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Modification of the self-concept in electro-shock therapy.

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Boston University
MODIFICATION OF THE SELF-CONCEPT IN ELECTRO-SHOCK THERAPY

by

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TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION AND STATEMENT OF THE PROBLEM</td>
<td>1</td>
</tr>
<tr>
<td>Introduction.</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem.</td>
<td>5</td>
</tr>
<tr>
<td>II. HISTORY AND RELATED LITERATURE.</td>
<td>7</td>
</tr>
<tr>
<td>The Self-concept in Contemporary Personality</td>
<td>8</td>
</tr>
<tr>
<td>The Self-concept in Client-centered Theory</td>
<td>13</td>
</tr>
<tr>
<td>The Self-concept in Psychological Adjustment</td>
<td>15</td>
</tr>
<tr>
<td>Studies of the Self-concept in Adjustive Change</td>
<td>26</td>
</tr>
<tr>
<td>Present Problems in Self-concept Theory</td>
<td>36</td>
</tr>
<tr>
<td>Q-Technique</td>
<td>38</td>
</tr>
<tr>
<td>III. MATERIALS AND METHODS</td>
<td>42</td>
</tr>
<tr>
<td>Experimental Hypotheses</td>
<td>42</td>
</tr>
<tr>
<td>Description of Experimental Populations</td>
<td>47</td>
</tr>
<tr>
<td>Methods of Data Collection</td>
<td>53</td>
</tr>
<tr>
<td>Statistical Treatment of the Data</td>
<td>62</td>
</tr>
<tr>
<td>IV. RESULTS</td>
<td>74</td>
</tr>
<tr>
<td>The Initial Self-Ideal Relationship</td>
<td>76</td>
</tr>
<tr>
<td>The total patient group</td>
<td>76</td>
</tr>
<tr>
<td>The normal control group</td>
<td>79</td>
</tr>
</tbody>
</table>
Comparison of the initial self-ideal relationship between the total patient and normal groups. ............... 81
The Final Self-Ideal Relationship. ............... 82
The total patient group. ...................... 82
The normal control group ..................... 83
A comparison of the final self-ideal relationship between the total patient group and the normal group ............... 83
The Change in the Self-Ideal Relationship. .... 84
The total patient group ....................... 84
The normal control group ..................... 86
The improved patient group ................... 88
The unimproved patient group .................. 91
Direct Comparisons of Group Changes. ........... 95
Total patient vs normal control group .......... 95
The improved vs the normal control group ....... 96
The improved vs the unimproved group ......... 97

V. DISCUSSION OF RESULTS. .................... 100
Results in the Total Patient Group ............. 100
Results in the Normal Control Group ........... 103
Results in the Improved Patient Group .......... 105
Results in the Unimproved Patient Group ....... 108
CHAPTER SUMMARY AND CONCLUSIONS

Summary of the Results in the Experimental and Control Groups... 109
The Change in the Perceived Self... 112
Interpretation of the Change in the Perceived Self... 118

VI. SUMMARY AND CONCLUSIONS

Summary... 120
Conclusions... 125
Implications for Future Research... 127

APPENDIX A: SEXUAL DISTRIBUTION AND MARITAL STATUS OF THE EXPERIMENTAL AND CONTROL SUBJECTS... 129

APPENDIX B: OCCUPATIONAL BACKGROUND OF THE EXPERIMENTAL AND CONTROL SUBJECTS... 131

APPENDIX C: LIST OF SELF REFERENT STATEMENTS BY IBM CODE NUMBER... 133

APPENDIX D: TREATMENT AND TESTING INFORMATION FOR EXPERIMENTAL AND CONTROL SUBJECTS... 136

APPENDIX E: WARD PHYSICIAN'S INSTRUCTION SHEET FOR INITIAL RATING OF PATIENTS... 138

APPENDIX F: INITIAL PSYCHIATRIC RATING SCHEDULE... 140

APPENDIX G: WARD PHYSICIAN'S INSTRUCTION SHEET FOR FINAL RATING OF PATIENTS... 142

APPENDIX H: FINAL PSYCHIATRIC RATING SCHEDULE... 144

APPENDIX I: PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, PRE AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP... 146
APPENDIX J: PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP. 149

APPENDIX K: FISCHER'S Z EQUIVALENTS OF PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, PRE AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP. 151

APPENDIX L: FISCHER'S EQUIVALENTS OF PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP. 154

BIBLIOGRAPHY 156

ABSTRACT 163

AUTOBIOGRAPHY 172
<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A Comparison of Group Characteristics of the Experimental and Control Subjects in Terms of the Controlled Variables.</td>
<td>75</td>
</tr>
<tr>
<td>2. Self-Ideal Correlations in the Patient Group</td>
<td>77</td>
</tr>
<tr>
<td>3. Self-Ideal Correlations in the Normal Control Group</td>
<td>80</td>
</tr>
<tr>
<td>4. Self-Ideal Correlation in the Improved Patient Group</td>
<td>89</td>
</tr>
<tr>
<td>5. Self-Ideal Correlation in the Unimproved Patient Group</td>
<td>92</td>
</tr>
<tr>
<td>6. Change in Self-Ideal Correlations in the Normal Control and Total Patient Groups</td>
<td>101</td>
</tr>
<tr>
<td>7. Change in Self-Ideal Correlations in the Improved and Unimproved Patient Groups</td>
<td>106</td>
</tr>
<tr>
<td>8. The Change in the Perceived Self</td>
<td>114</td>
</tr>
<tr>
<td>9. The Change in the Perceived Self</td>
<td>116</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

A. Introduction

The idea that the relative integration of various aspects of the self-concept as a totality is one of the conditions necessary for or a concomitant of psychological health is not a new one in psychology. Recent theoretical formulations and research, however, seem to indicate that the coherence of the self-concept of individuals may be a basic and central measure of emotional stability, the cohesiveness of the self-concept varying as the adjustive level of the individual varies. If this is so, two immediate applications of these formulations seem to occur, both dependent upon adequate methods for measuring the significant variables.

One important application would appear to lead to a new measure of relative emotional health among many individuals in a search for individual differences and their correlaries. A second equally important application, that of measuring adjustive change in individuals through time under specified conditions appears to hold great promise both for the study of adjustive change in general and as a means of throwing light on adjustive change under certain
specified conditions. This research is concerned with a problem of the latter type.

Recent studies of therapeutic change in client-centered therapy have indicated that a basic element of such change reflects itself in modification of the self-concept. Specifically, as individuals approached psychological health, certain definite changes in their sampled selves in the direction of greater congruence occurred. Such changes were either absent or considerably less striking in those individuals who did not show marked adjustive change for the better.

It is possible, of course, that such changes are peculiar to the process of client-centered therapy and/or to the type of patients on which these studies were based, primarily individuals suffering from minor to moderate personality difficulties in the neurotic range of disorders. It is, however, equally possible, as noted above, that such modifications of the self-concept may be more basic formulations of adjustive change. If this is so and if such formulations are to achieve the status of general laws, the demonstration of them under conditions of adjustive change not involving this particular form of psychotherapy and preferably with a different class of patients is imperative.

It is particularly important for these purposes that
such changes be demonstrated outside the area of client-centered therapy since specific elements in this form of treatment pose a question as to whether the presumed modification in the self-concept may be an artifact of the treatment itself. In client-centered therapy as in many other forms of psychotherapy, numerous self-referent statements are made by the patient. Although according to theory the great majority of these are equally accepted by the therapist; in practice, selective, although unconscious, reinforcement of some may occur. It would appear that the therapist's own ego-involvement in the treatment would tend to make the positive self-referent statements more susceptible to this influence than the negative ones. If these suppositions are true, modification of the self-concept in the direction of more positive and less negative feelings may easily occur as an artifact of the treatment itself.

Such positive modification of the self-concept would inevitably lead to greater congruence between the two sampled aspects of the self-concept, the real self and the ideal self, utilized in these studies. This is so because the ideal self, or self which is desired, appears to be the more stable of the two and the one toward which positive feelings are more probable. Both of these factors appear
to depend upon the pressure of cultural stereotypes which seem to have a proportionally greater effect on it. Change in the real self, or self as actually perceived, in the direction of more positive feelings, would inevitably lead to a higher correlation between it and the ideal self.

For these reasons, it is imperative for such changes in the self-concept to be demonstrated in some other form of therapy leading to adjustive change which has little similarity to it, particularly with regard to verbal interchange between the patient and the therapist, in order for these changes to achieve the status of general laws of behavior.

The somatic therapies, such as insulin and electroshock treatment, appear to offer suitable vehicles for such a purpose since adjustive change for the better, often of a dramatic sort, occurs in these treatments with a minimum of verbal interchange between the therapist and patient. In addition, the individuals who form the majority of patients treated by them are almost without exception suffering from extreme mental illnesses falling within the psychotic range and would certainly not be particularly suitable candidates, at least during the time of their treatment, for any type of psychotherapy. They, therefore, offer the possibility of testing the theory with an entirely
different class of patients, presenting a different area in which to test the generality of the theory.

In summary, then, this study has been undertaken to determine whether or not the essential elements of adjustive change for the better which appear characteristic of neurotic individuals undergoing client-centered therapy may indeed be general laws of adjustive change, or are characteristics, perhaps even artifacts, of this form of treatment only.

B. Statement of the Problem

This study is concerned with determining whether or not changes in the congruence of the self-concepts of individuals suffering from psychotic illnesses occur during adjustive change while undergoing electro-shock treatment (EST). Such changes should be evident according to our theoretical formulations most markedly in those individuals who respond successfully to the treatment. Comparison with a normal group of control subjects will provide a necessary parameter by which to evaluate the changes which occur. As can be seen from the following initial hypothesis, it must be assumed at the outset that there is a difference in the mean level of congruence between normal individuals and those suffering from psychotic illnesses. The following three hypotheses deal with change in the congruence of the
The general hypotheses are as follows:

1. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will be significantly lower than that of individuals in a normal control group.

2. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will significantly increase for patients who respond successfully to treatment, i.e., those patients who show a clinical improvement in adjustment level.

3. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will not significantly change for those individuals who do not respond successfully to treatment, i.e., who do not show a clinical improvement in adjustment level.

4. The mean level of congruence of the self-concepts of individuals in a normal control group will not show a significant change in time.
Preoccupation with the self as an object worthy of speculation has a long history prior to the development of psychology as a scientific discipline. Theological and philosophical thinkers have concerned themselves with it over the centuries. Among the latter, Kant and Schopenhauer are particularly important for, as Symonds (60) points out, these men were originally responsible for a basic dichotomy in thinking about the self. This involved distinguishing two definite aspects with regard to it which might be termed the subjective and objective meanings of the self. Symonds goes on to point out that James (28), possibly influenced by these men, was responsible for bringing this distinction within the purview of psychological science in his distinctions of the "I" and "ME" aspects of the self. For James, the "I" is the self as active observer or knower, perceiving and reacting to the world about itself. The "ME" on the other hand, is the subjective self, the self as observed. Symonds points out, "The 'I' can observe among many other things the 'Me', that is, his own self, and the self can become an object of awareness and of value" (60 p. 3).

The distinction between these aspects of the self was
and remains particularly important since confusion between them still leads to difficulty in specifying self as a variable in contemporary personality theories. A discussion of one very common source of confusion of these two aspects of the self, that of equating the self of phenomenological psychology to the ego of psychoanalytic psychology, will be touched upon presently. Having indicated in a general way how the self entered psychology, let us take up the uses of it in present day personality theory.

A. The Self-concept in Contemporary Personality Theory

In the past several years the self-concept as a psychological construct has become increasingly important in personality theory. At present, it occupies a central position in several widely utilized behavior schemas. The social psychologist (41, 42, 43, 54, 65) has made use of it as an explanatory variable investigating concepts such as role and status in attempting to formulate the laws governing individuals in groups. In addition, the self-concept has been the framework for numerous researches in the clinical field (9, 24, 47, 52, 53, 57) which have been particularly interested in relating aspects of this concept to levels of adjustment and their corollaries, and most particularly to problems with regard to therapeutic change or improvement.
Prior to a definition of the self-concept suitable for the purposes of this research, let us take up some formulations with regard to this most important construct representative of various schools of thought. Most of these schools being phenomenologically oriented, regard the self as the central construct necessary to explain behavior. This is so because the personality theories of these schools place a common emphasis on the ongoing or growth characteristics of the individual. Snygg and Combs phrase it as follows, "The fundamental drive of the organism is always the maintenance and enhancement of the phenomenal self" (54, p. 165). Goldstein (22, 23) uses the term "self-actualization" to describe this same tendency. Mowrer and Kluckhohn stress the "basic tendency of living things to function in such a way as to preserve and increase integration" (40, p. 74). Horney describes this tendency as it is experienced in therapy, "The ultimate driving force is a person's unrelenting will to come to grips with himself, a wish to grow and to leave nothing untouched that prevents growth" (27, p. 175). Angyal puts it in the following way:

"Life is an autonomous dynamic event which takes place between the organism and the environment. Life processes do not merely tend to preserve life but transcend the momentary status quo of the organism,
expanding itself continually and imposing its autonomous determination upon an ever increasing realm of events" (3, p. 48).

The importance of the self-concept as an explanatory variable in such personality theories as these is based on the fact that it is the self which is enhanced, maintained, actualized, etc. Activities for the purpose of accomplishing these ends are engaged in for the sake of the self and at the behest of it.

Murphy makes this point quite clear when he points out that the self occupies a central position with regard to the ego. For Murphy, the ego is defined as, "... The system of activities organized around the self - in particular, the struggle to do everything that can be done on behalf of this self" (41, p. 523). For Murphy, the self is a rather passive image which does not act of its own accord but is subserved by the ego. The centrality of the self, however, is made clear through the fact that the ego's activities are engaged in only for the protection and enhancement of the self. The self is, therefore, seen as capable of indirectly, through the mediation of the ego, controlling behavior.

Snygg and Combs have a somewhat similar viewpoint which is more phenomenologically oriented. They assume that, "Behavior is a function of the behaver's perceptual field;...
his behavior is always appropriate to his perceptions even when the perceptions are 'wrong' (13, p. 96). According to their viewpoint, however, the behaver's perceptual field and, therefore, his behavior, is largely determined by perceptions of the self and self in relation to the rest of the field. According to these authors, psychotherapy is a situation which provides the client with the opportunity to explore and change perception, particularly perception of the self. It is obvious from a consideration of both these factors that behavior is modified or changed by modifications or changes in the self-concept.

A similar view is held by Lecky (31), who by means of his principle of "self-consistency" provides the mechanism whereby behavior is ordered in a fashion consistent with the individual's concept of himself. Allport (2, 49), too, has indicated that he believes that protection and enhancement of the self are basic in the choice of behavior modes.

All of the above theorists have stated, therefore, either directly or indirectly that the basic tendency of human activity is a continuous ongoing growth process, the essential behavior of which is motivated by a need to maintain, protect, or enhance the self. Before going on to consider another phenomenological theory in somewhat greater detail since it provides the theoretical framework for this
study, it would perhaps be well to point out that the self of the phenomenological approaches is the self as "Me" in James' sense, in other words, the self observed. True enough, it may influence behavior and be influenced by it as has already been indicated, but these functions are accomplished indirectly through the mediation of behavior mechanisms which may or may not be organized in relationship to the self. The active elements of the personality structure are better termed, ego, following Symonds, since otherwise confusion arises when the terms ego and self-concept are used synonymously. One of the most common sources of such confusion is the attempted transposition of psychoanalytic formulations of ego functioning directly into terms of self-concept theory. As Symonds points out the ego and the self are not the same, although at times they bear a close correspondence. He feels that:

"There are interesting relations between the ego and the self. Awareness of the self keeps pace with the expanding ego. As the ego enlarges its power of perceiving, thinking, and acting, so the self, which is the awareness of this growing capacity for control and adjustment, has more of which to become aware and hence develops concurrently. The concept of the self is determined in large measure by the success or failure of the ego" (60, p. 86-87).

Symonds also points out the reciprocal features of the ego and the self.
"Success and failure of the ego are to a degree determined by the adequacy of the self, that is, the individual's concept and valuation of himself... the self is a partial determinant of the ego" (60, p. 87).

It is clear, therefore, that the ego and the self are two different entities. At present, we can do no more than point out this fact which has in the last few years assumed considerable importance due to the current increasing concern in psychoanalytic theory with ego analysis, an interest which has been paralleled by an increasing concern with self-concept theory in phenomenological psychology.

B. The Self-concept in Client-centered Theory

The phenomenological point of view which provides the theoretical framework for this paper and which has made the self-concept a more basic and integral part of its personality schema than any other is that of Rogers. In common with Snygg and Combs, Rogers feels that the organism reacts to the field as it is experienced and perceived. Not all that is experienced, however, is conscious. He states that, "Behavior may, in some instances, be brought about by organic experiences and needs which have not been symbolized" (50, p. 509). He feels that if such behavior is inconsistent with the structure of the self, such behavior is disowned by the individual.

We can already see from the above description that the
vast majority of behavior which is owned by the individual
is consistent with the self-concept and it is this fact
which gives the self-concept its ability to guide and di-
rect behavior. Rogers phrases it this way: "Most of the
ways of behavior which are adopted by the organism are
those which are consistent with the concept of self"
(50, p. 507). He goes on to indicate:

"As experiences occur in the life of the
individual, they are either (a) symbol-
ized, perceived, and organized into some
relationship to the self, (b) ignored be-
cause there is no perceived relationship
to the self-structure, (c) denied symbol-
ization or given a distorted symboliza-
tion because the experience is incon-
sistent with the structure of the self"
(50, p. 503).

