variance design was used having four replications within each treatment. Subjects were 144 Louisiana State University freshmen girls residing in the women's residence halls who were assigned randomly to the thirty-six treatment combinations. All the treatments were administered to the subjects simultaneously by
means of a group Q-Sort technique that required phenomenal self and ideal-self concept ratings. Two different peer groups selected independently of the subjects and a group of clinical psychologists reliably rated the Q-Sort statements from the frames of reference of social desirability, positive self-regard, and adjustment. From these ratings, mean values were computed for each statement and applied to the subjects as nomothetically derived scores. Pearson product-moment correlations were computed on each subject for the following pairs of distributions: 1. self concept with ideal-self concept, 2. self concept with social desirability, 3. self concept with positive self-regard, 4. self concept with adjustment, 5. ideal-self concept with social desirability, 6. ideal-self concept with positive self-regard, and 7. ideal-self concept with adjustment. Each of the Pearson r's was transformed to a Fisher's Z score to correct for lack of normality in the distribution of r. The analysis of variance was done for each of the seven sets of Z scores to assess the effects of the four parameters upon these correlations.

In examining the results of all analyses, it was apparent that the nomothetic ratings were similarly affected by treatments. Also, their intercorrelations were very high. For the S-I, S-SD, and S-ADJ analyses the main effect of number of statements was significant. The mean Z was small
for the fifty statement length in comparison to the other means. The AD interaction was significant for the S-I analysis and the BD interaction significant for the I-SD, I-PR, and I-ADJ analyses. Correlations involving I were greater than those involving S and they had less variability. This indicates the possible stereotypic character of I ratings.

Edwards' (1957) contention that social desirability accounts for a major portion of variance in self report techniques was given support. The study also indicated that ideal ratings have closer agreement with SD, PR, and ADJ ratings than do self ratings.

The non-significance of the construct irrelevant variables was regarded as an important finding, suggesting that the Q-Sort technique is relatively insensitive to error variance attributable to variations in method and/or procedure.
INTRODUCTION

The essential purpose of this study was to discover whether certain variations in the materials and procedures of the Q-Sort technique had effects upon results, and if so what the nature of these effects were. No specific hypotheses were formulated; rather, the question was directed to some equivocal practices that had been employed in previous Q-Sort studies. The selection of variables was based first upon their representativeness in the literature and secondly upon hunches that they might influence results in some measurably significant manner. The aim of the study was to assess the role certain variables had in contributing to method variance, and, thus, to some extent to explain the inconsistencies existing between Q-Sort technique studies and to make possible suggestions for more effective operational procedures.

The Q-Sort technique was first employed in evaluating the process of Rogerian non-directive psychotherapy by Butler and Haigh (1954). Since that time extensive studies have been made employing the Q-Sort as the major operational procedure for evaluating both process and outcome in non-directive counseling (Rogers and Dymond, 1954). The Q-Sort procedure, modified from the Q-technique of Stephenson (1953), grew out of the basic phenomenological approach of Rogers;
because of its relative freedom from nomothetic bias it was particularly suited for the study of individuals in a psychotherapeutic setting. Today it remains the basic operational procedure in Rogers' system and has been used to evaluate the therapist-patient interaction as well as therapist and patient variables per se. Applications extend equally to studies involving any interpersonal interactions. Wittenborn concludes:

... Q method's primary contributions to psychology appear to be in the study of psychotherapy and the related study of persons with personality disorders, and there are indications that this methodological emphasis can contribute to a broad study of personality and numerous related social problems (1961, p. 141).

The Q-Sort technique gave operational status to such constructs as actual-ideal self concept congruence, and self acceptance, and has been extended more recently as a procedure for measuring identification, transference, insight, empathy, and the extent of interpersonal agreement (Cronbach, 1953; Rogers, 1961).

Phenomenological constructs logically preclude criteria validation of the relevant measure; hence, construct validation must fill the void in Q-Sort technique (Wylie, 1961). There is considerable supporting evidence (Wittenborn, 1961; Wylie, 1961) for construct validity of the kind involving successful prediction of group differences and studies of predicted changes over measurement occasions (Butler and Haigh, 1954). Heavy reliance upon this type
of validation and upon face validity has been the rule thus far for the meaningfulness of Q-Sort methodology. However, previous validation studies offer no more than ambiguous support and are not sufficient for the establishment of construct validity (Crowne and Stephens, 1961; Wylie, 1961). What are lacking for establishing construct validity are studies employing the methods of convergent operations as set forth by Cronbach and Meehl (1955) and Campbell and Fiske (1959). The three main methods of convergent operations are the following: (1) A critical analysis of those variables other than the pertinent construct which might be influencing results (Cronbach and Meehl, 1955). (2) Application of different operational procedures to infer the same construct. The efficacy of differing procedures for inferring the same construct is shown when their correlations are (a) greater than correlations by the same operations applied to different constructs, and (b) greater than correlations between different operations applied to different constructs (Campbell and Fiske, 1959). (3) Item analyses and factor analyses to isolate the many variables affecting the responses whether these be sub-constructs or irrelevant variables (Cronbach and Meehl, 1955).

Crowne, Stephens, and Kelley (1961) used the Campbell and Fiske convergent operations model to test the validity of self-acceptance that included a measure of self-ideal discrepancies. These discrepancies correlated moderately
with self-acceptance, from low to moderate with adjustment, and low with dependency. All self-acceptance tests employed in this study correlated consistently with social desirability. Crowne and Stephens (1961) have also reviewed a number of studies that show a lack of relationship between a variety of measures purported to assess self-acceptance. These measures include Q-Sort, adjective rating scales, adjective check lists, and self-rating scales seemingly having face validity in common.

The construct of self-acceptance (frequently defined operationally as actual-self—ideal-self congruence) has been highly correlated in some instances with social-desirability (Edwards, 1955; 1957) and with defensive or self-protective behavior (Crowne and Stephens, 1961). Hence, the magnitude of actual-self and ideal-self concept correlations or the number of positive and/or socially desirable items ascribed to oneself may be primarily a function of social-desirability or defensive factors rather than of the degree of self-acceptance. Block and Thomas (1955) question whether actual-self—ideal-self congruence as a measure of satisfaction indicates adjustment. One who manifests self-satisfaction may be defensive and rigid.

The present study was aimed at furthering construct validation of self concept and ideal-self concept ratings and self-acceptance as operationally defined by the Q-Sort technique. The contribution to construct validity was by
means of evaluating some of the variables regarded as possibly significant but non-pertinent to the construct in question. Several variables viewed as probably contributing to method variance were chosen from the literature, and applied on several representative levels in an analysis of variance design to a homogeneous group of subjects. Beyond assessing the role of these variables it was hoped that some of the inconsistencies between previous studies might be better understood and that some facts would emerge to increase the effective use of the Q-Sort technique.

Wylie (1961) directs attention to construct-irrelevant variables when posing the question of the extent that method variance accounts for response variance on tests purported to measure some aspects of the phenomenal self. From her review of the research, she reports that many studies give incomplete descriptions of the instruments used and give no publicly available sources for them. They offer no reliability estimates or stability measures, and they usually by-pass problems of validity by assuming face validity.

Some of the possible construct-irrelevant variables specifically related to the measuring instrument employed have been investigated in isolated fashion. It is with some of these that the present study is concerned. What follows includes a review of research relevant to the variables employed in this study.
Number of sorting categories

Sets of Q-Sorts have had a varying number of sorting categories. Mowrer (1953) states that these variations are a matter of convention, computational efficiency and convenience. The possible range of variations extend from the extreme of rank-order—as many categories as items—to a simple dichotomy. Mowrer suggests something intermediate between these extremes, but gives no way for specifying intermediacy. Reference is made by Mowrer to Edwards' (1947) statement that the product-moment correlation has only negligible error if twelve or more class intervals and an N of fifty or more is employed. Wylie's table (1961) describing sets of self-descriptive Q-Sorts permits a breakdown of the differences in the number of sorting categories as follows: five (Hanlon, Hofstaetter and O'Connor, 1954; Klausner, 1953; McKenna, Hofstaetter, and O'Connor, 1956; Smith, 1956; seven (Nahinsky, 1956); nine (Butler and Haigh, 1954; Thompson and Nishimura, 1952); eleven (Pearl, 1954; Taylor, 1955); and ranks employing six sets of ten items (Kelman and Parloff, 1957). A study by Ewing (1953) used six categories, and the one by Hartley (1953) used eleven.

Number of statements

Wide variations in the number of statements included in the Q-Sort set have occurred among the published sets with no data as to the possible effect upon results from the differences in number. There could well be a differential
effect since fatigue and memory factors are involved. Mowrer (1953) states that the number of statements depends upon convenience and the desired level of reliability, more items yielding better reliability. From Wylie's table (1961) the following breakdown as to number of statements occurs: twenty-nine (Smith, 1958); fifty (Hilden, 1955; Caplan, 1957; Perkins, 1958a, 1958b); sixty (Kelman and Parloff, 1957; Klausner, 1953; Nunnally, 1955); seventy-six (Fiedler, Warrington and Blaisdell, 1952; Fiedler and Wepman, 1951; Frisch and Cranston, 1956); eighty (Block and Thomas, 1955; Friedman, 1955); ninety-six (Kogan, Quinn, Ax, and Ripley, 1957); one-hundred (Butler and Haigh, 1954; Engel, 1959; Hanlon, Hofstaetter and O'Connor, 1954; Levy, 1956; McKenna, Hofstaetter, and O'Connor, 1956; Nahinsky, 1958; Thompson and Nishimura, 1952); one-hundred and twenty-five (Chodorkoff, 1954a, 1954b, 1956); one-hundred and sixty (Taylor, 1955); one-hundred and seventy-five (Lepine and Chodorkoff, 1955); one-hundred and seventy-six (Edelson and Jones, 1954); and one-hundred and eighty (Pearl, 1954). Not listed in Wylie's table was one-hundred and fifty statements of Hartley's Q-Sort (1953).

**Type of distribution**

Whether one requires a free or forced distribution makes a difference in the results obtained and affects the manner of statistical treatment. Cronbach (1954) lists the
advantages of the forced-choice situation as: (1) it avoids the problem of subjects saying "yes" to favorable and "no" to unfavorable statements disproportionately; (2) it avoids the problem raised when subjects tend to use "cannot say" with high frequency; and (3) since the product-moment correlation gives greater weight to extreme values relative to middle values, the problem of unreliability of the difficult middle discriminations is avoided. He states that the disadvantages of the forced distribution are the loss of the level of elevation of profiles (throwing away the mean), and the loss of differences in scatter (equating for the standard deviation). Block (1956) analyzed forced vs. unforced distributions and recommended forced distributions because they were more stable and yielded more discriminations. Jones (1956) studied subjects' behavior with free-sorts and found that characteristically sorts chosen were typically non-normal and U-shaped.

Shape of distribution

Several studies have investigated the nature of the Q-Sort distribution itself when a forced-choice situation prevailed. Stephenson (1953) recommended a flattened, bell-shaped distribution because it was appropriate to the assumptions of normality and led to high discrimination. Livson and Nichols (1956) concluded that a rectangular distribution was best because it yielded the maximum number of
discriminations. Shape of the distribution, when varied, should take into account the assumptions of normality underlying the use of the product-moment correlation. The Norton study as reported by Lindquist (1953) revealed wide latitudes in variations from the normal, bell-shaped curve without much loss in efficiency of predictions. He demonstrated that even marked flat or peaked curves have very small discrepancies from the normal curve. In the Q-Sort method, when number of statements and the number of sorting categories are varied, there is a complex effect upon the relative flatness of the curve as a whole (upon the standard deviation). When forced-choice procedures are used skewness is eliminated by making the distribution perfectly symmetrical. The relative flatness at the mode (Kurtosis) has been varied, ranging from rectangularity to mesokurtosis, but the extent of this range of differences cannot be traced since researchers characteristically have failed to report this variable. Dymond (1954) reports the required quasi-normal distribution for the Butler-Haigh set of one-hundred statements and nine categories as follows: 1-4-11-21-26-21-11-4-1. This is a moderately platyctic kurtic curve.

