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WAGNER'S HAND TEST MEASURE OF DEXTERITY,
A FACTORIAL CONSTRUCT STUDY

by John A. McGrory

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Psychology and Education of the
University of Ottawa as partial
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CURRICULUM STUDIORUM

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INTRODUCTION

Authors of some recent studies reported in the literature have emphasized the considerable importance of the dependency phenomenon. Despite this, relatively little research has been devoted to it or to the techniques devised to measure it. A number of studies, among which Snyder's is one of the most extensive, have found that the incidence and degree of dependency needs in a person is an important matter to be considered by therapists in determining the type of psychotherapy to be employed. However, in order to gauge dependency, the therapist requires some valid and reliable measuring device which will provide him with a reasonably accurate estimate of dependency. This paper is concerned with the Hand Test, a recently developed projective technique, which reserves one of its scoring categories to the measurement of dependency.

It is the purpose of this report to compare this measure of dependency to a measure of Dependence-Independence factorially derived by Cattell. Also, the Hand Test Dependency construct is to be explored by comparing it to the primary and the remaining secondary factors of Cattell's Sixteen Personality Factor Questionnaire. This study should serve to clarify the relationship between these two measures of dependency, as well as provide insight into some of the elements which make up the Hand Test measure of dependency.

The first chapter of this thesis is devoted to a review of the research so far conducted in this area, as well as to a discussion of the importance of dependency and its measure. Also included in this section is a description of the two measures of dependency involved in the study. The formulation of the null hypothesis precedes a description of the experimental design in the second chapter. Test-retest reliability, as well as the inter-scorer reliability, are also outlined in chapter two. The results derived in the study are then presented and discussed in the third chapter. This discussion delves into Cattell's primary and secondary factors which are found to be related to Hand Test Dependency and also gives possible explanations for the relationship found between the two dependency measures. Finally, a few proposals for subsequent research and the improvement of the Hand Test are outlined.

CHAPTER I

REVIEW OF THE LITERATURE

Relatively few studies have been conducted on the phenomenon of dependency despite the considerable importance attributed it by such authors as Blyth¹, Nelson² and Snyder³. The latter, in reviewing the research of dependency from 1958 to 1963, concluded that of the eighty articles published, very few were of any significance. The remainder were considered by Snyder to be unimportant, or dealt solely with the development of dependency in children, or were "simple descriptions of one or more dependent persons"⁴, or, finally, centered on the problem of dependency exclusively from the psychoanalytic approach.

In reviewing the literature for this thesis, the writer has found that apart from the paucity of dependency studies there is also a disjointedness in the research efforts

1 D.D. Blyth, Dependence, Independence, and Other Factors Related to Veterans' Reactions to an Offer of Psychotherapy, doctoral thesis presented at the Ohio State University, 1953, 157 p., as reviewed by William U. Snyder, Dependency in Psychotherapy: A Casebook, New York, MacMillan, 1963, p. 7.

2 J.W. Nelson, Dependency as a Construct: An Evaluation and Some Data, doctoral thesis presented at the University of Minnesota, 1958, 213 p., as entered in Dissertation Abstracts, Vol. 19, January-March, 1959, p. 2149.

3 William U. Snyder, Dependency in Psychotherapy: A Casebook, New York, MacMillan, 1963, viii-424 p.

4 Ibid., p. 7.

on the problem. Some of the studies, for instance, dwelt on the measuring techniques involved, others have been more construct-oriented and still others have concentrated on the role that dependency presumably plays in psychotherapy. It is difficult, therefore, to combine the information into any sort of a meaningful whole. As a result, this review can only endeavor to bring some chronological order to the studies, while concentrating on those which appear to have made the most valuable contributions.

1. Definition.

Most attempts at defining dependency have amounted to simple inventories of the more overt manifestations of an excessively dependent individual, instead of providing a succinct yet comprehensive definition. Perhaps one of the better definitions of dependency is the following: "the lack of self-reliance; the tendency to seek the help of others in making decisions or in carrying out difficult actions."⁵

2. Significance of Dependency.

In recent years there has been increased recognition in the literature of the importance of dependency. This has been reflected by more studies on the phenomenon. One area

⁵ Horace and Ava English, Comprehensive Dictionary of Psychological and Psychoanalytical Terms, New York, McKay, 1958, xiv-59+ p.

that has received much attention has been the role that dependency plays in psychotherapy, both in terms of the patient and of the therapist. Another series of studies has concerned itself more with the techniques for measuring dependency, particularly their validity. One recurring theme in the research is the suggestion by various authors that more work should be done on dependency in order to clarify its concept.

In the following paragraphs, in chronological order, this writer will concentrate on various studies which have illustrated the importance of dependency in psychotherapy.

Blyth⁶, in 1953, conducted a study among 193 out-patient, neuropsychiatric disability veterans at a Veterans' Administration Medical Unit. His purpose was to determine which variables, from among twenty-two, were most closely related to the veterans' acceptance or rejection of an offer of free psychotherapy from four staff therapists. The twenty-two original variables were drawn from available information of the subjects' personalities and their social histories. From these, nine were found to be linked to acceptance or rejection. The degree of dependency needs in the individual was found to be the most important factor influencing

⁶ Blyth, Op. Cit.

a decision of acceptance. Greater dependency was associated with greater acceptance. Other variables in order of diminishing importance were the physical distance of the individual from the clinic, the degree of insight possessed by the patient, his birth position in his family (more amenable if older or intermediate birth rank), and job, home and marital stability. Blyth also found that some therapeutic techniques were more effective with high dependency patients than with the more independent. This indicates the need for efficient measures of dependency in order to assist in determining therapeutic approaches. To determine high and low dependency among his 193 subjects, Blyth employed the Rotter Incomplete Sentences Blank⁷, using Rockwell's⁸ definition of dependency and Dunlap's⁹ scoring method. Blyth's effort to dichotomize his sample into high and low dependency may have been more easily achieved had he employed a more direct and easily scored measure of dependency.

7 J.B. Rotter and Janet E. Rafferty, The Rotter Incomplete Sentences Blank, New York, The Psychological Corporation, 1950.

8 A.F. Rockwell, The Evaluation of Six Social Learning Need Constructs, doctoral thesis presented at the Ohio State University, 1950.

9 Ralph A. Dunlap, A Study of the Relationship of Dependency to the Seeking of Psychological Counseling in College Freshmen, Master's thesis presented at the Ohio State University, 1951.

Peterson, Snyder, Guthrie and Ray¹⁰, in 1958, set out to "study a group of psychotherapists in terms of the similarities and differences in their pattern of preference and rejection of client statements representing therapeutic gain".¹¹ A fifty-four item Q-sample was created by combining client statements from four dimensions of therapeutic gain, which were as follows:

1. Direction of therapeutic gain in self-expression.
2. Client attitude towards self or others.
3. Mode of change:
 - a) understanding
 - b) expression of feeling
 - c) action or concrete behavior.
4. Three areas of conflicts:
 - a) sex
 - b) aggression
 - c) dependence on authority.

Thirty-five therapists were asked to put each of the fifty-four statements into one of two categories by deciding if pursuing the statement in the actual therapy session would lead to therapeutic gain. Two factor analyses were then done "to determine dimensions in the therapists' Q-sorts using the centroid method of factor extraction and the oblique rotational methods of Thurstone".¹² Six factors were found, the first

¹⁰ A. Peterson, W.U. Snyder, G.M. Guthrie and W.S. Ray, "Therapist Factors, an Exploratory Investigation of Therapeutic Biases", Journal of Counseling Psychology, Vol. 5, No. 3, issue of Fall, 1958, p. 169-173.

¹¹ Ibid., p. 169.

¹² Peterson, Snyder, Guthrie and Ray, Op. Cit., p. 171.

factor being dependency. By this, "the counselor chose items which indicated a concern over the client's dependency feelings [...]"¹³ The other five factors were conformity, sex, aggression and undercontrol, aggression and overcontrol and, finally, aggression and ambivalence. The authors concluded that the therapists responded to the client's responses in the order of the six factors, with dependency first.