Since the self-concept has been discussed at some
length, perhaps it would be useful to make explicit a
definition of it. Rogers formulates it as follows:

"The self-structure is an organized configura-
tion of perceptions of the self which are
admissible to awareness. It is composed of
such elements as the perceptions of one's
characteristics and abilities; percepts and
concepts of the self in relation to others
and to the environment; the value qualities
which are perceived as associated with ex-
periences and objects; and the goals and
ideals which are perceived as having posi-
tive or negative valence. It is, then, the
organized picture, existing in awareness
either as figure or ground, of the self and
the self-in-relationship, together with the
positive or negative values which are asso-
ciated with those qualities and relationships,
as they are perceived as existing in the past,
present, or future" (50, p. 501).
This then, is the self-concept which for Rogers and other theorists is the source of the ongoing nature of behavior and the directive force which modifies it and is modified by it. This formulation holds, of course, for both behavior within normal, socially approved limits and abnormal behavior. It is equally applicable to changes in behavior. As Rogers has directly suggested in discussing therapy:

"The changes in behavior keep pace with the changes in organization of self, and this behavior change is, surprisingly enough, neither as painful nor as difficult as the changes in self-structure. Behavior continues to be consistent with the concept of self, and alters as it alters" (50, p. 195).

It is obvious that Rogers' formulations lead directly to the supposition that individuals whose behavior is less adjusted than that of normal individuals should show differences within their self-concepts as compared to the self-concepts of normals.

C. The Self-concept in Psychological Adjustment

Let us first attempt a definition of psychological adjustment and maladjustment in terms of the self-concept prior to indicating the results of some specific research studies in this area.

Rogers defines these states as follows:

"Psychological adjustment exists when the concept of the self is such that all the
sensory and visceral experiences of the organism are, or may be, assimilated on a symbolic level into a consistent relationship with the concept of self" (50, p. 513).

"Psychological maladjustment exists when the organism denies to awareness significant sensory and visceral experiences, which consequently are not symbolized and organized into the gestalt of the self-structure. When this situation exists there is a basic or potential psychological tension" (50, p. 510).

It is obvious from these definitions that according to Rogers, adjustment exists to the degree that the organism's experiences are, "admissible to awareness through accurate symbolization, and organizable into one system which is internally consistent and which is, or is related to, the structure of the self" (50, p. 513-514).

Such a state of affairs can only exist, it would seem, if the self is viewed by the individual as adequate to deal with experiences threatening or otherwise. If it is viewed in an opposite manner as weak or inadequate to cope with environmental experiences, it is protected from them by denying such experiences conscious symbolization. The degree of threat inherent in an experience appears to vary first with its degree of incongruence with regard to the rest of the self-structure as Hogan (25, 26) points out. It also seems to be directly proportional to the degree of centrality of the aspects of self which are perceived as
related to the new experience. From the point of view of adjustment, however, leaving aside the question of threat to the self, a self-structure which is integrated and considered by its possessor to be adequate to cope with experiences generally is less likely to experience threat if only because fewer experiences will be regarded as incongruent with the self-structure.

One of the first investigators to demonstrate that positive attitudes towards the self and increasing acceptance of it were associated with greater degrees of adjustment was Raimy (47). He studied the relation between feeling tone in self-utterances in psychotherapeutic interviews and the outcome of client-centered therapy. Utilizing the PNav technique, Raimy found definite differences between successful and unsuccessful cases when the patient's self-references were classified by judges as to their positive, negative or ambivalent feeling tones. The PNav ratio which is a measure of the approving-disapproving attitude which an individual has towards himself was found to separate successful from unsuccessful cases in the following manner. In the successful cases it was found that positive self-references increased toward the end of therapy; whereas, negative or ambivalent self-references declined. Such changes, however, could not be established for unsuccessfully treated cases. This pioneering study by Raimy will
be touched upon again later in this chapter since, in addition to being one of the first studies of the relation of the self-concept to adjustment, it is also the initial study of change in the self-concept in a longitudinal direction. Let us pass on for the moment, however.

Further studies by Stock (57) and Sheerer (53) have demonstrated a definite and substantial relation between attitudes of acceptance of and respect for self, and attitudes of acceptance of and respect for others. Aidman (1) in an unpublished master's thesis found a similar relationship between feelings towards the self and the non-self (the environment).

While all of these studies are elaborations on the PNav analysis method of Raimy, they have extended the application of the feeling tone scale to other categories of the "non-self". In these studies client utterances during therapy were classified in two general areas, the first having to do with the referent of the utterance, i.e., self or others, and the second as to the type and intensity of affect which the client held toward the referent. Kind of affect was again categorized as positive, negative or ambivalent.

All three studies supported the view that there is a definite relationship between acceptance of the self, i.e.,
positive attitudes toward the self and acceptance of others. Certainly attitudes toward others of acceptance and respect are characteristics of good adjustment.

Similar findings were reported by Phillips (46). This investigator converted the self-other attitudes reported by Sheerer into simple statements to form a questionnaire which tapped both attitudes towards the self and towards others. He found a high correlation between the two parts of the scale.

Berger (4) reports similar results. He devised a test consisting of scales for measuring self-acceptance of others and administered it to approximately two hundred subjects, ranging from college students to prisoners and including adults in a YMCA class, stutterers and counseling cases. He found that in using this larger group highly significant positive correlations could be demonstrated between acceptance of self and acceptance of others. Data suggestive of a similar relationship were obtained by Lundy, Katkovsky, Cromwell, and Shoemaker (33) in a project designed to study the relation between self-acceptability and sociometric choices.

Calvin and Holtzman (11) in a somewhat different manner present evidence which again supports the belief that positive attitudes towards the self are directly correlated
with adjustment level. In a study involving university students in four different fraternities, these authors had each member rank all members of his fraternity including himself on seven different personality traits. A normalized pooled rank score was obtained for each individual on each of the traits and provided a measure of one aspect of the "inferred" self. The respective self-rank provided an equivalent measure of one aspect of the self-concept. Using adjusted self-group discrepancy scores, four measures of the discrepancy between the self-concept and the inferred self were derived. From findings based on these four measures, the authors concluded in part that "the more poorly adjusted the individual, the more self-depreciative relatively speaking, he appears" (11, p. 43). It should be noted that adjustment was measured only on the basis of one paper and pencil personality inventory and that all of the subjects were symptom-free "normal" individuals functioning in the community. However, the findings are certainly suggestive.

Another study by Lepine and Chodorkoff (32) studied the inter-relationships between goal setting behavior, expressed feelings of adequacy and the relation between the perceived and the ideal self. Working with a small number of hospitalized veterans these authors collected
Q-sorts of self-descriptive statements in terms of both a perceived and an ideal self. In addition, a level of aspiration procedure was conducted consisting of a number of short trials of letter coding. Patients were asked to tell how well they expected to do on subsequent trials after they had been given scores which presumably reflected their standing in the patient group. Prearranged scores were used so that each subject was given the same sequence of performance scores. The authors interpret their results to indicate that individuals who expressed feelings of adequacy showed a greater correspondence between the perceived and ideal self and less dependence upon environmental evaluation of past performance in judgments with regard to future performance.

In still another study by Jourard and Remy (29), evidence is presented to indicate that there is a direct relationship between positive attitudes towards the self and adjustment. These authors were interested in studying the effect of perceived parental attitudes on the self as appraised by the individual. They found evidence to support the belief that self-appraisals vary directly with individual's beliefs concerning their parent's appraisals of them. In addition, they demonstrated that negative self-appraisals of the body and self are directly correlated
with psychological insecurity as measured by a paper and pencil personality test. The self appraisals and beliefs concerning parental appraisals of body and self were collected by means of rating scales constructed previously for appraising these areas.

Not all of the studies which attempt to correlate positive attitudes towards the self and adjustment have achieved positive results in the opinion of their authors. The following study is an example.

McIntyre (35) was interested in determining whether individuals who accept themselves and others to a higher degree are really better accepted by others, i.e., are better adjusted. By means of a sociometric questionnaire a large number of male college students all living in one dormitory were asked to rank in order of preference up to eight men also living in the dormitory with whom they would like to spend a recreational evening or with whom they would like to room. Total acceptance scores for each individual were then computed and these scores were compared with the results of scores on Phillips' Attitude-Toward-Self-And-Others questionnaire for individuals in the upper and lower quartiles of the distribution. McIntyre interprets his results to indicate that while attitudes towards the self and others are positively and significantly correlated, there
is no evidence to indicate that individuals who do accept themselves and others are better accepted by others. He grants, however, that this negative finding may be due to errors in the method of the experiment and the superficiality of the Phillips' questionnaire.

Fey (19), in a study which constituted essentially a replication of McIntyre's design, was interested in determining whether or not a combination of self-acceptance and acceptance-of-others scores might form the basis for reliable predictions of personality characteristics. Specifically, Fey felt that acceptance by others might well be a function of the relationship between these expressed attitudes. His results appear to indicate that the relation between high self-acceptance and acceptance by others is a more complex function than the previous studies would indicate. He feels that:

"Individuals with high self-acceptance scores tend also to accept others, to feel accepted by others, but actually to be neither more nor less accepted by others than those with low self-acceptance scores. Individuals with high acceptance-of-others scores tend to turn to feel accepted by others, and tend toward being accepted by them" (19, p. 276)

He goes on to point out that estimated acceptability is independent of actual acceptability in this study.

The studies cited above have attempted to relate adjustment level directly or indirectly to positive attitudes
towards the self. Another type of study, some examples of which will be cited shortly, has attempted to relate adjustment to stability or congruence of the self-concept. These two types of studies are essentially different in a theoretical if not a practical sense. They seem confusingly alike at times because the stability or congruence of the self-concept is measured by discrepancy scores between positive and negative attitudes towards the self or differences between the self as perceived and the self as desired. Such discrepancy scores, of course, can easily be interpreted as merely additional ways of expressing the initial idea of Raimy basic to the studies already quoted that positive attitudes towards the self and adjustment go hand in hand. There is, however, a theoretical difference in such studies in that they depend implicitly on the notion of congruence of self portraits which is a considerably more inclusive personality measure than emotional attitudes of a positive or negative nature toward the self. When discrepancy scores are reported in terms of differences between perceived and desired aspects of the self, little practical difference, it is true, is in evidence, but studies involving discrepancies between other self portraits such as the perceived self as against the remembered self make the distinction clear since such studies have at
best a peripheral relationship to the question of positive attitudes toward the self. Let us consider a few of the studies more directly based on congruence or consistency of the self-concept as it relates to adjustment.

Brownfain (9) obtained self-ratings from sixty-two college students on a schedule of twenty-five personality variables. Under the first set of instructions, the subjects were instructed to give themselves the benefit of any doubt about their standing on any item in the inventory, thus yielding a "positive" self-concept. Under another set of instructions, denying themselves the benefit of such doubts, a "negative" self-concept was obtained. The differences between these two ratings on each item were summed over the entire inventory yielding an operational measure of stability. Brownfain felt that his findings supported the position that subjects with stable self-concepts were better adjusted than those with unstable ones; adjustment being determined by behavior ratings, group evaluation of individuals, and separate personality test data.

Employing a quite different experimental method and a more sophisticated statistical design suggested by McQuitty (37), Stewart (56) factor analyzed responses to self-referent questions from two extremely disturbed schizophrenic patients and two symptom-free "normals" and
found that the number of orthogonal factors necessary to explain statistically the self-referent responses of the patients were two to seven times as great as those sufficient to explain the normals.

Bills, in a series of articles in conjunction with other authors (5, 6, 7), involving the construction and testing of a measure of self-concept functioning called "An Index of Adjustment and Values", has found that self and ideal-self discrepancies were indeed related to psychological adjustment. One particularly interesting study by Bills and his collaborators provides the first hint of diagnostic implications in differences in self-congruence found for individuals. Because of the important bearing that this study has on the findings of a later research study, a detailed description will be postponed until the more recent study has been discussed.

D. Studies of the Self-concept in Adjustive Change

The first study of change in the self-concept as related to change in adjustive level was the unfortunately never completely published doctoral dissertation of Raimy (47), which has already been described. A published condensation of this study (48) attracted much interest, however, and has stimulated many of the previously cited investigations in self-concept theory.
Another doctoral dissertation growing directly out of Raimy's exposition of self-concept theory is that of Hartley (24) in 1951, which so far as the writer has been able to determine is the first study of change in self-concept employing Q-technique. In this study a woman about to begin client-centered therapy was asked to sort a number of self-referent statements to describe herself as she was, self-sort, and as she would like to be, ideal-sort, as well as to describe her unhappy self and the self of an ordinary other person. These four sorting arrays were repeated twice. In addition, the counselor treating the patient described his own self and ideal image and made predicted and diagnostic self-sortings on the client as well, the latter two sorts being accomplished twice, once shortly after the beginning of treatment and once at the end of treatment. Hartley computed all possible intercorrelations between the eighteen sorting arrays described and then subjected the correlation matrix to a factor analysis by means of Thurstone's method. Seven first order and three second order factors were uncovered and interpreted by Hartley which enabled her to follow in a very precise fashion the process of therapy in this case both from the patient's and from the therapist's viewpoint. Among the more important findings were those in relation to changes in the congruence of
the patient's self-concept as measured by the relation between the self and ideal sorts. Prior to therapy, the patient's self picture was not congruent, $r$ between the self and ideal sorts equalling .18. Following treatment correlations between self and ideal sorting arrays had changed to .81. The intercorrelations also enabled Hartley to state that this change in the relationship between the self and ideal was due to change in the self during therapy more than to change in the ideal self-concept, correlation before and after treatment of the self equalling .15; whereas, the equivalent ideal relationship equaled .71. Hartley interpreted her findings within the framework of client-centered therapy.

A study similar to Hartley's was reported by Rogers and his collaborators (51), again involving Q-technique and factor-analysis of psychotherapeutic movement in one case which was more intensively studied. This project represented a preliminary report of a continuing large scale research program at the University of Chicago Counseling Center. The methodology was similar to that in the Hartley study but in addition to correlational studies of therapeutic movement, a projective test, a paper and pencil personality test, a role playing situation, electrically recorded interviews and a test designed to measure social
attitudes and other variables were included. In the Q-sorting procedures, the subject was again asked to give a picture of the self, the ideal self and the ordinary other person. In addition, the patient's counselor was asked to make sorting arrays to predict the client's self, self-ideal, and concept of the ordinary person. The majority of this battery of tests was administered several times during the course of contacts with the patient, the last administration following therapy by twelve months. An additional sort of self-referent statements was requested of the patient immediately following treatment in which she was asked to represent herself as remembered at the beginning of treatment.

The findings in this study in terms of change in the self-concept bear a strong relationship to those in the Hartley study already reported. Prior to treatment, the correlation between the self and ideal sorts equaled .21; whereas, at follow-up correlation equaled .79. Again, this change appears due more to change in the self as perceived than change in the ideal self as desired, the correlation between the self before treatment and the self at follow-up equalling a correlation value of .30; whereas, the equivalent relationship in the ideal self equaled a value of .72.

The findings in this study were complex and varied,
and we can only summarize the most pertinent for our purposes; however, they were felt by Rogers and his co-workers to support the theory of client-centered therapy in general and self-concept theory in particular. They feel they were able to demonstrate that as an individual improved in ajustive level in psychotherapy judged by objective or projective tests, expert diagnostic opinion, or opinions of peer group representatives, there was evidence of a modification of the self-concept in the direction of greater congruence. In addition, the change in congruence of the self-concept was due more to change in the perceived self than in the ideal self. Several other interesting findings were uncovered, particularly with reference to the relations between the conceptual self of the patient and the therapist's predictive sorts. However, a consideration of these is outside the scope of this summary. Let us go on, therefore, to a description of the most recent results of the continuing research project of the counseling center of the University of Chicago. This most impressive book, under the editorship of Rogers and Dymond, is, in effect, a further progress report of programatic research in psychotherapy which has continued since the publication of the case of Mrs. Oaks cited directly above. Indeed, the data on the Oaks case is included in this further progress report.
Psychotherapy and Personality Change by Rogers and Dymond (52) consists of eleven separate but interrelated studies of psychotherapy on the same group of twenty-nine unselected clients who received client-centered therapy. As in the preliminary research report, data collected by a variety of projective and objective tests and rating scales including Q-sort arrays comparing the self, self-ideal, and ordinary person, are reported. These appraisal procedures were administered four times, twice before treatment began, again at the conclusion of treatment and six months to a year after the end of treatment. The Q-sorting arrays were administered in addition several times during the course of treatment. This study includes, unlike its predecessor and the other Q-sort studies of adjustive change, reported data on patient and normal control groups, thus answering much of the criticism primarily of a statistical nature which can be directed toward Q-sort studies of single cases for the purposes of theory validation. The results of the project as a whole are felt by the authors to provide further evidence to bolster the postulates concerning adjustive change made by client-centered therapy and its related self-concept theory. It was found that the therapy group showed significant change in self-concept not found in the control group. In addition, this change was more the result of modification
of the self than of the self-ideal. These results based on the Q-sort studies were upheld by analyses of the therapeutic process by other methods. One study in this group is of particular interest to us because of its close relation to the experimental design of the present study. This is the study by Butler and Haigh (10) of the changes in the relation between self-concepts and ideal concepts consequent upon client-centered therapy. We will therefore consider this study in somewhat greater detail.

