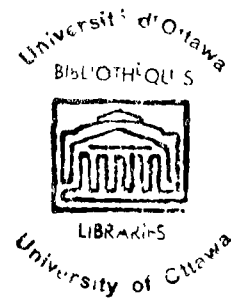


SOME RELATIONSHIPS BETWEEN
ASSUMED MEASURES OF BODY-IMAGE

by Salvatore A. Vertuca

Thesis presented to the School of
Psychology and Education of the
University of Ottawa as partial
fulfillment of the requirements
for the degree of Doctor of
Philosophy



Ottawa, Canada, 1960

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Appraisal in detail of the work on "Some Relationships between Assumed Measures of Body-Image" by Salvatore VERTUCA:

His circumspect, careful, analytic and really thorough study merits the highest praise. He is precise in reporting, clear and logical in his approach and continuously watchful for implications by his advanced statements. He follows up his proposed subject matter into great detail and does not dismiss even the thought of doubt as inessential.

The problem he tackles asks for courage. He documented it well and integrated his reading with skill into his existing knowledge. I would say that he really and truly was challenged by his chosen problem and that he has spent a great deal of thinking on it.

In all fairness I have to praise his exactitude and if he had shown a little bit more originality than just to devise a scoring method and to chose the drawing of a tree as means to study the particular problem, I would consider his work as excellent. However, there is no doubt that with the work it stands now, Sal has contributed something to the advancement of psychology and from this point of view, I would rate his thesis at 90.

*W. J. Morgan
Sept. 1960*

ACKNOWLEDGMENTS

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Reverend Raymond H. Shevenell, Ph.D., Director of the School of Psychology and Education of the University of Ottawa, aided in its development.

Appreciation is expressed here for their direction.

CURRICULUM STUDIORUM

Salvatore A. Vertuca was born September 13, 1921, in Fleming, Kentucky. He received his Bachelor of Arts degree from St. Meinrad College, St. Meinrad, Indiana, in 1946. He received the Master of Psychology degree in Clinical Psychology from the University of Ottawa, Ottawa, Ontario. The title of his scientific paper was One Dimension of the Body-image and the Tree Test.

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INTRODUCTION

Currently there are many studies which concern themselves with Body-image theory. One study reports a promising reliable scoring system which is purported to relate to many critical dimensions of Body-image theory.

Consequently, this study will attempt to utilize the above scoring system in conjunction with certain hypothesized Body-image dimensions. It is hoped that this scoring system and certain other quantitative techniques will reliably relate to certain other dimensions of Body-image theory.

Therefore this report will concern itself with the general question: is there a relationship between a known reliable scoring system purported to relate to many critical dimensions of Body-image theory and other measures believed to be related to Body-image theory?

In order to test this general question, a two part study is presented in the following manner.

The first chapter will cover Body-image literature and attempts to give the reader a perspective of the field. It is concluded with a treatment of the specific literature which develops the hypothesis of the first part.

The second chapter will present the design involving definition of terms, description and acquisition of materials

and a reliability study.

The third chapter will concern the statistical results, hypothesis and implication of the findings.

The fourth chapter will introduce part two as a replication study and considers a reformulation of the hypothesis with its sub-hypothesis. A description of the sample is covered.

Chapter five considers the results of part one and the discussion incorporates the findings of both part one and part two.

Implications of the overall results are considered for future research.

Attention is now focused upon a presentation of the literature.

CHAPTER I

REVIEW OF THE LITERATURE

The abundant literature on this topic can conveniently be studied under four headings:

1. Early Studies on Body-image,
2. Selected Studies Concerning the Body-image,
3. Studies Pertinent to the Hypothesis, and
4. The Development and Statement of the Hypothesis.

These divisions will attempt to give the reader a general perspective about Body-image literature and the specific areas out of which the hypothesis was developed for this study.

1. Early Studies on Body-image.

The concept of Body-image in one of its earliest formulations has been credited to Henry Head,¹ a British neurologist, about the time of 1920. He hypothesized that an individual slowly constructs a model of himself which becomes a standard against which all of one's body movements and posture is judged. He felt this ability to construct a model indicated an internalized source which was constantly reacting to the stresses and strains of posture and body adjustments. Therefore Head gave an impetus to the use of Body-image frames of reference for the neurology of his

¹ Seymour Fisher and Sidney E. Cleveland, Body Image and Personality, New Jersey, D. Van Nostrand, 1958, p. 4-5.

time and it was quickly taken up by his fellow neurologists on the continent of Europe.

Among these neurologists was Schilder² who expended the concept and extended it to the field of psychology. Schilder, after many studies involving the physiological, libidinous and sociological aspects of the Body-image, published a book on his observations and the manner in which he believed the concept had been documented neurologically and psychologically. Accordingly he formulated a description of the Body-image in this manner:

The image of the human body means the picture of our own body which we form in our own mind, that is to say, the way in which the body appears to ourselves. . . Beyond that there is the immediate experience that there is a unity of the body. This unity is perceived. Yet it is more than a perception. We call it a schema of our body or bodily schema, or, following Head, who emphasizes the importance of the knowledge of the position of the body, postural model of the body. The body schema is the tridimensional image everybody has about himself. We call it "Body-image". The term indicates that we are not dealing with a mere sensation or imagination. There is a self appearance of the body.³

The theoretical assumption for Schilder was in effect an extension of Head's earlier analysis, with the contribution and extension as seen through the eyes of a psychologically oriented neurologist.

² Paul Schilder, The Image and Appearance of the Human Body, New York, International Universities Press, 1953, 353 p.

³ Paul Schilder, op. cit., p. 11.

Schilder added the further dimension of an interacting personality. He phrased it in this way:

In studying the Body-image, we must approach the central psychological problem of the relation between the impressions of our senses and our movements and motility in general. When we perceive or imagine an object, or when we build up the perception of an object, we do not act merely as perceptive apparatus. There is always a personality that experiences the perception. We feel inclined to answer with an action or actually do so. We are, in other words, emotional beings, personalities. And personality is a system of actions and tendencies to such.⁴

This view of personality permitted Schilder to move rather easily from a neurological to a psychological emphasis as the problems so warranted. Consequently neurology in general benefited, since Body-image constructs could be used to explain many of the psychological and physical changes in individuals whose symptoms could not be fully related to known neurological involvements.

The contribution of this kind of logic had immediate application; Schilder⁵ subsequently described certain types of neurological involvements as due to the disturbance and reformulation of a psychological-neurological scheme within the individual or between individuals. Further, this new logic permitted a meaningful classification of neurological symptoms in terms of Body-image disturbances.

4 Paul Schilder, op. cit., p. 15.

5 Paul Schilder, op. cit., p. 16.

Commenting on these early studies, Fisher and Cleveland⁶ described some of these neurological involvements as 'clusters'; for example, one cluster of Body-image disturbances are those found in cases of depersonalization where there are degrees of phantasy concerning loss of parts of the body or the complete body.

Generally, Head and Schilder are considered the early theoreticians who did much to popularize the concept of Body-image and they are regarded as authoritative sources for discussions of early Body-image development.

2. Selected Studies Concerning the Body-image.

A small sample of research studies will be presented in this section so as to acquaint the reader with the scope and variability of Body-image hypotheses. They can conveniently be listed under the following headings:

- a. Child Psychology and Adolescence,
- b. Studies in Pathology, and
- c. Critique of Statistical and Impressionistic Approaches.

p. 6. ⁶ Seymour Fisher and Sidney E. Cleveland, op. cit.,

a. Child Psychology and Adolescence.

From the area of child psychology there is a report by Linn⁷ which stressed the developmental aspects of the Body-image by asserting that an individual first learned to discriminate between hand and mouth, then between his hand and other parts of his body; and subsequently the individual established an image, a new body detail every time he had to discriminate between body details.

Mott⁸ concentrated on the muscular activity of child development to determine if there was a relationship between muscular activity and its effects on drawings. The author found that an association of a particular part of the body with muscular activity occurred upon drawing. The procedure whereby he found such a relationship was to act out before the children a particular muscular relationship. For example, he might say, "This is my head, I nod it", and then the child was asked to respond to this muscular set by drawing. He found a positive and direct influence was exerted upon the drawings.

⁷ Louis Linn, "Some Developmental Aspects of the Body-image", in International Journal of Psychoanalysis, 1955, Vol. 36, p. 36-42.

⁸ L.M. Mott, "Muscular Activity an Aid in Concept Formation", in Child Development, Vol. 16, 1945, p. 97-109.

Body-image frames of reference were used by Goodenough in order to indicate some of the developmental changes observed in children. She quotes the following authors to support her view that children as they mature tend to draw their body parts with progressive accuracy. "Both Dallinger and Spillrein have pointed out the relationship between the child's growing awareness of his own body parts and his depiction of these parts in his drawings."⁹

A study was reported by Bender and Keeler where a relationship between pathology and body-image disturbance was hypothesized. They felt that schizophrenic children would offer a good test for the presence or absence of a construct such as body-image. Subsequently they hypothesized a loss and a rebuilding of the body-image during and after electro-shock therapy. They stated.

⁹ Florence Goodenough and D.B. Harris, "Studies in the Psychology of Children's Drawings", No. 11, 1928-49, in Psychological Bulletin, Vol. 47, 1950, p. 391.

In conclusion it appears that electroshock therapy of schizophrenic children produces, at first a dissolution of the Body-image, but immediately re-creation is in motion. A stage of crystallation has been changed into an amorphous stage from which new constructions are possible. The organic impact, in certain cases, allows the brain to function temporarily at an archaic level, thus permitting primitive material to emerge. There is indication in the case material that a type of reorganization takes place which gives rise to a more integrated body-image gestalt.¹⁰

Curran and Frosch¹¹ examined a group of disturbed adolescents and found that the adolescents showed little inclination to disrupt their body-images and to view individual parts of it. However, in those cases where there was excessive interest expressed in the Body-image, they found that a disruption was usually associated with some type of personality disturbance.

These few studies covering child psychology and adolescence furnish some evidence that the Body-image is a developmental phenomenon which is affected, changes and reacts to the physiological-psychological environment of the individual.

¹⁰ Laretta Bender and W.R. Keeler, "The Body Image of Schizophrenic Children Following Electroshock Therapy", in American Journal of Orthopsychiatry, Vol. 22, 1952, p. 355.

¹¹ F. J. Curran and J. Frosch, "The Body-image in Adolescent Boys", in Journal of Genetic Psychology, Vol. 60, p. 37-60.

b. Studies in Pathology.

Several studies indicate how Body-image is assumed to be operative under certain surgical and pathological conditions.

A comprehensive study dealing with personality changes due to surgical interference was carried out by Meyer, Brown and Levine. They administered the House-Tree-Person drawings before and after surgery and reported that ear operations, breast removals, leg amputations, loss of an eye, were all reflected in the drawings by conflict indicators on the surgical area. Excessive shading, erasures, tremulous line treatment, or studied avoidance of the area marked the site of the operation. Loss of limb, or sense organ on one side of the body was also projected on to that side of the drawn figure. They stated:

The projection of laterality (right and left-sidedness) from the body to the pictures was consistent in virtually every instance. In the drawings right and left were considered from the point of view of the anatomists' pictures: the left side of the page when viewed contains the right side of the picture and vice versa. This finding of anatomical laterality and its consistent accuracy emphasizes the element of self-portraiture which we feel to be characteristic of these pictures.¹²

¹² B. Meyer, F. Brown, and A. Levine, "Observations on the House-Tree-Person Drawings Test Before and After Surgery", in Psychosomatic Medicine, Vol. 17, 1955, p. 433.