Instructions

Relatively uncontrolled variations in instructional set have occurred with the use of Q-Sorts. Wylie writes that:
... there have been marked variations from study to study in the particular directions given to S to define a concept which was assigned the same label (e.g., ideal self). No one has systematically studied the influence of such variations upon self-report responses in self-concept studies (1961, p. 34).

Wylie reports a personal communication from Cohen (1959) to the effect that at times subjects were asked to respond as "a person" would act or feel, and sometimes as "I" would act or feel. The inference was made that despite this difference in instructions, an individual was revealing his own self or ideal-self concept.

Presentation technique

Taylor (1953) found that there were no differences when he used paper-and-pencil and card sort techniques to measure discrepancies in actual-self and ideal-self concepts. Morsh (1955) employed a modified form of the Q-Sort technique by arranging the statements in random order on a page and providing a graphic array for the distribution. He concluded that the method was highly satisfactory and could easily apply to areas other than ratings by students of instructors, the specific content of his study.

Statement content

Other sources of method variance lie within the content of the test itself. A major problem involved with content is the matter of defining the universe of statements represented and the means by which the sample of statements
is drawn. The majority of Q-Sort sets devised purport to measure a universe of statements concerning personal or social adjustment. However, there have been sets designed for very restricted universes. For example, Caplan (1957) had phrases representing aspects of the self in school. Engel (1959) used items relevant to adolescent concerns as defined by Jersild. Nahinsky (1953) had items describing characteristics relevant to the ideal and typical Naval officer.

The methods of sampling generally have been of the accidental variety, although Hilden (1954) devised a unique means for random sampling from a finite universe of statements. Sources of statements have been widely different; e.g., therapy protocols (Butler and Haigh, 1954); student autobiographies (Caplan, 1957); and the Thorndike-Century Senior Dictionary (Hilden, 1954).

Within the set content, we find that the format of the statements have varied so that they may not be statements at all. Block and Thomas (1955) used adjectives while descriptive phrases were used by Caplan (1957) and Smith (1958). Statements have been used very commonly as in the Butler and Haigh Q-Sort (1954).

Statement content has also varied along several dimensions without knowledge of the effects. The ratio of positively worded to negatively worded statements in some instances were unknown (Butler and Haigh, 1954). Others
have developed sets with the positive-negative dimension specifically controlled (Engel, 1959); Frisch and Cranston, 1956; Pearl, 1954; Hilden, 1954; and Taylor, 1955). Usually the dimension was made on the basis of ratings by judges. Taylor (1955) found that repetition had less effect upon positive ratings than upon actual-self and ideal-self correlations. He recommended the positive self-concept and positiveness of self and self ideal as better criteria for evaluating psychotherapy. The positiveness dimension may be measuring something different from what is measured by actual and ideal-self correlations.

Cronbach (1953) has some specific recommendations in regard to statement content, one of which is the remark that statements should have the same average desirability over the entire population, otherwise response variability will be limited. Goodling and Guthrie (1956) make a similar recommendation saying that neither strong negative nor strong positive values should appear in statements. They further recommend minimum intra-subject variability and maximum inter-subject variability. Within the same set of statements, there sometimes are statements having terms indicating degree or frequency which can be confusing since placement of the statement by the subject becomes a matter of assigning degree. Logically confusing statements may lead to a negative attitude, the authors conclude, resulting in carelessness and lowering of reliability.
As noted previously when considering construct validity, it has been shown that social desirability may be a contaminating factor in Q-Sort methodology. Block (1961) reanalyzed a study by Wiener, Blumberg, Segman and Cooper (1959) to illustrate that the high correlation between social desirability and well-adjusted person ratings of Q-Sort statements does not demonstrate as so often implied that little of importance remains when the social desirability factor is partialed out. Wylie (1961) concludes after reviewing the literature on social desirability that its influence on the validity of self-reports concerning actual-self and ideal-self concepts remains unsettled. Social desirability may not be measuring the same thing as adjustment or actual-self and ideal-self congruence.

**Subject variables**

Certain subject variables may also be an important contributor to irrelevant variance. Crowne and Stephens (1961) review studies suggesting that for some subjects at least the validity of self-reports is questionable. Researchers have postulated such constructs as: "defensive behavior" (Butler and Haigh, 1954), "self-protective response tendencies" (Crowne, 1959), and "social desirability" (Edwards, 1957). Individuals otherwise judged maladjusted may not appear to be so because they do not reveal the extent of their dissatisfaction. Even normal subjects
according to Wylie (1961) will reveal themselves differentially with respect to content areas and the degree of rapport with the examiner. Mowrer (1953) reviews possible subject variables and among them is what he labels the "hello-goodby effect" or "flight into health." He also mentions the likelihood of malingering such as that measured by the K scale of the MMPI.

Scoring

Wylie (1961) considers the problem of the use of simple or complex scoring categories. Often complex scoring is used when simple scoring is sufficient, or more justified. When the matter of reliability is dealt with in Q-Sorts of actual-self and ideal-self discrepancies, it is clear that the congruence score based on the product-moment correlation is dependent upon the reliability of the separate scales. Block (1961) points to the necessity for the correction for attenuation when comparing the different operational procedures for self-acceptance.

Q-Sort data may be treated by correlational procedures. Most commonly the product-moment correlation used by Butler and Haigh (1954) is employed; less commonly the tetrachoric correlation (Ewing, 1953), Spearman's rho (Kelman and Parloff, 1957), and other correlational procedures including non-parametrics are used. The methods of factor analysis may also be applied to Q-Sort data as was done by Nunnally
on a single subject, or the data may be subjected to an analysis of variance design as was the Tennessee Department of Mental Health Q-Sort (Fitts, 1956).

The present study had as its major purpose the clearing the air of some of the confusion that exists regarding the Q-Sort as a technique for measuring certain aspects of personality. What appeared to be several of the more significant variables of the class referred to by Wylie (1961) as construct-irrelevant variables were chosen. It appeared often that changes were made by researchers in the types and nature of materials and in various aspects of procedure pertaining to the Q-Sort without having any knowledge of the effects such changes would have upon results. Attempts were made frequently to compare the results between two or more studies that had made radically different modifications in materials or procedure. No one is in a position to offer reliable evidence as to the relation between some of the types of changes made and the effects upon the construct under investigation. Involved was the attempt at getting systematic variations in some of the variables, reliably measuring their effects, and where possible testing for the significance of effects. Strictly speaking, in such a study hypotheses need not play a part. The goal was in a sense descriptive or at least exploratory. The basic question was simply "what is occurring" and not "if this is done, will such and such happen."
Thus, it would be made possible, perhaps, to explain some of the differences in results that have occurred in the past. It might also be possible, to discover certain meaningful relationships that suggest some types of variations to be superior to others. Finally, some general facts might emerge upon which to evaluate the Q-Sort technique as a reliable measuring instrument of the constructs it is purported to measure.

Though no hypotheses were specified, a few hunches entered into the selection of the variables to be studied. The first criterion for the inclusion of a particular variable was that it be well represented in the literature as having been subjected to near capricious handling.

The second criterion was the hunch that the particular variable might well have a significant influence upon results in its varied applications. The final criterion was a matter of the practicability of using the variable in a study of the kind proposed.

The dependent variables chosen were those also deemed of major importance for this technique. The ones included in the study had been used extensively in past research as the best to be had in spite of controversy over validity status.

The analysis of variance design was employed so that the effects could be measured simultaneously on the same
group of subjects permitting analysis of interaction effects if present. Such a procedure seemed to be the logical first step in the use of any operational technique in extensive validity studies, more definitive parametric research, or investigations into the relative importance of subject variables.
METHOD

Subjects. One hundred and seventy-eight volunteer subjects were drawn from the population of female freshmen students residing in the women's residence halls at Louisiana State University during the Fall semester of 1961. One hundred and forty-four of these girls were assigned randomly to the various treatment conditions in an analysis of variance design and served as experimental Ss. Thirty-four of the pool of 178 girls were assigned randomly to one of two groups for the purpose of rating the Q-Sort items employed in the study.

Task. All experimental Ss, irrespective of treatment condition were required to rate varying numbers of self-descriptive statements twice—once as descriptive of phenomenal self concept (S), and once as descriptive of ideal-self concept (I).

Research Design. A complete, $3 \times 3 \times 2 \times 2$ analysis of variance design, totaling 36 cells with four within cells replications was employed. Such a design necessitated the use of 144 Ss. A homogeneous group of Ss was selected to control inter-subject variability as far as was practicable. As inter-subject variability is lessened, the
greater the likelihood that homogeneity of variance within cells would be achieved. Subjects were assigned randomly to each cell, the chances for any one of the 144 Ss falling within a given cell being equal. The design employed is illustrated in Figure 1.

**Independent Variables.** The independent variables correspond to the treatments in the design. They were identified as follows: A) number of sorting categories, B) number of statements, C) type of distribution employed, and D) wording of instructions.

Treatment A, number of sorting categories, was varied three ways: (1) seven categories, (2) nine categories, and (3) eleven categories. These three variations appeared to represent adequately the range of variations that had occurred in the literature as reviewed previously. The five category distribution commonly reported in the literature was not included because (a) it was a more extreme departure from the suggestions of Stephenson (1953) and Edwards (1947) which might do violence to the limits of reliability of the product-moment correlational procedure employed, and (b) it was impracticable to have more than three variations under treatment A. Obviously, the maximal number of categories of rank order described by Mowrer (1953) was impracticable since the number of items employed was so large.

Variations in number of sorting categories were effected
**FIGURE 1**

THE COMPLETE $3 \times 3 \times 2 \times 2$ ANALYSIS OF VARIANCE DESIGN WITH FOUR WITHIN CELLS REPLICATION

<table>
<thead>
<tr>
<th>Categories</th>
<th>A&lt;sub&gt;1&lt;/sub&gt; Seven</th>
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<td>S&lt;sub&gt;s&lt;/sub&gt;</td>
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<td>D&lt;sub&gt;1&lt;/sub&gt; Emphatic</td>
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<td>D&lt;sub&gt;1&lt;/sub&gt; Emphatic</td>
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</table>
by means of differences in graphic arrays for recording responses in the test booklets following the procedure used by Morsh (1955); (see Appendix E). The array consisted of a series of squares in which the subject placed the statement numbers, there being as many squares as statements. The squares were arranged in rows, and there were two or three rows at each of several levels. Each level was identified by a cardinal number in a series that corresponded to a rated value on an assumed interval scale described at its terminals as "least" and "most." These levels represented what is referred to as "categories," and were equivalent to the separate stacks used in the more common card-form method. Hence, for the different treatments of A, there were seven, nine, and eleven levels of squares in the arrays respectively for the seven, nine, and eleven sorting categories.

Treatment B, number of statements, was also varied three ways: (1) fifty, (2) one-hundred, and (3) one-hundred and fifty. These three variations represented the different numbers of statements reported in the previously reviewed studies. The reported range in number was from twenty-nine to one-hundred and eighty. According to Hilden (1954) satisfactory reliability was demonstrated with as few items as fifty. The chosen upper limit of 150 was dictated mostly by practical consideration. Rating more than 150 statements
twice successively at one sitting for a self-concept description and an ideal self-concept description would be too time consuming and too tedious. It was thought that two hours would be the maximal time allotted for completing the ratings, and that 150 items would be the largest multiple of 50 items that one could complete within this time limit.

The specific source of the 150 statements was Hilden's (1954) random sets of personal concepts. Since the study centers upon the test itself and incorporates Hilden's rationale, further consideration of the statements seems to be in order. Hilden, using a table of random numbers, drew every word of a sixth grade reading level or less that was suitable for formulating a statement about human reactions from the Thorndike-Barnhart Handy Pocket Dictionary. When questions of meaning arose he consulted the Thorndike-Century Senior Dictionary. Words selected were put into statement form, and in those instances where statements could be worded positively or negatively they were done one way or the other on a purely random basis. A total of 1575 statements were then devised and constituted a finite universe of personal concepts, abbreviated by the author as UPC. From a table of random numbers twenty sets of fifty statements each were drawn. Each set was returned to the universe before drawing another thus not substantially altering the size and composition of the universe
for successive samples. These sets were called the Random Sets of Personal Concepts, abbreviated as RSPC.