The Butler and Haigh study entitled "Changes in the Relation Between Self-concepts and Ideal Concepts Consequent upon Client-centered Counseling" is a Q-technique study of self-concept change in a group of twenty-five clients undergoing therapy. These authors aimed at exploring the hypotheses first, that client-centered therapy results in a decrease of self-ideal discrepancies, and, secondly, that such discrepancies would be more clearly reduced in clients judged on two independent criteria, (counselor and TAT ratings), to be definitely improved. One hundred self-referent statements, randomly selected, were Q-sorted to describe a self-sort and an ideal sort both before and after treatment and again after a follow-up period.

The results indicate that the client group as a whole showed a significant decrease in self-ideal discrepancy.
from the pre-counseling to the follow-up tests, $r_{SB.IB}$ equaled $-.01$; whereas, at the follow-up tests, $r_{SA.IA}$ equaled $0.31$. The mean difference in correlation, $0.32$, was demonstrated to be a highly significant change. This study also included findings from an equivalent-control group. $r_{SB.IB}$ in this group of sixteen subjects equaled $0.58$ at the first sorting tests; whereas, at an equivalent follow-up period, $r_{SA.IA}$ was found to be $0.59$. This difference of $0.01$ correlation points was obviously not significant. These authors also compared the mean gains in $r$ values for the clients and control group and concluded that the client group showed a significantly greater increase in self-ideal correlation.

The improved group showed a change quite similar to that demonstrated for the total patient group; the difference, however, was greater, $r_{SB.IB}$ equalling $0.02$, while $r_{SA.IA}$ equaled $0.44$. This change of $0.42$ in terms of $r$ was again highly significant. Further statistical tests indicated that the mean gain in self-ideal correlation for the improved group could be demonstrated to be greater than that for the control group. A comparison of the improved with the unimproved group yielded a rather surprising finding, however. These groups could be demonstrated to be significantly different on follow-up self-ideal correlations although not significantly different on pre-counseling
correlations. When the magnitude of increases in correlation from pre-counseling to follow-up was compared for the two groups, however, no significant difference could be established.

Butler and Haigh concluded from these findings that improvement was related to final level of but not to increase in the self-ideal correlations. They felt this finding to be due to defensive sorting by individuals whose adjustive level had not changed but who had demonstrated gains in correlation points. They felt this finding also raised the question as to the meaning of a correlation of unity between self and ideal. They indicate that in their opinion this does not indicate perfect adjustment and point out that the only self-ideal correlation above .90 in an uncited study was achieved by a paranoid individual. These authors, therefore, conclude that extremely high correlations are likely to be due to defensive mechanisms.

Butler and Haigh conclude that the general findings in this Q-sort study provide support for the postulates of self-concept change in client-centered therapy as specified in their experimental hypotheses.

Not all of the studies of self-concept change clearly support the hypothesis that such change occurs only when
adjustive level changes. For example, Taylor (61) has demonstrated by means of Q-sort self-distributions that some changes in the self-concept can occur without psychotherapy or adjustive change. He presents results to indicate that repeated self-description or intensive introspection leads to increased positive attitudes towards self, increased positive relationships between the self and self-ideal, and increased consistency of the self-concept. He qualifies these statements, however, by pointing out that none of the changes approach the magnitude of those reported as occurring during therapy.

Dymond (18) has also presented evidence based on a small number of cases who "spontaneously improved" to indicate that increase in adjustment measured by Q sorts could not be confirmed by TAT ratings.

An overview of self-concept theory indicates, therefore, that although the majority of studies relating positive attitudes towards the self and congruence of self and ideal-self portraits to adjustment have demonstrated positive significant findings, scattered other studies have thrown doubt on this. A somewhat similar state of affairs exists with regard to the relationship between adjustive change and modification of the self-concept in the direction of greater congruence. The majority of the evidence,
however, seems to provide support for the self-concept theory of the client-centered school. Some distinct problems, however, remain which we will be able only to summarize in the following section.

E. Present Problems in Self-concept Theory

One question which is presently being raised with regard to the formulations of this theory is that of the relation between congruence of self and ideal-self portraits and diagnosis. Little work appears to have been done in this area. This is perhaps due to the fact that the theory, having grown out of studies with mildly disturbed individuals, has not seemed particularly applicable to more disturbed ranges of behavior. Even within the neurotic ranges, however, with which several studies deal, little or no diagnostic information with regard to the composition of the samples has been supplied. The work which has been done can be very quickly summarized. So far as the writer can determine the first evidence of interest in the use of the self-ideal discrepancy as a measure for separating diagnostic categories was that of Bills and his co-workers (7), which has been mentioned previously in this chapter. Utilizing a scale which they had constructed to measure self-ideal discrepancy, they were able to correlate amounts of discrepancy to the presence of neurotic or psychotic
features in Rorschach protocols. They found, confirming other studies, that high self-ideal discrepancy was demonstrated for individuals producing neurotic Rorschach records; whereas, those producing psychotic records had self-ideal discrepancy scores below the mean of the group. This study possesses serious limitations for anyone wishing to generalize from its findings, based as it was on only twenty cases and on the presence of psychotic or neurotic features appearing in volunteer college students functioning in the community. It was, however, the first attempt to relate a self-ideal discrepancy measure to diagnostic differentiation even if only in a general way. There is some evidence that Bills and his co-workers in concluding that low self-ideal discrepancies were characteristic of psychotic individuals were being overly inclusive and perhaps should have specified paranoid individuals as Butler and Haigh have recently, as we have noted. However, the status of this problem remains unclear.

Perhaps a better approach to the whole situation has been made in such studies as those of Block and Thomas (8) and Sweetland and Frank (59). The latter of these studies has attempted to investigate the nature of ideal adjustment by means of factor analytic techniques with some success. Block and Thomas have provided evidence to indicate that
degree of self-satisfaction bears a curvilinear relationship to adjustment in addition to being related to the further dimension of ego control.

F. Q-Technique

Within the scope of this treatment of self-concept theory it would be impossible to make more than a few comments with regard to Q-technique, and these comments must be largely confined to generalities. Q-technique is primarily a method of personality investigation, perhaps more exactly, "...a number of distinct, though functionally related procedures" (39, p. 343) as Mowrer has stressed. It involves forced normal distributions of sorts, correlations of such distributions, factorial analysis of such correlations or variance designs employing them and a series of related methodological principles.

Stephenson (55) in a recent book summarizes his previous publications and current thinking with regard to this methodology, while providing a description and history of the technique.

There has been much speculation about the validity of Q-technique and its methodology, especially when applied to single case studies, while proponents of the theory, primarily Stephenson, have defended it vehemently. It seems obvious that whatever the methodological or statistical
limitations of Q-technique in a larger sense may be, certain of its tools, particularly the Q-sort, are extremely useful and do not depend on the ultimate decisions with regard to the larger issues raised. These forced normal arrays, Q-sorts, have several psychometric advantages which have been summarized as follows by Cronbach:

". . . this method of interrogation is much more penetrating than the common questionnaire where the person can say Yes to all the favorable symptoms and No to all the unfavorable ones. The method is free from those idiosyncracies of response which cause some people to respond Cannot Say twice as often as others, and so make their scores non-comparable. The forced choice requires every person to put himself on the measuring scale in much the same manner. The forced normal distribution gives certain statistical advantages, since correlation is more meaningful when all distributions have the same shape. Since more statements are placed in the middle piles, the subject is freed from many difficult and rather unimportant discriminations he would have to make if he were forced to rank every statement. And the fact that discrimination near the center of the scale is difficult is reduced in importance by the fact that in product-moment correlation the end cells receive greatest weight" (14, p. 378-379).

Perhaps counter-balancing some of the advantages of such Q-sort data are some notable limitations. As can be seen, the forced normal arrays eliminate the mean and variance of the two sorts from consideration when correlated since they are fixed equal quantities. As Cronbach and Gleser point out:
"In determining the similarity between two tests it is reasonable to eliminate the mean from consideration. . . the test mean represents its general level of difficulty for the population, while the variance is a function of the units used. Differences between tests in these values are usually quite arbitrary, depending on the choice and number of items. When we are mainly interested in the underlying relationship between tests these differences are of no importance and are neglected in the correlation formula. In dealing with similarity of individuals, however, it is necessary to consider rather carefully what logic is involved when individuals are equated for level and scatter" (16, p. 466).

To avoid confusion, it should be explicitly stated that in this study the writer was interested in dealing only with the relationship between sorting arrays, not similarity of individuals so far as individual correlations are concerned. It was therefore considered that equating for level and scatter, i.e., forcing fixed means and variances and correlating arrays would have no important effect on the experimental hypotheses.

Q-technique, however, involving such Q sorts, i.e., the forced normal distributions which we have described, and Q-correlations, the relationship between such sorts in terms of product-moment correlation coefficients, are not the only methods of assessing the similarity of profiles. Several other possibilities have been suggested by Osgood and Suci (44), Pearson (45), Cattell (12), Kendall (30), and DuMás (17), as well as Cronbach and Gleser (15). Many
of the techniques recommended by them have advantages not possessed by Q-technique. The advantages appear, however, more statistical or methodological than practical and are of greatest use when primary interest is centered on assessing similarity between persons. The specific technique recommended by Cronbach and Gleser, a distance measure, D, as well as Osgood and Suci allowing for consideration of both elevation and scatter of profiles. An interesting and careful comparison of some of the more important of these measures is reported by Warrington (63) in an unpublished doctoral dissertation indicating the advantages of the various measures.
CHAPTER III

MATERIALS AND METHODS

A. Experimental Hypotheses

Reference to Chapter I indicates that the author was concerned with testing four major hypotheses derived directly or indirectly from self-concept theory as this term is broadly defined. To serve the purposes of clarity of exposition they may be restated as follows:

General Hypotheses

1. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will be significantly lower than that of individuals in a normal control group.

2. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will significantly increase for patients who respond successfully to treatment, i.e., those patients who show a clinical improvement in adaptive level.

3. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will not significantly
change for those individuals who do not respond successfully to treatment, i.e., who do not show a clinical improvement in adjustable level.

4. The mean level of congruence of the self-concepts of individuals in a normal control group will not show a significant change in time.

These, then are the major hypotheses which we are interested in subjecting to experimental test. To accomplish this, definitions of several terms must be made more explicit. The first of these is concerned with a definition of the term mean level of congruence of the self-concepts. Level of congruence refers to the relative cohesiveness of all the selves which an individual may conceptualize. It is manifestly impossible to attempt to measure the relationships between all of these possible conceptual entities. This, however, does not appear to be necessary since an approximation of cohesiveness may be obtained by determining the relationship between two of the conceptual selves. Following the lead of Rogers and co-workers (51), a measure of the relationship between the ideal self and the real self might well be an approximation of the level of congruence of the total self-concept, which theoretically
can include many other types of self images. It is not clear whether the relationship between any other two conceptualized selves might be an equally good approximation of the relative cohesiveness of the whole or not, and the problem must await future research. It seems sufficient here to indicate that theoretical considerations would tend to support such a view. Experimental evidence, however, is already at hand to indicate the usefulness of the relationship of the real self and ideal self as an approximation of the level of congruence of the total self-concept. It has, therefore, been employed in this present study. Mean level of congruence merely refers to the fact that since approximations of level of congruence of the self-concept may be found for individuals, means may be determined for groups as well.

Once a definition of the areas to be sampled in attempting to measure the cohesiveness of the total self-concept has been given, there still remains the problem of the type of measurement to be employed. Several methods of collecting relevant data with regard to the real self and the ideal self suggest themselves, and all have peculiar advantages. In the present study, however, the author was not primarily interested in an evaluation of the two areas of self-functioning in and of themselves but rather in
measuring the relationship between them. This requires the collection of data in the two areas of conceptual functioning which can be easily transformed into numbers so that the relationship between the two self-concepts can be as exactly expressed as possible. Rogers and his co-workers (51) have again provided an interesting and highly workable solution to this problem. It depends on sampling of the real self and ideal self by means of a number of meaningful self-referent statements which can be categorized in a particular way for ease of statistical treatment. This makes possible a rapid and exact calculation of the relationship between them and presumably, therefore, of all the possible conceptual selves. Reference to Chapter II indicates the method employed in a research analysis involving clients undergoing client-centered psychotherapy. The method employed in the present study was adapted with minor variations from this study. It involves sampling of the real self and ideal self by means of sorting into a forced normal array a number of self-referent statements that can be meaningfully used to describe individuals. These Q-sorts can be correlated providing a measure of the relationship between these two aspects of the self-concept and, therefore, an approximation of the congruence of the many selves which make up the self-concept as a whole. By
the simple replication of the procedure in time relative
changes in congruence may be studied.

In view of the foregoing, it is now possible to restate
the general hypotheses in testable form. Before doing this,
however, it is necessary to make quite explicit an opera­
tional definition which bridges the gap between the two
sets of hypotheses. This definition follows:

In this study the level of congruence of
the self-concept will be measured by the
correlation score which represents the
mathematical relationship between the
ideal sort and the self-sort.

Having stated this definition, it is now possible to
restate the general hypotheses in terms of its implications.
They may be presented as follows:

1. The mean correlation score between the
self-sort and the ideal sort of a psy­
chotic patient group will be signifi­
cantly less than the mean correlation
score between the self-sort and the
ideal sort of a normal control group.

2. The mean correlation score between the
self-sort and the ideal sort before ther­
apy of a successfully treated psychotic
patient group will be significantly less than the mean correlation score between the self-sort and the ideal sort after therapy of this same group.

3. The mean correlation score between the self-sort and the ideal sort before therapy of the unsuccessfully treated psychotic patient group will be equal to the mean correlation score between the self-sort and the ideal sort after therapy of this same group.

4. The mean correlation score between the self-sort and the ideal sort of the normal control group will be equal to the mean correlation score between the self-sort and the ideal sort after a time interval of this same group.

Having stated in explicit form the nature of the experimental hypotheses studied, it remains to specify as exactly as possible the nature of the samples which were used to test these predictions.

B. Description of Experimental Populations

The patient groups in this study consisted of all patients tentatively selected for EST at two public hospitals.
over a six month period, with the following additional qualifications:

1. All patients processed were officially committed in-patients who had a diagnosis which indicated that they were suffering from a psychotic illness.

2. All patients processed fell within the age limits of not less than twenty or more than sixty years of age.

3. All patients processed were able to respond to testing procedures.

4. All patients processed were able to achieve a minimum score on a test of verbal intelligence.

5. All patients processed were free of purely physical disorders which complicated the psychiatric diagnosis.

The larger patient group was obtained at a state hospital for mental diseases in southern New England. A smaller patient group was obtained from the neuro-psychiatric wards of a city hospital in the same area. In both hospitals the same limitations applied.

In both institutions the diagnoses were arrived at by the hospital staffs functioning under the direction of
neuropsychiatrists and represent the consensus of opinion of the several members of the staffs. The writer had no official connection with either institution and participated in no way with the diagnostic or treatment formulations for any of the cases. His only contact with the patients was in interviewing them to determine whether or not they would be suitable candidates for this project and in administering the verbal intelligence test and the sorting procedures on two different occasions.

Following the limitations outlined above, forty individuals were processed and compose the original patient sample in the study. Of these, thirty-one were able to complete the post-treatment sorting tests for inclusion in the study and compose the final patient sample. These consist of twenty-two patients who were treated and tested at the state hospital while the remaining nine were obtained from the neuropsychiatric service at the city hospital. Of the original patient group of forty patients, nine were dropped following the initial testing procedures for various reasons. Seven did not start treatment, and the other two, although they completed treatment, refused to complete the post-treatment testing procedures.

Thus, the final patient group totaled thirty-one patients who were completely processed and met all the requirements for inclusion described above.
The mythical average individual of the patient group could be described as a native-born white, American, approaching thirty-five years of age, who left school at sixteen, after having almost completed the 10th grade. He has worked since at a semi-skilled or more commonly at an unskilled job involving manual labor. Judged by a test of verbal intellectual functioning, his intelligence would be classified as falling within the average range of endowment. Almost twice as many females as males appear in our sample, and of the females, almost twice as many are or have been married as have not, while among the males, this ratio approaches three to one. This is the patient's first admission to a mental hospital in this state, and his illness is of recent onset but is severe in nature.

The original normal control group consisted of twenty-two individuals selected to match the total patient group as closely as possible with regard to age, intelligence, educational level and age at which it was attained. The final number of individuals in the normal control group whose responses have been incorporated into the study is twenty, since two individuals were unable to complete the second part of the testing procedures. The largest part of the normal group consisted of fourteen members of the
duty detachment of an Army General Hospital in the southern New England area. The procedure of matching cases to the patient group was initially accomplished by a screening of Army personnel forms prior to interview, to eliminate candidates who did not meet the requirements of age, intelligence, or educational level. A random selection of the large number of remaining records was made until a suitable group was formed consisting of approximately the correct numbers of males and females. The remaining six members of the normal control group were selected from civilians residing in the city where the writer lives. Of the individuals who formed part of the duty personnel at the hospital, none had ever worked on a psychiatric ward or been under the care of a psychiatrist for any type of mental disorder, and all had received a psychiatric Profile I rating on pre-induction examination. The six civilian subjects had similarly been free of psychiatric illness. None of the control subjects was acquainted with the purpose of this study in any way. None had had any psychological or psychiatric training, and all were functioning effectively in their communities during the period of testing.