This study traces the impact of physiological loss and the manner in which that loss is accommodated by the individual. The projection of such a loss through drawings emphasizes the assumption that there is or may be a central model the individual consistently carries of himself. This model under the impact of physiological or psychological change may have the function of reacting to such a change. Subsequently the individual reshapes the conception of himself relative to such a change or loss.

Zucker¹³ in studying obesity reported that the drawings of an individual are the first to show incipient pathology. He stated further that drawings as prognostic indicators are the last to lose signs of illness after the patient remisses. He concluded that drawings are more highly sensitive to psychopathological trends than are other projective techniques.

In another study by Brown and Goitein¹⁴ the similarity of projected drawing material between some normal groups and abnormal groups displayed more than physical similarity. The normal group in terms of predispositions

13 L. Zucker, "A Case of Obesity", Projective Techniques Before and After Treatment", in Journal of Projective Techniques, Vol. 12, 1948, p. 202-215.

14 E.A. Brown and P.L. Goitein, "The Significance of Body-image for Personality Assay", in Journal of Nervous and Mental Diseases, Vol. 97, 1943, p. 401-8.

seem to move in the direction of the pathological group. They hypothesized that since one's Body-image is largely determined by non-conscious internal factors, a subject's drawings of himself would be a projection of his basic needs. With this assumption, they obtained drawings of both normal and abnormal groups while blind-folded. The results were interpreted on the basis of similarities between groups. They found, when the drawings of a normal subject were similarly matched with the drawings of a particular abnormal group, the normal subject's personality would show trends similar to those found in the abnormal group.

The foregoing studies in pathology characterize rather vividly the assumed presence and operation of an involved construct labelled Body-image. Now we shall focus our attention on several critical reviews in order to give the reader some feeling of the quantitative and qualitative difficulties present in Body-image studies.

c. Critique of Statistical and Impressionistic Approaches.

Swenson, after reviewing many articles in the field of drawings and those with a Body-image emphasis, made the following comments using a statistical frame of reference;

Serious criticism must be leveled against the use of the percentage of agreement as a measure of reliability. The significance of the percentage of agreement on the DAP is entirely dependent upon the basal rate of the particular body part or structural aspect of the drawing that is being investigated. The "base-rate" refers to the frequency with which a particular sign is ordinarily present in the population of S's that is being studied.¹⁵

Swenson asserts that reliability of sign approaches in drawings is a function of establishing a basal expectancy rate or gathering extensive norms before establishing reliability. This view is unsympathetic to impressionistic interpretations of entitative drawing material.

Silverstein and Robinson after analyzing drawing research declared that drawings including other projective materials, "... shares with many other projective instruments the need for convincing and unequivocal demonstrations of validity". They also added that, "Body-image has been variously described by different writers and the lack of a universally accepted definition has undoubtedly served as a deterrent to systematic research in this problem area".¹⁶

15 Clifford H. Swenson, "Empirical Evaluation of Human Figure Drawings", in Psychological Bulletin, Vol. 54, No. 6, issue of November 1957, p. 434.

16 A.B. Silverstein and H.A. Robinson, "The Representation of Orthopedic Disability in Children Figure Drawings", in Journal of Consulting, Vol. 20, No. 5, 1956, p. 333.

The same writers believe the subjective approach to studying drawings is very questionable and coupled with bias. They present their criticism as follows:

Subjective approach to the study of figure drawings is seriously deficient from the point of view of scientific rigor. For one thing, the judges who evaluate the drawings are not only aware that they are dealing with productions of handicapped individuals, but also have some general knowledge of the nature and site of the disability. This may introduce bias in at least two ways: the observer may tend to overweigh minor deviations as evidence of disability, or he may de-emphasize certain characteristics not obviously related to the known impairment.¹⁷

The criticisms by Silverstein and Robinson emphasize that validity, definitions and rater bias are prevalent deficiencies in drawing and projective research. Further they assert that subjective bias is present in the so-called sign studies. Their views are stated as follows:

In their drawings the handicapped children do not more frequently omit parts of legs than do controls. On the contrary, significantly greater proportion of the normal subjects make such omissions. This is clearly an example of a finding of a subjective impressionistic approach which does not stand up under more careful scrutiny. ... Yet it may be that restricting the choice of signs in this way may unduly de-emphasize other distinctive treatments as when the Body-image representation of the physical disability generalizes or is displaced to other portions of the body than the legs.¹⁸

17 Id., Ibid., p. 333.

18 Id., Ibid., p. 335.

There is considerable agreement with the above stated view that impressionistic appraisals are unreliable. Fisher and Fisher speak in a comparable way when discussing the methods of analyzing drawings. Their evaluation is as follows: "This total impressionistic approach is no more successful in detecting 'the paranoid drawing' than is the detailed sign approach".¹⁹

Further Albee and Hamlin agree with the previous criticisms in stating that:

Most clinicians make judgements and interpretations of patients drawings with little conscious attention to specific molecular factors of constant significance but rather as a result of global impressions of un verbalized comparison of a present drawing with a past experience, of intuitive or insightful impressions.²⁰

It is apparent from the foregoing criticisms that drawings and projectives lack the rigorous precision sought for in adequate experimental design. In general, drawing material, including those using Body-image hypothesis, require more acceptable levels of validity and reliability.

Thus far the review has been generalized and cursory; it will now become specific with those studies

19 S. Fisher and Ronda Fisher, "Tests of Certain Assumptions Regarding Figure Drawing Analysis", in Journal of Abnormal and Social Psychology, Vol. 45, 1950, p. 729.

20 G.W. Albee and R.M. Hamlin, "An Investigation of the Reliability and Validity of Judgements Inferred from Drawings", in Journal of Clinical Psychology, Vol. 5, 1949, p. 389-390.

related to the development of the hypothesis.

3. Studies Pertinent to the Hypothesis.

A book entitled, Body Image and Personality, authored by Fisher and Cleveland²¹ presents a comprehensive variety of studies relating to the Body-image. A unique contribution was made by the authors since they presented a scoring system which made it possible to check consistently on Body-image hypotheses in their many variations.

This scoring system utilized Rorschach cards but was not based on conventional Rorschach usage or interpretation. The Rorschachs were used only to obtain a set number of responses. After the responses were obtained, they were interpreted in reference to a particular set of scoring criteria which the authors²² descriptively labelled 'Barrier-score' and 'Penetration of Boundary score'. The scoring criteria were set up after it was noticed that a certain commonality and uniqueness of response recurred with certain types of Rorschach records. These responses fell into a natural dichotomy which they labelled, as was indicated above, 'Barrier-score' and 'Penetration of Boundary score'.

²¹ Seymour Fisher and Sidney E. Cleveland, Body Image and Personality, New Jersey, D. Van Nostrand, 1959, xi-420 p.

²² Id., Ibid., p. 58.

This study will use one part of Fisher and Cleveland's scoring system,²³ i.e., the 'Barrier-score'. The Barrier-score is described as those Rorschach responses which refer to a definite structure, definite substance or surface quality of the periphery of things. A full description of this particular scoring will be given in the experimental design.

The authors²⁴ subsequently devised a scoring system for the Barrier-score. It was simply giving the value of one to each such response and adding the total number for the final score.

Further Fisher and Cleveland²⁵ submitted this scoring system to a reliability check and found satisfactory agreement. The overall average of the five Barrier-score correlations was .92.

They²⁶ also checked the Barrier score against verbal productivity, intelligence and Rorschach determinants for possible significant influences. The findings presented no appreciable influences.

23 Id., Ibid., p. 58.

24 Id., Ibid., p. 61.

25 Id., Ibid., p. 64.

26 Id., Ibid., P. 64-70.

Furthermore, the authors²⁷ by using a controlled number of Rorschach responses set at 24, found stable norms in three successive groups of college students with the median Barrier-score being four.

Next, the authors assumed a relationship between Body-image theory and their scoring system. Since the Rorschach of an arthritic population had given them the initial insights and a natural scoring system they hypothesized:

Those persons whose psychosomatic symptoms involved the body exterior would conceive of their bodies as surrounded by a protective, defensive wall, whereas those with symptoms involving the body interior would conceive of their bodies as lacking a defensive wall and being easily penetrated.²⁸

Subsequently in order to test this assumption, Cleveland and Fisher²⁹ used subjects with symptoms involving body interior sites, such as stomach disturbances, ulcerative colitis and those involving exterior body symptoms, such as rheumatoid arthritis, neurodermatitis and conversion hysteria. Their results indicated that the exterior body symptom groups obtained an above the median Barrier-score and that the interior body group obtained a below the median Barrier-score.

27 Id., Ibid., p. 70.

28 Id., Ibid., p. 73.

29 Id., Ibid., p. 73-75.

However, these results permitted only a generalization that some clinical groups fell into a natural dichotomy of scoring on the Rorschach, and that the Barrier-scores were associated with one part of the dichotomy.

Therefore in order to establish clearly a relationship between Barrier-scores and an aspect of Body-image theory, they devised a Check-list and Phantom-Limb study utilizing normal groups.

A check-list was used that required the subjects to indicate whether they had uncomfortable sensations or symptoms involving any of seven different exterior and interior areas of the body. They³⁰ found subjects with above the median Barrier-scores experienced a significantly greater number of sensations and symptoms in the exterior layers (muscle and skin) than did the below median Barrier-score subjects.

Again, the authors³¹ presented a Phantom-Limb study. They obtained drawings from twenty-four veterans who had been subjected to unilateral amputations above the elbow. Their purpose for using this sample of amputees was to discover how veterans perceived their Phantom-Limb relative to the stump. After analyzing the drawings globally, they

30 Id., Ibid., p. 87.

31 Id., Ibid., p. 97-99.

found that twelve of the veterans pictured the Phantom-Limb outside or even detached from the stump while the other twelve veterans drew the Phantom-Limb as being completely inside the stump or with only the fingers protruding. These findings led Fisher and Cleveland to assume that the drawings could provide one critical test for their assumptions concerning the Barrier-score and its relationship to Body-image theory.

Therefore they hypothesized that those amputees with Phantom-Limbs extended outside the stump would obtain a low Barrier-score and those amputees with Phantom-Limbs drawn inside the stump would obtain a high Barrier-score. Consequently, they obtained Rorschachs from these same amputee groups, scored them blindly and compared the results with their original drawings. They found that the outside stump phantom group were significantly lower in Barrier-score than the inside stump phantom group.

Fisher and Cleveland after obtaining these results state that: "This result further documents the Body-image foundation of the Barrier-score. It indicates that the score does meaningfully relate to a variable which is about as pure a Body-image phenomenon one can find."³²

³² Id., Ibid., p. 99.

The foregoing studies by Fisher and Cleveland indicate the Barrier-score system establishes a meaningful and valid relationship to certain types of Body-image hypotheses. Therefore the Barrier-score system will be used in the present study when attempting to establish a specific relationship with Body-image theory.