Ahmad¹⁴, in a study in 1961, set out to determine how the continuance of clients in therapy was affected by whether or not their dependency needs were touched upon in the initial session. He also attempted to discover if the attitude shown by therapists to a client's dependency needs affected the willingness of the client to discuss them. His results showed that clients continued longer in therapy if their dependency needs were discussed at the outset of therapy. Also, and as might be predicted, clients were more willing to discuss their dependency if the therapists were approachable, as well as receptive and permissive of their dependency.

Levitt, Lubin and Zuckerman¹⁵, in 1962, developed an objective system for scoring dependency in Rorschach responses.

13 Ibid., p. 172.

14 Farrukh Zahur Ahmad, Aspects of Psychotherapy Related to Psychotherapists' Responses to Dependency, doctoral thesis presented at Stanford University, 1961, 130 p., as entered in Dissertation Abstracts, Vol. 21, Part 4, April-June, 1961, p.3519.

15 Eugene E. Levitt, Bernard Lubin and Marvin Zuckerman, "A Simplified Method of Scoring Rorschach Content for Dependency", Journal of Projective Techniques, Vol. 26, No. 2, issue of June, 1962, p. 234-236.

Three categories were created, the first two for dependency responses of movement and content and the third for any style of language denoting dependency. A simplified and easily used scoring system such as this is a welcome addition to the various measures of dependency. In the opening paragraph of the article the authors stated:

The importance of the construct, dependency, to personality theory as well as to applied areas like psychotherapy is acknowledged by most workers in these areas. It ranks along with anxiety and hostility as broad constructs which are widely regarded as basic to clinical research and practice. The development of measures of dependency, however, lags well behind that of anxiety and hostility.¹⁶

Perhaps one of the best and most comprehensive studies on dependency has been that done by Snyder¹⁷. He developed a detailed and involved coding system whereby what transpired during therapy, conducted with two excessively dependent patients, could be chronicled and analyzed in depth by students. In order to better illustrate the effects of varying therapeutic techniques, Snyder developed a measure of dependency, one of the factors of his Client Affect Scale¹⁸. Following each session, the patient completed this scale and thus provided running evidence of the effects of the techniques used in each session. The therapy itself was basically eclectic, drawing from psychoanalytic, Rogerian and learning

16 Ibid., p. 234.

17 Snyder, Op. Cit.

18 Ibid.

theories. Included in his text were the extensive accounts of the actual therapeutic sessions Snyder had with two patients. Snyder was duly impressed with the importance of dependency, particularly in psychotherapy with young adults. He directed his efforts to facilitating the handling of patients' dependency needs by student-therapists, as well as experienced therapists having difficulties with this problem.

A study done by D.W. Winnicott¹⁹, in 1963, found dependency to be very important in psychoanalysis. He believed, as did Ahmad, that the therapist had to have a permissive attitude toward his patient's dependency needs in order to be of any assistance to him.

Meyer²⁰, in 1964, wrote of the importance of the dependency phenomenon in a rehabilitative setting where disabled patients, with previous successful social records, were undergoing rehabilitation. All members of the rehabilitation team--physicians, nurses, physiotherapists, were readily available so the patients could once again develop through manipulated phases of dependency to independency, as they had done as children.

19 D.W. Winnicott, "Dependence in Infant Care, in Child Care, and in the Psycho-analytic Setting", International Journal of Psycho-Analysis, Vol. 44, No. 3, 1963, p. 339-344, as entered in the Psychological Abstracts, Vol. 39, No. 2, issue of April, 1965, p. 586.

20 Rose Meyer, "Dependency as an Asset in the Rehabilitation Process", Rehabilitation Literature, Vol. 25, No. 10, 1964, p. 290-298, as entered in Psychological Abstracts, Vol. 39, No. 3, issue of June, 1965, p. 917.

These studies show how several authors have found dependency needs to be of great importance in the therapeutic session. The therapist's handling of these needs will greatly influence the ultimate success he will achieve with his patient.

There are many areas, other than psychotherapy, however, in which dependency has also shown to exert a major influence. For example, Pruitt and Van de Castle²¹, in 1963, found that chronic welfare cases tended to score higher on Navran's Dependency Scale²² than did others. The suggestion, of course, is that welfare cases may tend to be victims of their own excessive dependency needs as well as, or instead of, victims of some other socioeconomic variable affecting their plight. Alcoholism studies have also consistently shown that dependency needs play a major role in the etiology and process of alcoholism. Studies by Bell²³, Bingham²⁴, Lisansky²⁵, Korman and

21 Walter A. Pruitt and K.L. Van de Castle, "Dependency Measures and Welfare Chronicity", Journal of Consulting Psychology, Vol. 26, No. 6, issue of December, 1962, p. 559-560, as entered in Psychological Abstracts, Vol. 39, No. 1, issue of February, 1965, p. 210.

22 Leslie A. Navran, A Rationally Derived Minnesota Multiphasic Personality Inventory Scale to Measure Dependency, doctoral thesis presented at Stanford University, 1951, as reviewed by Alan D. Button, "MMPI Study of Alcoholics", Quarterly Journal of Studies on Alcohol, Vol. 17, No. 2, issue of June, 1956, p. 263-281.

23 R.G. Bell, "Dependence on Depressant Chemicals", Quarterly Journal of Studies on Alcohol, Vol. 18, No. 1, issue of March, 1957, p. 143.

24 J.R. Bingham, "Precipitating Factors in Peptic Ulcer", Quarterly Journal of Studies on Alcohol, Vol. 23, No. 1, issue of March, 1962, p. 174.

25 Edith S. Lisansky, "Psychological Predisposition in Alcoholism", Quarterly Journal of Studies on Alcohol, Vol. 21, No. 2, issue of June, 1960, p. 314-343.

Stubblefield²⁶ and Lemert²⁷, have all found dependency to be linked significantly to a predisposition to alcoholism. Both Bingham and Lisansky, particularly the former, have found dependency to be the most characteristic feature of the alcoholic.

Nelson²⁸, in deference to the importance of dependency and the need for its clarification, approached his rather involved study of the problem from two angles; the psychometric and the semantic. His purpose was "to provide empirical evidence, in the form of psychometric responses, for the construct validity and conceptual meaningfulness of the construct of dependency."²⁹ Nelson employed a semantic differential and ranking technique with twenty psychotherapists and found that the term possessed a "high degree of meaningfulness"³⁰ for them as well as a "highly consistent conceptual status."³¹ However, when he compared the dependency construct, as agreed to by the therapists in his study, to Navran's³² measure of dependency,

26 H. Korman and R.L. Stubblefield, "Definition of Alcoholism", Quarterly Journal of Studies on Alcohol, Vol. 23, No. 2, issue of June, 1962, p. 339-340.

27 Edwin M. Lemert, "Dependency in Married Alcoholics", Quarterly Journal of Studies on Alcohol, Vol. 23, No. 4, issue of December, 1962, p. 590-609.

28 Nelson, Op. Cit.

29 Ibid., p. 2149.

30 Ibid.

31 Ibid.

32 Navran, Op. Cit.

he concluded that the construct possessed "essentially no experimental validity"³³. Nelson, in his conclusion, emphasized that more construct validity studies should be conducted on the concept of dependency.

The writer has set out to compile various studies of dependency and to outline how important the characteristic is in several areas, particularly in psychotherapy and alcoholism. Dependency is very important, but it seems to have been underestimated or deemphasized by researchers. Dependency pervades many areas of psychopathology as an etiological factor and exerts its influence in almost all types of therapy. This writer believes that more work should be directed to clarify the concept, to understand its function in psychotherapy and, finally, to measure it with reasonable accuracy.