Table 1 presents the relevant data of the experimental and control groups with regard to age, intelligence test
score, educational level attained and age at which it was attained. A discussion of the results of the statistical tests between the groups which also appear in this table is postponed to Chapter IV. It is sufficient at present to indicate that they provide evidence that the groups can be considered legitimately comparable. No attempt was made to preserve the exact ratio of males to females of the patient group in the normal control group; similarly, no attempt was made to control marital status or occupational background since it was not considered feasible. In the writer's opinion, these factors do not affect the results; however, the appropriate distributions appear to guide the reader in Appendices A and B.

As previously mentioned, all individuals in the patient group were officially committed in-patients who had been diagnosed as suffering from a mental illness of a psychotic nature. No attempt was made to eliminate any type of illness.

The largest number of patients were suffering from one of four varieties of schizophrenic disorders, N = 21. These can be broken down into ten paranoid schizophrenic reactions, three catatonic schizophrenic reactions, two simple schizophrenic reactions in addition to six schizophrenic reactions undifferentiated. A smaller number of patients, N = 10,
were suffering from one of a variety of depressive illnesses, which can be separated into four psychotic depressive reactions, three manic-depressive reactions, depressed, two involutional psychotic reactions and one mixed depression.

C. Methods of Data Collection

All in-patients at two hospitals who were tentatively selected for EST over a six month period were screened as potential candidates for this research study. All patients who survived screening with regard to the additional limitations previously discussed, were processed for the study as follows. During the initial interview with the psychologist, if the patient appeared to be in sufficient contact with reality to be amenable to testing, the vocabulary test of the Wechsler-Bellevue Scale Form I was administered. In two cases, because of previous experience with this particular test, the vocabulary Scale of the Wechsler-Bellevue Scale Form II was used. In both tests, all words were given regardless of failures in contradistinction to the usual procedure. The administration was otherwise as indicated by Wechsler (64, p. 185). If the patient achieved a minimum raw score of ten, the processing was continued by administering the sorting tests which were used to measure self-concept functioning. Assessments of two aspects of the self-concept were made by sorting fifty self-referent
statements. Appendix C presents the list of statements used in the present study. They were selected by means of random sampling from the original one hundred statements utilized by Rogers and his co-workers (51) in a previous study. Several sets of fifty were tried prior to the beginning of this study before a workable set which appeared to be meaningful to the patients was found. In all cases, however, the sets of fifty were random selections from the total number of one hundred original statements. The statements were printed in standard block type on the back of IBM cards, which had previously been gang punched for patient number and statement number to facilitate handling. Each patient had his own set of cards, which were presented to him in random fashion, shuffled like a deck of playing cards. Appendix C lists the statements by means of their correct number designation. It should be emphasized, however, that the patients had no way of reading the IBM code, and, from their point of view, they were presented cards of the same fifty statements, always in a different order, printed on cards which had irregularly spaced punches through them. Each patient worked only with his own card set and with no other.

The sorting tests were presented to the patients in the following manner. They were told that this was a
test which all of the patients would be given in the near future and that it consisted of a set of cards on which were printed statements which people found useful in describing themselves. They were told that the tester was interested in their own ideas about themselves and that he would like to have them sort the cards first to describe themselves as they felt they were, (self-sort). It was emphasized that he was only interested in their own ideas about their personality and not what other people might have told them about themselves either in or out of the hospital. They were told to sort the cards to characterize the way they felt right at the moment and that to make the appraisal a little more exact, the tester wished them to sort the cards into seven piles. The three piles on their left should consist of statements that were not true of them. The pile in the middle should consist of statements that they were unsure about, whereas the three piles on the right were to consist of statements that were true of them. They were told that the piles on the extremes should represent the statements that were most true or most untrue of the fifty, whereas the two next closest to the center pile should consist of statements which were not quite as true or not quite as untrue. The two on each side of the center were to consist of statements which were
somewhat true or somewhat untrue. Following this description of the meaning of the categories, they were told the number of cards which must be placed in each pile. They then were asked if they had any questions with regard to what was required of them. They were told that they could shuffle and sort the cards for as long as they wished and that there were no right or wrong answers, since, of course, they were the best judges of their feelings about themselves. Small cards were placed on the desk to indicate where each pile should be placed as well as to remind the patient of the meaning of the placement and the correct number of cards to be placed in each particular pile. The frequencies in the requested array were as follows: 1, 4, 12, 16, 12, 4, 1. The patients were then instructed to go ahead and sort the statements to describe themselves as they really thought they were at that moment. The tester remained with the patient to answer any questions which arose with regard to the meaning of words or to repeat the directions when necessary.

After the statements had been sorted, they were immediately coded by means of an IBM marking procedure, and the cards were reshuffled and again presented to the patients with the following instructions. They were told that they had just finished sorting the cards to describe themselves as they thought that they really were. They
were told that the tester would like to have them sort the cards once more in the same manner, again placing the same number of cards in each of the same seven piles, but that this time we wished them to describe the kind of people they would like to be, (ideal sort). They were told we were interested not in the kind of person they felt they should be or that anyone else had told them they should be, but rather in the kind of person they felt they would like to be if it were possible. Again, the tester remained on hand to answer questions, and, following the sorting, the cards were again immediately coded and the card pack re-shuffled and filed until after the patient's course of EST was completed.

After the initial testing just described had been completed, the patient underwent a course of EST of the grand mal seizure type. The treatment was administered by the individual patient's ward physician and continued until, in his opinion, maximum benefit had been achieved. No form of concurrent therapy, either of an organic or formal psychotherapeutic nature, occurred, with the possible exception, in some cases, of work in a hobby shop supervised by an occupational therapist. Treatment was administered in most cases three times per week in the early morning. The number of treatments necessarily
varied as did the number of seizures obtained. Appendix D presents the relevant data. It was not felt that the number of treatments or seizures administered had any direct effect on the experimental results obtained, since the major interest was in studying the effect of adjustive change in general on the self-concept and not the means whereby it was induced. In any case, the patient's welfare made any plan for experimentally controlling this variable impossible.

Following the course of EST prescribed by the patient's physician, the two sorting tests were readministered with the same instructions. Sufficient time was allowed after treatment to allow the patients to recover from confusional effects induced by the course of therapy. However, since this varied from patient to patient and because the advice of the ward psychiatrist was sought with regard to the best time to readminister the tests from the point of view of the patient's welfare, the amount of time which elapsed following treatment before the retesting necessarily varied. A similar variability occurred in the amount of time which elapsed between initial testing and the beginning of the course of treatment. An attempt was made to keep the ranges between one and two weeks both between initial test and the beginning of the treatment and
between the end of treatment and the final testing. However, this was not always possible, and, therefore, the writer was faced with the choice of eliminating the data of subjects whose testing dates did not conform to such a rigid schedule or utilizing the data on the assumption that this variability had no important effect, which was the decision made. Appendix D also presents the relevant information.

Following the administration of the initial sorting tests and prior to initiation of therapy, each ward psychiatrist was asked to fill out a rating sheet for each patient. Copies of this scale sheet, together with the directions for filling it out, appear as Appendices E and F. It consists of a large number of variables with regard to present personal and social functioning which are rated on separate continua together with three separate overall ratings which are made on a five point scale indicating degree of psychiatric disturbance present. Thus, an overall rating of five is the appropriate rating for the most extremely disturbed of patients, whereas, a rating of one indicates a relatively much less disturbed level of functioning.

Following treatment the first three sections of a post-treatment rating form were filled out. A copy of this
schedule, together with appropriate directions for completing it, appears as Appendices G and H. This post-treatment rating sheet, as well as its instructions, closely parallels the pre-treatment rating sheet and directions, with the exception of the addition of a scale, section IV, consisting of five steps which indicates the degree of improvement in adjustive level. This section was completed last after the ward physician had had an opportunity to compare his pre and post-treatment ratings and appraise the degree of improvement.

This one scale, section IV, was the only part of the rating sheet data actually incorporated in the study. The other sections in both the pre and post-treatment scales were used to provide a common basis for evaluation among the various raters. The pre-treatment form was used to control as much as possible for halo effects and the unpredictable vagaries of memory which would certainly have occurred if the raters had been forced to remember the patient's pre-treatment status to compare with the post-treatment status in attempting to rate improvement or lack of it. The usefulness of the procedure is attested to by the favorable comments made concerning the method by several of the raters as well as the reliability of the ratings, an estimate of which was obtained and will be
described presently. The rating sheet used in this present study was adapted from one designed by Goldman (21) and contains many sections originally designed by her.

Independent pre and post-treatment ratings on fifteen individuals in the patient group, already mentioned, were obtained from the appropriate chiefs of service on the male and female psychiatric wards. The ratings of improvement, i.e., section IV of the post-treatment form, were used to estimate the reliability of psychiatric opinion of improvement. The Rank-order correlation between these ratings yielded a value of .94 indicating that the form yields highly reliable results.

When the ratings had been completed by the psychiatrists, section IV of the post-treatment sheet was used to separate the total patient group into those judged improved and those judged unimproved by treatment. Individuals rated as showing marked improvement or moderate improvement, steps 1 and 2 on the rating sheet, constitute the improved group. Patients judged to show slight improvement, no change or worse, steps 3, 4 and 5 in section IV, were placed in the unimproved group. In the case of fifteen of the patients for whom duplicate psychiatric ratings were available, an average between the two ratings was made to determine the degree of improvement. Thus, if a
patient showed marked improvement, step 1, in the opinion of one psychiatrist and slight improvement, step 3, in the opinion of the second, he was considered to have shown moderate improvement, step 2. However, any patient whose averaged improvement was not rated at step 2 or less was placed in the unimproved group. Thus, if a patient received one rating at step 1 and one rating at step 5, his average rating, step 3, would place him in the unimproved group.

D. Statistical Treatment of the Data

The basic data of this study which were subjected to statistical analysis consisted of four approximately normal distributions of fifty self-referent statements for each patient and control subject. An important limitation of these Q-sort arrays and the population of statements utilized in this study should be noted here. Only fifty items compose our statement population and our sorting array is composed of only seven categories. Both of these factors represent a reduction in the usual numbers employed, a population of statements of one hundred or more, and sorting arrays of nine to eleven categories being more common. Certainly the reduction of these two factors portends less reliability for the results here reported than would be the case if larger numbers could be employed. However, the
individuals in the patient population sampled, suffering as they did from extreme degrees of mental illness made the use of more statements and sorting arrays of larger dispersion impossible. The testing time involved because of their extreme distractibility and susceptibility to fatigue would have become disproportionately long. The writer was therefore faced either with not employing Q-technique, thereby making the study not comparable to previous studies in self-concept theory, or accepting this limitation and assuming the results to be valid in spite of it.

The Q-sorts consisted of an initial self-sort and ideal sort and a final self and ideal sort. Between these four Q-sorts, six correlations may be computed. These may be listed as follows:

1. $r$ between the self-sort before therapy and the ideal sort before therapy.
   
   $(r_{SB,IB})$

2. $r$ between the self-sort after therapy and the ideal sort after therapy.
   
   $(r_{SA,IA})$

3. $r$ between the ideal sort before therapy and the ideal sort after therapy.
   
   $(r_{IB,IA})$
4. \( r \) between the self-sort before therapy and the self-sort after therapy.
\[(r \text{ SB.SA})\]

5. \( r \) between the self-sort before therapy and the ideal sort after therapy.
\[(r \text{ SB.IA})\]

6. \( r \) between the ideal sort before therapy and the self-sort after therapy.
\[(r \text{ IB.SA})\]

The major interest in this study was of course concerned with the congruence of the selfsorts. Following usual \( Q \)-technique the Pearson product-moment correlation coefficient \((r)\) is used to represent this relationship. It constitutes an ideal way of relating the various sorts for several reasons. Since these sorts represent forced normal distributions, many of the major assumptions inherent in such correlations are automatically met. In the first place, although it is not necessary to assume normal distributions of the variables being correlated to use \( r \), the assumptions of linearity of regression and homoscedasticity are quite generally associated with normal marginal distributions.

Another advantage of \( r \) as a measure of relationship for such sorts is more practical than theoretical. Since
in each distribution of sorts the mean and variance are the same, i.e., 4 and 1.48, the computation of $r$ is greatly simplified for only the sum of the squares of differences between scores on the total statements for any two sorts needs to be obtained, all other factors in the relationship remaining constant.

The six product-moment correlations listed above were therefore computed between the four sorts for each patient and control subject, a total of three hundred and thirty-six correlations being required. The formula utilized consists of the relationship:

$$ r = 1 - \frac{\xi d^2}{2nVx} $$

This formula is a derivation of the raw score relationship of the usual Pearson product-moment correlation, which can be used when the standard deviations and means of the distributions to be correlated are the same. Here $\xi d^2$ equals the sum of the squared differences between scores on all the statements for the two sorts, while $Vx$ equals the fixed variance and $n$ equals the number of statements sorted.

The resulting product-moment correlations for the total patient group appear as Appendix I, while those for the normal control group appear as Appendix J.

While product-moment correlations represent the basic
data of this study, a transformation of them prior to the application of formal statistical tests was necessary. Such a transformation is needed because of certain peculiarities in the sampling error of r. In spite of randomness of sampling procedures, variable errors causing r to differ from the true population value occur. An adequate measure of the sampling variation of r's is of course necessary when comparing mean values of r for groups, but the usual formula for the standard error of r is misleading unless N is very large and universe r is zero. When universe r is large, the distribution of sample r's is skewed; such skewness being also inversely proportional to N. Thus, not only are the standard error estimates of r useless in such circumstances when comparing mean group r's but, in addition, the usual small sample parametric statistics for such comparisons cannot be used depending as they do on normal distributions.

In this study the implicit assumption exists that the correlations between the self-sorts and the ideal sorts in the populations are values considerably greater than zero, in spite of fluctuations which may occur as the result of adjustive change. If the assumption is accurate, the sampling distribution of r is skewed. Moreover, although the number of patients and subjects processed is not particularly small for a study of this type, small sample theory
provides the basis for statistical tests of the hypotheses. It is obvious, therefore, that some way of correcting for sampling errors of high values of \( r \) and relatively small numbers of subjects must be applied before the correlation coefficients can be adequately treated statistically.

A most useful and accurate method of handling sampling errors for high values of \( r \), applicable in both large and small samples and when \( r \) is low also, has been developed by Fisher (20). It consists of a logarithmic transformation of \( r \) to a normalized \( z \) value. Appropriately known as Fisher's \( r \) to \( z \) transformation, the relationship is given by:

\[
z = 1.1513 \log_{10} \frac{1 + r}{1 - r}
\]

The standard error of \( z \) is computed by:

\[
\sigma_z = \frac{1}{\sqrt{N - 3}}
\]

McNemar summarizes two distinct advantages of the \( z \) transformation as follows:

"(1) The distribution of \( z \) for successive samples is independent of the universe value, \( r \), i.e., for a given \( N \), the sampling distribution will have the same dispersion for all values of \( r \); (2) the distribution of \( z \) for successive samples is so nearly normal that it can be treated as such with very little loss of accuracy" (36, p. 123).
Since these two advantages of Fisher's z correct for the sampling errors which were predicted in view of the assumption as to the population r's, it was decided to employ the transformation. Thus, all statistical tests to be reported were conducted employing not product-moment correlations but rather their equivalent z values.

Appendices K and L present the z values for the total patient and normal control groups and are in effect replications of Appendices I and J in terms of z. Both the Pearson product-moment correlations and the r to z transformations of them were accomplished by IBM calculating machines at the Boston University Statistical Laboratory.

An attempt has been made to fit the experimental hypotheses into the framework of changes in the self-concept as empirically reflected in the data. Many statistical tests over and above those designed to test the main hypotheses are reported. No specific hypotheses were formulated to account for these extra tests since they are merely either descriptive, helping to order the project results being narrated; or in cases where they test group differences such differences would have been impossible to predict in advance since they depend on factors unrelated to the theory which generated the experimental hypotheses. Here we are referring to such factors as the relative
success with which patients responded to EST in this study.

Several different techniques were used to appraise group changes in this project. The basic statistical tests employed consisted of $t$ tests of group mean correlations expressed in terms of $z$. Such tests were used to determine whether the mean $z$ of a group was significantly different from zero; whether the mean $z$ or a group showed a significant change through time or finally, whether the mean $z$'s or gains in mean $z$ of two groups were significantly different.

In application of the $t$ test to appraise movement of the same group through time, the usual formula employed when utilizing differences between paired scores was used to test the differences in paired $z$'s of the group. In the application of a $t$ test to mean $z$'s or mean gains in $z$'s from two different groups, estimation of the comparability of the variance about the mean $z$'s of the two samples was made by means of the $F$ ratio. Depending upon the results of this ratio one of two different estimations of the standard error was employed in obtaining the $t$ ratio. If the $F$ ratio indicated that no significant difference existed between the groups' variances, a common variance was estimated in the usual manner. If on the other hand the $F$ ratio indicated that on the basis of the group variances
it was unreasonable to consider the populations as equally variable, then such a common variance would be incorrect. In these cases the individual sample variances were utilized.