4. Development and Statement of the Hypothesis.

The authors³³ in a section treating the results of drawing research as related to Barrier-score and Body-image present the following results: Using normal groups, they obtained drawings of a house and group Rorschachs. In turn, the Rorschachs were scored for Barrier-scores and the drawings were evaluated in terms of over- and under-elaboration.³⁴ Subsequently the writers rated each drawing subjectively as being either above or below average in the elaboration of its facade. This above- or below-elaboration gave them a dichotomous grouping. These groupings were then compared with the Barrier-scores by means of the Chi-square technique. Their results indicated that the elaborated house

33 Id., Ibid., p. 102-103.

34 Over- and under-elaboration was the degree to which individuals sketched in an elaborated facade, the degree to which the individual surrounded his house with ornamental, landscape, and decorative details. These concepts will be elaborated upon more fully in the experimental design.

facades were associated significantly with the above median Barrier-scores, and the unelaborated house facades were associated with the below median Barrier-scores at the (.001) level of significance.

The conclusions suggested by this study re-enforces the previous findings that there is a Body-image variable which can be approached in various ways. Cleveland and Fisher successively studied it under the aspect of a Checklist, a Phantom-Limb Study, and by means of drawings.

Since a clear relationship was found between over-elaboration and high Barrier-scores on the drawings of a house, the question suggests itself: Will a comparable level of significance be found using another drawing which has a comparable theoretical relationship to Body-image theory? Or to phrase it in reference to the specific problem of this paper: Can the drawings of a tree, if evaluated in terms of over- and under-elaboration, and in turn, compared to Barrier-scores, show a comparable relationship to Body-image theory as that shown by the drawings of a house?

There are reasons to believe that with certain additions and modifications which will be spelled out in the experimental design that the drawings of a tree may show a comparable relationship to Body-image theory. The reasons for this assumption are based on projective and

theoretical formulations.

Projective assumptions support such a possible relationship since drawings rest upon the mechanics of individual projection. Accordingly, if an individual's projected drawings consist in a tendency to utilize over- or under-elaboration, then such tendencies should be projected consistently whatever the subject matter of the drawings.

Theoretical assumptions support such a possible relationship as can be ascertained from the following writers. Hammer relates:

As to the Tree and the Person, both of these concepts tap that core of the personality which Theorists notable Paul Schilder have labelled the Body-image and the self-concept. The drawing of the Tree appears to reflect the subjects relatively deeper and more unconscious feelings about himself. ... The Tree, a more basic natural, vegetative entity has been found to be a more suitable symbol upon which to project the deeper personality feelings, feelings about the self residing at the more primitive personality level than what one has learned about people. ... This view that a Tree taps more basic and longstanding feelings is supported by the fact that the Tree is less susceptible to change on retesting.³⁵

The theoretical assumptions evolved here indicate that the drawings of a tree are believed to tap a basic dimension of Body-image theory. From this point of view,

³⁵ Emmanuel F. Hammer, The Clinical Application of Projective Drawings, Illinois, Charles C. Thomas, 1958, p. 171-172.

the tree has much the same theoretical strength as drawings of a house when relating both to Body-image theory.

Koch presented the following theoretical formulation concerning drawings of a tree:

What is expressed in the drawings of a Tree is not a real physiognomy but almost rather a secretion of that which is within, an outward movement of that which is within into a form which is indeed like a human person but is of a different nature in its inner being. It is a "projection" of the psyche and what emerges is not exactly a "face". As the law of the Tree is to push that which is within outward, so the human psyche follows the law of the Tree.³⁶

Here the emphasis is on the symbolic meaning of a tree as something with a history, which taps the basic attitudes and development of the individual in psychological and physiological time. Koch speaks in a picturesque way. However, it is apparent that he views the drawings of a tree as a self-portrait or the unique involvement of physiological-psychological influences and therefore an aspect of the Body-image.

Schilder did not emphasize drawings as a method of studying Body-image theory, yet he made the following generalization: "I believe therefore that the way in which children draw human figures really reflects their knowledge

³⁶ Charles Koch, The Tree Test, Bern, Hans Huber, 1952, p. 9-10.

and sensory experience of the Body-image".³⁷

The foregoing references indicate that drawings including those of a tree are believed related to general Body-image theory with the nature of those relationships open to confirmation.

Certain statements can now be made: It is not known if the drawings of a tree tap a dimension of the Body-image as do the drawings of a house. However, there is reason to believe as shown by the foregoing theoretical formulations that drawings of a tree should tap a comparable dimension of the Body-image if subjected to the same scoring criterion and Barrier-score comparison.

The preceding statements lead to the following hypothesis: There is no difference between that dimension of the Body-image concept as represented by Barrier-scores on the Rorschach and over-elaboration on the drawings of a house and that represented by over-elaboration on the drawings of a tree.

³⁷ Paul Schilder, op. cit., p. 106.

CHAPTER II

EXPERIMENTAL DESIGN, PART I

To test the foregoing hypothesis several steps were taken which will be briefly presented herewith:

1. Definition of Terms,
2. The Testing Procedure,
3. Description of Materials, Test Conditions and Directions,
4. Description of the Sample, and
5. Scoring Method.

1. Definition of Terms.

To avoid confusion and to facilitate understanding, it behooves the writer to define certain terms and to state how they will be used in this report in the light of the writings and assumptions of those authors treated in the review of the literature. Special attention must be given to: (a) Body-image, (b) Barrier-scores, (c) Over-elaboration, and (d) Under-elaboration.

Body-image was understood as "the picture of our own body which we form in our mind, that is to say the way in which the body appears to ourselves".¹ This study will be concerned with one aspect of Body-image theory, that is the relationship which might be inferred between elaboration

¹ Paul Schilder, The Image and Appearance of the Human Body, New York, International Universities Press, Inc., 1930, p. 11.

scores on the drawings of a tree or house on the one hand and on the other Barrier-scores.

Barrier-scores were those scores based by Fisher and Cleveland² on specific Rorschach responses. Such responses referred to definite structure, definite substance, surface qualities and bounding peripheries of things, e.g., all separate articles of clothing, animals or creatures with unusual skin, enclosed openings in the earth, unusual animal containers, overhanging or protected surfaces and things covered, surrounded or concealed.

Over-elaboration concerned a specific category as applied to drawings³ that is the degree to which detail work was superimposed on a given drawing; for example, detail work on a house drawing would be to surround the house with environmental additions, landscaping or adding general decorative details; detail work on the tree drawings would be the inclusion of environmental props such as clouds, hills, stars, foliage, intricate treatment of the branches, symbolic inclusions or over-work in general. Over-elaboration scores were required for both the tree and house drawings in order to collect both the second and third sets of data.

2 Seymour Fisher and Sidney E. Cleveland, op. cit., p. 58.

3 Seymour Fisher and Sidney E. Cleveland, op. cit., p. 102.

Under-elaboration concerned the degree of exclusion or absence of detail and was determined by a statistical cutting-off point. The two scorings of over- and under-elaboration will be given specific meaning and usage when reliability is introduced.

2. The Testing Procedure.

There were four phases in the procedure, which were presented in this order: (a) the Questionnaire, (b) the drawings of a tree, (c) the drawings of a house, and (d) the group Rorschach. A sample can be studied in Appendix 2.⁴

(a) Questionnaire.- The questionnaire was introduced as means of obtaining a more detailed description of the population. It was felt in the event results were negative, the questionnaire items could be of some aid in determining the possible sources for such results. The majority of items were taken from Fisher and Cleveland's⁵ assumptions concerning the possible relationships between various Body-image variables and high Barrier-score productivity.

The questionnaire items were subdivided into three areas, viz., vital data, Body-image attitudes, and

⁴ Appendix 2, p. 92.

⁵ Seymour Fisher and Sidney E. Cleveland, op. cit., p. 85.

acceptance or rejection of the drawing tasks.

The first area sought to provide a gross vital description of the population. There was no Body-image research which dictated the acquisition of specific vital data, so items 1 and 2 were subjective and fact seeking.

The second area was concerned with specific Body-image attitudes as phrased by Items 3, 4, 5, 6, 7, 9, 10 and 11. These items were believed to be discriminating and the attitudes contained therein possibly related to high Barrier-score productivity. The following is presented as a breakdown and discussion of each item.

Item 3 was entered as it could give some indication of the characteristic energy level utilized by an individual when expressing himself in sports. Those individuals using active, physical expression should score high on a Barrier-score continuum.

Item 4 was included since cooking interest placed high in many records of high Barrier-score individuals.

Item 5 presented the factor that many individuals with a driving interest in law and politics scored high on Barrier situations.

Item 6 was presented since an over-all description of a high Barrier-score individual was that of a highly motivated person.

Logic for the inclusion of Item 7 was that various psychosomatic entities are believed related to high Barrier-score productivity while others are not related. The item presented a choice of interior versus exterior dichotomy of disease entities. The Ulcerative Colitis and stomach disturbances are the interior disease entities, while Dermatitis and Arthritis are the exterior disease entities and the latter are believed to be related to high Barrier-score production.

Item 8 was brought in as a useful description of the group, but was discarded later as no meaningful interpretation could be inferred.

Items 9 and 10 were used to investigate the consistency of a subject's introspective reporting. These items presented a natural dichotomy of interior versus exterior identifications, and were similar to Item 7 in terms of interior or exterior identifications.

Item 11 endeavoured to determine the existence of a strong drive toward success, which is supposedly present in high Barrier individuals.

Item 12 was included in order to determine the number of individuals with formal art training and what effect, if any, such training could exercise upon drawing productivity.

The third and last area of the questionnaire concerned acceptance or rejection of the drawing tasks. Items 13 and 14 were introduced to check the attitudes of the individuals toward the drawing tasks. The two items presented choices involving a disguised acceptance or rejection of a tree or house theme. It was felt that positive or negative choices could indicate implicit acceptance or rejection of the drawing tasks.

b. Drawings of a Tree.- Drawings of a tree were sought in order to determine if a relationship existed between the drawings, above-median Barrier-scores, and an aspect of the Body-image. These drawings represented a new variable and correspondingly an attempt to extend Body-image formulations.

c. Drawings of a House.- As will be recalled, a relationship was found between drawings of a house, high Barrier-scores and an aspect of the Body-image by Fisher and Cleveland. Drawings of a house were sought on the assumption that such findings could be repeated but with modifications in experimental procedure. Therefore the inclusion of the house drawings as one of the phases was not interpreted as a duplication of the previous authors⁶ approach.

⁶ Seymour Fisher and Sidney E. Cleveland, op. cit., p. 102-104.

d. Group Rorschach.- Rorschachs were presented in order to obtain the necessary Barrier-score responses. These Barrier-scores were the referrent sources, as has been spelled out in the review of the literature, against which the tree and house elaboration scores were compared in order to generalize to a particular Body-image relationship. Therefore the group Rorschach method was employed following the procedure described by Fisher and Cleveland.⁷

The procedure consisted of exposing the ten Rorschach slides with a projector and limiting the responses to twenty-four, distributed according to a pre-determined number of responses per card. Cards one, two, three, and eight called for three responses, while the remaining six cards required only two responses.

3. Description of Materials, Test Conditions and Directions.

The following description will be of value if duplication of the experiment is desired. The test form consisted of a questionnaire, two blank sheets for the drawings and the Rorschach sheets. These forms were numbered sequentially on the back to control computations, and duplication was done by mimeograph on white paper 8½ x 11 inches. Full sized, new sharpened pencils equipped with

⁷ Seymour Fisher and Sidney Cleveland, op. cit., p. 84.

erasers were provided so as to ensure convenience and uniformity of production during the testing situation.