Hilden (1958) hypothesized that the twenty sets of RSPC would be representative within the limits of sampling error of the UPC. The hypothesis was investigated using four psychology graduate students as subjects. Each of the four students did self-concept sorts followed by the ideal-self concept sorts in the usual manner for each of the twenty RSPC successively. A few days following this each student repeated the self-concept and ideal self-concept sort on the UPC. Pearson product-moment correlations for the twenty RSPC didn't differ significantly from the correlations in the UPC, thus supporting the hypothesis. Furthermore, the mean correlations of the 20 RSPC over a number of conditions correlated .94 with the UPC correlations. These results led the author to conclude that the 20 RSPC could be considered as equivalent, and that they presented a unique method for determining reliability of the Q-Sort technique.

Hilden's procedure and his conclusion provided the material and rationale for assuming comparability of content where actual content varied between subjects because of the difference in number of statements.

The test booklets, reflecting the differences in treatments, varied between themselves as to the number of statements included. A third of the booklets had fifty statements
in a single column for the self concept description and fifty statements on another page in a single column but different random order for the ideal self-concept ratings. The next third had one-hundred statements in two columns of fifty each arranged in like fashion for the self-concept and ideal self-concept ratings. The last third had 150 statements in two columns of seventy-five each also arranged in the manner of the fifty and one-hundred statement booklets regarding the self-concept and ideal self-concept ratings. The fifty statements' treatment consisted of Hilden's set number 10 from the RSPC, the one-hundred statements' treatment was formed by adding set 11 to set 10, and the 150 statements' treatment was formed by adding set 14 to sets 10 and 11.

Treatment C, the type of distribution employed, was varied two ways as: (1) a platykurtic distribution, and (2) a mesokurtic distribution. The summary of previous studies indicated a range of variation from rectangular distributions to normal ones, though they most typically were described as quasi-normal, tending toward a platykurtic shape. According to Tippett (1931), the measure of kurtosis as devised by Pearson was independent of the standard deviation. The latter was viewed as a measure of the flatness of the curve as a whole whereas the former measured the relative flatness at the mode. A variety of statistical measures of kurtosis have been published. Among them are the procedures
of Garrett (1940), McNemar (1956), and Tippett (1931). Garrett's method was chosen in the present study for the purpose of defining this treatment because a formula for computing the standard error for kurtosis also was provided. Garrett's formula for measuring kurtosis was given as:

\[ Ku = \frac{Q}{(P_{90} - P_{10})} \]

For the normal curve, Ku equals .26315.

The formula for the standard error of Ku was given as:

\[ \sigma_{Ku} = \frac{.27779}{Ku/N} \]

Where N equals sample size.

A general criteria for normality of kurtosis was given as those values being normal that do not exceed the limits of plus or minus three standard errors of Ku, providing that the distributions are not skewed.

The distributions selected for the present study represented as well as possible the range of published variations while at the same time staying within the limits of normality for all distributions and meeting the practical demands for implementing the study. The distributions used were all quasi-normal and forced. The mean for each was zero and each was perfectly symmetrical. Standard deviations varied as a function of Treatment A, the number of sorting
categories, and Treatment B, the number of statements.

Criteria met for defining the distributions and for meeting the assumptions underlying the Pearson product-moment correlation coefficient were:

1. All distributions were quasi-normal with respect to kurtosis on the basis of their all being within the limits of plus or minus three standard errors of Ku.

2. The similarity of mesokurtic distributions to other mesokurtic distributions having the same N but varying across the number of sorting categories was demonstrated by testing the difference in the extreme values where N equaled 150. Such an obtained difference would have occurred on the basis of chance 38 times in 100.

3. The similarity of platykurtic distributions to other platykurtic distributions having the same N but varying across the number of sorting categories was demonstrated by testing the difference in the extreme values where N equaled 150. Such an obtained difference would have occurred on the basis of chance 46 times in 100.

4. Determination of similarity of distributions disregarding both number of sorting categories and number of statements couldn't be based upon the standard error of Ku since it was partly a function of N. However, by inspection it can be seen that in most instances Ku was identical in value. Maximal differences were .009 for both mesokurtic and platykurtic distributions.
5. To establish that mesokurtic and platykurtic distributions were distinguishable from one another disregarding the number of sorting categories and the number of statements, reliance was placed upon the accuracy with which discriminations could be made by judging either the graphic presentation or numerical values of distributions. Since the standard error of $Ku$ was a partial function of $N$ as mentioned in 4 above, differences between mesokurtic and platykurtic distributions having small $N$ couldn't be demonstrated on this basis. Where $N$ was as large as 150, the minimum difference between the distributions' $Ku$ values were significant, there being 94 chances in 100 that the true difference exceeded zero.

The distributions used are represented in Figure 2, with their respective $Ku$ and $\sigma_{Ku}$ values.

Treatment C was presented to subjects in terms of variations in the graphic array. The arrangement of the squares for statement numbers varied within levels (sorting categories) according to the prescribed number of squares for a particular distribution, also taking account of the different number of squares for each level as a function of the total number of statements. As indicated in Figure 2, the number of squares at each level was predetermined for each subject in the design of the test booklet.

Treatment D, the wording of instructions, was varied in two ways: (1) emphatic and (2) ambiguous. Studies
FIGURE 2
THE DISTRIBUTIONS AND THEIR RESPECTIVE KU AND $\sigma_{KU}$ VALUES

<table>
<thead>
<tr>
<th>Category</th>
<th>N</th>
<th>Shape</th>
<th>Distribution</th>
<th>Ku</th>
<th>$\sigma_{KU}$</th>
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<td>.393</td>
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<tr>
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<td>.023</td>
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<td>.393</td>
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<td>&quot;</td>
<td>09-12-15-15-15-18-...</td>
<td>.300</td>
<td>.023</td>
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</table>
reviewed previously pointed to variations in instructions when the same label applied (e.g. ideal-self concept). It would then seem that instructions are of crucial importance in Q-Sort technique to assure that the appropriate phenomenological frame-of-reference is assumed by the subjects.

The wording of instructions followed what had been done in the past. They allowed for possible differences in response sets, since vagueness and ambiguity was introduced on one hand and specificity and emphasis was applied on the other.

Treatment D variations were as follows:

(1) Ambiguous instructions about the self-concept ratings.
"You are to rate as a person acts or feels how well each statement describes you as you see yourself today."

(2) Emphatic instructions about the self-concept ratings.
"You are to rate each statement according to how well it describes you as you see yourself today. Do not rate the statements as you think others see you!"

(3) Ambiguous instructions about the ideal-self concept ratings.
"You are to rate as a person acts or feels how well each statement describes how you would like
to be."

(4) Emphatic instructions about the ideal-self concept ratings.

"You are to rate each statement according to how well it describes how you would like to be. Do not rate the statements as you think others would like you to be!"

Dependent Variables. Since subjects within treatments rated each single statement twice, once for the self-concept description and once for the ideal-self concept description, there were two distributions of ratings over the same statements for every subject. This is the way the Q-Sort technique is usually applied. In addition, however, ratings had been secured from three independent groups of subjects on all the statements, each group basing its ratings on different instructional sets. One group of sixteen LSU freshmen girls who also lived in the women's residence halls rated the statements on a seven point scale according to the following instructions:

You are to judge the degree of social desirability or undesirability of each statement on the following pages. In other words, you are to rate how desirable or undesirable you would consider the behavior or characteristic in other individuals.

The instructions were phrased in a manner similar to that used by Edwards (1959) to define the social desirability dimension. The procedure used was somewhat different
in the present study from the usual approach in that an independent group of peers was employed for the social desirability rating rather than having the same subjects do both self description and social desirability ratings.

The girls' judgments were pooled across statements, and a mean rating was computed for each statement. These mean ratings were then regarded as the social desirability values (henceforth referred to as SD) of the statements. The SD values were assigned to each of the subjects in the analysis of variance design who had done the self concept and the ideal-self concept ratings. Thus a third distribution of ratings was secured involving the same statements for every subject; however, these ratings were assigned by an independent group of judges and not by the subjects themselves. The new distribution of ratings therefore followed a nomothetic procedure. Previous approaches toward achieving nomothetically based scores using the Q-Sort technique as reported in the literature have been derived from the sum of ratings over all the statements yielding a composite score; whereas, the present study preserves the separate ratings for each statement (Dymond, 1954; Reznikoff and Toomey, 1958). The reliability of the SD ratings was determined as .94 following a procedure developed by Horst (1949).

A second group of eighteen LSU freshmen girls, who also lived in the women's residence halls, rated the
statements on a seven point scale according to the following instructions:

Rate each statement on the following pages as to how much you feel that a person's saying the specific statement about himself would reflect a positive attitude toward the self. In other words would a person's saying that he is in full accord with the statement suggest approval of and respect for himself as a worthy person in his own way of thinking.

These instructions were to tap that quality of self-referent statements so commonly reported in the research on psychotherapy to be significantly associated with favorable therapeutic outcome. Rogers and Dymond (1954) and Rogers (1961) defined this as positive self-regard set as opposed to negative self-regard set.

As for the SD values, these girls' judgments were pooled across statements and a mean rating computed for each statement. These mean ratings were then considered the positive self-regard values (henceforth referred to as PR) for each statement. Again as for the SD values, the PR values were assigned to each of the subjects in the analysis of variance design. The distribution of PR ratings was, therefore, the fourth such distribution for each subject. The reliability of the PR ratings was determined as .91 following Horst (1949).

A group of fifteen clinical psychologists were also used to rate the Q-Sort items. They represent nine different places of employment in four different states—Louisiana (9), Kansas (4), Arizona (1), and Nebraska (1). Their
primary places of employment were as follows: state mental hospital (4); community guidance center (4); medical school faculty--two different schools represented (3); university--faculty--two different schools represented (2); Veterans Administration out-patient service (1); and private practice (1). The mean number of years experience for this group was 11 years. The range was from two to twenty-seven years of employment. Five of this group were diplomates in clinical or counseling psychology. Two of this group were women.

The fifteen clinical psychologists, rated the statements on a seven point scale according to the following instructions:

Rate each statement on the following pages as to how much you feel that a person's saying the specific statement about himself would indicate the attitude of a well adjusted person. In other words would a person saying that he is in full accord with the statement reflect a state of being more or less at one with himself and society.

The definition of the adjustment ratings was based in part upon the instructions which referred to both intrapersonal and social factors as relating to adjustment. Another important aspect of the definition was that of the judges themselves who by their specialized training and experience probably had a more explicit formulation of the term adjustment than do people in general.

These psychologists' judgments were treated as were the above SD and PR ratings. The mean rating for each
statement was considered the adjustment value (henceforth referred to as ADJ) for that statement. The ADJ distribution of ratings constituted the fifth and final such distribution for each subject. The reliability of the ADJ ratings was determined as .98 following the method of Horst (1949).

Hence, for each subject over all statements, there were five ratings, the self concept (S) and the ideal-self concept (I) viewed as idiosyncratically determined and the SD, PR, and ADJ viewed as nomothetically determined. From these five ratings, seven dependent variables were derived that were applied separately to the analysis of variance design. In order to remain clear on the meaning of these dependent variables, it is essential to keep the general theme of the study in mind, that theme being to measure the four treatments in terms of some commonly employed dependent variables. Each of the four treatments were in themselves an intrinsic part of the test so that the structure of the test itself as related to its type of scoring was the focus of attention. The subjects were not being studied. Consequently, the dependent variables do not apply to the subjects except as the subjects respond to the various features of the test design. For example, should the subjects within a given treatment show a significant treatment effect on self concept and ideal-self concept congruence, the conclusion would be that the treatment was
the factor contributing to the effect. An interpretation that the subjects apart from the specific test would be different in measured congruence from any of the other subjects that had been subjected to different treatments would not follow. As a further example, should the ADJ values be involved in significant treatment effects then these effects would be due to the test variables involved as related to the manner used to measure adjustment and not due to the actual adjustment of the subjects apart from the specific test situation. If an independent test purporting to measure congruence or adjustment were given to all subjects so that the test variables were the same for all, then the above hypothetical treatment effects would not obtain since subjects had been assigned randomly to the various treatments.