In addition to using \( t \) tests involving mean \( z \)'s both as statistical checks of the main hypotheses and in a descriptive fashion, such tests were utilized in comparing group variances expressed in terms of \( z \) values. Such tests were accomplished for related variances, i.e., those involving change in the same group through time. Finally, in addition to \( t \) techniques, Chi Square for association as a descriptive statistic was routinely utilized whenever a \( t \) test for significance of an individual mean \( z \) was made.

Distribution-free techniques were occasionally utilized in appraising differences in mean \( z \)'s as well as the appropriate parametric \( t \) tests. There was some doubt in the writer's mind as to whether or not the basic assumptions underlying \( t \) had been met in these cases. In particular, the assumptions of equal variance and normality of distributions is called into question when comparisons of net gains in mean \( z \) are made for different groups. As a check, therefore, on parametric \( t \) test results, three types of non-parametric techniques were employed. The description of the computation, assumptions, and limitations of
these tests which follow is largely reproduced from the discussion of these techniques in the chapter on non-parametric statistics in Walker and Lev (62).

The first of these was the Sign test, a simple and widely applicable technique which tests whether the median of the population of differences is zero or not. The statistic is the number of positive or negative differences, which should be approximately equally divided if the null hypothesis is to be upheld. For samples of twenty-five cases or more, Chi Square corrected for continuity with one degree of freedom yields an approximation to the correct probabilities. In the Sign test reported in this study, such a Chi Square was computed. The Sign test was useful for our purposes in testing net gains in mean z's for groups since it assumes only that the differences are continuously distributed and independent. No assumptions with regard to homogenous variance or the form of the distribution of differences are required.

Another non-parametric technique utilized in this study was the Wilcoxon Signed Rank test for paired observations. It was utilized in studying changes in mean z of a group through time. The test is made by ranking all differences in order of absolute magnitude. The sign of each rank is then added in accord with the sign of the difference from
which it arose. The null hypothesis states that the positive rank sum is approximately equal to the negative rank sum. Tables are available for determining probabilities for twenty-five pairs of scores or less. When more than twenty-five pairs of scores are involved, the absolute value of the smaller rank sum approximates a normal distribution.

The final distribution-free technique employed was the Mann-Whitney test (34). It is used when \(N_1\) does not equal \(N_2\) and thus is useful for our purpose in comparing mean \(z\)'s and net gains in mean \(z\) for different groups. It was also utilized together with parametric \(t\) tests for comparing the normal control and total patient groups in terms of the controlled variables of age, present and past intellectual functioning as mentioned before in this chapter.

The statistic is computed in the following manner. Ranks are assigned to each score in the two groups from smallest to largest, and the sum of ranks obtained separately for each group. The statistic tests the null hypothesis that there is no difference between the two groups of correlations. It is designed to examine degree of overlap of the two distributions. Moses (38) indicates that it tests roughly whether one population has a larger mean than another. Since the test statistic follows the normal distribution if \(N_1\) and \(N_2\) are each eight or larger, tests of
significance may be made employing the normal probability table.

This completes the discussion of the statistical tests utilized in analyzing the data of the project. Before continuing with an examination of the results obtained, it is necessary to consider one final point with regard to the interpretation of the tests to follow.

In all tests of directional hypotheses in this study, i.e., those tests of predicted change in one group or predicted differences between two groups with regard to mean z's or gains in mean z, one-tailed tests were used. However, when the hypothesis was two sided as for example when no changes were predicted in the control group through time, two-tailed tests of significance were applied. This method was followed in the interpretation of both the parametric and non-parametric techniques which are reported in the following chapter.
CHAPTER IV

RESULTS

Before presenting the results obtained from tests of the major hypotheses, a comparison of the experimental and control groups to estimate their variation with respect to the relevant variables of age and present as well as past level of intellectual functioning is necessary.

This can be accomplished by demonstrating that no significant differences exist between these two groups with regard to these variables presumed to have an effect on the changing relationships within the self-concept. In experimental terms, this involves determining whether significant differences exist between the mean age, vocabulary test score, educational level and age at which it was attained of the groups involved. In deciding whether the groups significantly differ, the 5 percent level of significance was selected as the point at which the null hypothesis would be rejected.

Table 1 presents the group means as well as the results of the statistical tests involved. t tests of the differences between means and Mann-Whitney tests of the differences in distributions indicate that none of the group differences meet the specified level. The two groups, therefore, appear comparable with regard to the factors
### TABLE 1

A COMPARISON OF GROUP CHARACTERISTICS OF THE EXPERIMENTAL AND CONTROL SUBJECTS IN TERMS OF THE CONTROLLED VARIABLES

<table>
<thead>
<tr>
<th></th>
<th>Age (Yrs)</th>
<th>Vocab. Test Score WB I or II (Raw)</th>
<th>Educational Grade Completed</th>
<th>Age When Education Completed (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N  Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
<td>Mean  SD</td>
</tr>
<tr>
<td>Patient Group</td>
<td>31  34.58 7.77</td>
<td>22.60 5.20</td>
<td>10.23 2.03</td>
<td>16.55 1.76</td>
</tr>
<tr>
<td>Normal Group</td>
<td>20  34.20 10.11</td>
<td>24.68 2.68</td>
<td>11.15 3.14</td>
<td>17.50 3.37</td>
</tr>
</tbody>
</table>

**t-tests of the Differences Between Means**

(Df = 49)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient vs Normal Group</td>
<td>.15*</td>
<td>1.84*</td>
<td>1.14*</td>
<td>1.13*</td>
</tr>
</tbody>
</table>

**U Tests of the Differences Between Distributions**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient vs Normal Group</td>
<td>.47*</td>
<td>1.62*</td>
<td>.92*</td>
<td>.77*</td>
</tr>
</tbody>
</table>

*Not significant
specified, and changes occurring in the experimental group may be presumed not to be the result of these variables.

We may now proceed to describe the result of tests in statistical form of the major hypotheses as outlined in Chapter III. Let us begin by characterizing the relationship between the self and the ideal self prior to the initiation of therapy.

A. The Initial Self-Ideal Relationship

1. The Total Patient Group:

Table 2 presents the correlations between these two sorts for the total patient group both before and after treatment. As can be noted, prior to beginning EST, there is a wide variation in the self-ideal correlations extending from a negative relationship of \(-.24\) to a fairly high positive relationship of \(.80\). The mean \(z\) of this array is \(.28\), corresponding to a correlation of \(.27\). That this is a significant relationship is demonstrated from a computation of a \(t\) ratio for testing the hypothesis that the mean \(z\) of the population is zero. The standard error from the observed distribution is \(.07\), and the \(t\) ratio equals \(4.12\) which is significant at less than the \(.001\) level with 30 degrees of freedom.

To answer the question as to whether this correlation between the self and ideal-self conceptions is a uniform
TABLE 2

SELF-IDEAL CORRELATIONS IN THE PATIENT GROUP

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Pre-treatment r</th>
<th>Post-treatment r</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-.16</td>
<td>.39</td>
</tr>
<tr>
<td>2</td>
<td>.28</td>
<td>.50</td>
</tr>
<tr>
<td>3</td>
<td>.74</td>
<td>.65</td>
</tr>
<tr>
<td>4</td>
<td>-.23</td>
<td>.82</td>
</tr>
<tr>
<td>5</td>
<td>-.22</td>
<td>.69</td>
</tr>
<tr>
<td>6</td>
<td>.69</td>
<td>.57</td>
</tr>
<tr>
<td>7</td>
<td>-.19</td>
<td>.08</td>
</tr>
<tr>
<td>8</td>
<td>.47</td>
<td>.15</td>
</tr>
<tr>
<td>9</td>
<td>.18</td>
<td>.60</td>
</tr>
<tr>
<td>10</td>
<td>-.11</td>
<td>.60</td>
</tr>
<tr>
<td>11</td>
<td>.14</td>
<td>.19</td>
</tr>
<tr>
<td>12</td>
<td>.61</td>
<td>.20</td>
</tr>
<tr>
<td>13</td>
<td>.28</td>
<td>.64</td>
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<td>15</td>
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<td>20</td>
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<td>21</td>
<td>.10</td>
<td>.18</td>
</tr>
<tr>
<td>22</td>
<td>-.24</td>
<td>.76</td>
</tr>
<tr>
<td>23</td>
<td>.55</td>
<td>.19</td>
</tr>
<tr>
<td>Patient No.</td>
<td>Pre-treatment r</td>
<td>Post-treatment r</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>24</td>
<td>.32</td>
<td>.41</td>
</tr>
<tr>
<td>27</td>
<td>-.11</td>
<td>.51</td>
</tr>
<tr>
<td>31</td>
<td>.01</td>
<td>.49</td>
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<td>32</td>
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<td>.80</td>
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<tr>
<td>34</td>
<td>-.20</td>
<td>.74</td>
</tr>
<tr>
<td>35</td>
<td>.20</td>
<td>.18</td>
</tr>
<tr>
<td>37</td>
<td>.53</td>
<td>.58</td>
</tr>
<tr>
<td>38</td>
<td>.42</td>
<td>.80</td>
</tr>
<tr>
<td>39</td>
<td>.60</td>
<td>.37</td>
</tr>
<tr>
<td>40</td>
<td>.15</td>
<td>.53</td>
</tr>
<tr>
<td>Mean z</td>
<td>.28</td>
<td>.55</td>
</tr>
<tr>
<td>Corresponding r</td>
<td>.27</td>
<td>.50</td>
</tr>
</tbody>
</table>
relationship or whether there are non-chance individual differences in the magnitude of the correlations which for some patients are positive and for some negative with a resultant mean at .28, the Chi Square test for association was made within this group of correlations. The value of Chi Square here is equal to 206.52, which is significant at less than the .001 level with 30 degrees of freedom.

It thus appears that for the total patient group prior to treatment there is a wide range of individual correlations between the self and ideal-self concepts. It is further apparent that the average of these correlations, .27, is a significant value indicating a true association between the self and ideal. It also appears that there are significant individual differences or distinct subgroups within this group so far as the magnitude of the self-ideal relationship is concerned.

2. The Normal Control Group:

Let us now consider the relationship between the self and ideal in the normal control group as demonstrated in the initial sorting procedure.

As can be seen in Table 3 a fairly wide range of correlations obtains in the normal control group as well. Indeed, it is greater than the range demonstrated in the patient group, running from a high negative relationship of -.50 to a fairly high positive relationship, .77. The mean
<table>
<thead>
<tr>
<th>Subject No.</th>
<th>First Sort r</th>
<th>Second Sort r</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.60</td>
<td>.62</td>
</tr>
<tr>
<td>2</td>
<td>.37</td>
<td>.55</td>
</tr>
<tr>
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<td>.73</td>
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<tr>
<td>21</td>
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<td>.65</td>
</tr>
<tr>
<td>Mean z</td>
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<td>.71</td>
</tr>
<tr>
<td>Corresponding r</td>
<td>.55</td>
<td>.61</td>
</tr>
</tbody>
</table>
z of the array is .62 with a corresponding r of .55. The ratio of this mean z to the standard error obtained from the observed array of z values, .08, is 7.95, which is significant at less than the .001 level with 19 degrees of freedom.

Chi Square for the significance of individual differences yields a value of 110.30 which with 19 degrees of freedom is similarly significant at less than the .001 level.

These findings, similar to those demonstrated in the patient group, may be characterized by stating that there is a significant high positive correlation between the self and ideal self in the normal control group. In addition, however, there are true individual differences in the correlations which cluster around a mean value of .55.

3. Comparison of the Initial Self-Ideal Relationship Between the Total Patient and Normal Groups:

Having characterized the relationship between the initial self and ideal sorts in the patient and control groups, we may now present the results of the statistical tests of the first hypothesis as outlined in Chapter III. This, it will be recalled, involved a comparison of the mean correlation score between the self and ideal sort of the control group and the patient group prior to treatment. For purposes of clarity, it is restated as follows:
The mean correlation score between the self-sort and the ideal sort of a psychotic patient group will be significantly less than the mean correlation score between the self-sort and the ideal sort of a normal control group.

The mean correlation score of the patient group prior to treatment was reported as .28, corresponding to a correlation of .27; whereas the mean correlation score of the normal group equaled .62, corresponding to a correlation of .55. The difference in these mean correlation scores equals .34 with a standard error of .11, yielding a $t$ of 3.19 which with 49 degrees of freedom is significant at less than the .01 level against a one-sided hypothesis. It is thus demonstrated that there is a significant difference between the patient and normal groups with regard to the relationship between the self and ideal sort. A greater discrepancy exists between the sorts of the patient group than the sorts of the normal group as was predicted. The null hypothesis must, therefore, be rejected.

B. The Final Self-Ideal Relationship

1. The Total Patient Group

Reference to Table 2 indicates that following EST a wide variation in the self-ideal correlations still exists.
They now extend from - .14 to .82. The mean z of the array has a value of .55, corresponding to a correlation of .50. The t ratio for testing the significance of this relationship yields a value of 9.02, employing a standard error from the observed distribution of .06. This t is significant at less than the .001 level with 30 degrees of freedom.

Testing for significance of association in these correlations, Chi Square yields a value of 162.46, which with 30 degrees of freedom is similarly significant at less than the .001 level.

2. The Normal Control Group:

Table 3 presents the equivalent data for the normal group following elapsed time. The range of correlations extends from - .61 to .81. The mean z of this array equals .71 corresponding to an r of .61. This is obviously a significant relationship which is verified by a t ratio of 7.89 when tested for significance. The standard error from the observed array equals .09 and the t is significant at less than the .001 level with 19 degrees of freedom.

Computation of Chi Square for individual difference yields a value of 145.51, which is also significant at less than the .001 level with 19 degrees of freedom.

3. A Comparison of the Final Self-Ideal Relationship Between the Total Patient Group and the Normal Group:

This comparison does not bear directly on any of the
stated hypotheses. It was considered impossible to predict whether or not the total patient group would change to such an extent as to move significantly closer to the relationship obtaining in the normal control group following treatment, since this possibility was contingent not only on verification of the stated hypotheses but also on an adequate number of patients who significantly improved. That such a number did so respond is evident from a consideration of the following test.

The mean correlation score of the patient group following EST was reported as .55 expressed in terms of z. This value corresponds to an r of .50. The normal group's second sort yielded a mean z of .71 corresponding to an r of .61. The difference between these mean correlation scores equals .16 which with a standard error of .11 yields a t of 1.52 which is not significant with 49 degrees of freedom.

Apparently no significant difference exists between the groups in terms of the final self-ideal relationship, in contradistinction to the results obtained with these groups on the initial self-ideal relationship. The implications of this finding will be discussed in the following chapter.

C. The Change in the Self-Ideal Relationship

1. The Total Patient Group:

Prior to treatment the patient group demonstrated
a mean correlation between the self and the ideal-self concept of .27, whereas following treatment this value equaled .50. The mean difference in correlations equals .23 which expressed in terms of $z$ equaled .27. A $t$ test of this mean difference employing a standard error of .09 from the observed distribution of differences yielded a $t$ of 2.92, which with 30 degrees of freedom is significant at less than the .005 level against a one-sided hypothesis. This appears to indicate a significant change in the hypothesized direction.

Although it does not bear directly on the hypothesis, it is interesting to note that this change occurred in the absence of related change in the degree of variation of these correlations. The variation of correlations prior to treatment expressed in terms of $z$ equaled .15, whereas, after treatment it corresponds to a $z$ of .12. A $t$ test for comparison of these related variances yields a value of .65, which is not significant for 29 degrees of freedom.

Since there is a question as to whether or not the data strictly meet the requirements necessary for correctly employing the $t$ test for paired differences, the non-parametric Sign test was run on the differences as well. There were 21 increases (positive differences) in self-ideal correlations and 10 decreases (negative differences).
This data yields a z value of 1.80 which is significant at less than .04 percent level against a one-sided hypothesis. It seems obvious from the results of these tests that there has been a marked change in the discrepancy between the self and ideal conceptions of the total patient group before and after EST. The data indicate that these changes have occurred in the absence of significant change in variance and also that the change can be demonstrated in the predicted direction when tested with either parametric or non-parametric techniques. This result as was the case in section B, 3, does not bear directly on any stated hypothesis. The reasons for failure to state an hypothesis to predict this result have already been indicated in the preceding section. It is, however, in line with the general hypotheses and is reported for the sake of completeness and interest.

2. The Normal Control Group:

The results of statistical tests in this section bear directly on hypothesis 4 which deals with change in the normal group. For purposes of clarity, we will restate this hypothesis.

The mean correlation score between the self-sort and the ideal sort of the normal control group will be equal to the mean correlation
score between the self-sort and the ideal sort after a time interval of this same group.

On the initial sort the mean correlation between the self and ideal self of the normal group was .55, whereas on the final sort after an interval of time this value was .61. The mean difference is equal to .06, which expressed in terms of z equals .08. Employing a standard error of .05 from the observed distribution of differences this difference yields a t value of 1.77, which for 19 degrees of freedom is not significant.

The variances on the first and second sorts when transformed to z are .12 and .16. A t test for comparison of these related variances yields a value of 1.16, which for 18 degrees of freedom is similarly not significant.