A Graflex Constellation slide projector, catalogue number 3501, with automatic and manual controls was utilized during the Rorschach situation. During testing the machine was operated manually by tripping a button conveniently located on the right side. The projections were always of a uniform size, i.e., 5.x 7, upon luminescent screens. The screen was also placed in clear view of all subjects. A stop watch was used for the timing sequence of each projection. Standard Rorschach slides were provided and the machine functioned without mechanical failure.

The conditions surrounding the testing situations were as follows: Regular class rooms were used and prepared prior to each testing period. This preparation consisted in placing a screen and projector in the appropriate places. Then the assembled test forms and pencils were placed on the desk and were distributed easily to the subjects as they entered the classrooms. Normal fluorescent lighting was used during the first three phases of the testing situation. Then a semi-darkened room was utilized for the Rorschach sequence.

Accordingly, with materials ready and the room prepared, summer graduate students in Psychology and Education, representing a cross section of Canada and some parts of

the United States, became the testees. These student groups were unaware of any impending test situation and were confronted with the test forms and pencils as they entered their regularly scheduled classes. After the necessary materials were distributed, general directions were presented.

Prior to the presentation of directions, a few remarks were made in an effort to enlist the subjects' cooperation and allay any anxiety, then testing began in this sequence.

The first situation was the Questionnaire which the subjects were invited to fill in, following these approximate directions: "This first page contains material which is both familiar and unusual. Please answer each statement as you see fit, however, please answer all of them. This is not a test and there is no time limit. If there is any question concerning the wording or meaning, do not hesitate to ask". Little time was required to complete the questionnaire and there were few questions.

The second situation sought drawings of a tree. The subjects were reminded to use the soft lead pencils provided for them. The instructions followed: "On this blank page please draw a picture of a tree. You may draw it in any way you wish. You may treat it in any way you like. However, do not draw a pine tree. There is no time limit". After a period of twelve minutes, the subjects

were asked if they were near completion. Most of them were finished and the remainder completed their drawings within a few minutes. The maximum time used was approximately fifteen minutes. Then they were introduced to the next blank page.

The third situation was concerned with drawings of a house. The subjects were given the same directions as those of the tree with the subject changed to that of a house. The directions were as follows: "On this blank page please draw a picture of a house. You may treat it in any way you like. There is no time limit". A waiting period similar to that in the tree drawings followed. After this, the subjects were asked if they were near completion. Most of them were finished and the remainder were permitted to complete their drawings. The maximum time used was again approximately fifteen minutes.

The fourth and last situation concerned the group Rorschach. The group Rorschach forms contained a set of explicit directions at the top of the first page which the subjects were asked to read. The numbering sequence of the blocks and the entering of responses were then explained. After which, questions concerning the forms were answered. Then the following comments were added: "Please follow the written directions at the top of the page. Designs will be

projected upon the screen in front of you. Please write what you see or think of without great elaboration. This is timed". Subsequently the Rorschach slides were projected with one minute duration permitted for each response, making a total of twenty-four minutes for the Rorschach situation.

The material gathering step of the design ended with the completion of the Rorschach. However, there was a parting reminder to some students who, by coincidence of class overlap, repeated the test situation. They were asked to write the word 'duplication' in the upper right-hand corner of the test forms. Subsequently those forms were removed from the sample when establishing the final N.

Attention will now be turned to an analysis of each phase of the completed test forms. The first phase concerns description of the sample by means of the questionnaire.

4. Description of the Sample.

There were 173 completed test forms obtained from the groups tested. The N for this sample was acquired in the following manner. Test forms were eliminated which carried the word 'duplication' placed on the first page as explained in the directions, or which upon inspection indicated deliberate defacement. Accordingly, nineteen 'duplications' and one defacement were removed leaving an

N of 153.

Table I shows that in a sample where the total N was 153, there were eighty-nine males and sixty-four females. The male mean age was based on the given age and was 32.64 with a range of twenty-one to fifty-three. Whereas the female mean age was 40.44 with a range of twenty-one to fifty-eight. The total group mean was 35.87 with a range extending from twenty-one to fifty-eight.

There were 111 Religious representatives totalling 72.54 per cent of the sample with an age range extending from twenty-one to fifty-eight. Of these totals, there were fifty-six men composing 36.60 per cent of the group with ages ranging from twenty-three to fifty-one. Also there were fifty-five women constituting 35.53 per cent of the group with ages ranging from twenty-one to fifty-eight.

There were forty-two laymen constituting 27.45 per cent of the sample with ages ranging from twenty-one to fifty-three. Of these totals, there were thirty men constituting 19.60 per cent of the sample with ages ranging from twenty-one to fifty-three. Whereas, there were twelve women constituting 7.84 per cent of the sample with ages ranging from twenty-one to forty-two.

The following art responses herein described are not presented in tabular form. There were 151 responses. Thirty-seven individuals reported previous training and 67

Table I.-

Frequency, Mean Age, and Range for 153 Subjects by Sex

	<u>Freq-</u> <u>uency</u>	<u>Mean</u>	<u>Range</u>	<u>Freq-</u> <u>uency</u>	<u>Mean</u>	<u>Range</u>	<u>Freq-</u> <u>uency</u>	<u>Mean</u>	<u>Range</u>
Male	56	36.60	23-51	30	19.60	21-53	89	32.64	21-53
Female	55	35.53	21-58	12	7.84	21-42	64	40.44	21-58
Total	111	72.54	21-58	42	27.45	21-53	153	35.87	21-58

stated no previous training. Men comprised 58.27 per cent of the sample with nineteen reporting art training and 69 stating no previous training. Likewise, women comprised 41.72 per cent of the sample with eighteen reporting art training and 45 stating a lack of previous training.

Table II reveals the categories, number and percentage of subjects identifying themselves with certain sports.

The categories were very extensive and covered all of the better known or popular sports. It can be seen upon inspection that hockey, baseball and tennis respectively were chosen by the largest number. Correspondingly, interest and identifications were spread rather unevenly among the remaining sports.

The number of sports categories are not fully reported since it was arbitrarily decided that any category falling below two percentage points would not be presented.

The force of this table indicates this sample identifies itself generously with active sports. Consequently, the theoretical implications are, that those individuals indicating a strong interest in sports should score above the mean in Barrier-score productivity, while those without such interest may score below the mean.

On Table III the categories, number and percentage of the sample population responding to Body-image

Table II.-
Amount of Responses Obtained on Sports

Categories	Frequency	Percentage
Baseball	25	16.33
Basketball	13	8.49
Football	6	3.92
Handball	4	2.61
Hockey	26	16.99
Skating	13	8.49
Softball	4	2.61
Swimming	11	7.18
Tennis	22	14.37
Others	29	18.95

Table III.-

Amount of Responses Obtained on Body-image Identifications

Categories	Frequency	Yes		No	
		No.	%	No.	%
Arthritis	152	12	7.84	141	92.15
Cooking	152	30	19.73	122	80.26
Colitis	153	6	3.92	147	96.07
Dermatitis	153	19	12.41	134	87.58
Goal	152	100	65.78	52	34.21
Politics	153	70	45.75	83	54.24
Stomach	150	30	20.00	120	80.00

identifications are given.

The arthritic category, with an N of 152, reported that twelve subjects constituting 7.84 per cent of the total affirmed its presence, while 141 subjects constituting 92.15 per cent of the sample, denied the involvement.

The theoretical implications are: those subjects affirming the presence of an arthritic involvement should present above the median Barrier-score productivity, while those denying this involvement eliminate it as a possible causative factor in Barrier-score productivity.

In the cooking category, with an N of 152, thirty chose cooking as a hobby or interest constituting 19.73 per cent of the total, whereas 122 were not so disposed constituting 80.26 per cent.

The implications are: those individuals utilizing cooking as a hobby should obtain above the median Barrier-score productivity, while those subjects without such a history eliminate this category as a possible causative factor in Barrier-score productivity.

The category of colitis with an N of 153 indicated that six subjects carried such a condition and totaled 3.92 per cent of the group, while 147 subjects did not report such a syndrome totaling 96.07 per cent of the group.

According to theoretical assumptions individuals presenting the syndrome of colitis should obtain below the

median Barrier-score productivity, while those without colitis should not score in such a consistent manner.

The syndrome of dermatitis with an N of 153 indicated that nineteen subjects totaling 12.41 per cent of the group reported the condition, while 134 subjects totaling 87.58 per cent of the group reported no such involvement.

The possible theoretical implications are: the group involved with dermatitis should obtain above the median Barrier-score productivity, whereas those not so involved may score below the median.

The drive toward a goal category with an N of 152 indicated that one hundred subjects composing 65.78 per cent of the group were goal striving, while fifty-two subjects composing 34.21 per cent of the total were not oriented in that way.

The goal strivers should correspondingly obtain above the median Barrier-score productivity, while those subjects without a goal could fall below the median.

In the category of politics, an N of 153 revealed that seventy subjects totaling 45.75 per cent of the group showed an active interest in politics, while eighty-three subjects totaling 54.24 per cent rejected such interests.

Again those individuals with an interest in politics should score above the median Barrier-score productivity, whereas those subjects without such interest

could score below the median.

The stomach syndrome with an N of 150 showed that thirty subjects comprising 20 per cent of the group admitted stomach involvements, while 120 subjects totaling 80 per cent of the group denied such physiological involvements.

Following the theoretical assumptions, those subjects bearing a stomach syndrome should score below the median on Barrier-score productivity, while those without such involvements may score above the median.

Table IV is the next consideration. It presents category, number and percentage of those items relating to body attitudes. The category of body visualization with an N of 148 presented two possibilities, either an interior body oriented answer or an exterior oriented one. Accordingly, there were twenty-nine subjects totaling 19.59 per cent who could better visualize their body interior, while 119 subjects totaling 80.40 per cent could better visualize their body exterior.

The theoretical assumptions concerning high Barrier-score productivity favoured the individual oriented toward exterior body visualization.

The body control category with an N of 145 again offered two possible body orientations, either interior or exterior. The interior group was composed of forty subjects totaling 27.58 per cent, while the exterior group

Table IV.-

Amount of Responses Obtained on Body Attitudes.

Body	Frequency	<u>Interior</u>		<u>Exterior</u>	
		No.	%	No.	%
Control	145	40	27.58	105	72.41
Visualization	148	29	19.59	119	80.40

was composed of 105 subjects totaling 72.41 per cent.

Again the theoretical assumptions favoured exterior control when attempting to relate high Barrier-score production to Body-image theory.

The next consideration is Table V. Here the category, number and percentage are presented concerning acceptance or rejection of tree drawing themes. As can be seen, the number and percentage of choice related consistently to positive categories with the description of 'beautiful' being applied most frequently, while negative categories were an insignificant part of the total choices.

The force of this table reports that this sample was positively oriented toward the subject matter of the tree. Now whether the inference is permissible that these positive choices are a reflection of their attitudes toward the drawing task or its subject matter is not conclusive. Yet, the assertion could be made that it was a gross indication of positive tendencies on part of the sample and to some extent exemplified the orientations of a normal sample.