The seven dependent variables are listed and described below:

1. Pearson product-moment correlation between the self concept (S) and the ideal-self concept (I) expressed in terms of Fisher's Z score. The S and the I distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores to correct for the lack of normality in the distribution of \( r \). This correlation has been the usual way of expressing the results of the Q-Sort technique, and it has served to define degree of self-acceptance or self concept congruence.
The S-I correlation indicated the direction and strength of relationship between the way a person rated himself as he felt himself to be and the way he rated himself on the same statements as to his ideal-self conception. A positive correlation reflected agreement in "like self" for both ratings. The Fisher Z transformation permitted comparisons between different r values. Differences between subjects in different treatments in the magnitude of their S-I Z scores reflected the treatment effects upon the relationship of phenomenal self ratings and phenomenal ideal-self ratings.

2. Pearson product-moment correlation between the self concept (S) and the social desirability ratings (SD) expressed in terms of Fisher's Z score. The S and SD distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The S-SD correlation indicated the direction and strength of relationship between the way a person rated himself as he felt himself to be and highly socially desirable ratings on the same statements by peers. Differences between subjects in different treatments in the magnitude of their S-SD Z scores reflected the treatment effects upon the relationship of phenomenal self ratings and peer social desirability ratings.
3. Pearson product-moment correlation between the self concept (S) and the positive self-regard ratings (PR) expressed in terms of Fisher's Z score. The S and the PR distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The S-PR correlation indicated the direction and strength of relationship between the way a person rated himself as he felt himself to be and positive self-regard ratings on the same statements by peers. Differences between subjects in different treatments in the magnitude of their S-PR Z scores reflected the treatment effects upon the relationship of phenomenal self ratings and peer positive self-regard ratings.

4. Pearson product-moment correlation between the self concept (S) and the adjustment ratings (ADJ) expressed in terms of Fisher's Z score. The S and the ADJ distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The S-ADJ correlation indicated the direction and strength of relationship between the way a person rated himself as he felt himself to be and adjustment ratings on the same statements by clinical psychologists. A positive correlation reflected a "like self" description in agreement with good adjustment. Differences between subjects in different treatments in the magnitude of their S-ADJ Z scores reflected the treatment effects upon the relationship of
phenomenal self ratings and clinical psychologists' adjustment ratings.

5. **Pearson product-moment correlation** between the **ideal-self concept (I)** and the **social desirability ratings (SD)** expressed in terms of Fisher's Z score. The I and the SD distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The I-SD correlation indicated the direction and strength of relationship between the way a person rated himself as he felt he would like to be and highly socially desirable ratings on the same statements by peers. Differences between subjects in different treatments in the magnitude of their I-SD Z scores reflected the treatment effects upon the relationship of ideal-self ratings and peer social desirability ratings.

6. **Pearson product-moment correlation** between the **ideal-self concept (I)** and the **positive self-regard ratings (PR)** expressed in terms of Fisher's Z score. The I and the PR distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The I-PR correlation indicated the direction and strength of relationship between the way a person rated himself as he felt he would like to be and positive self-regard ratings on the same statements by peers. Differences between subjects in different treatments
in the magnitude of their I-PR Z scores reflected the treatment effects upon the relationship of ideal-self ratings and peer positive self-regard ratings.

7. Pearson product-moment correlation between the ideal-self concept (I) and the adjustment ratings (ADJ) expressed in terms of Fisher's Z score. The I and the ADJ distributions of ratings on the same statements for each subject were correlated and converted to Fisher's Z scores. The I-ADJ correlation indicated the direction and strength of relationship between the way a person rated himself as he felt he would like to be and adjustment ratings on the same statements by clinical psychologists. A positive correlation reflected agreement between "like ideal-self" and good adjustment. Differences between subjects in different treatments in the magnitude of their I-ADJ Z scores reflected the treatment effects upon the relationship of ideal-self ratings and clinical psychologists' adjustment ratings.

To further understand the meaning of the dependent variables, intercorrelations were computed between SD, PR, and ADJ. The Pearson product-moment correlations were corrected for attenuation. The uncorrected values were as follows: for SD and PR .91; for SD and ADJ .86; and for PR and ADJ .86. The corrected values were .98, .90, and .92 respectively.
Materials

Each subject assigned to the analysis of variance design was given a paper-and-pencil Q-Sort in booklet form. Variations in the specific content of the booklet reflected the different treatments within the design. Each booklet contained written instructions and the paper-and-pencil Q-Sort format with its means for registering responses. The size of the paper used in the booklet was 14-1/2 x 8 inches. The booklets were reproduced from stencils on a Multilith Duplicator. The instructions and statements were put on twenty-weight white paper having no rag content. The arrays of squares for the recording of responses were put on twenty-weight white bond paper having fifty per cent rag content.

The front page of the booklet contained general instructions that were the same for all subjects (see Figure 3). Its reverse side was blank. The front of the second sheet contained the appropriate specific instructions for the self-sort. Its reverse side contained the list of statements numbered consecutively from 1 to the last item in the list. A lined space preceded each number where a check mark could be placed conveniently. The front page of the third sheet, opposite to the statement page in the booklet, contained the appropriate array of squares for recording responses. This sheet's reverse side was blank. The front page of the fourth sheet contained the appropriate
FIGURE 3

SCHEMATIC ARRANGEMENT OF THE PAGES WITHIN THE TEST BOOKLETS WITH THE CONTENT ASSOCIATED WITH EACH PAGE

FACING

PAGE 1
General Instructions
Same for all Subjects

FACING

PAGE 3
Self Concept Instructions
Emphatic or ambiguous

FACING

PAGE 7
Ideal-self Concept Instructions
Emphatic or ambiguous

FACING

PAGE 9
Ideal-self Concept Instructions
Emphatic or ambiguous

BACK

PAGE 2
BLANK

BACK

PAGE 6
BLANK

FACING

PAGE 4
Statements
Order #1
50, 100, or 150

FACING

PAGE 8
Statements
Order #2
50, 100, or 150

FACING

PAGE 5
Graphic Array
50, 100, or 150 squares
7, 9, or 11 categories
Platykurtic or Mesokurtic shape

FACING

PAGE 10
BLANK

BACK

PAGE 6
BLANK

BACK
specific instructions for the ideal-sort. Its reverse side had the list of statements to which the ideal-sort instructions applied. The front page of the last sheet, opposite the ideal-sort statement page had its array of squares for recording the responses, it being the same as the other in each booklet, though arrays varied between booklets of different cells. The pages were stapled together on the long axis so as to open in usual book fashion.

These test booklets made practicable the administration of all 36 treatments simultaneously with all subjects together at a single sitting. By so doing, numerous group error effects such as differences in time and place of administration were eliminated that might otherwise be present if treatments had been given separately. Ten junior and senior girl counselors were used as proctors to make certain that instructions were complied with. Subjects were given the added motivation of an extra "late night" during the semester for participating in the study.
RESULTS

S-I. The effect of treatments upon the magnitude of self concept (S) and ideal-self concept (I) correlations expressed in terms of Fisher's Z scores are presented in Table 1 which summarizes the results of the analysis of variance. The main effect of variable B, number of statements, was significant at the five per cent level of confidence. The means, given as rs, for the different levels of B were as follows: fifty statements, .35, one hundred statements, .51, and one hundred and fifty statements, .49. The AD interaction, involving the number of sorting categories with the wording of instructions, was also significant at the five per cent level of confidence. The pertinent means for the AD interaction are shown in Table 2.

S-SD. The effect of treatments upon the magnitude of self concept (S) and social desirability (SD) correlations expressed in terms of Fisher's Z scores are presented in Table 3 which summarizes the results of this analysis of variance. For the S-SD, only variable B, number of statements, was significant at the five per cent level of confidence. The respective means given as rs, for the fifty, one hundred, and one hundred and fifty statement sorts were: .35, .49, and .47.
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MEAN VALUES EXPRESSED IN TERMS OF r FOR THE SIGNIFICANT INTERACTION OF THE S-I ANALYSIS

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**Analysis of Variance of Pearson Product-Moment Correlations Expressed in Terms of Fisher's Z Scores for the Self Concept (S) and Social Desirability (SD) Ratings**

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S-PR. Table 4 presents the analysis of variance summary showing the effect of treatments upon the magnitude of self-concept (S) and positive self-regard (PR) correlations expressed in terms of Fisher's Z scores. None of the F ratios was significant for either main or interaction sources of variation.

S-ADJ. The magnitude of self concept (S) and adjustment (ADJ) correlations expressed in terms of Fisher's Z scores as affected by the various treatments are presented in Table 5 which summarizes the results of the analysis of variance. Variable B, number of statements, was significant at the five per cent level of confidence. Means given in terms of rs, for the fifty, one hundred, and one hundred and fifty length sorts were respectively: .27, .44, and .40.

I-SD. Table 6 presents a summary of the analysis of variance on the magnitude of ideal-self concept (I) and social desirability (SD) correlations expressed in terms of Fisher's Z scores. The BD interaction, number of statements with wording of instructions, was significant at the one per cent level of confidence. The pertinent means are presented in Table 7.

I-PR. In Table 8, summarizing the analysis of variance results, are the effect of treatments upon the
### TABLE 4

ANALYSIS OF VARIANCE OF PEARSON PRODUCT-MOMENT CORRELATIONS EXPRESSED IN TERMS OF FISHER'S Z SCORES FOR THE SELF CONCEPT (S) AND POSITIVE SELF-REGARD (PR) RATINGS

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### TABLE 6

**ANALYSIS OF VARIANCE OF PEARSON PRODUCT-MOMENT CORRELATIONS EXPRESSED IN TERMS OF FISHER’S Z SCORES FOR THE IDEAL-SELF CONCEPT (I) AND SOCIAL DESIRABILITY (SD) RATINGS**

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## Table 8

### Analysis of Variance of Pearson Product-Moment Correlations Expressed in Terms of Fisher's Z Scores for the Ideal-Self Concept (I) and Positive Self-Regard (PR) Ratings

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magnitude of ideal-self concept (I) and positive self-regard (PR) correlations expressed in terms of Fisher's Z scores. The BD interaction, number of statements with wording of instructions, was significant at the one percent level of confidence. The pertinent means are presented in Table 9.

I-ADJ. Finally, Table 10 presents a summary of the analysis of variance design showing the effect of treatments upon the magnitude of ideal-self (I) and adjustment (ADJ) correlations expressed in terms of Fisher's Z scores. The BD interaction, number of statements with wording of instructions, was significant at the five percent level of confidence. The pertinent mean values are presented in Table 11.

In order to visualize more effectively the analysis of variance results across all seven designs, Table 12 presents the mean values (expressed in terms of the Pearson product-moment correlation following the calculation from Fisher's Z transformation) and the significance level for the main effects with a notation regarding the significant interactions.