There were 15 increases and 5 decreases in self ideal correlations from the first to the second sortings. The Wilcoxon Signed Rank test was used to test the paired differences rather than the Sign test since it is sensitive to the magnitude of differences as well as the number. The sum of ranks corresponding to the negative differences yields a value of 58.5, which does not meet the 5 percent level of significance.

Summarizing our findings, it is apparent that the change
in the normal group has not been significant as can be shown both by parametric and non-parametric statistical tests. Similarly, there has been no significant change in the variances of these two arrays of correlations. It is thus apparent that hypothesis 4 has been demonstrated and the null hypothesis cannot be rejected.

3. The Improved Patient Group:

Table 4 presents the correlations between the two sorts for the improved patient group both before and after treatment as well as the psychiatric ratings of improvement. Prior to beginning treatment, the range of correlations is fairly wide, running from \(-.23\) to \(.74\). The mean z of the array is equal to \(.27\), corresponding to a correlation of \(.26\), the relationship being very similar to that in the patient group as a whole. This is again a significant relationship, the \(t\) ratio for testing the hypothesis that the mean \(z\) is zero yielding a value of 3.07, the standard error from the observed distribution equalling \(.09\). This \(t\) ratio with 15 degrees of freedom is significant at less than the \(.01\) level. Chi Square to test for the significance of individual differences yields a value of 88.16, which with 15 degrees of freedom is far beyond the \(.001\) significance level.

At the outset, therefore, there is a significant
# TABLE 4

SELF-IDEAL CORRELATION IN THE IMPROVED PATIENT GROUP

<table>
<thead>
<tr>
<th>Patient Number</th>
<th>Pre-treatment $r$</th>
<th>Post-treatment $r$</th>
<th>Psychiatric Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-.16</td>
<td>.39</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>.28</td>
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<td>3</td>
<td>.74</td>
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<tr>
<td>4</td>
<td>-.23</td>
<td>.82</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>.18</td>
<td>.60</td>
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<td>.19</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>.60</td>
<td>.46</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>.11</td>
<td>.14</td>
<td>1</td>
</tr>
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<td>33</td>
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<td>.74</td>
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</tr>
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<td>38</td>
<td>.42</td>
<td>.80</td>
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<td>.60</td>
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</tr>
<tr>
<td>40</td>
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<td>.53</td>
<td>2</td>
</tr>
<tr>
<td>Mean z</td>
<td>.27</td>
<td>.63</td>
<td></td>
</tr>
</tbody>
</table>

Corresponding $r$ = .26

Note: 1 - Marked Improvement  
       2 - Moderate Improvement
positive relationship between the self and ideal concepts of the improved patient group. Again, it is found that this relationship indicates that there are true individual differences in the magnitude of the correlations which deviate around the estimated mean of .26.

Following treatment the range of correlations is no longer as wide as it was prior to treatment. All the correlations are now positive, running from .14 to .82. The mean z is equal to .63, corresponding to a correlation of .56. This is a significant relationship, and the t ratio which equals 7.59 employing a standard error of .08 confirms this. It is significant at less than the .001 level with 15 degrees of freedom.

Testing again for the significance of individual differences, Chi Square equals 78.68, which again is well beyond the .001 level with 15 degrees of freedom.

Following treatment, therefore, the patient's self and ideal concepts show a highly significant and positive relationship and again there is a significant range of individual differences in the degree of self ideal similarity.

Let us now evaluate this change in relationship. Since the evidence which follows bears directly on hypothesis 2, let us restate it for the purposes of clarity.

The mean correlation score between the self-sort
and the ideal sort before therapy of a successfully treated patient group will be significantly less than the mean correlation score between the self-sort and the ideal sort after therapy of this same group.

Hypothesis 2 states that there would be an increase in the mean correlation score between the self and ideal sort of a successfully treated patient group following treatment. Prior to treatment, as was noted, the mean correlation between the self and ideal sort expressed in terms of z equaled .27 corresponding to an r of .26. Following treatment, the mean z equaled .63, corresponding to an r of .56. This represents an increase expressed in terms of z of .37 or in terms of r of .30. A t test of the significance of this change yields a value of 3.16, utilizing .12 as the standard error of the differences. This t is significant at less than the .01 level against a one-sided hypothesis, with 15 degrees of freedom, indicating that there has been a significant change in the improved patient group in the predicted direction. The null hypothesis must, therefore, be rejected.

4. The Unimproved Patient Group:

Table 5 presents the correlations between the initial and final sorts for the unimproved patient group as well as the psychiatric ratings of improvement. Before
TABLE 5
SELF-IDEAL CORRELATION IN THE UNIMPROVED PATIENT GROUP

| Patient Number | Pre-treatment $r$ | Post-treatment $r$ | Psychiatric Ratings
<table>
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<td>6</td>
<td>0.69</td>
<td>0.57</td>
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<td>7</td>
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<td>0.08</td>
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<td>8</td>
<td>0.47</td>
<td>0.15</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>-0.11</td>
<td>0.60</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>0.61</td>
<td>0.20</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>0.28</td>
<td>0.64</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>0.80</td>
<td>0.64</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>-0.24</td>
<td>0.76</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>0.55</td>
<td>0.19</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>0.32</td>
<td>0.41</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>-0.11</td>
<td>0.51</td>
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<tr>
<td>32</td>
<td>0.18</td>
<td>-0.14</td>
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<td>4</td>
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<td>0.53</td>
<td>0.58</td>
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<tr>
<td>Mean</td>
<td>0.30</td>
<td>0.47</td>
<td></td>
</tr>
</tbody>
</table>

Corresponding $r$ 0.29 0.44

Note- 1 - Marked Improvement
2 - Moderate Improvement
3 - Slight Improvement
4 - No Change
5 - Worse
The range of correlations is from -0.24 to 0.80. The mean z of the array equals 0.30, corresponding to a correlation of 0.29. Again, the relationship is very similar to that obtaining in both the total patient group and the improved patient group. The t ratio for testing whether or not the mean z is significantly different from zero, equals 2.78, employing a standard error from the distribution of 0.11. This t ratio is significant at less than the .02 level with 14 degrees of freedom. Chi Square for testing for significance of individual differences yields a value of 117.50, which with 14 degrees of freedom is significant at less than the .001 level.

Prior to treatment, therefore, a significant positive relationship between the self and ideal self concepts obtains in the unimproved patient group. Again, it is found that there are true individual differences in the magnitude of the correlations which deviate around the estimated mean of 0.30 in terms of z.

Following treatment the range of correlations as reproduced in Table 5 runs from -0.14 to 0.76. The mean z of the array equals 0.47, corresponding to an r of 0.44. This relationship is significant at less than the .001 level with 14 degrees of freedom as indicated by a t ratio of 5.34 employing a standard error of 0.09.
Again, there appear to be individual sub-groups within this array of correlations, Chi Square for individual differences equalling a value of \(74.26\) which with 14 degrees of freedom is significant at less than the .001 level.

Following EST, therefore, it may be said that the patient's self and ideal-self concepts show a highly significant positive relationship, and, as before, there are still significant sub-groups within the array of correlations which deviate around the estimated mean. We are now in a position to evaluate the change in relationship between the self and ideal-self concepts in the unimproved patient group before and after treatment. This will be, in effect, a statistical test of hypothesis 3. For purposes of clarity, this may be restated as follows:

The mean correlation score between the self-sort and the ideal sort before therapy of the unsuccessfully treated psychotic patient group will be equal to the mean correlation score between the self-sort and the ideal sort after therapy of this same group.

The mean change in the self-ideal relationship in the unimproved patient group before and after treatment is equal to a z value of .17. The standard error of the differences equals .15, yielding a \(t\) of 1.14, which does not
approach the .05 level with 14 degrees of freedom. It thus appears that there has been no significant change in the unimproved patient group before and after treatment, and the null hypothesis cannot be rejected.

D. Direct Comparisons of Group Changes

We have demonstrated that there are non-random increases in self-ideal correlations in the total patient group following EST and that no evidence for similar change exists for the control group. In addition, we have demonstrated that there is a significant increase in such correlations in the improved patient group which cannot be demonstrated in the unimproved patient group. The results, however, are still ambiguous since the combined effects of uncontrolled variables might lead to supposition of increases in relationship where none exist.

We may begin to come to grips with this problem by directly comparing increases in self-ideal correlations of the groups involved. Let us first consider the mean gains in z of the total patient and normal control groups.

1. Total Patient vs Normal Control Group:

The mean gain in z for the patient group was reported as .27 with a standard error of .09, whereas the gain in the control group equaled .08 with a standard error of .05. The mean difference is equal to .19 with a standard
error of .10, this value yielding a $t$ of 1.90 which with 49 degrees of freedom is significant at less than the .05 level against a one-sided hypothesis.

When the Mann-Whitney test is applied to these same data, grouping the differences of the patient and control groups together, the sum of ranks for the control group yields a value of 442.0. This yields a $z$ of -1.51, which is significant at the .07 level against a one-sided hypothesis.

The results of these tests are somewhat ambiguous. The parametric technique indicates a significant difference in the predicted direction, while the non-parametric test, although yielding a value highly suggestive of a non-random difference, does not meet the .05 level. Perhaps this difference is due to the relative insensitivity of the non-parametric statistic which is an invariable consequence of sacrifice of parameters. In general it seems safe to conclude that a real difference in the predicted direction occurred. Let us now directly compare the change in the improved group with that in the normal control group.

2. The Improved vs the Normal Control Group:

As reported, the mean gain in the self-ideal relationship of the improved patient group equals .37 with a standard error of .12, whereas the change in the control
group through time yielded a value of .08 with a standard error of .05. A $t$ test of the significance of this mean difference, .29, employing a standard error of .13 yields a value of 2.23, which with 34 degrees of freedom is significant at the .01 level against a one-sided hypothesis. The Mann-Whitney test applied to this same difference yields a value of 296.0 as the sum of ranks for the normal control group which yields a $z$ of -2.36, significant at less than the .01 level against a one-sided hypothesis.

It is evident, therefore, that a highly significant difference in mean gain in correlation has been demonstrated by the improved patient group as against the normal control group. A final method of direct evaluation of change is to compare the net differences between the improved and the unimproved groups.

3. The Improved vs the Unimproved Group:

As noted above, the mean gain in self-ideal relationship of the improved group equals .37 with a standard error of .12. The equivalent change in the unimproved group equals .17 with a standard error of .15. A $t$ test of this mean difference, .20, yields a value of 1.05, employing a standard error of .19. This result is not significant with 29 degrees of freedom. When the Mann-Whitney test is applied to this data, the sum of ranks for the unimproved group
yields a value of 209.0. This is equal to a $z$ of -1.23, which does not approach the .05 level of significance.

Comparison of these two groups on the initial self-ideal relationship also yields non-significant results. The mean correlation score for the improved group is .27, while the score for the unimproved group is .30. A $t$ test of this mean difference, .03, employing a standard error of .14, yields a value of .21, which is not significant for 29 degrees of freedom. When the Mann-Whitney test is applied to this data, the sum of ranks for the unimproved group is 248.0, which yields a $z$ of .32, a non-significant result.

A comparison of these two groups on the final self-ideal relationship yields similar results. The mean correlation score for the improved group was reported as .63, while the score for the unimproved group is .47. A $t$ test of this mean difference, .16, with a standard error of .12, yields a result of 1.33 which is not significant for 29 degrees of freedom. When the Mann-Whitney test is applied to this data, the sum of ranks for the less improved group is 212.5 and the $z$ of -1.09 is again not significant.

It is apparent that although the net increase in mean $z$ is highly significant in the improved patient group as compared to the normal control group, and suggestive of a real difference even when the total patient group is
similarly compared, the net gains in mean $z$ between the im-
proved and unimproved patient groups do not achieve such
significance. A discussion of the implications of this find-
ing together with those of the other statistical tests re-
ported will be postponed to Chapter V so that they may be
considered in relation to judgments concerning the results
as a whole.
CHAPTER V

DISCUSSION OF RESULTS

A. Results in the Total Patient Group

Table 6 depicts the changing relationships of the self-conceptions in the total patient group. As can be seen before treatment, the self bears a low but significant relationship to the wanted self ($r_{SB,IB} = .27$). After therapy, however, this relationship is greater ($r_{SA,IA} = .50$). Tests of this difference in mean correlation of .23 by means of both parametric and non-parametric statistical techniques as reported in the preceding chapter indicate that this is a significant change in congruence.

Further examination of the web of intercorrelations provides evidence to indicate that the change in relationship between the self and ideal conceptions is due primarily to change in the perceived self, ($r_{SB,SA} = .33$), the ideal self-conception remaining more consistent, ($r_{IB,IA} = .60$). There is some indication that the change in the perceived self may be directional, the self after therapy bearing a higher relationship not only to the ideal after therapy but a somewhat, though not significantly higher, relationship to the ideal self before therapy,
TABLE 6
CHANGE IN SELF-IDEAL CORRELATIONS IN THE NORMAL CONTROL AND TOTAL PATIENT GROUPS

Normal Control Group

<table>
<thead>
<tr>
<th></th>
<th>First Sort</th>
<th>Second Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal</td>
<td>IB .74</td>
<td>IA</td>
</tr>
<tr>
<td></td>
<td>.54 .55</td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>SB .70</td>
<td>SA</td>
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</tbody>
</table>

Total Patient Group

<table>
<thead>
<tr>
<th></th>
<th>First Sort</th>
<th>Second Sort</th>
</tr>
</thead>
<tbody>
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<td>Ideal</td>
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<td>IA</td>
</tr>
<tr>
<td></td>
<td>.32 .25</td>
<td>.50</td>
</tr>
<tr>
<td>Self</td>
<td>SB .33</td>
<td>SA</td>
</tr>
</tbody>
</table>
The slight change in the self ideal does not bring it closer to the pre-treatment self.

It is apparent then that the congruence of the self and ideal conceptions has shown a significant change in the total patient group. As noted in the preceding chapter, no specific hypotheses were formulated predicting such a change because it is obviously dependent not only on verification of the stated theory of self-concept modification as a central factor in adjustive change, but also on a large enough number of individuals responding successfully to EST in the total patient group. That a significant number of patients did so respond is demonstrated by the changes in this group. It is interesting to note that both the initial and final self-ideal relationships are significant values and that there are independent sub-groups in the range of correlations contributing to both group means. The possibility of these clusters of correlations or statistical sub-groups being related to nosological categories of patients is an intriguing one but our data is not adequate to investigate this possibility. Before continuing, it might also be pointed out that the change in congruence of self-conceptions occurred in the absence of a significant change in variance in the ranges of correlations.
Apparently the variability in individual levels of congruence of self-conceptions in the group has not changed in spite of a shift in the entire scale in the direction of greater congruence. Possibly this finding means that changes in the levels of congruence of self-conceptions occur for the majority of patients to some extent but that for some the change is greater than for others.

B. Results in the Normal Control Group

Table 6 also contains an illustration of the intercorrelations of the self-conceptions in the normal control group. There is initially a fairly high relationship between the self and ideal in this group \((r_{SB.IB} = .55)\). At the second sort, this relationship has changed but little \((r_{SA.IA} = .61)\). Both of these mean correlations are significant relationships of course, but as is supposed, the change in mean correlation of .06 is not significant as indicated in tests by means of both parametric and distribution-free statistics reported in the preceding chapter.

Differences between the rest of the intercorrelations when compared to the total patient group are interesting. It is immediately apparent that the self has changed but little, especially when compared to the patient group \((r_{SB.SA} = .70)\). The ideal conception of the
self is similarly quite stable \((r_{IB,IA} = .74)\). The consistency of the ideal relationship appears somewhat higher than that reported for the patient group, but, again, the difference is probably not significant.

It is apparent from a consideration of this table of intercorrelations that the congruence of the self and ideal conceptions has shown no significant change in the normal control group as was predicted in hypothesis 4. This is made evident by the results of tests of both parametric and non-parametric type reported in Chapter IV. There is again no significant change in variances between the first and second sorts, which may perhaps be interpreted as adding weight to the supposition that no change has occurred in this group when the lack of change in mean correlation values is simultaneously considered. It is interesting to note that there are again significant sub-groups within the initial and final groups of correlations reflecting individual differences in self-concept congruence.

Before going on to a consideration of the results obtained with the improved patient group's data, it should be pointed out that there is additional evidence of an indirect sort bearing on the contention that a significant change has occurred in the patient group; whereas the normal control group has remained reasonably stable insofar as relationship between self and ideal conceptions is
concerned. As was pointed out in Chapter IV, a test of the significance of the difference between the initial mean correlations of these two groups indicated that they were significantly different. This test was submitted as evidence bearing on hypothesis 1, which was upheld on this basis. A similar test between the two groups, mean self-ideal correlations on the second sort, indicates that no significant difference exists here. This specific test bears on no stated hypothesis. The reasons for failure to specify such a result in advance are the same as those which apply to failure to predict the change in the total patient group. Of course the change from a significant difference to a non-significant difference in mean self-ideal correlations between these two groups is no direct proof of a change in one of the groups, but together with the other evidence, it provides additional support for the argument.