In Table VI, the category, number and percentage are reported concerning the acceptance or rejection of house drawing themes. It was apparent that the number and percentage of choices were related to positive house themes even though there was a larger spread of choices among

Table V.-
Amount of Responses Obtained on Tree Themes.

Category	Frequency	Percentage
Barren	3	1.98
Beautiful	126	83.44
Cold		
Depressing	1	
Exciting	6	3.97
Strong	15	9.93

Table VI.-
Amount of Responses Obtained on House Themes.

Category	Frequency	Percentage
Affection	69	45.39
Coldness		
Indifference	5	3.28
Punishing	1	
Security	42	27.63
Warmth	35	23.02

the positive categories than was found with the tree. The category of 'affection' was the most common choice, with 'security' and 'warmth' correspondingly strong. As in Table V, the negative categories were very weak with six subjects totaling a little over 3.28 per cent of the sample identifying themselves in such a manner.

Generally these results repeated the positive findings of Table V. The implications were the same. That is: even though there was a guarded inference that these choices were related to positive attitudes which could be translated as co-operation during the drawing task, the assertion could be made that this was a gross indication on the part of the sample that they harboured positive or accepting attitudes toward home themes.

Attention will now be focused upon the introduction of a scoring method. This is an interruption in the presentation. However the timeliness is believed appropriate since the subsequent phases will rely upon this innovation.

5. Scoring Method.

The reader is reminded that in the development of the hypothesis an observation was made that certain additions and modifications would be introduced. The reason for this statement can now be given. It was felt that critical reviews of drawing design had successfully questioned

the consistency shown by impressionistic or subjective evaluations of drawing material. It will be recalled that Fisher and Cleveland had subjectively evaluated their drawings so that public repetition was not possible. A letter was written requesting further information. The communication verified that a subjective approach had been utilized.⁸ Therefore it was felt that an objective scoring method providing for public repetition would offer greater consistency. This consequently meant an innovation and departure from the approach of Fisher and Cleveland.

It was hypothesized that elaboration could be formulated objectively and therefore amendable to statistical treatment. Elaboration was conceived of as the number of discrete differences placed upon a particular drawing. This discreteness provided a means of counting and objectively classifying elaborations in terms of degree or expected differences among individuals. Count of discrete differences would then provide the objectivity sought in contra-distinction to the approach of Fisher and Cleveland.

The methods of scoring these discrete differences were as follows: Credit of one was given for the presence of each distinct, discrete item in the drawing and then the items were summed up for a total score. The term discrete

⁸ Personal Correspondence of the Author, letter of Seymour Fisher, March 2, 1959.

item was an inclusive term and was used in this way, e.g. if a house had one or ten windows, it was credited with the score of one. The point being that each discrete item was scored only once regardless of how many times that item appeared in the drawing. It was felt that this type of scoring did not do violence to the concept of elaboration and presented each conceptual distinction with equal opportunity for credit. A list of common discrete differences found in the drawings of a tree and house was drawn up along with a statement of directions and scoring method.⁹ This list was used as a guide for the judges in determination of the reliability which follows.

Fifty numbers were drawn at random from an N of 153. This was accomplished by writing 153 numbers on individual slips, placing them in a container, thoroughly mixing them, and then drawing fifty numbers from the container at random. These fifty numbers were placed on a tally sheet and their corresponding test forms withdrawn from the N of 153. Then three judges were chosen, one of whom was the writer. The three judges were subjected to a short practice period of interpretation and scoring. Consequently, three tally sheets were made up containing the fifty randomly drawn numbers and placed in three unsealed envelopes bearing

⁹ Appendix 3, p. 93.

the titling, judges A, B, and C. Then the tally sheets, test forms, and guide list, with samples, were given as required to each judge. Each judge was directed to score the drawings of a tree and a house, enter the results on the tally sheets and seal the envelope when completed.

The correlation formula for raw scores¹⁰ was applied with the following results. Agreement between judge A and B was .96; judge A and C .92; and judge B and C .89.

In order to determine if the correlations had been influenced by chance factors, 't' tests of significance¹¹ were calculated. The results were as follows: rab, 23.54 > 2.69, s, .01, 48 df; rac, 16.28 > 2.69, s, .01, 48 df; rbc, 13.62 > 2.69, s, .01, 48 df. The results were well beyond 2.69 required at .01 level of probability.

The agreement between judges¹² was accepted as adequate with the consequent inference that this objective scoring system was capable of consistent and similar interpretation by three judges. It was assumed that drawings of a tree and house could be evaluated objectively by this

$$10 \quad r^2 = \frac{[N \sum XY - (\sum X)(\sum Y)]^2}{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}$$

$$11 \quad t = r \sqrt{\frac{N-2}{1-r^2}}$$

12 Following Guilford, the writer accepted the .70 to .90 strength of relationship which if attained may be interpreted as a high correlation, a marked relationship, p. 145.

scoring. Consequently, the writer, having been one of the three judges, independently scored the 153 test forms.

We will return now to a consideration of the second, third, and fourth phases of the test record subsumed under the heading of results and discussion.

CHAPTER III

RESULTS AND DISCUSSION

Table VII indicates that one hundred and fifty-three test forms were evaluated for Barrier, tree and house scores.

Barrier-scores ranged from zero to ten with the largest concentration between three and four. The median of the group was 3.3.

Tree scores occurred within a range of two and thirteen with the greatest concentration between five and six. The median was 5.5.

House scores ranged from four to nineteen with the maximum concentration between ten and eleven. The median was 10.5.

After determination of the range, frequency and median, statistical significance was considered by means of the Chi-square technique.

The first Chi-square application concerned a possible relationship between Barrier-scores and elaboration on tree drawings. Barrier-scores with a median of 3.3 and tree scores, 5.5, separated a 2 x 2 Chi-square¹ as follows: Cell A contained 45 frequencies, Cell B, 25, Cell C, 33, and Cell D, 50. N totalled 153.

$$1 \chi^2 = \frac{N(AD-BC)^2}{(A+D)(C+D)(A+C)(B+D)}$$

Table VII.-
Barrier, Tree and House Score Results.

	Frequency	Range	Median	Chi-Square	
				Significant	Non-Significant
Barrier	153	0-10	3.3		
Tree	153	2-13	5.5	9.14 ^a	
House	153	4-19	10.5		1.9

a Significant between .01 and .001.

The resultant Chi-square was 9.14, significant between the .01 and .001 level of confidence utilizing one degree of freedom.

This result indicated some type of relationship existed between Barrier-score productivity and tree elaboration. The hypothesis of independence of the data as classified was therefore rejected. However, the strength of the relationship remained to be demonstrated.

Therefore to test the strength of relationship a contingency coefficient was applied giving a result of .23, with limits of .70. Corrected to the traditional r and limits, the contingency coefficient read .32.

At this point, the precise meaning of .32 in relation to the Chi-square of 9.14 could not be spelled out. However thirty-two could assume interpretative significance if the second part of this study produced comparable results.

The second Chi-square considered the possible relationship between Barrier-scores and elaboration on house drawings. A median of 3.3 for the Barrier-scores and 10.5 for the house, separated the Cells as follows: Cell A contained 40 frequencies, Cell B, 30, Cell C, 38, and Cell D, 45. N totalled 153.

The obtained Chi-square was 1.9 without significance at the .01 level of confidence utilizing one degree of freedom. The inference from this statistic indicated that

no significant relationship was found between Barrier-scores and elaboration on the house drawings. This result was restricted in its implication to this sample and its limitations.

Attention is now turned to a discussion of these findings.

The significant relationship found between Barrier-scores and elaboration on the tree drawing permits the inference that Barrier-scores as an aspect of Body-image may occur concurrently with tree elaboration.

However, at this point, one may only conjecture as to the uniqueness of the variables concerned and wonder whether other unknown variables have contributed to this positive result, for Barrier-scores and house drawings did not concur significantly.

If the logic of individual projection as emphasized by theorists is operative and consistent in each person's drawings, then such consistency should have occurred in the drawings of a house and consequently given significance.

The conjecture may be considered that significance of Barrier versus tree elaboration was simply a function of this sample and upon repetition with a different sample such significance may not be obtained.

With contradictory results, therefore, one may not argue that an aspect of Body-image theory has been extended or clarified. However, there is a sufficient number of

unknowns in this design to justify repetition, for it is not known what is contributing to these results, i.e., whether it is design, scoring, sample characteristics of sex, age and normalcy, or Barrier-score inadequacy.

To some extent, the questionnaire was drawn up for such an eventuality, i.e., not only to describe the sample but also to offer a qualitative check on some of the unknowns when repeating the study.

In this first study, the questionnaire presented certain qualitative trends which supposedly characterize a normal population sample. These trends indicated that certain characteristics were shared, such as body complaints, strenuous muscular activity, concern for political and law issues. It is of high interest to learn if a second comparable sample produces the same trends.

Consequently, a second study will be performed in an attempt to discover what factors are playing in Barrier-score productivity and what characteristics of the sample are contributing to the over-all results.

This completes consideration of the first pilot study. Attention is now turned to the development, rephrasing and termination of this two-part study.

CHAPTER IV

EXPERIMENTAL DESIGN, PART II

This second section is a replication and extension of the first study. In this chapter the following is presented: First, theoretical formulations concerned with projectives and their replication; indirect Barrier-score appraisal and the use of questionnaire items. Several reasons are given for additional statistical manipulation. Second, the hypothesis is rephrased and presented with its sub-divisions. Third, a short reference is made to the testing procedure. Fourth, the chapter ends with a description of the second sample.

1. Theoretical Considerations

It is important in this second part to maintain the same design in order to answer one of the theoretical problems pertinent to this study. This theoretical problem concerns the reliability of reporting many critical values for one dimension. As an example, Fisher and Cleveland¹ report the relationship of many critical values to one dimension and in turn infer a relationship with Body-image theory.

¹ Vide, Study, Part One, p. 16.

In many instances critical values are reported with acceptable levels of significance, yet replication is either ignored or insufficient data is given thereby preventing systematic replication. It would seem therefore that replication, though a general problem in psychology, takes on added significance in a study of this type.

Replication may demonstrate the effectiveness of elaboration-scores as one criterion measure of Body-image theory. Elaboration-scores may indicate that they discriminate effectively when applied to the drawings of a tree or house. Generally, both the drawings and questionnaire items will be used as criterion measures which may reflect critical features in Body-image theorizing.

There are other questions which may find answers in this replication: Will there be a repetition of the relationships found in the first part? Will there be a repetition of the negative findings as found in the first part?

The combined results of the first and second parts should permit indirect appraisal of Barrier-score effectiveness as a referent for Body-image theory. Some comments therefore will be addressed to the question: is the Barrier-score as broadly discriminative as assumed? This is a key question since all of the criterion measures in this study are referred to Barrier-scores.

There will be statistical manipulation of the median in this second part in order to establish clear-cut events and eliminate possible error. It is felt that clear-cut events are basic to the scoring classifications of over- and under-elaboration, above, below Barrier-scores and Questionnaire items. Since clear-cut events are desired, the median will be manipulated in three different ways. First, Chi-square values will be reported utilizing the derived median. Second, Chi-square values will be reported utilizing frequency ratings scored 'three' entered as a separate cell entry. Third, Chi-square values will be reported utilizing frequency ratings scored 'three' and 'four' entered as a separate cell entry. It is believed that this type of manipulation should permit the extreme scores to operate and thereby produce clear-cut events. Generally, this is an attempt to control far over-lap with the hope that the ends of the distribution will be permitted to operate and error be correspondingly reduced.