For variable A, the relation between means within the SI analysis is dissimilar to the types of relations shown in any of the other analyses. The types of relations that hold for the S-SD, S-PR, and S-ADJ means are quite similar
TABLE 9

MEAN VALUES EXPRESSED IN TERMS OF r FOR THE SIGNIFICANT BD INTERACTION OF THE I-PR ANALYSIS

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<tr>
<td>ABC</td>
<td>4</td>
<td>.0222</td>
<td></td>
</tr>
<tr>
<td>ABD</td>
<td>4</td>
<td>.0522</td>
<td></td>
</tr>
<tr>
<td>ACD</td>
<td>2</td>
<td>.1269</td>
<td>1.42</td>
</tr>
<tr>
<td>BCD</td>
<td>2</td>
<td>.0318</td>
<td></td>
</tr>
<tr>
<td>ABCD</td>
<td>4</td>
<td>.0251</td>
<td></td>
</tr>
<tr>
<td>Within</td>
<td>108</td>
<td>.0892</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>143</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 11

MEAN VALUES EXPRESSED IN TERMS OF $r$ FOR THE SIGNIFICANT BD INTERACTION OF THE I-ADJ ANALYSIS

<table>
<thead>
<tr>
<th>Instructions</th>
<th>Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>$D_1$ Explicit</td>
<td>$B_1$ .59</td>
</tr>
<tr>
<td>$D_2$ Ambiguous</td>
<td>$B_1$ .45</td>
</tr>
</tbody>
</table>
TABLE 12

SUMMARY OF MAIN EFFECT MEANS EXPRESSED IN TERMS OF CORRELATIONS ACROSS THE SEVEN ANALYSES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>Type of Analyses</th>
<th>SI p</th>
<th>S-SD p</th>
<th>S-PR p</th>
<th>S-ADJ p</th>
<th>I-SD p</th>
<th>I-PR p</th>
<th>I-ADJ p</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>7</td>
<td></td>
<td>.45</td>
<td>.47</td>
<td>.46</td>
<td>.40</td>
<td>.54</td>
<td>.54</td>
<td>.53</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td></td>
<td>.45   (NS)</td>
<td>.46    (NS)</td>
<td>.45   (NS)</td>
<td>.39   (NS)</td>
<td>.57   (NS)</td>
<td>.58   (NS)</td>
<td>.57   (NS)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td>.46</td>
<td>.40</td>
<td>.33</td>
<td>.31</td>
<td>.51</td>
<td>.50</td>
<td>.48</td>
</tr>
<tr>
<td>B</td>
<td>50</td>
<td></td>
<td>.33</td>
<td>.35</td>
<td>.35</td>
<td>.27</td>
<td>.52</td>
<td>.52</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td></td>
<td>.51   (.05)</td>
<td>.49   (.05)</td>
<td>.47   (NS)</td>
<td>.41   (.05)</td>
<td>.56   (NS)</td>
<td>.56   (NS)</td>
<td>.54   (NS)</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td></td>
<td>.49</td>
<td>.47</td>
<td>.46</td>
<td>.40</td>
<td>.53</td>
<td>.53</td>
<td>.52</td>
</tr>
<tr>
<td>C</td>
<td>Platy</td>
<td></td>
<td>.42</td>
<td>.41</td>
<td>.40</td>
<td>.33</td>
<td>.54</td>
<td>.54</td>
<td>.53</td>
</tr>
<tr>
<td></td>
<td>Meso</td>
<td></td>
<td>.48</td>
<td>.47</td>
<td>.46</td>
<td>.40</td>
<td>.54</td>
<td>.54</td>
<td>.52</td>
</tr>
<tr>
<td>D</td>
<td>Explicit</td>
<td></td>
<td>.48</td>
<td>.46</td>
<td>.44</td>
<td>.38</td>
<td>.56</td>
<td>.56</td>
<td>.56</td>
</tr>
<tr>
<td></td>
<td>Ambiguous</td>
<td></td>
<td>.43</td>
<td>.43</td>
<td>.41</td>
<td>.34</td>
<td>.51</td>
<td>.51</td>
<td>.49</td>
</tr>
</tbody>
</table>

Significant Interactions
(See Tables 2, 7, 9, 11, for means)
AD (.05) BD (.05) BD (.01) BD (.05)
to one another and dissimilar to any of the other types of relations. In increasing order of magnitude mean values go from eleven to nine to seven categories. Also, the types of relations for the I-SD, I-PR, and the I-ADJ have an order in common dissimilar to any of the other orders. The increasing order of magnitude for these mean values go from eleven to seven to nine categories. However, in no case was variable A significant. The mean differences were relatively small in each instance.

For variable B, the types of relations within the different analyses show the same relative order increasing in value from fifty, to one-hundred and fifty, to one-hundred statements. As shown previously, three of the analyses were significant for variable B, number of statements. Mean differences for the remaining analyses are quite small.

The direction of the two means for variable C for SI, S-SD, S-PR, S-ADJ, and I-SD is the same with the platykurtic distribution having the lowest mean values. However, the mean differences were quite small. The means for variable C on I-PR are identical, whereas for I-ADJ the platykurtic mean is the highest. None of the analyses showed significant C effects.

The two means for variable D have the same relative order in magnitude for all of the analyses. The mean value is always highest with explicit instructions. Variable D
was not significant in any of the analyses, however, with analyses other than S-I involving I, variances were relatively large and came close to achieving significance at the five per cent level of confidence. Mean differences in the other analyses were quite small.

Table 13 shows the results of the group as a whole over all treatment conditions. On the character of the correlations between S and I ratings, the following descriptive facts were shown: The mean Z score was .49, corresponding with an r of .46; the range of r's was from -.49 to +.82; and the standard deviation for the distribution of Z's was .34, the corresponding r being .33.

From an examination of the results of S and SD correlations for the group as a whole, ignoring the various treatment conditions, the following descriptive facts were shown: the mean Z score was .47, corresponding with an r of .44; the range of r's was from -.35 to +.80; and the standard deviation for the distribution of Z's was .31, the corresponding r being .30.

Looking at the results of the group as a whole in terms of S and PR ratings, the following obtained: the mean Z score was .46, corresponding to an r of .43; the range of r's was from -.46 to +.81; and the standard deviation for the distribution of Z's was .29, the corresponding r being .28.
### TABLE 13

**SUMMARY OF DESCRIPTIVE STATISTICS EXPRESSED BY CORRELATION COEFFICIENTS FOLLOWING FISHER'S Z TRANSFORMATIONS FOR ALL ANALYSESignoring the treatment conditions**

<table>
<thead>
<tr>
<th>Analyses</th>
<th>Mean</th>
<th>Range</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-I</td>
<td>.46</td>
<td>-.49 to +.82</td>
<td>.33</td>
</tr>
<tr>
<td>S-SD</td>
<td>.44</td>
<td>-.35 to +.80</td>
<td>.30</td>
</tr>
<tr>
<td>S-PR</td>
<td>.43</td>
<td>-.41 to +.81</td>
<td>.28</td>
</tr>
<tr>
<td>S-ADJ</td>
<td>.36</td>
<td>-.63 to +.78</td>
<td>.31</td>
</tr>
<tr>
<td>Mean</td>
<td>.41</td>
<td>-.48 to +.80</td>
<td>.30</td>
</tr>
<tr>
<td>I-SD</td>
<td>.54</td>
<td>-.22 to +.75</td>
<td>.25</td>
</tr>
<tr>
<td>I-PR</td>
<td>.54</td>
<td>-.18 to +.74</td>
<td>.26</td>
</tr>
<tr>
<td>I-ADJ</td>
<td>.53</td>
<td>-.28 to +.79</td>
<td>.28</td>
</tr>
<tr>
<td>Mean</td>
<td>.54</td>
<td>-.23 to +.76</td>
<td>.26</td>
</tr>
<tr>
<td>Grand Mean</td>
<td>.48</td>
<td>-.36 to +.78</td>
<td>.28</td>
</tr>
</tbody>
</table>
Ignoring the differences among the various treatment conditions and viewing the group of subjects as a whole in terms of correlations between $S$ and $ADJ$, the following descriptive facts were shown: the mean $Z$ score was \( .38 \), corresponding to an $r$ of \( .36 \); the range of $r$'s was from $-.63$ to $+.78$; and the standard deviation for the distribution of $Z$'s was \( .32 \), the corresponding $r$ being \( .31 \).

The results of the group as a whole on the character of the correlations between $I$ and $SD$ ratings were as follows: the mean $Z$ score was \( .60 \), corresponding with an $r$ of \( .54 \); the range of $r$'s was from $-.22$ to $+.75$; and the standard deviation for the distribution of $Z$'s was \( .26 \), the corresponding $r$ being \( .25 \).

The character of the correlations between $I$ and $PR$ ratings for the group as a whole were as follows: the mean $Z$ score was \( .60 \), corresponding to an $r$ of \( .54 \); the range of $r$'s was from $-.18$ to $+.74$; and the standard deviation for the distribution of $Z$'s was \( .27 \), the corresponding $r$ being \( .26 \).

The results of the group as a whole on the character of the correlations between $I$ and $ADJ$ ratings were as follows: the mean $Z$ score was \( .59 \), corresponding to an $r$ of \( .53 \); the range of $r$'s was from $-.28$ to $+.79$; and the standard deviation of the distribution of $Z$'s was \( .29 \), the corresponding $r$ being \( .28 \).
A summary of descriptive statistics for respective analyses, ignoring all treatment conditions, showed general trends with respect to relations among types of analyses. Table 13 gives the various means and means of means to better illustrate these relations. The following seemed to hold for mean correlations: 1. S-I mean was in closer approximation to other means involving S than to others involving I, and 2. ignoring the S-I correlation, means involving S correlations were substantially smaller than means involving I correlations, and 3. the mean for S-ADJ was relatively low. Looking at the differences in ranges the following was shown: 1. the S-I range was in closer agreement with the means of ranges involving S than it was with means involving I, and 2. the mean range was smaller with I correlations, other than S-I, than it was with mean ranges of S correlations. With the standard deviations of the distributions of r the following was shown: 1. the S-I σ was greater than either the mean σ's for other S correlations or for mean σ's of other I correlations, and 2. the mean σ for S correlations, apart from the σ for S-I correlations, was larger than that for I correlations.
DISCUSSION

The critical analysis of this study will focus upon the two kinds of results reported. These are the analysis of variance results and the combined responses ignoring treatment conditions.

There was a striking difference between the dependent variables employed. The analysis of the S-I correlations was set apart in a significant way from the analysis of the S-SD, S-PR, S-ADJ, I-SD, I-PR, and I-ADJ. The difference had been referred to previously as a difference between idiographic and nomothetic approaches. In more concrete language, the self and ideal-self concept correlations were based upon two sets of responses for the subjects; whereas, the other correlations were based upon one set of responses related to an objectively determined system of scoring. The self and ideal-self concept sets of responses both varied between subjects while the scoring systems applied to them were the same for all subjects. The correlations based upon self and ideal-self ratings were operationally the same as the typical way of measuring self-acceptance. Correlations involving the objective scoring systems simply showed the relation of self concept and ideal-self concept separately to each of the objective systems of scoring.
As indicated in the definition of the dependent variables, it was shown clearly through the intercorrelations that the social desirability, positive self-regard, and adjustment ratings had a large amount of variance in common. Quite likely they are essentially measuring the same construct. The similarity of the three rating scales was demonstrated in the present study by the consistent trends for the main effects and some of their interactions for the self and the ideal analysis viewed separately. The trends over the separate analyses were not as remarkable as they might seem at first glance since each was done on the same subjects and the three rating scales were highly intercorrelated. Consequently, the seven separate analyses were anything but independent.

The measured similarity between rating scales, particularly social desirability with adjustment confirm Edwards' (1959) contention that the amount of variance unaccountable for by the social desirability dimension is negligible.

In the self concept--ideal-self concept analysis the significant main effect from number of statements could be attributable to the discrepancy in mean value for the fifty statement length from the means of one hundred and one hundred and fifty statements. Possibly the reason for such a significant effect can be attributable to a difference in reliability. As Mowrer (1953) has pointed out, with Q-Sorts of greater lengths there is greater reliability. Increased
reliability no doubt would increase the magnitude of the self and ideal-self concept correlation as was indicated in the present study with such an interpretation since the fifty statement mean was substantially lower than the others. On the basis of the significant effect from differences in number of statements, the conclusion is drawn that, in using the Q-Sort technique, smaller numbers of statements may yield significantly lower mean self and ideal-self concept correlations.

The significant interaction for sorting categories with instructions indicates that, with explicit instructions, the mean correlations for the nine and eleven sorting categories were higher than the mean for seven categories. Also, with ambiguous instructions, lower means were obtained with the nine and eleven sorting categories than with seven categories. Looking at the significant interaction another way, it is apparent that for seven categories the highest mean obtains with ambiguous instructions, whereas for the nine and eleven sorting categories the highest mean obtains for the explicit instructions.

The self-social desirability analysis also showed a significant main effect for difference in number of statements. The mean for the fifty statement length was lower than the other means. In this analysis it is shown that the effect holds when the self concept ratings are studied apart
from the ideal-self concept ratings.

At first glance, the complete lack of significance with the self concept ratings viewed alone in terms of positive self-regard indicates independence of this correlation from these parameters. However, the greatest contributor to variance in the analysis of variance was from the main effect of number of statements.