C. Results in the Improved Patient Group

Table 7 depicts the relationships in the self-conceptions of the improved patient group. In this group, before treatment, the self again bears a low but significant relationship to the ideal \( r_{SB.IB} = .26 \). Following EST, however, the relationship is much higher and more significant, the self-conceptions more congruent.
TABLE 7

CHANGE IN SELF-IDEAL CORRELATIONS IN THE IMPROVED AND UNIMPROVED PATIENT GROUPS

**Improved Patient Group**

<table>
<thead>
<tr>
<th></th>
<th>First Sort</th>
<th>Second Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal</td>
<td>IB .62 IA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.26</td>
<td>.32 .25 .56</td>
</tr>
<tr>
<td>Self</td>
<td>SB .35</td>
<td>SA</td>
</tr>
</tbody>
</table>

**Unimproved Patient Group**

<table>
<thead>
<tr>
<th></th>
<th>First Sort</th>
<th>Second Sort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal</td>
<td>IB .58 IA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.29</td>
<td>.35 .25 .44</td>
</tr>
<tr>
<td>Self</td>
<td>SB .30</td>
<td>SA</td>
</tr>
</tbody>
</table>
(r SA.IA = .56). Tests of this difference in mean correlation of .30 by means of both parametric and distribution-free techniques as reported in Chapter IV indicate that this is a highly significant change.

Examination of the interrelationships among the other sorts indicates, as was the case with the total patient group, that it is the self-concept which has changed most significantly (r SB.SA = .35), the ideal self-conception remaining again reasonably stable (r IB.IA = .62). The relation of the post-treatment self to the pre-treatment ideal again suggests that the change in the self may be directional as was the case in the total patient group, the self becoming more like the pre-treatment ideal (r IB.SA = .32). Again, the slight change in the ideal conception could not be interpreted as bringing it closer to the pre-treatment self (r SB.IA = .25).

It is interesting to note the similarity between the results in the improved patient group and those in the total patient group. Indeed, the relationship between the ideal sort before and the self-sort after, as well as the correlation between the self-sort before and the ideal sort after, are the same in both groups. The groups also show highly similar results when their ideal sorts before and after and their self sorts before and after are compared.
The initial self and ideal correlations differ only by .01 correlation points. The greatest difference occurs between the correlations depicting the relationship between the final or post-treatment self and ideal conceptions. Even here, the difference is not large, mounting to only .06 correlation points in favor of the improved patient group. It should be pointed out, however, that this difference is consistent with the presumed greater degree of adjustive change in the improved patient group.

It is obvious from a consideration of the results obtained with the improved patient group that hypothesis 3 specifying a significant change in this group in the direction of greater congruence of the self-conceptions must be accepted. It is interesting to note again that there are individual subgroups in the correlations in both the initial and final sorting arrays.

D. Results in the Unimproved Patient Group

Table 7 includes a description of the correlations between sorts for the unimproved patient group as well. The results are highly similar to those already noted in the improved patient group and the total patient group, except that the increase in congruence between the self and ideal conceptions is not as great. Before treatment, the self again bears a low significant relationship to the ideal
(r SB.IB = .29). After EST, however, this relationship has changed somewhat to a slightly more significant value (r SA.IA = .44). This mean difference of .15 correlation points is not significant but is suggestive. This result provides evidence for the acceptance of hypothesis 3. Again the most marked change occurs in the self-conception (r SB.SA = .30), while the ideal self-concept remains more stable (r IB.IA = .58). The results of the cross-products relationships (r SB.IA, and r IB.SA) are so similar to those obtaining in the improved and total patient groups as to require no comment. Additional similarities are noted in that individual sub-groups of correlations occur both in the initial and final groups of correlations.

E. Summary of the Results in the Experimental and Control Groups

It is apparent from a consideration of the results described in the preceding four sections that the major hypotheses specified in Chapter III must be accepted. The results are still somewhat ambiguous, however, in that there has been no direct relation between the amount of adjustive improvement and increase in congruence of self-ideal conceptions. As reported in the last chapter, an attempt was made to remedy this discrepancy by directly comparing the net increases in correlation for some of the groups. For
instance, when the mean gain in the total patient group of .23 in terms of r was compared to the net gain in the normal group of .06 in terms of r, it was found that the difference was highly significant, and, of course, this difference is in the predicted direction. An even more striking difference between gains in the groups in the predicted direction occurs when the improved patient group is compared with the normal control group. The improved patient group showed, as will be remembered, a net gain in r of .30 as against the normal control group's gain of .06. This finding again lends weight to the hypothesis that positive adjutivie change is correlated with an increase in self-ideal congruence.

When the net gains for the improved and the unimproved patient groups were compared, it was found that the net gain in the improved group of .30, in terms of r, was not significantly different from the gain, in terms of r, of the unimproved group, of .15. Similarly, these groups could not be clearly differentiated in terms of either their pre or post-treatment mean self-ideal correlation. Definite trends, however, seem to indicate that real differences may exist between the two groups in terms of both differential gains in congruence and/or post-treatment levels of relationship.
It was, of course, assumed that the improved and unimproved groups were samples of a common population at the pre-treatment stage. However, if the criteria of adjustive improvement is valid, it would seem that it should be able to differentiate these groups either in terms of the net increases in congruence, and/or final level of congruence. The fact that this is not possible in spite of the obvious changes occurring differentially in the groups as well as the definite statistical trends supporting the experimental hypotheses, leads the writer to question the discriminatory ability of the rating scale of improvement. It may be that this instrument was too crude and allowed too much overlap between the improved and unimproved groups. Certainly, the change in the unimproved group of .17 correlation points was large, although not significant. In any case, improvement cannot be directly related to either final level or increase in self-ideal correlations with the present data. If the statistical trends noted can be overlooked, the findings may indicate that we are dealing with a complex function here, rather than a lack of refinement in the rating scale of adjustive improvement. This point of view has already been expressed by Block and Thomas (8).

These investigators feel that degree of satisfaction
with the self or amount of self-ideal discrepancy bears a curvilinear relationship to adjustment and that high degrees of self-ideal congruence may be related to defensive rather than optimum adjustment. Butler and Haigh (10) report a similar feeling with regard to their most recent results and specify that paranoid individuals demonstrate such self-ideal congruence. The present study, of course, included individuals suffering from paranoid illnesses as part of the total patient group. It may be that the complex relationship suggested to explain our inability to relate adjustment directly to either level of self-ideal correlation or net increase in such correlation between the improved and unimproved groups is due to the complicating factor of paranoid patients in the total patient sample. Certainly, there is some reason to suspect, on the basis of these two cited studies as well as the present results, that the level of congruence of self-conceptions and changes in congruence of self-conceptions in such individuals does not conform to the prototype changes specified by the self-concept theory of adjustive change. This problem, however, must await further study.

F. The Change in the Perceived Self

When statistical descriptions of group changes are presented alone, particularly when patients suffering from
psychotic illnesses provide the samples, the question al­
ways arises as to whether the tests were meaningful to the
subjects and whether the results can be demonstrated in
other than statistical terms. In this section, therefore,
a brief attempt will be made to present the qualitative
changes in the perceived self which have been demonstrated
statistically. For this purpose, we will examine the
change in the perceived self specified as occurring under
conditions of adjustive improvement which leads to greater
self-ideal congruence. The discussion is confined to the
changes demonstrated by the improved patient group, since
it is here that the changes are most striking.

Table 8 presents the items considered most character­
istic of the self before and after treatment in the im­
proved patient group; whereas Table 9 presents those con­
sidered least characteristic at the same times. As can be
seen, prior to treatment these patients had many negative
attitudes towards themselves as they were. Fully 50 per­
cent, or 8 of the 16 patients constituting this group, con­
sidered their most outstanding characteristic in a nega­
tive fashion prior to treatment. Following treatment,
however, only 3 patients, or 18.75 percent, described their
most outstanding characteristic as other than a positive
factor. The results presented in Table 9 do not make any
### TABLE 8

**THE CHANGE IN THE PERCEIVED SELF**
(Improved Patients $N = 16$)

Items Most Characteristic

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(40)</td>
<td>I am confused.</td>
<td>3</td>
<td>18.75</td>
</tr>
<tr>
<td>(45)</td>
<td>I usually like people.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(31)</td>
<td>I am a good mixer.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(7)</td>
<td>I can't seem to make up my mind one way or another.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(11)</td>
<td>I am just sort of stubborn.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(16)</td>
<td>My decisions are not my own.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(18)</td>
<td>I am often down in the dumps.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(21)</td>
<td>I am intelligent.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(34)</td>
<td>I am liked by most people who know me.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(37)</td>
<td>I understand myself.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(46)</td>
<td>Self-control is no problem to me.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(48)</td>
<td>My hardest battles are with myself.</td>
<td>1</td>
<td>6.25</td>
</tr>
</tbody>
</table>

16 100.00
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(25)</td>
<td>I am a responsible person.</td>
<td>5</td>
<td>31.25</td>
</tr>
<tr>
<td>(45)</td>
<td>I usually like people.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(24)</td>
<td>I am a hard worker.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(14)</td>
<td>I am naturally nervous.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(13)</td>
<td>I feel inferior.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(14)</td>
<td>I am a failure.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(22)</td>
<td>I feel relaxed and nothing really bothers me.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(29)</td>
<td>I can usually make up my mind and stick to it.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(31)</td>
<td>I am a good mixer.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(33)</td>
<td>I am ambitious.</td>
<td>1</td>
<td>6.25</td>
</tr>
</tbody>
</table>

16 100.00
## TABLE 9
THE CHANGE IN THE PERCEIVED SELF
(Improved Patients N = 16)

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 4)</td>
<td>I am naturally nervous.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(22)</td>
<td>I feel relaxed and nothing really bothers me.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(39)</td>
<td>I am much like the opposite sex.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>(43)</td>
<td>I put on a false front.</td>
<td>2</td>
<td>12.50</td>
</tr>
<tr>
<td>( 5)</td>
<td>I despise myself.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>( 8)</td>
<td>I am afraid of sex.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(10)</td>
<td>I feel superior.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(11)</td>
<td>I am just sort of stubborn.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(14)</td>
<td>I am a failure.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(42)</td>
<td>I am afraid of what other people think about me.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(49)</td>
<td>I am unreliable.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>(50)</td>
<td>I doubt my sexual powers.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>100.00</td>
</tr>
<tr>
<td>Item No.</td>
<td>Item</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>---------</td>
<td>------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>1</td>
<td>I am impulsive.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>3</td>
<td>I really am disturbed.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>4</td>
<td>I am naturally nervous.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>5</td>
<td>I despise myself.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>11</td>
<td>I am just sort of stubborn.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>13</td>
<td>I feel inferior.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>14</td>
<td>I am a failure.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>16</td>
<td>My decisions are not my own.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>17</td>
<td>I have a hard time controlling my sexual desires.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>18</td>
<td>I am often down in the dumps.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>23</td>
<td>I am optimistic.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>30</td>
<td>I have an attractive personality.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>36</td>
<td>I just don't respect myself.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>43</td>
<td>I put on a false front.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>49</td>
<td>I am unreliable.</td>
<td>1</td>
<td>6.25</td>
</tr>
<tr>
<td>50</td>
<td>I doubt my sexual powers.</td>
<td>1</td>
<td>6.25</td>
</tr>
</tbody>
</table>

16 100.00
more clear the change in the perceived self. Apparently the major discriminations were made by the patients in terms of positive feelings. Evidence bearing on this point can be seen when it is noted that only two statements are common in the pre and post-treatment most characteristic arrays; whereas, seven statements are common in the least characteristic sorts. It seems obvious from an examination of the statements that the sorting tests were meaningful to the subjects and that a real change in the perceived self in the direction of more positive feelings occurred.

G. Interpretation of the Change in the Perceived Self

The preceding sections of this chapter and the evidence cited in Chapter IV indicate that a positive change in the direction of greater congruence of self-ideal conceptions has occurred in the patients in this study who were treated by means of EST. Furthermore, evidence has been adduced to indicate that these changes are produced most strikingly in the improved patient group. In spite of these results, it is obviously impossible to conclude that EST has led to the change in the self-conceptions. We are able to state only that such self-modification has occurred in conjunction with this form of treatment especially when successful, judged by criteria unrelated to it. It seems, however, that evidence is at hand to indicate that when EST leads
to adjustive improvement, change in the self-concept occurs. Put in another way, it is impossible to answer on the basis of this study, the question as to whether self-concept modification precedes adjustive change, or whether the changes in the self-conceptions are merely reflections of this outcome. These questions must await further research.
CHAPTER VI

SUMMARY AND CONCLUSIONS

A. Summary

This study has attempted to investigate hypothesized changes in the relationship of two aspects of the self-concept under conditions of adjustive change in patients undergoing EST. According to self-concept theory as it has evolved from experiences in client-centered therapy with neurotic individuals, modification of the self-concept in the direction of greater congruence is a basic aspect of adjustive change for the better. If such changes are general laws of behavior and are not characteristic only of individuals in these ranges of adjustment who improve under this form of treatment; indeed, if such changes are not merely artifacts of this therapy, it should be possible to demonstrate them with individuals suffering from a more extreme degree of psychological illness and under different, preferably widely different methods of treatment. This study then was undertaken to investigate whether or not such characteristics of adjustive change could be demonstrated with individuals suffering from psychotic illnesses undergoing a form of somatic treatment.

In order to investigate changes in congruence of the
self-concept of such individuals, two aspects of the self-concept were sampled, i.e., those of the real or phenomenal and of the ideal self. The sampling was accomplished by asking the patients to sort fifty self-referent statements both before and after EST. Each patient was asked to sort the fifty statements into a forced-normal distribution, i.e., a Q-sort, to indicate the similarity or lack of it between each statement and the patient's conception of himself as he really was and the self that he would like to be. At the same time, a rating sheet of the patient's status both before and after treatment was accomplished by each individual patient's ward physician to determine the amount of improvement in adjustment level, if any, which occurred during treatment. For half of the patients duplicate psychiatric ratings were obtained. A reliability study based on these duplicate ratings indicated that psychiatric opinion with regard to degree of improvement was reasonably consistent.

Following treatment, the patients were separated into an improved and unimproved group on the basis of psychiatric opinion as reflected in the rating schedules. Changes in the self-concept in the direction of greater congruence between the real and the ideal self were postulated for the improved patient group whereas it was assumed that such
changes would not be characteristic of the unimproved patient group. In addition, a normal control group, matched for supposed relevant variables with the total patient group was tested by means of the same sorting procedures before and after a time interval. It was presumed that no changes in the congruence of these two aspects of the self-concept would occur in this group as a function of time.

On the basis of the theoretical discussion in Chapter II and in the light of previous experimental findings modified for the sample populations and procedures involved in our study, specific hypotheses regarding changes in the congruence of the self-concept or lack of it for the groups specified were evolved. These hypotheses were tested by means of several different statistical procedures involving both small sample parametric methods and distribution-free techniques.

The results indicate that the following statements with regard to self-concept modification as a function of EST may be made:

1. There is a wide difference between the normal control and the total patient group prior to treatment in the degree of congruence of self-concepts. In general, this finding indicates, in
accord with self-concept theory, that individuals suffering from adjective difficulties show far less congruence in their self-conceptions than those individuals who are symptom-free. This is to say, in other words, that individuals in our normal group appear to show greater satisfaction with themselves as they are, i.e., the self that they are bears a higher relationship to the self that they want to be than individuals in the patient group suffering from psychotic illnesses.

2. Following EST, the patient group which improved showed a definite increase in congruence of the self-concept. This finding again is in line with the theoretical formulations of self-concept theory. This finding may be interpreted in another way by saying that following successful treatment the degree of congruence of the self-conceptions of psychotic patients bears a closer relationship to that obtaining in a group of normal individuals, than it did before treatment.
3. No significant change in the congruence of self-concepts could be demonstrated for individuals who did not show significant improvement following EST. This finding, which is, in effect, the obverse of the previous finding, is again in line with the formulations of self-concept theory.

4. No significant change in the congruence of self-conceptions of normal individuals could be demonstrated as a function of time.

5. There is evidence to indicate that the change in congruence of the self-conceptions when it occurs, is a change in the conception of the real self and not a change in the conception of the self which is desired. Put in another way, this is to say that the final real self bears a greater relation to the desired self as compared with the relation before treatment because the real self has become more like the desired self rather than the desired conception being modified to agree with the real self.

6. Improvement in adjustive level, according to psychiatric opinion, cannot be directly
related to either the final level of self-ideal congruence, or to the amount of increase in such congruence in this study. However definite statistical trends occurred in both instances. If these trends are chance factors, however, the results may be due to the relative lack of sensitivity in such ratings as compared to Q-sort correlational data or to a more complex relationship between adjustive improvement and congruence of self-conceptions than was originally postulated.

B. Conclusions

It is felt that the present research indicates that self-concept theory as it has evolved as a central variable in the theory of client-centered therapy is a useful and widely applicable framework for research in personality functioning. It is hoped that the findings that have been reported will help to establish more firmly the claims of some of its laws to be considered general laws of behavior rather than laws characteristic of adjustive change under a specific method of treatment.

It is equally evident that much work remains to be done, not only in terms of different types of adjustive change,
i.e., those involving different specific classes of patients or nosologically different groups, but in addition studies of the various conditions under which adjustive change takes place, i.e., other types of treatment. Such longitudinal and latitudinal studies, particularly with regard to diagnostic categories appear to offer great promise in the study of the relationships between the self-concept and behavior. Some specific recommendations for such studies are presented in the following section.