3. Measures of Dependency.

Most efforts at devising valid and reliable measures of dependency have been somewhat disappointing. The number and kinds of techniques developed are a good indication of the elusiveness of the phenomenon. Practically every approach has been used, including rating scales, projective techniques

³³ Nelson, Op. Cit., p. 2149.

such as the TAT³⁴, questionnaires as by Cattell³⁵, and even, as shall be seen, perceptual measures.

Probably the most widely known measure of dependency is Navran's³⁶ "rationally derived", fifty-seven item M.M.P.I. scale. It has been found able to discriminate, according to the degree of dependency present, between various groups such as normals and neurotics³⁷. However, Nelson³⁸ found this measure somewhat lacking. Navran's measure of dependency could not predict with any accuracy the behavior and attitude of patients towards their therapy. According to Nelson, the dependency measured in this scale was "identified as a psychological construct having no association with objective situations of dependency."³⁹

Another indication of the amount of dependency present in a person has been derived by using combinations of the fifteen scores provided in the Edwards Personal Preference

³⁴ Henry A. Murray, The Thematic Apperception Test, Harvard University Press, 1936.

³⁵ R.B. Cattell, Handbook for the Sixteen Personality Factor Questionnaire, Champaign, Illinois, Institute for Personality and Ability Testing, 1957 (with 1962 supplementation), ii-54 p.

³⁶ Navran, Op. Cit.

³⁷ Alan D. Button, "MMPI Study of Alcoholics", Quarterly Journal of Studies on Alcohol, Vol. 17, No. 2, issue of June, 1956, p. 263-281.

³⁸ Nelson, Op. Cit.

³⁹ Ibid., p. 2149.

schedule⁴⁰. Snyder⁴¹, for instance, used the combination of the deference, succorance and abasement scales as one of his measures of dependency in his study.

Probably one of the most productive and most interesting techniques has been that devised by Witkin, Karp and Goodenough⁴². This technique was found able to discriminate effectively between dependent and non-dependent individuals through the use of three perceptual tasks, which provided objective measures of the subject's perceptual field dependency-independency. Previous studies by the same authors led to this "development of perceptual techniques, which have shown to provide reliable, valid and objective measures of dependency."⁴³ Subsequent studies using alcoholics, non-alcoholics, normal college students and psychiatric patients have confirmed their hypothesis that measures of perceptual field dependency-independency provide an accurate estimate of "pervasive dependence in psychological functioning."⁴⁴ With alcoholics,

⁴⁰ Allen L. Edwards, The Edwards Personal Preference Schedule, New York, Psychological Corporation, 1953.

⁴¹ Snyder, Op. Cit.

⁴² H.A. Witkin, S.A. Karp and D.R. Goodenough, "Dependency in Alcoholism", Quarterly Journal of Studies on Alcohol, Vol. 20, No. 3, issue of September, 1959, p. 493-504.

⁴³ Ibid., p. 504.

⁴⁴ Ibid., p. 498.

generally conceded to be a chronically dependent group, these three perceptual tasks were found to discriminate between alcoholics and non-alcoholics with seventy-six and seventy-seven per cent accuracy. This study has since been reproduced by Bailey, Hustmyer and Kristofferson⁴⁵, in 1961, and confirmed the original results.

In 1949, following many years of research, R.B. Cattell introduced his Sixteen Personality Factor Questionnaire⁴⁶. The sixteen factors were designed to provide a rather comprehensive overview of some basic dimensions of personality. With the advent of the "second-order factors"⁴⁷, derived from the factor analysis of the intercorrelations of the primary sixteen, more information could be gleaned from the test. Initial research efforts in finding the second-order factors arrived at two, anxiety and introversion-extraversion⁴⁸. Cattell described these second-order factors as:

⁴⁵ Willard Bailey, Frank Hustmyer and Alfred Kristofferson, "Alcoholism, Brain Damage and Perceptual Dependence", Quarterly Journal of Studies on Alcohol, Vol. 22, No. 3, issue of September, 1961, p. 387-393.

⁴⁶ Cattell, Op. Cit. Hereafter referred to as the 16PF.

⁴⁷ R.B. Cattell, "Second-Order Personality Factors in the Questionnaire Realm", Journal of Consulting Psychology, Vol. 20, No. 6, issue of December, 1956, p. 411-418.

⁴⁸ Ibid., p. 46.

[...] broader dimensions which thus often correspond more closely to common clinical evaluations and permit more facile discussion in terms of fewer clinical categories. Such second-order factors represent more massive organization of personality than is revealed in first-order factors, although, being more general, they cannot account for as much of the variance of specific instances of behavior.⁴⁹

Five second-order factors and two derived multifactorial scales are presently incorporated in the 16PF. The latter two factors or scales, leadership potential and creative personality, are not yet as clearly defined as are the initial five second-order scales. Nevertheless, all seven of the scales are generally referred to as "second-order" or "secondary" factors.

Subsequent research on the 16PF by Karson and Pool⁵⁰, on a homogeneous group of seventy-one U.S.A.F. officers referred for medical and psychological evaluation, found six second-order factors. After setting up a correlation matrix from the Pearson product-moment intercorrelations, Thurstone's centroid method of factor analysis yielded six second-order personality factors. The fourth second-order factor thus derived was a measure of dependence-independence. The other five factors

⁴⁹ R.B. Cattell and Ivan H. Scheier, Meaning and Measurement of Neuroticism and Anxiety, New York, Ronald Press, 1961, p. 45.

⁵⁰ S. Karson and K.E. Pool, "Second-Order Factors in Personality Measurement", Journal of Consulting Psychology, Vol. 22, No. 4, issue of August, 1958, p. 299-303.

found were anxiety vs. integration, extraversion-introversion, success vs. frustration, sociopathic deviation and latent homosexuality. The differences between these six factors and those derived by Cattell were attributed by Karson and Pool to differences in methodology, statistical procedures and in the two different samples used.

Horn⁵¹ used five relatively common rotational procedures and also found a second-order scale similar to independence-dependence. Like Karson and Pool's research, however, Horn's results were derived from an homogeneous sample.

Gorsuch and Cattell⁵², in an extensive and productive study, yet unpublished, set out to determine the "exact second-order factor structure of a more heterogeneous population than had yet been examined." Their total sample of 1652 was made up of female high school seniors, airmen, college students and adults. All were given the 16PF on different occasions by different administrators. The fourth factor of greatest magnitude found was a measure called Independence vs. Subduedness. The primary factor pattern for this scale is as follows:

51 John Horn, 'Second Order Factors in Questionnaire Data', Educational and Psychological Measurement, Vol. 23, issue of Spring, 1963, p. 117-134.

52 R.L. Gorsuch and R.B. Cattell, "Second Strata Personality Factors Defined in the Questionnaire Realm by the 16PF", Vanderbilt University Psychology Department, unpublished ditto report forwarded by author, December, 1964.

Independence vs. Subduedness:

Factor A		-.23
"	E	+.36
"	I	+.38
"	Q1	+.46
"	Q2	+.41

The beta weights to predict Independence vs. subduedness from the 16PF primary scales are as follows:

Factor A		-.18
"	E	+.31
"	I	+.22
"	Q1	+.27
"	Q2	+.25

This study has been of considerable value because it clearly outlined the exact contribution that each primary factor made in the derivation of the second-order factors.

The most recent information⁵³ on the origin of the second-order factors describes Cattell's measure of Dependence-Independence by the following equation:

$$\text{Independence: } -.54 - .27A + .44E - .16I + .32Q_1 + .39Q_2 + .36Q_2.$$

From this equation can be seen the major personality traits which would contribute to an individual's dependency score, as defined and measured by Cattell. Such an individual, according to the primary factors, would be "outgoing", "humble", "conscientious", "practical", "conservative", and "group-tied"⁵⁴.

⁵³ Institute for Personality and Ability Testing, Note on Second-Order Factors Measured by the Test, personal correspondence with the Institute, noted dated November 6, 1964.