In order that the foregoing considerations may be approached effectively, the hypothesis for the second part will be rephrased. This rephrasing will permit the questionnaire items to be incorporated as sub-hypothesis reflecting possible critical dimensions associated with Body-image theory. Questionnaire items were not evaluated for their theoretical contributions in the incomplete pilot

study. However, the contribution of the questionnaire items in both parts will be evaluated.

2. Statement of the Hypothesis.

Stated in general form, the hypothesis reads as follows: There is no relationship between Barrier-scores and measures believed related to Body-image theory.

The following sub-hypotheses derived from the foregoing general hypothesis will be tested. They are: There is no relationship between Barrier-scores as an aspect of Body-image theory and elaboration on the drawings of a tree; there is no relationship between Barrier-scores as an aspect of Body-image theory and elaboration on the drawings of a house; there is no relationship between Barrier-scores as an aspect of Body-image theory and the scores on questionnaire items of arthritis, cooking, colitis, control, dermatitis, energy, goal directedness, politics, stomach disorders, and body visualization.

3. Testing Procedure.

In order to test the foregoing sets of hypotheses, procedures identical to those of the first section were followed. That is, test conditions, materials, directions

and scoring were the same.² Attention will now be turned to an analysis of each phase of the completed test forms.

4. Description of the Sample

The results from the questionnaire phase of the form are listed in tables eight to thirteen.

In table eight, the distribution of responses shows that in a sample where the total N was 140, there were seventy-eight males and sixty-two females. The male mean age was based on the given age and was 20.96 with a range of seventeen to forty-seven. Whereas the female mean age was 20.62 with a range of seventeen to fifty-eight. The total group mean was 20.81 with a range extending from seventeen to fifty-eight.

There were six religious representatives totaling four per cent of the sample with an age range extending from twenty to forty-seven.

There were 134 laymen constituting 95.70 per cent of the sample with ages ranging from seventeen to fifty-eight. Of these totals, there were seventy-two males comprising 51.42 per cent of the sample with ages ranging from seventeen to forty-seven. Whereas, there were sixty-two females comprising 44.28 per cent of the sample with ages ranging from

² Vide, Study, Part One, p. 24.

Table VIII.

Distribution of Responses and Mean Age for 140 Subjects.

	Religious			Laymen			Total Group		
	Freq- uency	Per- centage	Range	Freq- uency	Per- centage	Range	Freq- uency	Mean Age	Range
Male	6	.07	20-47	72	51.42	17-47	78	20.96	17-47
Female				62	40.28	17-58	62	20.62	17-58
Total	6	.04	20-47	134	95.70	17-58	140	20.81	17-58

seventeen to fifty-eight.

Table nine presents the categories, frequency and percentage of those persons identifying themselves with certain sports. The categories were very extensive and covered most of the better known sports. It can be seen upon inspection that hockey, swimming, skating and skiing were chosen by the largest number.

On Table ten the categories, frequency and percentage of the samples Body-image identifications are displayed. The arthritic category, with an N of 140, reported that seven subjects constituting .05 per cent of the total affirmed its presence, while 133 subjects comprising .95 per cent of the sample, denied the involvement.

In the cooking category, with an N of 140, seventy-eight subjects chose cooking as a hobby or interest comprising .55 per cent of the total, whereas sixty-two were not so disposed comprising .44 per cent.

The category of colitis with an N of 140 indicated that two subjects carried such a condition and totaled .01 per cent of the group, while 138 subjects did not report such a syndrome totaling .98 per cent of the group.

The syndrome of dermatitis with an N of 140 indicated that eight subjects totaling .05 per cent of the group reported the condition, while 132 subjects totaling .94 per cent of the group reported no such involvement.

Table IX.-
Amount of Responses Obtained on Sports.

Categories	Frequency	Percentage
Baseball	6	4.35
Basketball	9	6.43
Football	8	5.71
Handball	5	3.57
Hockey	25	17.87
Skating	11	7.87
Skiing	10	7.87
Softball	7	5.00
Swimming	21	15.00
Tennis	7	5.00
Others	31	22.14

Table X.-
Amount of Responses Obtained on Body-image Identifications

Categories	N	Yes		No	
		Frequency	Percentage	Frequency	Percentage
Arthritis	140	7	.05	133	.95
Cooking	140	78	.55	62	.44
Colitis	140	2	.01	138	.98
Dermatitis	140	8	.05	132	.94
Goal	140	96	.68	44	.31
Politics	140	77	.55	63	.45
Stomach	140	5	.03	135	.96

The drive toward a goal category with an N of 140 indicated that ninety-six subjects comprising .68 per cent of the group were goal striving, while forty-four subjects comprising .31 per cent of the total were not oriented in such a manner.

In the category of politics, an N of 140 revealed that seventy-seven subjects totaling .55 per cent of the group showed an active interest in politics, while sixty-three subjects totaling .45 per cent rejected such interests.

The stomach syndrome with an N of 140 indicated that five subjects comprising .03 per cent of the group admitted stomach involvements, while 135 subjects totaling .96 per cent of the group denied such physiological involvement.

Table eleven presents the next consideration of category, number and percentage relating to body attitudes. The body control category with an N of 140 offered two possible body orientations, either interior or exterior. The interior group was comprised of forty-five subjects totaling 32.14 per cent, while the exterior group was comprised of ninety-five subjects totaling 67.85 per cent.

The category of body visualization with an N of 140 presented two choices, either an interior or exterior body oriented one. There were twenty-three subjects totaling 16.42 per cent who could better visualize their body interior, while 117 subjects totaling 83.54 per cent could

Table XI.-
Amount of Responses Obtained on Body-attitudes

Body	N	Interior		Exterior	
		Frequency	Percentage	Frequency	Percentage
Control	140	45	32.14	95	67.85
Visualization	140	23	16.42	117	83.57

better visualize their body exterior.

The next consideration is table twelve. Here the category, frequency and percentage is presented concerning acceptance or rejection of the tree drawing themes. The frequency and percentage related consistently to positive categories with the description of 'beautiful' being applied most frequently.

In table thirteen, the category, frequency and percentage concerning acceptance or rejection of house drawing themes is reported. The frequency and percentage of choices were related to positive house themes, although there was a larger spread of choices among the positive categories than was found with the tree. The category of 'security' was the most common choice with 'affection' and 'warmth' correspondingly strong.

For the reader who wishes to follow a table of comparisons covering both part one and two, he is referred to Appendix 4.³

Attention is now turned to a consideration of the results and discussion.

³ CF., Appendix 4, p. 94.

Table XII.-
Amount of Responses Obtained on Tree Themes.

Categories	Frequency	Percentage
Barren	2	1.45
Beautiful	96	70.07
Cold	3	2.18
Depressing	1	
Exciting	11	8.02
Strong	24	17.51

Table XIII.-
Amount of Responses Obtained on House Themes.

Categories	Frequency	Percentage
Affection	36	25.71
Coldness	7	5.00
Indifference	12	8.57
Punishing		
Security	53	37.85
Warmth	32	22.85

CHAPTER V

RESULTS AND DISCUSSION

This chapter presents the combined¹ statistical results and discussion of the first and second parts.

It begins with a presentation of the various scoring results with their significance and is followed by a consideration of the questionnaire. Finally, a discussion covering the theoretical implications of these findings is elaborated.

1. Barrier, Tree and House Results.

In table fourteen, following part two, Barrier-scores with an N of 140 presented a range from zero to ten, with the largest concentration of scores lying between three and four. The median for the Barrier-score was 3.6.

House scores occurred within a range of two to twenty with the greatest concentration lying between eleven and twelve. The median for the house scores was 11.2.

The obtained Chi-square between Barrier-scores and house scores was .14 without significance at the .01 level of confidence utilizing one degree of freedom.

¹ Combined results are presented for the reader's convenience. Part Two is treated in the above results whereas both parts will be compared in the discussion.

Table XIV.-

Chi-square Values Using Median Barrier-scores and Median Elaboration Scores for the House and Tree.

Categories	N		Range		Median		Chi-square ^a		Corrected Contingency	
	I ^b	II ^c	I	II	I	II	I	II	I	II
Barrier	153	140	0-10	0-10	3.3	3.6				
House	153	140	4-19	2-20	10.5	11.2	1.9	.14		
Tree	153	140	2-13	1-12	5.5	5.8	9.14 ^d	1.03	.32	

a 2 x 2.

b Study, Part One.

c Study, Part Two.

d Significant at .01.

Tree scores occurred within a range of one to twelve with the greatest concentration lying between five and six. The median for the tree scores was 5.8.

The obtained Chi-square between Barrier-scores and tree scores was 1.03 without significance at .01 level of confidence utilizing one degree of freedom.

In table fifteen, following part one and two, Barrier-scores and elaboration results are presented with scores of 'three' representing the median entered as a separate cell entry in a 2×3^2 Chi-square table. The N, Range and Median for the categories remained the same.

In Part one the obtained Chi-square between Barrier-scores and house scores was 2.48 without significance at the .01 level of confidence utilizing two degrees of freedom.

In Part two the obtained Chi-square between Barrier-scores and house scores was .40 without significance at the .01 level of confidence utilizing two degrees of freedom.

In Part one the obtained Chi-square between Barrier-scores and tree scores was 7.00 significant between the .05 and .02 level of confidence utilizing two degrees of freedom. A corrected contingency presented an r of .24.

2 Following Dayhaw, the Chi-square model for a $2 \times K$ was enlisted. p. 387.

Table XV.-

Chi-square Values using 'Three's' as a Separate Cell Entry for Barrier-scores and Elaboration Scores of the House and Tree.

Categories	N		Range		Median		Chi-square ^a		Corrected Contingency	
	I ^b	II ^c	I	II	I	II	I	II	I	II
Barrier	153	140	0-10	0-10	3.3	3.6				
House	153	140	4-19	2-20	10.5	11.2	2.48	.40		
Tree	153	140	2-13	1-12	5.5	5.8	7.00 ^d	1.92	.24	

a 2 x 3.

b Study, Part One.

c Study, Part Two.

d Significant between .05 and .02.

In part two the obtained Chi-square between Barrier-scores and tree scores was 1.92 without significance at the .01 level of confidence utilizing two degrees of freedom.

In table sixteen, following part one and two, Barrier-scores and elaboration results are presented with scores of 'three' and 'four' representing the median entered as a separate cell entry in a 2 x 3 Chi-square table. The N, Range, and Median for the categories remained the same.

In part one the obtained Chi-square between Barrier-scores and house scores was 2.30 without significance at the .01 level of confidence utilizing two degrees of freedom.

In part two the obtained Chi-square between Barrier-scores and house scores was .40 without significance at the .01 level of confidence utilizing two degrees of freedom.

In part one the obtained Chi-square between Barrier-scores and tree scores was 47.83 significant at the .001 level of confidence utilizing two degrees of freedom. A corrected contingency presented an r of .58.

In part two the obtained Chi-square between Barrier-scores and tree scores was 4.19 without significance at the .01 level of confidence utilizing two degrees of freedom.

Table XVI.-

Chi-square Values Using 'Three's' and 'Four's' as a Separate Cell Entry for Barrier-scores and Elaboration Scores of the House and Tree.