Perhaps the most important conclusion which may be drawn from studies of this type is that the extension of reasonably well-defined personality schemas into new areas of behavior as widely divergent as possible from those for which they were designed is a highly rewarding endeavor. Such studies which the writer prefers to consider "bridging studies" in a search for common elements accomplish an extremely useful purpose, if successful, in that they reduce the complexity of scientific findings by providing an order in the conceptual framework through which we view such discrete elements. Such results occur only when theories of sufficient generality and susceptibility to experimental test are applied in new areas. They are unique in opening up new ways of viewing psychological functioning because it is sometimes logically impossible
to derive the conceptual framework from the type of data to which it is applied. Most important, however, the ultimate results of such "bridging studies" lead to useful descriptions of the elements that psychological processes have in common rather than statements with regard to the differences between them.

C. Implications for Future Research

This study as an exploratory effort to translate the laws of adjustive change from one situation to another quite different one was necessarily limited in many ways. Most particularly, it must be noted that the results obtained are definitely related to the sample of self-referent statements utilized. The findings reported could and should be verified with different samples of such self-tapping material to see if similar results are obtained. Many particular questions were raised by this project. Among others, it was noted that psychotic individuals show as much discrepancy in their self-concepts with the possible exception of paranoid patients as do neurotic individuals reported in other studies. Does this finding indicate as accurate or inaccurate an appraisal of the discrepancy between present and desired self-functioning in psychotics as in neurotics? Do such findings indicate a basic similarity in mental illness in general regardless of degree
of disorder?

It seems obvious that the methodology used in this research can be extended in many directions. Possibly the most obvious and basic extensions with regard to self-concept theory are in the direction of further testing with somatic therapies. This would provide a more solid basis for the statements of the laws of self-concept theory to be considered general laws of adjustive change. In particular, studies of changes in the self-concept of individuals undergoing insulin shock treatment or pre-frontal lobotomy would be most interesting. There seems little doubt that if results similar to the ones here reported could be obtained in such studies, the status of the theory as a framework of remarkable breadth for viewing personality functioning would be established.
APPENDIX A

SEXUAL DISTRIBUTION AND MARITAL STATUS OF THE EXPERIMENTAL AND CONTROL SUBJECTS
SEXUAL DISTRIBUTION AND MARITAL STATUS OF THE EXPERIMENTAL AND CONTROL SUBJECTS

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APPENDIX B

OCCUPATIONAL BACKGROUND
OF
THE EXPERIMENTAL AND CONTROL SUBJECTS
OCCUPATIONAL BACKGROUND OF THE EXPERIMENTAL AND CONTROL SUBJECTS

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APPENDIX C

LIST OF SELF REFERENT STATEMENTS
BY
IBM CODE NUMBER
LIST OF SELF REFERENT STATEMENTS BY IBM CODE NUMBER

1. I am impulsive.
2. I don't trust my emotions.
3. I really am disturbed.
4. I am naturally nervous.
5. I despise myself.
6. I feel hopeless.
7. I can't seem to make up my mind one way or another.
8. I am afraid of sex.
9. I often feel guilty.
10. I feel superior.
11. I am just sort of stubborn.
12. I often feel humiliated.
13. I feel inferior.
15. I take a positive attitude toward myself.
16. My decisions are not my own.
17. I have a hard time controlling my sexual desires.
18. I am often down in the dumps.
19. I am shy.
20. I have initiative.
21. I am intelligent.
22. I feel relaxed and nothing really bothers me.
23. I am optimistic.
24. I am a hard worker.
25. I am a responsible person.
26. I feel adequate.
27. I am a competitive person.
28. I am tolerant.
29. I can usually make up my mind and stick to it.
30. I have an attractive personality.
31. I am a good mixer.
32. I am satisfied with myself.
33. I am ambitious.
34. I am liked by most people who know me.
35. I try not to think about my problems.
36. I just don't respect myself.
37. I understand myself.
38. I feel insecure within myself.
39. I am much like the opposite sex.
40. I am confused.
41. I feel helpless.
42. I am afraid of what other people think about me.
43. I put on a false front.
44. I am self-reliant.
45. I usually like people.
46. Self-control is no problem to me.
47. I am sexually attractive.
48. My hardest battles are with myself.
49. I am unreliable.
50. I doubt my sexual powers.
APPENDIX D

TREATMENT AND TESTING INFORMATION FOR EXPERIMENTAL AND CONTROL SUBJECTS
**TREATMENT AND TESTING INFORMATION FOR EXPERIMENTAL AND CONTROL SUBJECTS**

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*Refers to number of days between first and second testing periods.

**Refers to number of days between beginning and end of treatment.
APPENDIX E

WARD PHYSICIAN'S INSTRUCTION SHEET
FOR
INITIAL RATING OF PATIENTS
WARD PHYSICIAN'S INSTRUCTION SHEET
FOR
INITIAL RATING OF PATIENTS

Note on Filling out Check List for E. S. T. Research:

1. We are interested in getting your best estimate of the patient's mental status prior to the beginning of the course of shock treatment contemplated.

2. For each variable listed in the first two parts, there are a small number of possible choices. Please circle only one, using as a base line the underlined word which represents in each instance the normal or average condition.

3. The ratings in the third section which are made on a five point scale occur in an ascending order of mental health in all three cases; that is, #5 means most disturbed, while #1 means least or very slightly disturbed.
APPENDIX F

INITIAL PSYCHIATRIC RATING SCHEDULE
I. Personal Adjustment

A. Intellectual Disorganization
Marked Moderate Slight None

B. Emotional Disorganization
Marked Moderate Slight None

C. Anxiety
Marked Moderate Slight Apathetic

D. Mood
Elated Appropriate Depressed

E. Hostility
Constant Moderate Occasional None

F. Tension (Motor)
Marked Moderate Slight Inert

G. Affective Interest in Family
Excessive Good Poor Lacking

H. Affective Interest in Opposite Sex
Excessive Good Poor Lacking

I. Affective Interest in Same Sex
Excessive Good Poor Lacking

J. Social Interaction
High Medium Low Lacking

II. Social Adjustment

A. Self Care
Cares for self Cares for self with supervision and prompting Does not care for self

B. Occupational Adjustment
Can work at previous occupation Can work at lower level occupation Cannot work

C. Responsibility for conduct
Needs no supervision Needs some supervision Needs constant supervision

III. Severity of Illness

A. Personal Factors 5 4 3 2 1
B. Social Factors 5 4 3 2 1
C. Global Rating 5 4 3 2 1
APPENDIX G

WARD PHYSICIAN'S INSTRUCTION SHEET
FOR
FINAL RATING OF PATIENTS
WARD PHYSICIAN'S INSTRUCTION SHEET
FOR
FINAL RATING OF PATIENTS

Note on Filling out Check List for E. S. T. Research:

1. We are interested in getting your best estimate of the patient's mental status after the course of shock treatment just completed.

2. For each variable listed in the first two parts, there are a small number of possible choices. Please circle only one, using as a base line the underlined word which represents in each instance the normal or average condition.

3. The ratings in the third section which are made on a five point scale occur in an ascending order of mental health in all three cases; that is, #5 means most disturbed, while #1 means least or very slightly disturbed.
APPENDIX H

FINAL PSYCHIATRIC RATING SCHEDULE
I. Personal Adjustment

A. Intellectual Disorganization
   Marked Moderate Slight None

B. Emotional Disorganization
   Marked Moderate Slight None

C. Anxiety
   Marked Moderate Slight Apathetic

D. Mood
   Elated Appropriate Depressed

E. Hostility
   Constant Moderate Occasional None

F. Tension (Motor)
   Marked Moderate Slight Inert

G. Affective Interest in Family
   Excessive Good Poor Lacking

H. Affective Interest in Opposite Sex
   Excessive Good Poor Lacking

I. Affective Interest in Same Sex
   Excessive Good Poor Lacking

J. Social Interaction
   High Medium Low Lacking

II. Social Adjustment

A. Self Care
   Cares for self Cares for self with supervision and prompting Does not care for self

B. Occupational Adjustment
   Can work at previous occupation Can work at lower level occupation Cannot work

C. Responsibility for conduct
   Needs no supervision Needs some supervision Needs constant supervision

III. Severity of Illness

A. Personal Factors 5 4 3 2 1

B. Social Factors 5 4 3 2 1

C. Global Rating 5 4 3 2 1

IV. Condition After Treatment

Marked Improvement

Moderate Improvement

Slight Improvement

No Change

Worse
APPENDIX I

PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, PRE AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP
PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, PRE AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP

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*Patient refused to complete second sorting procedures.

**Patient did not begin electro-shock treatment.
APPENDIX J

PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP
PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP

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APPENDIX K

FISCHER'S Z EQUIVALENTS OF PRODUCT-MOMENT
CORRELATIONS BETWEEN SELF AND IDEAL, PRE
AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP
FISCHER'S Z EQUIVALENTS OF PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, PRE AND POST TREATMENT SORTS, FOR TOTAL PATIENT GROUP

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*Patient refused to complete second sorting procedures.

**Patient did not begin electro-shock treatment
APPENDIX L

FISCHER'S EQUIVALENTS OF PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP
FISCHER'S EQUIVALENTS OF PRODUCT-MOMENT CORRELATIONS BETWEEN SELF AND IDEAL, 1ST AND 2ND SORTS, FOR TOTAL NORMAL GROUP

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*Subject unable to complete the rest of the sorting procedures.
BIBLIOGRAPHY
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MODIFICATION OF THE SELF-CONCEPT IN
ELECTRO-SHOCK THERAPY

Abstract of a Dissertation

Submitted in partial fulfilment of the requirements
for the degree of Doctor of Philosophy

BOSTON UNIVERSITY GRADUATE SCHOOL

by
John Bennett, Jr.

A.B., Brown University, 1949
A.M., Boston University, 1951

Department: Psychology
Field of Specialization: Clinical Psychology
Major Instructor: Professor Chester C. Bennett
1957
ABSTRACT

It was the purpose of this investigation to determine whether the self-concept theory of adjustive change formulated by Rogers and his collaborators to characterize therapeutic change in neurotic individuals undergoing client-centered therapy, may be extended to describe adjustive change in individuals suffering from psychotic disorders who are being treated by means of electro-shock therapy.

According to this theory, positive changes in level of psychological adjustment and behavior are invariably associated with modification of the self-concept in the direction of greater congruence between the conceptualized selves of the individual. This inference is, however, based almost entirely on research results involving patients suffering from minor personality disorders undergoing a specific form of psychotherapy, i.e., client-centered therapy. If the proposition is to gain the status of a general law of behavior change, it must be demonstrated in other classes of mental illness and with other forms of treatment. The present project is an exploratory investigation of this possibility.

To test the present application of the theory, four specific predictions were derived from the general
hypothesis which could be verified with patients receiving electro-shock treatment. The experimental hypotheses were:

1. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will be significantly lower than that of individuals in a normal control group.

2. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will significantly increase for patients who respond successfully to treatment, i.e., those patients who show a clinical improvement in adaptive level.

3. The mean level of congruence of the self-concepts of individuals in a psychotic patient group will not significantly change for those individuals who do not respond successfully to treatment, i.e., who do not show a clinical improvement in adaptive level.

4. The mean level of congruence of the self-concepts of individuals in a normal control group will not show a significant change in time.
Sixty-one persons, consisting of forty hospitalized psychiatric patients suffering from psychotic disorders and twenty-one symptom-free normal individuals served as subjects in the investigation of these hypotheses.

Two aspects of the self-concept or two conceptualized selves were sampled in this experiment by means of a random selection of fifty self-referent statements. The subjects were asked to sort these statements into a forced normal distribution (Q-sort) to describe themselves first as they felt they really were (self-sort) and secondly as they felt they would like to be (ideal sort). Congruence of the self-concept was measured by the product-moment correlation between these self and ideal Q-sorts. Each subject provided four such sorts in the following manner. The patient group was given an initial self and ideal sorting test prior to a course of electro-shock therapy. Following the end of the course of treatment which continued until medical opinion indicated that maximum benefit had been obtained, self and ideal sorts were again obtained. A similar sequence of testing was followed for the normal control group, a time interval separating the initial from the final sorts.

The psychiatric status of each patient was rated both before and after treatment by the individual patient's own
ward physician. These ratings of pre and post treatment status were then used by the physicians to rate the amount of adjustive improvement. The ratings of an additional physician were obtained for approximately one-half of the patient group to provide a measure of the reliability of the psychiatric rating schedules. The total patient group was separated into an improved and an unimproved patient group on the basis of the amount of improvement in adjustive level indicated by the psychiatric ratings.

Product-moment correlations between the four sorts were computed for each patient. The six possible correlations are between the initial self and ideal sorts \((r_{SB,IB})\), between the final self and ideal sorts \((r_{SA,IA})\), between the initial and final selfsorts \((r_{SB,SA})\), between the initial and final ideal sorts \((r_{IB,IA})\), between the initial self-sort and final ideal sort \((r_{SB,IA})\), and finally between the initial ideal sort and the final self-sort \((r_{IB,SA})\).

Following computation of these values, all product-moment correlations were transposed to z values by means of Fisher's r to z transformation and appropriate group means were computed.

Tests of differences in these group means and gains in group means by parametric and distribution-free
techniques indicated confirmation of the four experimental hypotheses at a high level of confidence.

Specifically, the findings were as follows. In testing the first hypothesis it was found that the mean self-ideal correlation in the psychotic patient group was significantly lower than that in the normal control group prior to treatment \((P < .01)\). Evaluation of the second hypothesis revealed that the mean self-ideal correlation in the improved patient group was significantly higher after treatment than it was before treatment began \((P < .01)\). In testing the third hypothesis it was found that the mean self-ideal correlation in the less improved patient group showed no significant change following treatment. Evaluation of the fourth hypothesis revealed that the mean self-ideal correlation in the normal control group showed no significant change following a time interval.

In addition to confirming the experimental hypotheses, the results further indicated that the increase in congruence of the self-conceptions could be attributed primarily to change in the phenomenal self, the ideal conception having changed relatively little. The self-concept becomes more congruent as the phenomenal self comes to bear a higher relation to the ideal self.
An additional finding indicated that modification of the self-concept in the direction of greater congruence could be demonstrated as occurring in the total patient group as a whole. This finding was interpreted as indicating that modification of the self-concept in the direction of greater congruence occurred in the majority of patients undergoing electro-shock treatment in this study whether or not they were considered to have shown improvement in adjustive level as measured by psychiatric opinion. It was concluded that for some patients who showed slight improvements in adjustive level reflected by smaller changes in the self-conceptions the psychiatric rating schedule was too crude for accurate appraisal.

Related to this finding was an additional aspect of the change in self-ideal congruence. When the unimproved patient group was directly compared to the improved patient group, it was found that the two groups could not be statistically distinguished either on the basis of mean net gain in congruence between the first and second sorts, or on mean final level of congruence on the second sort, although clear trends are in evidence in both cases. It thus appears that improvement as measured in this study cannot be directly related to either gain in congruence or final level of congruence, in spite of obvious differential
changes occurring in the self-ideal relationship of the two groups specified.

The hypothesis was offered that such results might be further evidence of the lack of refinement in the psychiatric ratings of adjustment employed. An additional possibility exists, in that we are perhaps dealing with a complex function, i.e., perhaps degree of self-ideal congruence does not bear a direct linear relationship to adjustment.

In general, the findings in this study were interpreted as providing confirming evidence, within the limitations of its design, for the self-concept theory of adjustive change proposed by the client-centered school of psychology. It was concluded, on the basis of the results obtained that the theory has definite predictive power and breadth as a schema for viewing personality functioning.

Some suggestions were offered for additional research designed to test further the theory as a whole. It was suggested that the studies which appear to offer the greatest value were of two types: first, longitudinal studies of the process of adjustive change under other treatment conditions, such as insulin shock therapy or pre-frontal lobotomy; second, cross sectional studies
aimed at establishing corollaries of nosological differentiations in terms of self-concept theory.
John Bennett, Jr. was born in Providence, Rhode Island, March 9, 1925. He is the eldest child of John Bennett, Sr. and Mildred Ann Bennett, having one sister, Lois Ann.

He attended the public schools in Providence, Rhode Island, graduating from Classical High School in June of 1943. He served from 1943 until 1946 in the U. S. Army. At the time of his discharge, he was serving as an Educational Reconditioning Counselor at Lawson General Hospital, Atlanta, Georgia.

During the time of his military service, he completed one semester of pre-engineering studies under the auspices of the Army Specialized Training Program. He was stationed
at Manhattan College, Bronx, New York. Following discharge from the Army, he entered Brown University in September, 1946, and was graduated in 1949 with the degree of Bachelor of Arts, cum laude, with a major in psychology. He entered the Doctoral Training Program in Clinical Psychology at Boston University Graduate School in 1949 and was granted the degree of Master of Arts in Psychology in 1951. During 1950-1951 he served a clerkship at Boston Psychopathic Hospital and in 1952 entered the Army Senior Psychology Student Training Program as a 2nd Lieutenant, Medical Service Corps. He served as an intern in clinical psychology at Fitzsimons Army Hospital, Denver, Colorado during 1952. Since 1954 he has served as clinical psychologist at the Mental Hygiene Clinic, U. S. Army Hospital, Fort Eustis, Virginia.

He was married in 1949 to Norma Mabel Ranger and they have one child, Deirdre Anne, born in April, 1954.