⁵⁴ R.B. Cattell, 16 PF Profile, Form A and B, 1962.

Obviously, any concentration of these traits would provide a raised dependency second-order factor score. Cattell stated that a high dependency score would indicate a "group-dependent, agreeable, passive personality"⁵⁵.

Wagner's Hand Test⁵⁶ uses the projective approach to measure personality traits. It employs relatively structured drawings of human hands in ambiguous poses to elicit responses describing the hand's action. The rationale is:

[...] that prototypal action tendencies will be projected into pictures of hands since the hand, both ontogenetically and functionally, is crucial for interacting with and relating to the external world.⁵⁷

In point form, the rationale is also outlined by the author as:

(1) Human behavior is organized; (2) stimulus-specific perceptions of unstructured stimuli must, in some way, reflect higher-order behavioral tendencies; (3) responses to hands in ambiguous poses indicate these hierarchical organizations and are particularly amenable to a classification scheme which is psychologically and diagnostically useful.⁵⁸

The criterion for a dependency (DEF) response on the Hand Test is that an individual expresses dependency needs when he describes a hand in a position such as requesting

⁵⁵ Ibid.

⁵⁶ Edwin E. Wagner, Manual for the Administration, Scoring, and Interpretation of The Hand Test, Akron, Ohio, Mark James, no date, p. 62.

⁵⁷ Ibid., p. 1.

⁵⁸ Ibid.

assistance, permission or succorance of any kind. There is suggested in such a response a feeling of submissiveness; the individual is in an inferior position requesting something from an implied superior, such as a parent, teacher, boss, or even God.

Wagner describes the individual who gives more than the usual amount of dependency responses as a person who:

[...] needs the largesse of others. He is willing to subordinate himself in order to receive care and protection. He desires to associate with others in order to get something out of them. He is servile, demanding, and since he is incapable of reciprocity, immature.⁵⁹

The dependency response also:

[...] implies a degree of psychological inferiority and a willingness to come to terms with others in order to achieve gratification. People with many dependency responses can be expected to make great demands on significant others whom they consider to be essential to their well-being, and to develop a dependent relationship in therapy.⁶⁰

The dependency response of the Hand Test has received very little attention, except as it pertains to the prediction of "overt aggressive behavior."⁶¹ This is expressed by the ratio of the total of aggressive and directive responses to

⁵⁹ Ibid., p. 21.

⁶⁰ Ibid.

⁶¹ B. Bricklin, Z. Piotrowski and E. F. Wagner, The Hand Test: With Special Reference to the Prediction of Overt Aggressive Behavior, Springfield, Illinois, American Lecture Series in Psychology, Charles C. Thomas, 1962, 1-100 p.

the total of responses involving warm, human interaction. The latter is expressed as the sum of affectionate, communication and dependency responses. The assumption here is that the dependency responses, as well as the affection and communication responses, are contraindications of potential aggressive behavior when combined with a minimum number of aggressive and directive responses. A ratio of approximately 1:1 is considered normal⁶².

4. Summary and Hypothesis.

The literature has indicated a relative paucity of studies in the area of dependency. However, the research done does show that dependency is of considerable importance. The research also illustrates that the study of the phenomenon of dependency might be considerably facilitated if more were known about how our dependency measures work, how they compare and, inasmuch as is possible, what factors comprise them.

Cattell and Wagner's measures of dependency are distinctly different in their approach to gauging dependency. Cattell's measure is a factor-analytic, questionnaire scale based on actuarial and normative data. Wagner's Dependency score, on the other hand, uses an analogical interpretation assuming that because an individual perceives the hand to be

⁶² Wagner, Op. Cit., p. 26.

in a dependent action or pose, he is therefore projecting a dependency need.

Despite the fact Cattell and Wagner employ totally different techniques to measure dependency in their tests, their descriptions of the traits subsumed under their respective dependency scores are very similar. One would expect that a high score on one of the measures would indicate a correspondingly high score on the second.

This study expects to show to what extent Wagner's measure of dependency compares with Cattell's. Furthermore, because Cattell's test offers a relatively comprehensive overview of basic personality traits, a comparison of Wagner's Dependency scale to Cattell's sixteen primary and seven second-order factors should identify some of the elements which comprise it.

Expressed in a general experimental hypothesis, this study is endeavoring to determine how dependency, as defined and measured by Wagner, compares with dependency, as defined and measured by Cattell, as well as with Cattell's other 16PF scales.

CHAPTER II

EXPERIMENTAL DESIGN

The purpose of this chapter is to discuss the procedures involved in testing the general experimental hypothesis outlined in chapter one.

1. Null Hypothesis.

The hypothesis proposed in chapter one as expressed in the null form is:

1. There is no significant correlation between Wagner's measure of dependency and Cattell's measure of dependency;
2. nor are there significant correlations between Cattell's sixteen primary factors and Wagner's measure of dependency;
3. nor are there significant correlations between Cattell's seven second-order factors and Wagner's measure of dependency.

2. Subjects.

Canisius College is a Jesuit liberal arts college in Buffalo, New York. In September, 1964, a total of 534 freshmen were admitted. Of this group, approximately eighty per cent reside within a radius of twenty-five miles of Buffalo.

For the most part they come from lower-middle class homes with a net median income from all sources estimated between seven and eight thousand dollars.

A random sample of 108 was selected from 484 freshman students. The difference between this latter figure and total class enrolment of 534 represents fifty freshmen who were eliminated from the population, prior to the sampling, for one of several possible reasons. First, all females were eliminated, as also were all foreign students. A few were left out because of late registration, late arrival or illness. Those dropped would not constitute any systematic bias because of the variety of reasons for their elimination. The sampling was accomplished by a table of random numbers¹. Instructions of the authors in finding the random numbers were followed exactly. A number from one to 484 was assigned each freshman. A pencil was then freely dropped on the opened tables and numbers collected beginning with the number which lay nearest the pencil point. A check of the distribution of the random sample of 108 from the population of 484 showed the sample to be fairly evenly distributed from subject number 1 to number 484.

¹ James E. Wert, Charles Neidt and J. Stanley Ahmann, Statistical Methods in Education and Psychological Research, New York, Appleten-Century-Crofts, 1954, vii-435 p.

3. Tools.

The psychometric tools used are Wagner's Hand Test and Cattell's Sixteen Personality Factor Questionnaire. The background information of each and the rationales for their respective measures of dependency were discussed in chapter one.

4. Administration.

Cattell's 16PF was administered to all incoming freshmen at Canisius College in September, 1964. This test was part of a battery of three given all freshmen as part of the orientation program of the college's Department of Guidance.

Of the 105 students selected by the random sample, 102 came in voluntarily for the administration of the Hand Test. Each student was told his name had been chosen in a random sample and asked if he would agree to participate. All students readily agreed.

Prior to the actual testing, the test administrator, who was in all cases the writer, engaged in a rapport-establishing conversation with each student-subject. The latter was told nothing about the actual nature of the study, but only that it was some personal research. Each subject, of course, was assured that the results were to be kept confidential and that only the administrator and one other psychologist would have access to the results. Each student was also told that the results were not to be used, nor even seen, by the school's administrative staff. The volunteers were also told that, following the research, their test results could be interpreted to them by the

writer if they were interested and the results of the study made known. It was not expected that many would take advantage of the offer, but rather that such an explanation would put their minds at rest and serve to establish the good rapport necessary in the use of a projective technique, such as the Hand Test.

5. Scoring.

Following the administration of the test to all the subjects, the results were scored by the writer and recorded on separate answer sheets. The whole Hand Test was scored, rather than just the dependency responses, for two main reasons. First, it was considered this would provide a more realistic and accurate picture because there would be no undue emphasis on dependency responses alone. Second, the complete scoring of the test would also provide a better estimate of the inter-scorer reliability.