The only significant effect in the ideal-social desirability analysis occurred with the interaction between number of statements and wording of instructions. With this type of analysis, when instructions were explicit, the nature of effects were dependent upon the number of statements in the Q-technique. Under the conditions of explicit instructions, means were high with fifty and one hundred statement lengths and low with one hundred and fifty. On the other hand, with ambiguous instructions the means decrease from a high value with one hundred and fifty to a low at fifty. Conversely, from the point of view of variations in statement number, differential effects depend upon the type of instructions employed. The fifty and one hundred statement lengths had high means with explicit instructions, but the one hundred and fifty statement length was highest under conditions of ambiguous instructions. Though not achieving significance, the main effect of differences in instructions contributed the greatest variance aside from the above interaction variance.
The significant interaction of number of statements with wording of instructions in the ideal and positive self-regard analysis follows the same pattern among means as was present in the I-SD analysis. With explicit instructions or with ambiguous instructions, the effects were dependent upon the number of statements involved, or put the other way, differences in effects of number of statements were dependent upon the type of instructions.

In the ideal-adjustment analysis, only the interaction of number of statements with instructions was significant as was the case with I-SD and I-PR. The pattern of mean differences was also the same with each of the ideal self-concept analyses.

Looking at the results as a whole, and ignoring all treatment conditions, several conclusions may be drawn. The S-I correlations were in closer agreement with the S-SD, S-PR, and S-ADJ correlations along the dimensions of mean Z scores and range of r which might be a function of the greater contribution of the self ratings to the variance. The self concept rating was different from the ideal-self concept rating in terms of the mean Z scores which were lower for self and of the range which was greater for self. Conversely, correlations involving the ideal aside from the S-I correlation, were less variable. This suggests the stereotypic nature of I, confirmed by the higher correlations with SD, PR, and ADJ which are nomothetically derived. The S-ADJ
correlations seemed significantly lower than all other correlations, including S-PR. Subjects were not describing themselves in a manner deemed indicative of adjustment by experts. There was no way of verifying how "real" this effect was, and it could mean that the experts were "out of touch" with the subjects as much as the subjects themselves being poorly adjusted. The expert rating was for people in general and not specially aimed at this particular homogeneous group of subjects. A notion of general adjustment seemed more meaningful, and it more likely would yield greater reliability in psychologists' ratings.

The most striking feature of the study was the scarcity of significant effects. This could be due to the large intersubject variability. Though the group was assumed to be highly homogeneous on the basis of similarity on some vital characteristic prescribed by membership in the freshmen girl, residence hall groups, they gave a wide range of responses. Subject modal age fell at what may be described as late adolescence. Perhaps the variations in test responses reflected the different ranges of "ups and downs" in temperament thought typical for this age group. It may be that, being beginning freshmen, the girls were responding differentially to the stressful impact of college life thus inflating the variance. Regardless of these possibilities, the group may still be regarded as homogeneous by definition and representative of their population. Generalization of results to
similar homogeneous groups remains to be justified.

Another possible reason for excessive inter-subject variability might be higher variability of the Q-Sort technique employed in this study. The best way to assess whether the Hilden Q-Sorts are more variable than other published Q-Sorts would be through a study attempting to test this problem directly. Such a study has not been done. A comparison can be made simply on the basis of similarity of content between the Hilden sorts and, for example, the Butler and Haigh sort. A cursory inspection of the two sorts gave the impression that no essential difference is present.

Comparison of different sorts on different subjects have a confounding effect, but may still be of interest. Hilden (1958) found the mean correlations for twenty self and ideal-self concept Q-Sorts for each of four male graduate students in psychology to be .81, .76, .51, and .81. Butler and Haigh (1954) found a range of self and ideal self concept sorts on twenty-five clinic patients to be from -.47 to +.59. The mean was -.01. For a group of sixteen normal adults used as controls in the Butler and Haigh study, the range was -.01 to +.86. The mean correlation was .58. What seems of interest here, aside from the obvious differences in sample size and characteristics of subjects, is that the ranges of correlations in the studies quoted all fall within the range of the present study, illustrating the remarkable variation. The late adolescent group sampled included persons who
responded in a manner similar to a patient population and also similar to normal adults.

Aside from the few significant effects noted, the principal finding of the study was the lack of significant effects when aspects of method and procedure are varied. With such evidence, the latitude of the typically-used procedures regarding construct irrelevant variables in Q-Sort procedure seem more defensible, and it is likely that similar variations occurring in previous studies are likely not to have played a confounding role in the results.
SUMMARY

The purpose of this study was to investigate, by means of analyses of variance designs, the effects of four parameters of the Q-Sort technique upon several dependent variables considered pertinent to Q-Sort procedures. The parameters selected to be studied were among those regarded as construct-irrelevant which could contribute to method or error variance in most research endeavors. The literature regarding Q-Sort techniques indicated a need for such a study since the possible effects of a number of variables were being ignored and since there had been increasing efforts made to compare results from different studies in spite of radical differences in procedure. The parameters chosen for the study were clearly represented in the literature and seemed to be possible significant contributors to method variance. The particular variations employed for each parameter were also representative of the types of variations used in previous studies.

The parameters were: A) number of sorting categories varying as seven, nine, and eleven; B) number of statements varying as fifty, one hundred, and one hundred and fifty; C) type of distribution varying as platykurtic and mesokurtic; and D) wording of instructions varying as explicit and ambiguous. The statements were selected from Hildven's random sets.
of personal concepts.

The dependent variables were derived from the intercorrelations of five sets of ratings on the same Q-Sort statements for each subject. Two of the ratings were the usual phenomenal self-concept (S) and ideal-self (I) concept ratings secured in the Q-Sort procedure. The remaining ratings were nomothetically derived by using the mean ratings for each statement from three independent groups of raters. One group of sixteen raters were peers of the subjects, rating according to the social desirability (SD) dimension as conventionally defined. The reliability of the mean rating was .94. A second group of eighteen, also peers of the subjects, rated according to a dimension of positive self-regard (PR), as defined by Rogers. The reliability of the mean rating was .91. The third source of nomothetically derived ratings were obtained from a group of fifteen clinical psychologists rating adjustment (ADJ) defined loosely as involving both intra-personal and social factors. The reliability of this mean rating was .98.

The procedure employed 3 x 3 x 2 x 2 analyses of variance designs with four within cells replications. Subjects were 144 Louisiana State University freshmen girls residing in the women's residence halls who were assigned randomly to the thirty-six treatment conditions. All treatments, which constituted the parameters studied, were administered simultaneously by means of a group testing procedure. The
test yielded self concept and ideal-self concept ratings on the same statements to which were added the three distributions based on group means. From these five distributions, seven intercorrelations were considered appropriate measures. These seven pairs of distributions yielded Pearson product-moment correlations for each subject that were transformed to Fisher's Z scores and then subjected separately to the following analyses of variance designs: (1) self concept with ideal-self concept (SI), (2) self concept with social desirability (S-SD), (3) self concept with positive self-regard (S-PR), (4) self concept with adjustment (S-ADJ), (5) ideal-self concept with social desirability (I-SD), (6) ideal-self concept with positive self-regard (I-PR), and (7) ideal-self concept with adjustment (I-ADJ).

Additional correlations between social desirability, positive self-regard and adjustment were computed and corrected for attenuation to show the relationship between the three sets of group ratings which were .98 for SD and PR, .90 for SD and ADJ, and .92 for PR and ADJ. Such high intercorrelations and the similar treatment effects upon the SD, PR, and ADJ ratings indicate that each accounts for the same large segment of variance.

The only main effect showing significance was for differences in numbers of statements. The fifty statement length had the smallest mean correlation. The relatively low mean was found significant for the S-I, S-SD, and S-ADJ
analyses. The AD interaction was also significant with the S-I analysis. The BD interaction was significant with the I-SD, I-PR, and I-ADJ analyses while wording of instructions, variable D, was the only main effect that approached significance. The correlations involving I were greater than those involving S, and they showed less variability.

The study gives some support to Edwards' (1957) position that the social desirability dimension accounts for the greater portion of variance in self report techniques. The study showed that ideal ratings tend to be higher in terms of SD, PR, and ADJ than are self ratings and that ideal ratings are less variable—suggestive of a stereotyped character. Correlations were significantly smaller when fifty statement lengths were used compared with one hundred or more. The interaction effect of number of statements and instructions were significant when ideal sorts were considered apart from self sorts.

The principal finding of the study was the relative absence of significant effects when some construct irrelevant variables are changed, leading to the conclusion that the Q-Sort technique is relatively insensitive to error variance attributable to variations in method and procedure.
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APPENDICES
APPENDIX A

SETS 10, 11, AND 14 OF HILDEN'S RANDOM SETS OF PERSONAL CONCEPTS

SET 10

1. I get alarmed easily
2. I worry about what may happen
3. I tend to take charge of things
4. I am clear and distinct in my mind
5. I am clumsy and awkward
6. I feel I am an important person
7. I like to work with others
8. I look down on and despise others
9. I get disgusted easily
10. Life seems dreary
11. I dream a great deal
12. I love to eat
13. It takes great effort to get things done
14. I recover quickly from setbacks
15. I endeavor to do my best
16. I am better than others
17. I often falter and hesitate
18. I believe in fate
19. I can become violent and savage
20. I feel I am forging ahead
21. I tend to gossip
22. I am grateful for favors
23. I tend to avoid giving direct answers
24. Life seems hollow
25. I am guided by ideals of what ought to be
26. Life seems impossible
27. I tend to injure people's feelings
28. I have a keen mind
29. I feel lonely
30. I do not keep things neat and in order
31. I like to mingle with people
32. I feel something is missing in my life
33. I feel there are obstacles in my way
34. I am just ordinary
35. I have pious and reverent feelings
36. I pretend, conceal my real feelings
37. I have a good record
38. I like to help people in distress
39. I relish my meals
40. I am a remarkable person
41. I feel safe and secure
42. I feel spent, worn out
43. I suffer from misery
44. I give support and encourage people
45. I have talent
46. I do my work thoroughly
47. I am an unwilling person
48. I seek variety
49. I am vigorous and strong
50. I incline to deeds of virtue and moral goodness
84

SET 11

1. I yield completely to my feelings
2. I seek advice a great deal
3. I am wide awake, quick to notice
4. I feel to blame when things go wrong
5. I feel bored
6. I like to have a gay time
7. I stand on ceremony, being very polite
8. I help the poor and needy
9. I cheat when a chance comes
10. Life seems a struggle
11. I am crooked, dishonest
12. I am fond of dancing
13. I suffer from a sense of defeat
14. I deserve more than I have
15. I tend to be dirty, not clean
16. I feel in a state of disorder
17. I am bothered by drowsy feelings
18. I endeavor to do my best
19. I am not easily disturbed nor angered
20. I like to show off and display myself
21. Experience has brought me skill and knowledge
22. I tend to lay bare my feelings and thoughts
23. I do things with expression and feeling
24. I face matters squarely
25. I am fare in my dealings
26. I fare very well
27. I generally am fortunate
28. I look to the future
29. I am gay and full of fun
30. I tend to bear grudge and ill will
31. I tend to interfere with plans of others
32. I like to join others in doing things
33. I feel lost
34. I like to make things
35. I moan about my lot
36. I am neutral, not definite
37. I tend to punish people
38. I relish my meals
39. I tend to rush around
40. I am satisfied and contented
41. I can be savage and fierce
42. I am a poor scholar
43. I am shrewd in practical affairs
44. I am a skilled person
45. I like solitude
46. I am stupid
47. I act swiftly
48. I tease people
49. I value some things in life very highly
50. I tend to look to the welfare of others
1. I like to plead another's cause
2. I am highly disturbed
3. I like to amuse and entertain people
4. I feel like a stupid fool
5. I seem to be putting up with a lot
6. I am calm
7. I am a charming person
8. I feel close to those near me
9. I hold to definite convictions
10. I like to discuss matters
11. I tend to displease others
12. I am bothered by drowsy feelings
13. I feel on edge
14. I enjoy living
15. I am liable to overlook important things
16. I have many faults
17. I have very great natural powers of mind
18. I express feelings of being burdened
19. I tend to halt and hesitate
20. I tend to interfere with plans of others
21. I am inclined to tell lies
22. Many of my desires are not fulfilled
23. I am a modest person
24. I suffer from mortal terror
25. I tend to lay bare my feelings and thoughts
26. I am patient
27. I love to play
28. I seek pleasure and enjoyment
29. I pretend, conceal my real feelings
30. I have great pride in my own worth
31. I get drawn into scraps and fights
32. I incline to tender sentiments
33. I am simple and plain
34. I tend to slight people
35. I feel I am someone special
36. I like to spy on others
37. I am strict with others
38. I am easy to suit
39. I am sustained by hopes for the future
40. I am sympathetic with people
41. Time passes slowly
42. I am readily torn by conflicting feelings
43. I like to travel long distances on foot
44. I feel uncomfortable, uneasy
45. I have a clear understanding of situations
46. I do things in a uniform manner, always the same
47. I have vivid feelings, am full of life
48. I feel whole, sound, and complete
49. I am wise
50. I have the spirit of youth
APPENDIX B

EXAMPLES OF INSTRUCTIONS FOR RATING SCALES AND
PROCEDURE FOLLOWED IN RATING SD, PR, AND ADJ
ON STATEMENTS LISTED IN APPENDIX A
Instructions

You are to judge the degree of social desirability or undesirability of each statement on the following pages. In other words you are to rate how desirable or undesirable you would consider the behavior or characteristic in other individuals.