Categories	N		Range		Median		Chi-square ^a		Corrected Contin- gency	
	I ^b	II ^c	I	II	I	II	I	II	I	II
Barrier	153	140	0-10	0-10	3.3	3.6				
House	153	140	4-19	2-20	10.5	11.2	2.30	.40		
Tree	153	140	2-13	1-12	5.5	5.8	47.83 ^d	4.19	.58	

a 2 x 3

b Study, Part One.

c Study, Part Two.

d Significant at .001.

2. Questionnaire Results.

In table seventeen the combined questionnaire results utilized the median Barrier-score of 3.3 for part one and 3.6 for part two. Following part two with the scores placed in a 3 x 3 model,³ the obtained Chi-square between Barrier-scores and the category of 'energy' was 34.80. This was significant at the .01 level of confidence utilizing two degrees of freedom. A corrected contingency coefficient gave an r of .45.

Table eighteen shows that the questionnaire items were without significance when the 'three's' were entered as a separate cell entry.

Table nineteen, following part two, indicates that entering the 'three's' and 'four's' as a separate cell entry gave the subsequent significance.

The obtained Chi-square between Barrier-scores and 'cooking' was 6.45 significant between .05 and .02 level of confidence utilizing two degrees of freedom. A corrected contingency coefficient gave an r of .24.

The obtained Chi-square between Barrier-scores and 'energy' was 7.34 significant between .05 and .02 level of

³ Following Dayhaw, the Chi-square model for a K x L was enlisted. p. 384.

Table XVII.--

Combined Questionnaire Results of Part I and II Utilizing the Median Barrier-score.

Categories	N		Chi-square ^a		Corrected Contingency	
	I ^b	II ^c	I	II	I	II
Arthritis	153	140	.08	.06		
Cooking	153	140	.72	.16		
Colitis	153	140	3.65	.07		
Control	153	140	1.63	.29		
Dermatitis	153	140	2.26	1.14		
Energy	153	140	1.70	34.80 ^d		.45
Goal	153	140	.05	.41		
Politics	153	140	.05	.38		
Stomach	153	140	.22	.19		
Visualization	153	140	.00	.35		

a 2 x 3, 3 x 3.

b Study, Part One.

c Study, Part Two.

d Significant at .01.

Table XVIII.-

Combined Questionnaire Results of Part I and II with 'Three's'
as Separate Cell Entries.

Categories	N		Chi-square ^a		Corrected Contingency	
	I ^b	II ^c	I	II	I	II
Arthritis	153	140	.00	2.93		
Cooking	153	140	1.36	.20		
Colitis	153	140	5.57	3.24		
Control	153	140	1.46	.26		
Dermatitis	153	140	1.83	2.04		
Energy	153	140	3.86	2.85		
Goal	153	140	2.27	2.29		
Politics	153	140	1.33	.69		
Stomach	153	140	.62	2.44		
Visualization	153	140	1.27	.98		

a 2 x K.

b Study, Part One.

c Study, Part Two.

Table XIX.-

Combined Questionnaire Results of Part I and II with 'Three's'
and 'Four's' as Separate Cell Entries.

Categories	N		Chi-square ^a		Corrected Contingency	
	I ^b	II ^c	I	II	I	II
Arthritis	153	140	1.80	2.32		
Cooking	153	140	2.79	6.45 ^d		.24
Colitis	153	140	.26	.14		
Control	153	140	1.94	.82		
Dermatitis	153	140	.46	1.35		
Energy	153	140	.03	7.34 ^e		.26
Goal	153	140	3.29	1.81		
Politics	153	140	1.04	1.25		
Stomach	153	140	.44	.56		
Visualization	153	140	.39	1.89		

a 2 x K.

b Study, Part One.

c Study, Part Two.

d Significant between .05 and .02.

e Significant between .05 and .02.

confidence utilizing two degrees of freedom. A corrected contingency coefficient gave an r of .26.

The following section will discuss the findings of Part I and II.

3. Discussion.

This section will concern itself with the statistically significant results of part one and two in relation to the sub-hypotheses as formulated in chapter four. The sub-hypotheses will be discussed in the order of their original presentation.

A. There is no relationship between that aspect of Body-image theory as represented by Barrier-scores and elaboration scores on the drawings of a tree.

Significant results were obtained in part one between Barrier-scores and tree elaboration scores when utilizing the median as a cut-off point. The assumption of independence of events was thereby rejected. A correlation of .32 was derived between Barrier-scores and tree elaboration scores and indicated a low order relationship between the scores.

Again, in part one, significant results were obtained between Barrier-scores and tree elaboration scores when utilizing the frequency ratings scored 'three' as a separate cell entry. A correlation of .24 was derived between Barrier-scores and tree elaboration scores. This correlation was of

a lower order than the findings of the first hypothesis.

Further, significant results were obtained in part one between Barrier-scores and tree elaboration scores when utilizing the frequency ratings scored 'three' and 'four' as a separate cell entry. A correlation of .58 was derived between Barrier-scores and tree elaboration scores. Utilizing the frequency ratings in this manner raised the degree of significance to the .001 level.

Now, the foregoing corrected contingency correlations in part one between Barrier-scores and tree scores did not necessarily reflect a stable relationship with some critical dimension of Body-image. This may have been so since the size of the correlations were small and did not increase proportionately as the more extreme scores were allowed to function. Also, for example, the size of the correlations may have been a function of some common element present in both the Barrier-scores and tree elaboration scores not necessarily related to Body-image. Further the size of the correlations may have been a reflection of scoring inadequacy or lack of reliability.

Turning to part two, which was a product of replication, indicated that the results did not meet the criteria of statistical significance. One possible explanation is advanced for these results. This explanation concerns the group mean ages. There was a large discrepancy between the

groups. The mean age for part two was 20.81 and 35.87 for part one. It would seem that these age differences could have contributed to the results since there were no controls for age.

B. There is no relationship between that aspect of Body-image theory as represented by Barrier-scores and the Questionnaire scores in the 'cooking' category.

In part one the results between Barrier-scores and the Questionnaire category of 'cooking' did not meet the criteria of statistical significance.

Significant results were obtained in part two between Barrier-scores and the Questionnaire category of 'cooking' when utilizing the frequency ratings scored 'three' and 'four' as a separate cell entry. Significance was between .05 and .02.

However, the theoretical implications implied in the above cannot be advanced since the findings of part one did not coincide with part two. However, one possible explanation for the results of part one is offered.

It is believed that vocational identifications may have contributed to the findings of part one. It will be noticed that one of the differences between part one and part two was the Religious versus Laymen roles. Religious made up 72.54 per cent of part one while there were less than four per cent in part two. The Religious in part one were

predominately teachers. This seems to preclude 'cooking' as an active interest. Therefore it would appear that religious duties may partially account for the lack of statistical significance in part one.

C. There is no relationship between that aspect of Body-image theory as represented by Barrier-scores and the Questionnaire scores in the category of 'energy'.

The criterion of statistical significance was not met in part one when considering the results between Barrier-scores and the Questionnaire score in the category of 'energy'.

Significant results were obtained in part two between Barrier-scores and the Questionnaire score of 'energy' when utilizing the median as a cut-off point. This significant relationship was obtained at the .01 level of confidence. The significant trend continued when utilizing the frequency ratings scored 'three' and 'four' as a separate cell entry. However, this significance was at a somewhat lower level between .05 and .02.

Again, the theoretical implications implied in the above relationships cannot be advanced since the findings were restricted to part two. However, one variable may have played a part in these results.

It is a consideration of the variable age. It can be seen that the median age for part one was 35.87, while for part two it was 20.81. This raises a question for future

research. It is axiomatic that the normal young adult is more capable of sustained energetic pursuits than the normal older adult allowing for some overlap between the young and old adult. It would seem that future research could investigate the significance of age as a variable when seeking data concerned with energy levels.

4. General Comments.

The following comments are directed toward several questions raised in discussion of the theory.

Since replication has indicated that age and social identification may have played a role in the statistically non-significant results, no definitive statement can be offered accepting or rejecting the hypothesized Body-image relationships between Barrier-scores and the assumed criterion measures of elaboration and questionnaire scores. Before definitive comment may be offered on the relationship between scores, future replication should incorporate controls for age and social roles.

It will be recalled that statistical manipulation was introduced in order to produce clear-cut results. The statistics, as reported, after manipulating the frequency ratings, generally served their purpose. However several results did not emerge as anticipated. The Chi-square values did not increase proportionately and in the same direction

when the frequency ratings were progressively categorized. If the Chi-square values had evolved as anticipated, the results should have been larger and in the same direction. This was not the case for the Chi-square values of the category 'energy' were not consistently larger in the same direction. The reasons for this lack of consistency are not clear. One assumption, however, may be that the criterion scores used in this study and indirectly the Barrier-scores are not stable. Perhaps normative expectancy tables should first be established with large normal groups before meaning can be inferred from studies of this type. Therefore the amount of confidence to be placed in the statistical significance reported here remains to be established.

Consequently the status of Body-image theory utilizing Barrier-scores and various other criterion measures remains to be clarified.

The foregoing discussion has considered the statistically significant results of certain sub-hypotheses. Several design deficiencies were discussed as possible sources for the statistically non-significant results of part one and part two. Attention is now turned to a final summary of this two part study.

SUMMARY

In this two part study it was hypothesized that tree, house and questionnaire scores might possibly serve as criterion measures of Body-image.

It was believed that a quantitative approach to this problem was advisable since qualitative approaches involved certain difficulties for replication.

A reliable and valid scoring system for the Barrier-scores was taken from Fisher and Cleveland's study and a statistically reliable scoring system was introduced for the elaboration scores.

The first and second parts of this study utilized a normal population. Consequently, the subjects were presented a Questionnaire, two drawing situations of a house and tree, also a group Rorschach.

In the analysis of the first part of this study it was found that the hypothesis of independence was rejected when testing the relationship between Barrier-scores and tree scores when utilizing the median. The hypothesis of independence was also rejected when the frequency ratings scored 'three' and 'four' were manipulated. On the other hand, it was found that the hypothesis of independence was upheld when testing the relationship between Barrier-scores and house scores, also the hypothesis of independence was upheld between Barrier-scores and Questionnaire scores.

In the analysis of the second part of this study, it was found that the hypothesis of independence was upheld when testing the relationship between Barrier-scores and tree scores when utilizing the median. Also the hypothesis of independence was upheld between Barrier-scores and house scores. Further, the hypothesis of independence was upheld when the frequency ratings scored 'three' and 'four' were manipulated. On the other hand, it was found that the hypothesis of independence was rejected in part when testing the relationship between Barrier-scores and the Questionnaire category of 'cooking', and when testing the relationship between Barrier-scores and the Questionnaire category of 'energy'.

It was concluded that the study with replication did not achieve its objective because of the variables 'age' and 'social roles'. One recommendation for further research therefore followed from these findings. If the design of this study is duplicated, the variables of 'age' and 'social role' should be controlled.

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A comprehensive, integrated presentation of projective drawing techniques. It is a valuable reference containing theory, analysis and examples of significant drawing material.

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A small concise presentation of the original theory, development and scoring concerning drawings of a tree.

Schilder, Paul, The Image and Appearance of the Human Body, New York, International Universities Press, 1953, 353 p.