A second scorer, also a psychologist, scored the tests with no knowledge of the first scorer's results. Both sets were compiled on separate but exactly similar answer sheets. When all the protocols had been scored, the two results were compared in order to determine inter-scorer reliability.

6. Inter-scorer Reliability.

The reliability figures for both scorers are outlined in two main fashions. Table I outlines the number of times the second scorer agreed and disagreed with the writer's

Table I.-

Total Response Agreement and Disagreement between Scorers and
Percentage of Agreement between Scorers.

Scoring Categories	Response Agreement	Response Disagreement	Total No. of Responses	Percentage of Agreement
AFF	152	2	157	98.6
DEP	54	7	61	88.5
COM	174	24	198	87.8
EXH	3	4	7	42.9
DIR	85	5	90	94.5
AGG	102	26	128	79.8
ACQ	96	38	134	71.6
ACT	263	42	305	86.2
PAS	41	6	47	87.2
TEN	35	24	59	59.3
CRIP	52	6	60	86.7
FEAR	6	1	7	85.7
DLS	4	6	10	40.0
FAIL	16	3	19	84.2
BIZ	3	2	5	60.0

scoring, as well as their agreement expressed in percentages for each category. Table II shows the total agreement-disagreement percentages, as well as the number of times disagreements arose for each of the ten Hand Test cards.

The percentage of agreement between scorers I and II, particularly in regard to AFF, DEP and DIR, shows the generally high inter-scorer reliability. In some other categories, notably DES and EXH, the percentages of agreement are quite low. This illustrates the need for the provision of better scoring criteria and examples of typical responses in the Hand Test manual. Most of the criteria and examples are abundantly clear, but some remain slightly ambiguous. This applies, in particular, to EXH, TEN, DES and BIZ. The four lowest percentage agreements were due, to a large degree, to responses which did not neatly fit into one category or another, thereby permitting too much subjectivity on the part of the scorer.

However, as the DEP category is the one about which this study centers, its reliability is the one of greatest interest at this time. Scorers I and II agreed 88.5 per cent on this response.

7. Test-Retest Reliability.

One year after the initial administration of the Hand Test, a retest was conducted in order to determine the test's reliability. The subjects used in the retest were derived by a

Table II.-

Total Percentage Agreement-Disagreement between Scorers and
Number of Differences by Card.

Total Number of Responses	= 1287
Total Number of Disagreements and Changes	= 198
Total Percentage of Agreement	= 84.62%
Total Percentage of Disagreement	= 15.38%

Card	No. of Disagreements
I	12
II	28
III	10
IV	24
V	26
VI	31
VII	14
VIII	13
IX	25
X	15
Total	198

random sample of the original sample of 102. Sixty-five names were drawn by employing the same technique of random sampling as was used originally. Of the sixty-five subjects drawn, only fifty-six could be retested. The difference of nine subjects represented those students who had left the college for any one of several reasons, such as school transfers, financial hardship, academic failures and army enlistments. The reasons were sufficiently varied not to suspect any systematic bias.

The results of the retest were scored and the scores combined into one of four categories, the sum of the Interpersonal responses, the sum of the Environmental responses, the sum of the Maladjustive responses, or, finally, the sum of the Withdrawal responses. The four categories of each administration were compared in order to attain the Pearson product-moment correlations.

The means of the four categories of identical individuals on the original test and retest were collated to see if the differences between them were significant. Three of the four differences between the categories were found not to be significant. The means, standard deviations and "z" ratios are outlined in Table III, along with the reliability coefficients and their "t" ratios. A significant difference was found between the mean number of Withdrawal responses on the two test administrations. This was attributed to the less threatening atmosphere pervading the second administration and the

Table III.-

Reliability Coefficients and their Significance in "t" Ratios and Comparison of the Means and Standard Deviations of the Test and Retest and their Significance in "z" Ratios.

Categories	Reliability Coefficients	"t" Ratios	Means		"z" Ratios	Standard Deviations	
			Test	Retest		Test	Retest
Sum INT	.509	<u>4.327^a</u>	6.00	5.94	.195	1.85	1.78
Sum ENV	.401	<u>3.208</u>	4.55	4.25	.719	1.89	1.64
Sum HAL	.568	<u>5.167</u>	1.03	0.83	1.27	1.05	0.94
Sum WITH	.462	<u>3.835</u>	6.44	0.06	<u>3.86^b</u>	0.63	0.05

^a Underlined "t" ratios are significant beyond the one per cent level.

^b Underlined "z" ratio is significant beyond the one per cent level.

concomitant drop in card rejections, which are scored as Withdrawal responses. The students were simply more familiar with the test and were less inclined to defensiveness, which was usually expressed as a failure to respond.

The reliability coefficients, outlined in Table III, range from a low of .401 for the Environmental category to a high of .568 for the Maladjustive category. All of the test-retest coefficients were found to be significant beyond the one per cent level. The Interpersonal category, with a coefficient of .509, is the most important in regard to this study as it contains the dependency responses, as well as the affectional, communication, exhibition, direction and aggression responses.

Fair reliability or stability is indicated by these coefficients in view of the length of time between the administrations and because of the shortness of the Hand Test itself. Anastasi² stated that with long periods of time between test and retest, "genuine personality changes"³ may take place. Perhaps such was the case with this study's group. In regard to the length of the test, higher reliability coefficients may be attained should the Hand Test be of greater length. Coefficients ranging from the low .70's to the low .80's could be expected should the test be expanded to twenty-five or fifty

2 Anne Anastasi, Psychological Testing, New York, MacMillan, 1961, xiii-657 p.

3 Ibid., p. 594.

cards respectively. Such coefficients are estimated by the use of the Spearman-Brown formula for the reliability of a test of length n^4 .

8. Analysis of Results.

To determine whether the null hypothesis can be rejected or not, the correlations between Wagner's Dependency and Cattell's sixteen primary and seven secondary factors are required. To accomplish this, a computer program known as Correl⁵ is used. This is a standard computer program giving Pearson product-moment coefficients. The computer used is an IBM 7044, made available by the State University of New York at Buffalo Computing Center.

The resulting correlation matrix is interpreted and the significance of the coefficients determined by Fisher's "t" ratio⁶. For the purpose of this study, those Cattell factors were investigated whose coefficient of correlation with Wagner's Dependency was found to be significant at the .05 level.

⁴ J.P. Guilford, Fundamental Statistics in Psychology and Education, New York, McGraw-Hill, 1956, xi-565 p.

⁵ William W. Cooley and Paul R. Lohnes, Multivariate Procedures for the Behavioral Sciences, New York, Wiley, 1962, 211 p.

⁶ Guilford, Op. Cit., p. 219.

CHAPTER III

PRESENTATION AND DISCUSSION OF RESULTS

This chapter presents the results attained following the application of the procedures discussed in the preceding chapter.

Of the 1,287 total responses on the 102 protocols, sixty-one were scored as dependency responses. This represents 4.73 per cent of the total number of responses. Wagner¹ states that the expected percentage of dependency responses among his adult normal standardization group is 3.3 per cent. However, the mean age of his adult group was 33.0 years, as compared to the mean age of 18.0 years of this study's subjects. As might be expected, the adolescents show more dependency tendencies than do the adults. One possible explanation for this difference is the fact that the majority of this sample are still emotionally and financially dependent upon their parents. Whereas approximately 50 per cent of the group are self-supporting in terms of tuition, almost all require some financial support from their families for general living expenses.

¹ Edwin E. Wagner, The Hand Test. Manual for the Administration, Scoring and Interpretation, Akron, Ohio, Mark James, (no date), p. 26.

The mean number of dependency responses for the group on the Hand Test is 0.59. The standard deviation is 0.75.

Table IV, on the following page, provides the correlations found between Wagner's Dependency scores and the sixteen primary and seven secondary Cattell factors.