Record your rating by placing an X in the numbered space opposite each statement assuming in each instance that a person considers the statement like himself. The ratings vary from highly socially undesirable to highly socially desirable. High scale values indicate statements that are socially desirable and low scale value statements that are socially undesirable.

Remember, you are to assume that a person considers the statement as like himself.

EXAMPLES:

1. Scale values of 1, 2, 3 are SOCIALLY UNDESIRABLE. The following statement is given a low scale value to indicate its undesirability.

"I put on a false front" 1: X: 2: 3: 4: 5: 6: 7

2. Scale values of 5, 6, 7 are SOCIALLY DESIRABLE. The following statement is given a high scale value to indicate its desirability.

"I am a responsible person" 1: 2: 3: 4: X: 5: 6: 7

3. Scale value of 4 is NEUTRAL. The following statement is given the middle scale value to indicate its neutrality.

"I am impulsive" 1: 2: 3: X: 4: 5: 6: 7

Now turn the page and proceed as directed.
Instructions

Rate each statement on the following pages as to how much you feel that a person's saying the specific statement about himself would reflect a positive attitude toward the self. In other words would a person's saying that he is in full accord with the statement suggest approval of and respect for himself as a worthy person in his own way of thinking.

Record your rating by placing an X in the numbered space opposite each statement assuming in each instance that a person considers the statement like himself. An X in the space over number 7 would reflect a very high positive self-regard; whereas, an X in the space over number 1 would reflect very low positive self-regard. An X in a space between those numbered 1 and 7 if nearer to number 7 indicates greater value and if nearer to number 1 indicates lesser value. Remember, you are to assume that the person considers the statement as like himself.

EXAMPLES:

1. A statement rated very low in positive self-regard.

"I put on a false front"

\[
\begin{array}{ccccccc}
  & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
X & - & - & - & - & - & - & - \\
\end{array}
\]

2. A statement rated very high in positive self-regard.

"I am a responsible person"

\[
\begin{array}{ccccccc}
  & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
- & - & - & - & - & - & X \ \\
\end{array}
\]

3. A statement rated intermediate in positive self-regard.

"I am impulsive"

\[
\begin{array}{ccccccc}
  & 1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\hline
- & - & - & - & X & - & - & - \\
\end{array}
\]

Now turn the page and proceed as directed.
Instructions

Rate each statement on the following pages as to how much you feel that a person’s saying the specific statement about himself would indicate the attitude of a well adjusted person. In other words would a person saying that he is in full accord with the statement reflect a state of being more or less at one with himself and society.

Record your rating by placing an X in the numbered space opposite each statement assuming in each instance that a person considers the statement like himself. An X in the space over number 7 would indicate a very high level of adjustment; whereas, an X over number 1 would indicate a very low level of adjustment. An X value in a space between those numbered 1 and 7 if nearer to number 7 indicates greater value and if nearer to number 1 indicates lesser value. Remember, you are to assume that the person considers the statement as like himself.

EXAMPLES:

1. A statement rated very low in level of adjustment.
   "I put on a false front"
   
   \[
   \begin{array}{ccccccc}
   1 & 2 & 3 & 4 & 5 & 6 & 7 \\
   X & \_ & \_ & \_ & \_ & \_ & \_ \\
   \end{array}
   \]

2. A statement rated very high in level of adjustment.
   "I am a responsible person"
   
   \[
   \begin{array}{ccccccc}
   1 & 2 & 3 & 4 & 5 & 6 & X \\
   \_ & \_ & \_ & \_ & \_ & \_ & X \\
   \end{array}
   \]

3. A statement rated intermediate in level of adjustment.
   "I am impulsive"
   
   \[
   \begin{array}{ccccccc}
   1 & 2 & 3 & 4 & 5 & 6 & 7 \\
   1 & 2 & X & \_ & \_ & \_ & \_ \\
   \end{array}
   \]

Now turn the page and proceed as directed.
# APPENDIX C

## TABLE IDENTIFYING THE TREATMENT CONDITIONS BY CELL NUMBERS

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## TEST CONTENT BY PAGE NUMBER OF APPENDIX E OF EACH TREATMENT COMBINATION IDENTIFIED BY CELL NUMBER IN APPENDIX C

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APPENDIX E

CONTENT OF TEST BOOKLETS

**General Instructions:** We are trying to develop this personality measure and appreciate your cooperation. There are no "right" or "wrong" answers to the questions contained in this booklet.

You will not be identified in any way so that you can feel free in being completely frank with your responses. When responding, it is most often best to do so on the basis of first impressions though occasions will arise when you feel a more considered response is called for. You will be working at your own speed since time is not a factor. Obviously, because people have different response habits, some will finish before others. Do not let this trouble you for we are not interested in who finishes first or last.

**A response should be made to every item.** If help is needed with instructions raise your hand and a proctor will assist you. Now turn the page--read the next instructions silently and proceed as directed.
PART I

Instructions

Read all the statements appearing on the following page, then place the number of each statement in one of the little squares on the adjacent page to show how well the statement applies. (Hold your place here while turning this page for glancing at the way the following two pages are arranged.)

You are to rate each statement according to how well it describes you as you see yourself today. Do not rate the statements as you think others see you!

In the squares of the top level place the numbers of the statements that are most applicable to you. In the squares of the next level place the numbers of statements that are a little less applicable to you and so on. Numbers of statements least applicable are to be placed in the bottom level of squares. Fill in the squares in any order you wish. Order of placement within each level is not important. Any arrangement of the numbers within a level is all right. What is important is the placement at different levels. Check off each statement as you put its number in a square. Put numbers in lightly at first so they can be erased easily in case you wish to change the position of a number from one level to another. Remember, this is not a test!

Turn the page and proceed as directed above.
PART I

Instructions

Read all the statements appearing on the following page, then place the number of each statement in one of the little squares on the adjacent page to show how well the statement applies. (Hold your place here while turning this page for glancing at the way the following two pages are arranged.)

You are to rate as a person acts or feels how well each statement describes you as you see yourself today.

In the squares of the top level place the numbers of the statements that are most applicable to you. In the squares of the next level place the numbers of the statements that are a little less applicable to you and so on. Numbers of statements least applicable are to be placed in the bottom level of squares. Fill in the squares in any order you wish. Order of placement within each level is not important. Any arrangement of the numbers within a level is all right. What is important is the placement at different levels. Check off each statement as you put its number in a square. Put numbers in lightly at first so they can be erased easily in case you wish to change the position of a number from one level to another. Remember, this is not a test!

Turn the page and proceed as directed above.
PART II

Instructions

Read all the statements appearing on the following page, then place the number of each statement in one of the little squares on the adjacent page to show how well the statement applies.

You are to rate each statement according to how well it describes how you would like to be. Do not rate the statements as you think others would like you to be!

In the squares of the top level place the numbers of the statements that are most applicable to your personal ideal. In the squares of the next level place the numbers of the statements that are a little less applicable to your personal ideal and so on. Numbers of statements least applicable are to be placed in the bottom level of squares. Fill in the squares in any order you wish. Order of placement within each level is not important. Any arrangement of the numbers within a level is all right. What is important is the placement at different levels. Check off each statement as you put its number in a square. Put numbers in lightly at first so they can be erased easily in case you wish to change the position of a number from one level to another.

Turn the page and proceed as directed above.
PART II

Instructions

Read all the statements appearing on the following page, then place the number of each statement in one of the little squares on the adjacent page to show how well the statement applies.

You are to rate as a person acts or feels how well each statement describes how you would like to be.

In the squares of the top level place the numbers of the statements that are most applicable to your personal ideal. In the squares of the next level place the numbers of the statements that are a little less applicable to your personal ideal and so on. Numbers of statements least applicable are to be placed in the bottom level of squares.

Fill in the squares in any order you wish. Order of placement within each level is not important. Any arrangement of the numbers within a level is all right. What is important is the placement at different levels. Check off each statement as you put its number in a square. Put numbers in lightly at first so they can be erased easily in case you wish to change the position of a number from one level to another.

Turn the page and proceed as directed above,
FIFTY STATEMENTS FOR SELF

1. I get alarmed easily
2. I worry about what may happen
3. I tend to take charge of things
4. I am clear and distinct in my mind
5. I am clumsy and awkward
6. I feel I am an important person
7. I like to work together with others
8. I look down on and despise others
9. I get disgusted easily
10. Life seems dreary
11. I dream a great deal
12. I love to eat
13. It takes great effort to get things done
14. I recover quickly from setbacks
15. I endeavor to do my best
16. I am better than others
17. I often falter and hesitate
18. I believe in fate
19. I can become violent and savage
20. I feel I am forging ahead
21. I tend to gossip
22. I am grateful for favors
23. I tend to avoid giving direct answers
24. Life seems hollow
25. I am guided by ideals of what ought to be
26. Life seems impossible
27. I tend to injure people's feelings
28. I have a keen mind
29. I feel lonely
30. I do not keep things neat and in order
31. I like to mingle with people
32. I feel something is missing in my life
33. I feel there are obstacles in my way
34. I am just ordinary
35. I have pious and reverent feelings
36. I pretend, conceal my real feelings
37. I have a good record
38. I like to help people in distress
39. I relish my meals
40. I am a remarkable person
41. I feel safe and secure
42. I feel spent, worn out
43. I suffer from misery
44. I give support and encourage people
45. I have talent
46. I do my work thoroughly
47. I am an unwilling person
48. I seek variety
49. I am vigorous and strong
50. I incline to deeds of virtue and moral goodness
FIFTY STATEMENTS FOR IDEAL

1. Life seems hollow
2. I feel I am an important person
3. I endeavor to do my best
4. I relish my meals
5. I love to eat
6. I give support and encourage people
7. I incline to deeds of virtue and moral goodness
8. I have a good record
9. I look down on and despise others
10. I feel something is missing in my life
11. Life seems dreary
12. Life seems impossible
13. I often falter and hesitate
14. I tend to injure people's feelings
15. It takes great effort to get things done
16. I worry about what may happen
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18. I feel lonely
19. I have pious and reverent feelings
20. I am just ordinary
21. I can become violent and savage
22. I tend to gossip
23. I feel I am forging ahead
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25. I suffer from misery
26. I believe in fate
27. I like to help people in distress
28. I am clumsy and awkward
29. I pretend, conceal my real feelings
30. I get disgusted easily
31. I have talent
32. I feel spent, worn out
33. I am better than others
34. I am clear and distinct in my mind
35. I like to work together with others
36. I am vigorous and strong
37. I feel there are obstacles in my way
38. I like to mingle with people
39. I tend to take charge of things
40. I dream a great deal
41. I tend to avoid giving direct answers
42. I am grateful for favors
43. I have a keen mind
44. I do not keep things neat and in order
45. I am guided by ideals of what ought to be
46. I recover quickly from setbacks
47. I do my work thoroughly
48. I seek variety
49. I am a remarkable person
50. I am an unwilling person
ONE HUNDRED STATEMENTS FOR SELF