An exhaustive and detailed treatment of Body-image phenomenon as seen through the eyes of an analytically oriented physician. Many instances of Body-image involvement are traced under the headings of psychological, physiological and libidinous involvements.

APPENDIX 1

ABSTRACT OF

Some Relationships Between Assumed Measures
of Body-image¹

Current research assumes that several measures may be related to Body-image, among these measures are Barrier-scores, drawings and diverse personality involvements.

It was hypothesized that Barrier-scores, elaboration on house and tree drawings and certain diverse personality involvements contained in Questionnaire categories may serve as criterion measures of Body-image.

It was believed that a quantitative approach to this problem was advisable since qualitative approaches involved certain difficulties for replication.

Consequently a reliable and valid scoring system for the Barrier-scores was taken from Fisher and Cleveland and a statistically reliable scoring system was introduced for the elaboration scores.

A two part study with the second part being a replication was followed. Subsequently two normal populations were presented a Questionnaire, two drawing situations of a house

Salvatore A. Vertuca, doctoral thesis presented to the School of Psychology of the University of Ottawa, Ontario, August, 1960, vii-102 p.

and tree, also a group Rorschach.

The results of the first part of the study rejected the hypothesis of independence when testing the relationship between Barrier-scores and tree scores. On the other hand, the hypothesis of independence was upheld when testing the relationship between Barrier-scores and house scores, also between Barrier-scores and Questionnaire scores.

The results of the second part of the study upheld the hypothesis of independence when testing the relationship between Barrier-scores and tree scores. Also the hypothesis of independence was upheld when testing the relationship between Barrier-scores and house scores. On the other hand, the hypothesis of independence was rejected in part when testing the relationship between Barrier-scores and the Questionnaire category of 'cooking'. The hypothesis of independence was also rejected in part when testing the relationship between Barrier-scores and the Questionnaire category of 'energy'.

It was concluded that the study with replication did not achieve its objective because of the variables of 'age' and 'social roles'. One recommendation for further research followed from the reported findings. If the study was duplicated, the variables of 'age' and 'social role' would need to be controlled.

QUESTIONNAIRE

Age _____ Sex _____

Religious, Yes _____ Layman, Yes _____

Name your favorite sport, past or present. _____

Do you or would you like to have the hobby of cooking? Yes _____ No _____

Are you consistently interested in Politics, or Law? Yes _____ No _____

Would you characterize yourself as a person with High, Average,
or Low energy? _____

Have you at any time had the following diseases:

- a. Dermatitis, (Inflammation of the skin)? Yes _____ No _____
 b. Arthritis, (Inflammation of the joints)? Yes _____ No _____
 c. Ulcerative Colitis, (Inflammation of the colon)? Yes _____ No _____
 d. Stomach Disturbances, Chronic or Acute, which required medical
attention? Yes _____ No _____
 e. Other Diseases or Conditions. _____

Can you better visualize the Interior of your body or the Exterior?Do you have better control and more active use of your body
Interior or your body Exterior? _____Would you characterize yourself as a person whose goal is getting
to the top? Yes _____ No _____

Have you had any formal Art training? Yes _____ No _____

What does home represent to you as a Personal Experience?Warmth, Indifference, Security, Coldness, Affection, Punishing.If you were faced with a panorama of wooded scenery, would you
characterize the various trees as:Exciting, Cold, Strong, Depressing, Beautiful, Barren?

DIRECTIONS.

1. You will be shown Ink-Blots on the screen.
2. Please place your responses in the blocks given below.
3. There are 10 blocks.
4. Give the number of responses called for in each individual block.
5. You will be given sufficient time for each response.
6. Write down the individual responses as you see them, superfluous description of each response is not desired.

1. THREE RESPONSES

(1)

(2)

(3)

3. THREE RESPONSES

(1)

(2)

(3)

2. THREE RESPONSES

(1)

(2)

(3)

4. TWO RESPONSES

(1)

(2)

5. TWO RESPONSES

(1)

(2)

8. THREE RESPONSES

(1)

(2)

(3)

6. TWO RESPONSES

(1)

(2)

9. TWO RESPONSES

(1)

(2)

7. TWO RESPONSES

(1)

(2)

10. TWO RESPONSES

(1)

(2)

Scoring Criterion for the Drawings of a House and Tree

Please score these drawings by counting the different items that are present. An item is counted only once, whether shown several times or only once, e.g., fences, curtains, windows, steps, walls, doors, fruit, leaves, branches, holes and roots. The items must be distinctly different from each other item. A list of common items for the House and Tree are given below only as examples. The possibility of new items being included is as varied as the Drawees.

Tree.-	House.-
trunk	basement
roots	roof
bark	door
holes	windows
branches	chimney
leaves	steps
fruit	entrance
crown	curtains
baseline	furniture
decorative details	shrubby
ornaments	grass
potted base	ornaments
buds	walls
any other addenda	any other addenda

Scoring.- Total number of items is compiled. Each item is given a value of 1. The final score is simply equal to the total number of items in each drawing.

Combined Responses of Group I and II by Sex.

	Religious						Laymen						Total					
	Fre- uency		Per- centage		Range		Fre- uency		Per- centage		Range		Fre- uency		Per- centage		Range	
	I ^a	II ^b	I	II	I	II	I	II	I	II	I	II	I	II	I	II	I	II
Male	56	6	36.60	.07	23-51	20-47	30	72	19.60	51.42	21-53	17-47	89	78	58.88	55.71	21-53	17-47
Female	55		35.53		21-58		12	62	7.84	44.28	21-42	17-58	64	62	41.89	44.28	21-58	17-58
Total	111	6	72.54	.04	21-58	20-47	42	134	27.45	95.70	21-53	17-58	153	140			21-58	17-58

a Study, Part One.

b Study, Part Two.

Combined Total Body-image Identification Responses of
Study I and II

Categories	N		Yes				No			
	I ^a	II ^b	Freq- uency		Per- centage		Freq- uency		Per- centage	
			I	II	I	II	I	II	I	II
Arthritis	152	140	12	7	7.84	.5	141	133	92.15	.95
Cooking	152	140	30	78	19.73	.55	122	62	80.26	.44
Colitis	153	140	6	2	3.92	.01	147	138	96.07	.98
Dermatitis	153	140	19	8	12.41	.05	134	132	87.58	.94
Goal	152	140	100	96	65.78	.68	52	44	34.21	.31
Politics	153	140	70	77	45.75	.55	83	63	54.24	.45
Stomach	150	140	30	5	20.00	.03	120	135	80.00	.96

a Study, Part One.

b Study, Part Two.

Combined Body-image Identification Responses of Study I and II by Sex.

	N				Yes				No											
	I ^a		II ^b		Frequency		Percentage		Frequency		Percentage									
	M	F	M	F	M	F	M	F	M	F	M	F								
Arthritis	89	63	78	62	7	5	2	5	.7	.7	2.5	.8	82	58	76	57	.92	.92	.97	.91
Cooking	89	63	78	62	11	19	25	53	.12	.30	.32	.85	78	44	53	9	.87	.69	.67	.14
Colitis	89	63	78	62	4	2	-	2	.4	.3	-	.3	85	61	78	60	.95	.96	1.00	.96
Dermatitis	89	63	78	62	9	10	2	6	.2	.15	2.5	.9	80	53	76	56	.89	.84	.97	.90
Goal	89	63	78	62	61	37	54	42	.68	.61	.69	.67	23	24	24	20	.31	.38	.30	.32
Politics	89	63	78	62	50	20	51	26	.56	.31	.65	.41	39	43	27	36	.43	.68	.34	.58
Stomach	89	63	78	62	15	15	2	3	.16	.23	2.5	.4	74	48	76	59	.83	.76	.97	.95

a Study, Part One.
b Study, Part Two.

Combined Responses of Group I and II on Sports

Categories	Frequency		Percentage	
	I ^a	II ^b	I	II
Baseball	25	6	16.33	4.35
Basketball	13	9	8.49	6.43
Football	6	8	3.92	5.71
Handball	4	5	2.61	3.57
Hockey	26	25	16.99	17.87
Skating	13	11	8.49	7.87
Skiing		10		7.87
Softball	4	7	2.61	5.00
Swimming	11	21	7.18	15.00
Tennis	22	7	14.37	5.00

a Study, Part One.

b Study, Part Two.

Combined Total House Themes of Study I and II.

Categories	N		Frequency		Percentage	
	I ^a	II ^b	I	II	I	II
Affection	152	138	69	36	45.39	25.71
Coldness	152	140		7		.05
Indifference	152	140	5	12	3.28	.08
Punishing	152	140	1			
Security	152	140	42	53	27.63	37.85
Warmth	152	140	35	32	23.02	22.85

a Study, Part One.

b Study, Part Two.

Combined Total Tree Themes of Study I and II.

Categories	N		Frequency		Percentage	
	I ^a	II ^b	I	II	I	II
Barren	152	138	3	2	1.98	1.45
Beautiful	152	140	126	96	83.44	70.07
Cold	152	140		3		2.18
Depressing	152	140	1	1		
Exciting	152	140	6	11	3.96	8.02
Strong	152	140	15	24	9.93	17.51

a Study, Part One.

b Study, Part Two.

Combined House and Tree Themes of Study I and II by Sex.

Categories	N				Frequency				Percentage			
	I ^a		II ^b		I		II		I		II	
	M	F	M	F	M	F	M	F	M	F	M	F
Affection	89	63	76	62	41	28	19	17	.46	.44	.25	.27
Barren	89	63	78	62	-	1	4	1	-	-	.05	-
Beautiful	89	63	78	62	74	52	49	47	.83	.82	.62	.75
Cold	89	63	78	62	-	-	3	4	-	-	.03	.06
Coldness	89	63	78	62	-	-	2	1	-	-	.02	-
Depressing	89	63	78	62	-	1	-	1	-	-	-	-
Exciting	89	63	78	62	5	1	8	3	.05	-	.10	.04
Indifference	89	63	78	62	3	2	2	-	.03	.03	.02	-
Punishing	89	63	78	62	1	-	-	-	-	-	-	-
Security	89	63	78	62	19	23	28	25	.21	.36	.35	.40
Strong	89	63	78	62	6	9	15	9	.06	.14	.19	.14
Warmth	89	63	78	62	24	11	19	13	.26	.17	.24	.20

a Study, Part One.
b Study, Part Two.

Combined Total Body-Attitude Responses of Study I and II.

Body	N		Interior				Exterior			
	I ^a	II ^b	Freq- uency		Per- centage		Freq- uency		Per- centage	
			I	II	I	II	I	II	I	II
Control	145	140	40	45	27.58	32.14	105	95	72.41	67.85
Visual	145	140	29	23	20.00	16.42	116	117	80.00	83.57

a Study, Part One.

b Study, Part Two.

Combined Body-Attitude Responses of Study and II by Sex.

Body	N		Interior								Exterior									
			Frequency				Percentage				Frequency				Percentage					
	I	II	I	II	I	II	I	II	I	II	I	II	I	II						
	M	F	M	F	M	F	M	F	M	F	M	F	M	F						
Control	84	61	78	62	25	15	25	20	.29	.24	.32	.32	59	46	53	42	.70	.75	.67	.69
Visual	84	61	78	62	17	9	17	6	.20	.14	.21	.09	67	52	61	56	.79	.85	.78	.90

a Study, Part One.
 b Study, Part Two.