As can be seen in Table IV, Wagner's measure of dependency does not correlate significantly with Cattell's measure of dependency. However, Wagner's Dependency does correlate at a significant level with two of Cattell's primary factors, Factors B and M, and also with two of the secondary factors, Responsive Emotionality and High Neuroticism. These will be discussed in detail in the following paragraphs. It should be mentioned at the outset that in the following discussion some of those factors which have insignificant correlations with Wagner's Dependency will also be discussed. This is to illustrate better the total pattern of agreement and disagreement between Hand Test Dependency and the Cattell factors. The relationship between Wagner's Dependency and those factors which comprise Cattell's second-order measure of Dependence-Independence will be discussed first.

The correlation between Wagner's Dependency and Cattell's Independence is $-.06$. Cattell's Dependence-Independence measure, as mentioned in chapter one, is based on the following combination of primary factors:

Table IV.-

Correlations between Wagner's Dependency Score on the Hand Test
and Cattell's Primary and Second-Order Factors.

1.	Dependency and Factor A	(outgoing, cyclothymia) ^a	=	.17
2.	" " " B	(more intelligent, high "g")	=	<u>-.25^b</u>
3.	" " " C	(stable, high ego strength)	=	.12
4.	" " " E	(assertive, dominance)	=	.00
5.	" " " F	(happy-go-lucky, surgency)	=	-.07
6.	" " " G	(conscientious, high superego)	=	.07
7.	" " " H	(venturesome, parmia)	=	-.14
8.	" " " I	(tender-minded, premsia)	=	-.05
9.	" " " L	(suspicious, protension)	=	.00
10.	" " " M	(imaginative, autia)	=	<u>-.22</u>
11.	" " " N	(shrewd)	=	.13
12.	" " " O	(apprehensive, guilt proneness)	=	-.13
13.	" " " Q ₁	(experimenting, radicalism)	=	.00
14.	" " " Q ₂	(self-sufficient)	=	-.06
15.	" " " Q ₃	(controlled, high self-concept)	=	-.05
16.	" " " Q ₄	(tense, ergic tension)	=	-.01
17.	" " Second Order Factor	High Anxiety	=	.13
18.	" " " " "	Extraversion	=	-.01
19.	" " " " "	Tough Poise	=	<u>-.21</u>
20.	" " " " "	Independence	=	-.06
21.	" " " " "	High Neuroticism	=	<u>.23</u>
22.	" " " " "	High Leadership Potential	=	-.14
23.	" " " " "	Creative Personality	=	.00

a Terms in brackets are Cattell's description of each factor.

b Underlined correlations are significant at the five per cent level.

$-.54-.27A+.44E-.16G+.32M+.39Q_1+.36Q_2$. Wagner's Dependency correlates .17 with Factor A in the positive direction. Factor A indicates a warm-hearted, outgoing, sentimental individual. This might mean that Wagner's Dependency, to an extent, is sensitive not only to dependency needs, but perhaps also to an individual not necessarily dependent himself but rather sensitive and receptive to the dependency needs of others. Also, of course, Factor A might suggest that dependent people are somewhat warm-hearted, outgoing and sentimental. Factor E, the most important contributing factor of the Independence measure, correlates .00 with Wagner's Dependency. Factor G correlates .07 with dependency on the Hand Test, obviously not at a significant level. Factor M has a significant correlation of $-.22$ with dependency. This factor, in the negative direction, indicates a person who tends to be practical, conventional and, to a general extent, externally directed. These are traits which might well be expected of a dependent individual. Such persons would tend to be conventional and easily directed and influenced by outside elements and persons. Factor Q_1 correlates .09 with dependency. This is an insignificant correlation, and is also in the opposite direction one would expect in view of the equation for the second-order measure of Independence. Factor Q_2 , another major element of Independence, insignificantly correlates $-.06$ with dependency,

but is in the expected negative direction. The dependent person would certainly tend to be more group-tied and a follower than self-sufficient. So, despite the general agreement between Wagner's Dependency and the direction of some of the primary factors which constitute Cattell's Dependence-Independence measure, the overall correlation between the two measures of dependency is not significant. However, in some respects one might have expected this low coefficient of $-.06$. The two tests employ totally different techniques, one indirect and adhering to most of Lindzey's² criteria of a projective technique, the other in the more direct questionnaire form. Zuckerman, Levitt and Lubin³, in a study conducted among student nurses, found that direct measures of dependency were more highly related to peer ratings of dependency than were the more indirect, projective measures. Perhaps each of the techniques used in this study is measuring a different level, or depth of dependency. Or, perhaps the dependency that each test measures lies in a

² Gardner Lindzey, Projective Techniques and Cross-Cultural Research, New York, Appleton-Century-Crofts, 1961, ix-339 p.

³ Marvin Zuckerman, Eugene E. Levitt and Bernard Lubin, "Concurrent and Construct Validity of Direct and Indirect Measures of Dependency", Journal of Consulting Psychology, Vol. 25, No. 4, issue of August, 1961, p. 316-323.

separate domain. Both Cattell⁴ and Guilford⁵ distinguish between the domains of general personality and the dynamic and motivational aspects of personality. Nevertheless, Cattell and Wagner's descriptions of some of the traits subsumed under their respective dependencies certainly suggest they are attempting to measure the same phenomenon.

In the ensuing paragraphs, those factors will be discussed which have been found to correlate significantly with Wagner's Dependency.

The correlation between Wagner's Dependency measure and the second-order factor of Tough Poise is $-.21$, significant at the 5 per cent level. Tough Poise is derived from the following combination of primary factors: $10.40-.49A$ $-.65I+.24N$. The opposite of Tough Poise on this continuum is Responsive Emotionality. A high score on Responsive Emotionality indicates a person of a sensitive, emotionally-directed disposition, who is prone to frustration and depression. Factor A, a major factor of this second-order trait, has already been discussed. Factor I correlates $-.05$ with Hand Test Dependency. Factor I is the most important factor of Responsive Emotionality. This coefficient, apart

⁴ R.B. Cattell, Personality and Motivation Structure and Measurement, New York, World Book, 1957, xxiv-948 p.

⁵ J.P. Guilford, Personality, New York, McGraw-Hill, 1959, xiii-562 p.

from being obviously insignificant, is also opposite from the expected direction, i.e. dependency would be expected to correlate with Factor I in the tender-minded, sensitive, dependent direction, rather than toward the tough-minded, self-reliant pole. It should be noted, however, that Factor I is not included in the primary factor equation for the second-order measure of Dependence-Independence, despite its seeming similarity in Cattell's description. Factor N, the third primary factor of this second-order factor, correlates .13 with dependency. This is also unexpected because Factor N in this direction suggests an individual who is very calculating, worldly-wise and shrewd. This trait is also sensitive to an alert person who has no difficulty managing other people. Again, as with Factor A, there is a suggestion that perhaps Wagner's Dependency also captures an alertness in some people to other persons' dependency needs.

Hand Test Dependency correlates significantly with Cattell's second-order factor of Neuroticism. The coefficient is .23. Neuroticism is made up of the following primary factors: 6.33-.03B-.30C-.19E-.44F-.11G+.12H+.25I+.30 O-.10Q₁ +.40Q₄. The correlation between Neuroticism and dependency is to be expected. Wagner states that "neurotics, especially

hysterics, are prone to DEP."⁶ Factor B of the above equation will be discussed later. Factor C correlates .12 with dependency. Factor C, in the positive direction, indicates emotional stability and high ego-strength, which are not characteristics usually attributed to excessively dependent persons. This suggests again that perhaps Hand Test Dependency is not exclusively measuring projected dependency needs but rather reflecting alertness and sensitivity to others' dependency needs. Factor F and dependency have a negative and insignificant correlation of $-.07$. Factor F is the major component of the second-order factor of Neuroticism, but it is obvious the correlation between Factor F and dependency was not instrumental in accounting for the significant correlation between dependency and Neuroticism. Factor G and dependency is as insignificant a correlation as is Factor F. Factor H, however, correlates $-.14$ with dependency. This is to be expected as in this direction Factor H suggests a shy, timid and submissive individual. These are traits expected of a person scoring high on dependency. Factor O and dependency correlate $-.13$. This is somewhat unusual for a dependent person as Factor O, in the negative direction, suggests a placid, self-assured, worry-free person. Finally, Factor Q₄ and dependency have an insignificant correlation coefficient of $-.01$.