1. I get alarmed easily
2. I worry about what may happen
3. I tend to take charge of things
4. I am clear and distinct in my mind
5. I am clumsy and awkward
6. I feel I am an important person
7. I like to work together with others
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17. I often falter and hesitate
18. I believe in fate
19. I can become violent and savage
20. I feel I am forging ahead
21. I tend to gossip
22. I am grateful for favors
23. I tend to avoid giving direct answers
24. Life seems hollow
25. I am guided by ideals of what ought

51. I yield completely to my feelings
52. I seek advice a great deal
53. I am wide awake, quick to notice
54. I feel to blame when things go wrong
55. I feel bored
56. I like to have a gay time
57. I stand on ceremony, being very polite
58. I help the poor and needy
59. I cheat when a chance comes
60. Life seems a struggle
61. I am crooked, dishonest
62. I am fond of dancing
63. I suffer from a sense of defeat
64. I deserve more than I have
65. I tend to be dirty, not clean
66. I feel in a state of disorder
67. I am bothered by drowsy feelings
68. I endeavor to do my best
69. I am not easily disturbed nor angered
70. I like to show off and display myself
71. Experience has brought me skill and knowledge
72. I tend to lay bare my feelings and thoughts
73. I do things with expression and feeling
74. I face matters squarely
to be
26. Life seems impossible
27. I tend to injure peoples feelings
28. I have a keen mind
29. I feel lonely
30. I do not keep things neat and in order
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43. I suffer from misery
44. I give support and encourage people
45. I have talent
46. I do my work thoroughly
47. I am an unwilling person
48. I seek variety
49. I am vigorous and strong
50. I incline to deeds of virtue and moral goodness

75. I am fair in my dealings
76. I fare very well
77. I generally am fortunate
78. I look to the future
79. I am gay and full of fun
80. I tend to bear grudge and ill will
81. I tend to interfere with plans of others
82. I like to join others in doing things
83. I feel lost
84. I like to make things
85. I moan about my lot
86. I am neutral, not definite
87. I tend to punish people
88. I relish my meals
89. I tend to rush around
90. I am satisfied and contented
91. I can be savage and fierce
92. I am a poor scholar
93. I am shrewd in practical affairs
94. I am a skilled person
95. I like solitude
96. I am stupid
97. I act swiftly
98. I tease people
99. I value some things in life very highly
100. I tend to look to the welfare of others
ONE HUNDRED STATEMENTS FOR IDEAL

1. Life seems hollow
2. I feel I am an important person
3. I endeavor to do my best
4. I relish my meals
5. I love to eat
6. I give support and encourage people
7. I incline to deeds of virtue and moral goodness
8. I have a good record
9. I look down on and despise others
10. I feel something is missing in my life
11. Life seems dreary
12. Life seems impossible
13. I often falter and hesitate
14. I tend to injure people's feelings
15. It takes great effort to get things done
16. I worry about what may happen
17. I get alarmed easily
18. I feel lonely
19. I have pious and reverent feelings
20. I am just ordinary
21. I can become violent and savage
22. I tend to gossip
23. I feel I am forging ahead
24. I feel safe and secure
25. I suffer from misery

51. I look to the future
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53. I relish my meals
54. I stand on ceremony, being very polite
55. I am satisfied and contented
56. I am not easily disturbed nor angered
57. I like to make things
58. I value some things in life very highly
59. I cheat when a chance comes
60. I endeavor to do my best
61. I am fond of dancing
62. I suffer from a sense of defeat
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64. I deserve more than I have
65. I feel to blame when things go wrong
66. I tend to look to the welfare of others
67. I like to show off and display myself
68. I help the poor and needy
69. I do things with expression and feelings
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31. I have talent
32. I feel spent, worn out
33. I am better than others
34. I am clear and distinct in my mind
35. I like to work together with others
36. I am vigorous and strong
37. I feel there are obstacles in my way
38. I like to mingle with people
39. I tend to take charge of things
40. I dream a great deal
41. I tend to avoid giving direct answers
42. I am grateful for favors
43. I have a keen mind
44. I do not keep things neat and in order
45. I am guided by ideals of what ought to be
46. I recover quickly from setbacks
47. I do my work thoroughly
48. I seek variety
49. I am a remarkable person
50. I am an unwilling person

77. I tend to lay bare my feelings and thoughts
78. I am neutral, not definite
79. I generally am fortunate
80. I like to join others in doing things
81. I am bothered by drowsy feelings
82. I seek advice a great deal
83. I feel lost
84. I am a poor scholar
85. I am a skillful person
86. I tend to punish people
87. I tend to bear grudge and ill will
88. I yield completely to my feelings
89. I tease people
90. I face matters squarely
91. I fare very well
92. I am stupid
93. I am shrewd in practical affairs
94. I moan about my lot
95. Life seems a struggle
96. I tend to interfere with plans of others
97. I am gay and full of fun
98. I feel bored
99. I can be savage and fierce
100. Experience has brought me skill and knowledge
ONE HUNDRED AND FIFTY STATEMENTS FOR SELF

1. I get alarmed easily
2. I worry about what may happen
3. I tend to take charge of things
4. I am clear and distinct in my mind
5. I am clumsy and awkward
6. I feel I am an important person
7. I like to work with others
8. I look down on and despise others
9. I get disgusted easily
10. Life seems dreary
11. I dream a great deal
12. I love to eat
13. It takes great effort to get things done
14. I recover quickly from setbacks
15. I endeavor to do my best
16. I am better than others
17. I often falter and hesitate
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19. I can become violent and savage
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94. I am a skilled person
95. I like solitude
96. I am stupid
97. I act swiftly
98. I tease people
99. I value some things in life very highly
100. I tend to look to the welfare of others
26. Life seems impossible
27. I tend to injure people's feelings
28. I have a keen mind
29. I feel lonely
30. I do not keep things neat and in order
31. I like to mingle with people
32. I feel something is missing in my life
33. I feel there are obstacles in my way
34. I am just ordinary
35. I have pious and reverent feelings
36. I pretend, conceal my real feelings
37. I have a good record
38. I like to help people in distress
39. I relish my meals
40. I am a remarkable person
41. I feel safe and secure
42. I feel spent, worn out
43. I suffer from misery
44. I give support and encourage people
45. I have talent
46. I do my work thoroughly
47. I am an unwilling person
48. I seek variety
49. I am vigorous and strong
50. I incline to deeds of virtue and

101. I like to plead another's cause
102. I am highly disturbed
103. I like to amuse and entertain people
104. I feel like a stupid fool
105. I seem to be putting up with a lot
106. I am calm
107. I am a charming person
108. I feel close to those near me
109. I hold to definite convictions
110. I like to discuss matters
111. I tend to displease others
112. I am bothered by drowsy feelings
113. I feel on edge
114. I enjoy living
115. I am liable to overlook important things
116. I have many faults
117. I have very great natural powers of mind
118. I express feelings of being burdened
119. I tend to halt and hesitate
120. I tend to interfere with plans of others
121. I am inclined to tell lies
122. Many of my desires are not fulfilled
123. I am a modest person
124. I suffer from mortal terror
125. I tend to lay bare my feelings and
moral goodness

51. I yield completely to my feelings
52. I seek advice a great deal
53. I am wide awake, quick to notice
54. I feel to blame when things go wrong
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56. I like to have a gay time
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70. I like to show off and display myself
71. Experience has brought me skill and knowledge
72. I tend to lay bare my feelings and thoughts
73. I do things with expression and feeling
74. I face matters squarely
75. I am fair in my dealings

thoughts

126. I am patient
127. I love to play
128. I seek pleasure and enjoyment
129. I pretend, conceal my real feelings
130. I have great pride in my own worth
131. I get drawn into scraps and fights
132. I incline to tender sentiments
133. I am simple and plain
134. I tend to slight people
135. I feel I am someone special
136. I like to spy on others
137. I am strict with others
138. I am easy to suit
139. I am sustained by hopes for the future
140. I am sympathetic with people
141. Time passes slowly
142. I am readily torn by conflicting feelings
143. I like to travel long distances on foot
144. I feel uncomfortable, uneasy
145. I have a clear understanding of situations
146. I do things in a uniform manner, always the same
147. I have vivid feelings, am full of life
148. I feel whole, sound, and complete
149. I am wise
150. I have the spirit of youth
<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
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<tbody>
<tr>
<td>1</td>
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<td>118</td>
<td>I do things in a uniform manner, always the same</td>
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<td>119</td>
<td>I express feelings of being burdened</td>
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<td>120</td>
<td>I suffer from mortal terror</td>
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<tr>
<td>121</td>
<td>Time passes slowly</td>
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<tr>
<td>122</td>
<td>I am inclined to tell lies</td>
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<tr>
<td>123</td>
<td>I enjoy living</td>
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<tr>
<td>124</td>
<td>I tend to slight people</td>
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<tr>
<td>125</td>
<td>I like to plead another's cause</td>
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</tbody>
</table>
51. I look to the future
52. I am wide awake, quick to notice
53. I relish my meals
54. I stand on ceremony, being very polite
55. I am satisfied and contented
56. I am not easily disturbed nor angered
57. I like to make things
58. I value some things in life very highly
59. I cheat when a chance comes
60. I endeavor to do my best
61. I am fond of dancing
62. I suffer from a sense of defeat
63. I like to have a gay time
64. I deserve more than I have
65. I feel to blame when things go wrong
66. I tend to look to the welfare of others
67. I like to show off and display myself
68. I help the poor and needy
69. I do things with expression and feeling
70. I act swiftly
71. I feel in a state of disorder
72. I am crooked, dishonest
73. I am fair in my dealings
74. I tend to be dirty, not clean
75. I tend to rush around
76. I am simple and plain
77. I am sympathetic with people
78. I like to amuse and entertain people
79. I have great pride in my own worth
80. I am calm
81. I am a charming person
82. I am bothered by drowsy feelings
83. I have the spirit of youth
84. I love to play
85. I feel I am someone special
86. I get drawn into scraps and fights
87. I like to discuss matters
88. I am wise
89. I have very great natural powers of mind
90. I am liable to overlook important things
91. I tend to interfere with plans of others
92. I am readily torn by conflicting feelings
93. I like to spy on others
94. I pretend, conceal my real feelings
95. I hold to definite convictions
96. I like to travel long distances on foot
97. I seek pleasure and enjoyment
98. I am easy to suit
99. I have a clear understanding of situations
100. I am sustained by hopes for the future
RESPONSES

Every square should have a different number.

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RESPONSES

Every square should have a different number.
Gene Francis Ostrom was born in Louisa, Virginia, on March 13, 1929, and is the youngest of two children of Roy and Elvira Ostrom. He was graduated from Sanford Preparatory School in 1948, after which he attended The George Washington University for one semester. In 1949 he enrolled at the University of Delaware, remaining there until the Spring semester of 1951 when he returned to The George Washington University, receiving a Bachelor of Arts degree there in February 1953. Following this, he completed a tour of duty in the United States Army. Thereupon he enrolled in the graduate Psychology program at The George Washington University where his Master of Arts degree was conferred in October of 1956. He was then employed for one year as a psychological assistant at the Bryce Hospital, Tuscaloosa, Alabama, before continuing graduate work in Psychology at the University of Nebraska during the 1957-1958 academic year. Next he completed a year's Clinical Psychology internship at the Wichita Guidance Center, Wichita, Kansas. In September 1959, he commenced work toward a doctorate in Clinical Psychology at Louisiana State University. Presently, he is a Clinical Psychology Fellow at Southeast Louisiana Hospital.
Candidate: Gene F. Ostrom

Major Field: Psychology

Title of Thesis: A Study of Some Parameters of the Q-Sort Technique in a Homogeneous Population of Normal Subjects

Approved:

[Signature]
Major Professor and Chairman

[Signature]
Dean of the Graduate School

EXAMINING COMMITTEE:

[Signature]
Friedrich L. Bates

[Signature]
Germaine Berg

[Signature]
Joseph H. Sanner

[Signature]
John R. Swede

Date of Examination:

January 18, 1962