⁶ Wagner, Op. Cit., p. 21.

Factor B and Wagner's Dependency correlate with a coefficient of .25, which is significant beyond the 2 per cent level. Cattell describes Factor B as a measure of "general ability".⁷ Its avowed purpose is to measure general mental ability, the "g" factor, rather than a series of specific abilities, as is usually the case with intelligence tests. Cattell clearly states that Factor B "will not correlate fully"⁸ with the usual intelligence measures employing speed tests because the 16PF allows the subject as much time as is necessary to complete the test. Factor B is considered more a power measure of intelligence by Cattell. It is also designed to measure "crystallized" mental ability, rather than "fluid"⁹ mental ability. The two differ in terms of the ages at which they develop and begin to decline, as well as the manner in which they are measured, e.g. crystallized ability should be measured by power rather than timed tests. The relatively high correlation found between dependency and Factor B is difficult to justify. However, indications are that Factor B, as a

7 R.B. Cattell, Handbook for the Sixteen Personality Factor Questionnaire, Champaign, Illinois, Institute for Personality and Ability Testing, 1957 (with 1962 supplementation), 11-54 p.

8 Ibid., p. 11.

9 Ibid.

personality variable, can generally be regarded as a control factor in the total personality. Concurrent with this study was one done by Mann¹⁰, which provided the correlations between Factor B and the other 16PF variables. For his study, Mann used the same freshman population of 484, from which this study's random sample was drawn. Mann found that Factor B correlated .39 with the second-order factor Neuroticism. This coefficient is significant beyond the 1 per cent level. The reliability of Factor B was also studied by Mann and found to be only .28 when the Spearman-Brown correction had been applied to the original coefficient of .16, found between Forms A and B of the 16PF. It appears Factor B inadvertently measures, through an intelligence factor, certain aspects of neuroticism. However, Cattell is probably aware of this as Factor B is one of the primary factors contributing to his second-order measure of Neuroticism. It should be mentioned that this pronounced relationship between Neuroticism and "intelligence" does not appear when the former is compared to the College Entrance Examination Board's Scholastic Aptitude Tests.¹¹ Mann¹² found that Cattell's

10 W.R. Mann, "Personality Context of Intelligence in College Males, O.A.I.S. and the Cattell 16 P.F.Q.", study done at Canisius College, Buffalo, as yet unpublished, 1965.

11 College Board Score Reports, Princeton, New Jersey, Educational Testing Service, 1961, 63 p.

12 Mann, Op. Cit., p. 39a.

Neuroticism factor correlated .04 with the College Board Verbal test and $-.05$ with the Math.

Two possible explanations for the lack of correlation between the two measures of dependency were put forward on p. 37-38. First, it was considered that the different approaches or techniques of measuring dependency may have accounted for the lack of correlation. Also, the dependency that each test measures may lie in separate domains, one of general personality and the other of dynamic and motivational personality. Another possible reason for the lack of a correlation may be the relatively low reliabilities of both Cattell and Wagner's tests. Also, the small range of dependency scores on the Hand test may be another factor contributing to the low correlation. Virtually all of the subjects on both the test and the retest had four or fewer dependency responses. It may also be said that, although a linear correlation between the two dependency measures does not seem to be present, a non-linear relationship may exist. Finally, a sixth possibility also exists which might account for the lack of correlation between the two measures. It is the writer's opinion that there exists certain inherent shortcomings in Wagner's Hand Test. It is considered that Cards I, III, VI, and VIII are too highly structured, at least for this group, and also for an alcoholic group previously studied by the writer. As a result, the responses

elicited by these cards are too often stereotyped. In effect, the Hand Test is restricted to the presentation of only five cards of sufficiently ambiguous hand poses. The few unique responses thus derived offer too limited an opportunity for hypotheses of psychodynamics.

SUMMARY AND CONCLUSIONS

In the analysis of the correlations between Wagner's Dependency and all the factors of Cattell's test, it was found that the null hypothesis of no significant correlation between Wagner's Dependency and Cattell's Dependence-Independence could not be rejected. However, the second part of the null hypothesis, that there are no significant correlations between Wagner's Dependency and Cattell's primary and secondary factors, could be partially rejected.

It was found that two of the primary factors of Cattell's 16PF Questionnaire, Factors B and C, correlated significantly with Hand Test Dependency. Two of the second-order factors, Responsive Emotionality and Neuroticism, also correlated at a significant level with Wagner's Dependency.

The study indicated that Cattell's measure of dependency is not linearly related to Wagner's Dependency, in this group. Six interpretations of this result were advanced. First, the lack of correlation may have been due to the two different measuring techniques employed, one projective and the other questionnaire. Second, the dependency constructs may lie in separate domains, one a domain of general personality and the other of dynamic and motivational personality. Third, the relatively low reliabilities of both of the tests involved may have contributed to the lack of

correlation. Fourth, the small range of the dependency scores found on the Hand Test, within the limits of zero to four responses, may have been responsible. Fifth, perhaps a non-linear correlation between the two measures exists, rather than a linear correlation as pursued in this study. Sixth, the discrepancy between the two measures may have been due in part to the shortcomings found by this writer in the Hand Test itself.

The significant correlations found between Hand Test Dependency and the two primary and two second-order factors were somewhat justified upon close scrutiny of exactly what each scale in question implied.

A profitable area of research with the Hand Test might exist in exploring the development of more hand poses. Perhaps some of the cards could employ female hands as well as obviously masculine hands, and even combine groups of hands suggestive of some human interaction. It might also be of value to expand the number of cards to twenty-five, or even fifty. This would provide more responses with which to work and would allow more opportunity for the administrator to observe the testee's behavior. One other obvious advantage of extending the number of cards would be the resulting increase of the test's reliability. Also, this writer considers that the addition of at least one more scoring category for

symbolic responses might prevent the possible misscoring of these responses as bizarre (BIZ).

Another major innovation or improvement of the Hand Test may lie in heightening the test's sensitivity. Perhaps weightings could be introduced to some of the scoring categories so as to provide a qualitative discrimination in addition to the quantitative. For instance, if dependency responses were scored according to a weighted scale based on the degree of dependency implied, more information could be derived. A dependency response indicating the hand is pleading for assistance probably denotes a greater degree of dependency than does a response involving a hand raised in a classroom requesting permission to speak. If a scale from one to three were used, a truer indication of degree or intensity would be available. In the example mentioned, a pleading hand response would be given a score of three, whereas the hand raised in class would be given the minimum of one. Such weightings could be profitably applied to the remaining Interpersonal categories, as well as to most of the Maladjustive and Withdrawal categories.

One other possible research area might be to explore the relationship existing between Wagner's Dependency and the individual items of Cattell's test in order to determine which items, if any, correlate with dependency on the Hand Test.

BIBLIOGRAPHY

Ahmad, Farrukh Zahur, Aspects of Psychotherapy Related to Psychotherapists' Responses to Dependency, doctoral thesis presented at Stanford University, 1961, 130 p., as entered in Dissertation Abstracts, Vol. 21, Part 4, April-June, 1961, p. 3519.

Studies the effects of the manipulation of clients' dependency needs by the therapist. Also provides insight into the importance of the dependency role in psychotherapy.

Bingham, J.R., "Precipitating Factors in Peptic Ulcer", Quarterly Journal of Studies on Alcohol, Vol. 23, No. 1, issue of March, 1962, p. 174.

Found dependency the major personality trait of alcoholics.

Blyth, D.D., Dependence, Independence, and Other Factors Related to Veterans' Reactions to an Offer of Psychotherapy, doctoral thesis presented at the Ohio State University, 1953, 157 p., as reviewed by William U. Snyder, Dependency in Psychotherapy: A Casebook, New York, MacMillan, 1963, viii-424 p.

Found dependency the most important variable affecting acceptance of psychotherapy. Used a very indirect measure to gauge dependency, however.

Bricklin, B., Z. Piotrowski and E.E. Wagner, The Hand Test: With Special Reference to the Prediction of Overt Aggressive Behavior, Springfield, Illinois, American Lecture Series in Psychology, Charles C. Thomas, 1962, x-100 p.

The Hand Test text. Has more statistical information than the test manual. The scoring system provided in this book is not the one presently in use, however.

Cattell, R.B. Handbook for the Sixteen Personality Factor Questionnaire, Champaign, Illinois, Institute for Personality and Ability Testing, 1957 (with 1962 supplementation), ii-54 p.

Clear and concise manual with interesting occupational profiles on the 16PF.

Cattell, R.B. and Ivan H. Scheier, The Meaning and Measurement of Neuroticism and Anxiety, New York, Ronald Press, 1961, viii-535 p.

A study of anxiety and neuroticism from almost all conceivable angles. Provides more insight into the primary Cattell factors.

Cattell, R.B., Personality and Motivation Structure and Measurement, New York, World Book, 1957, xxiv-948 p.

Thorough coverage of Cattell's theories on personality and trait measurement. Difficult to read, however.

-----, "Second Order Personality Factors in the Questionnaire Realm", Journal of Consulting Psychology, Vol. 20, No. 6, issue of December, 1956, p. 411-418.

Pioneer work on the introduction of the second-order factors derived from the intercorrelations of 16PF primary factors.

Gorsuch, R.L. and R.B. Cattell, "Second Strata Personality Factors Defined in the Questionnaire Realm by the 16PF", Vanderbilt University Psychology Department, unpublished ditto report forwarded by author, December, 1964.

Extensive study to determine the second-order factors of a more heterogeneous group than had previously been done.

Guilford, J.P., Personality, New York, McGraw-Hill, 1959, xiii-562 p.

The author's extensive views on personality, its study, structure and measurement. Very clearly written.

Horn, John, "Second Order Factors in Questionnaire Data", Educational and Psychological Measurement, Vol. 23, issue of Spring, 1963, p. 117-134.

Study done to determine some of the second-order factors from intercorrelations among the primary factors. Done with an homogeneous group, however.

Institute for Personality and Ability Testing, Note on Second-Order Factors Measured by the Test, personal correspondence with the Institute, note dated November 6, 1964.

Provides the equations of primary factors making up the second-order factors.

Karson, S. and K.B. Pool, "Second-Order Factors in Personality Measurement", Journal of Consulting Psychology, Vol. 22, No. 4, issue of August, 1958, p. 299-303.

Same type of study as done by Horn, also with an homogeneous group.

Levitt, Eugene E., Bernard Lubin and Marvin Zuckerman, "A Simplified Method of Scoring Rorschach Content for Dependency", Journal of Projective Techniques, Vol. 26, No. 2, issue of June, 1962, p. 234-236.

A concise and objective system for scoring dependency in Rorschach responses. Should be a valuable measure for future studies of dependency.

Lisansky, Edith S., "Psychological Predisposition in Alcoholism", Quarterly Journal of Studies on Alcohol, Vol. 21, No. 2, issue of June, 1960, p. 314-343.

Studies the etiology of alcoholism and the characteristics which predispose an individual to alcoholism. One of the better of several studies conducted on the elusive "alcoholic personality".

Mann, W.R., "Personality Context of Intelligence in College Males, the O.A.I.S. and the Cattell 16 P.F.Q.", study done at Canisius College, Buffalo, as yet unpublished, 1965.

Intercorrelations of all variables of both tests as well as academic grades and College Board verbal and math aptitude results. Good information for prediction of academic achievement.

Navran, Leslie A., A Rationally Derived Minnesota Multiphasic Personality Inventory Scale to Measure Dependency, doctoral thesis presented at Stanford University, 1951, (no page), as reviewed by Alan D. Button, "M.M.P.I. Study of Alcoholics", Quarterly Journal of Studies on Alcohol, Vol. 17, No. 2, issue of June, 1956, p. 263-281.

One of the most widely used measures of dependency. However, it has been found lacking to some extent by other studies.

Nelson, J.W., Dependency as a Construct: An Evaluation and Some Data, doctoral thesis presented at the University of Minnesota, 1958, 213 p., as entered in Dissertation Abstracts, Vol. 19, January-March, 1959, p. 2149.

This delves into the concept of dependency, as well as studying Navran's M.M.P.I. Dependency scale and its relationship to therapy.

Peterson, A., W.U. Snyder, G.M. Guthrie and W.S. Ray, "Therapist Factors, an Exploratory Investigation of Therapeutic Biases", Journal of Counseling Psychology, Vol. 5, No. 3, issue of Fall, 1958, p. 169-173.

Studied psychotherapists' techniques of pursuing certain areas in therapy which they believed would be therapeutically beneficial.

Pruitt, Walter A. and K.L. Van de Castle, "Dependency Measures and Welfare Chronicity", Journal of Consulting Psychology, Vol. 26, No. 6, issue of December, 1962, p. 559-560, as entered in Psychological Abstracts, Vol. 39, No. 1, issue of February, 1965, p. 210.

suggested chronic welfare cases score higher on a direct measure of dependence. Authors found no relation, however, between Rorschach responses and welfare cases.

Snyder, William U., Dependency in Psychotherapy: A Casebook, New York, Macmillan, 1963, viii-424 p.

A very extensive and thorough study of therapy conducted with two excessively dependent patients. Excellent coding system provided to assist in the handling of dependency.

Wagner, Edwin E., The Hand Test, Manual for the Administration, Scoring, and Interpretation, Akron, Ohio, Mark James, (no date), 62 p.

Hand Test manual with sample protocols. Limited statistical coverage provided.

Witkin, H.A., S.A. Karp, and D.R. Goodenough, "Dependency in Alcoholism", Quarterly Journal of Studies on Alcohol, Vol. 20, No. 3, issue of September, 1959, p. 493-504.

Presents three valid, objective and reliable perceptual measures of psychological dependency. Most interesting work and strongly recommended.

Zuckerman, Marvin, Eugene E. Levitt and Bernard Lubin, "Concurrent and Construct Validity of Direct and Indirect Measures of Dependency", Journal of Consulting Psychology, Vol. 25, No. 4, issue of August, 1961, p. 316-323.

This study found direct measures of dependency more closely related to peer ratings of the same phenomenon than projective measures. Valuable in focusing attention on dependency measures.

APPENDIX 1

ABSTRACT OF

Wagner's Hand Test Measure of Dependency. A
Factorial Construct Study

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Wagner's Hand Test Measure of Dependency. A Factorial Construct Study.¹

Despite its considerable importance, very little research has been devoted to the study of dependency and the techniques developed to measure it. The estimation of the incidence and extent of dependency needs in a patient becomes of particular importance when the type of psychotherapy to employ is being considered.

In this project, Wagner's Hand Test measure of dependency was compared to Cattell's factorially-derived measure of dependency. The Hand Test Dependency measure was also compared to the remaining primary and second-order factors of Cattell's Sixteen Personality Factor Questionnaire in order to identify some of the elements which comprise it. The study was conducted with 102 freshman college students, representing a random sample of a population of 404.

The results upheld the first part of the null hypothesis of no significant correlation to be found between Wagner's and Cattell's respective dependency measures. However, the

¹ John A. McGrory, Master's thesis presented to the Faculty of Psychology and Education of the University of Ottawa, Ontario, March, 1966, vii-54 p.

second part of the null hypothesis, of no significant correlations between Wagner's Dependency and the primary and second-order factors, could be partially rejected. Wagner's Dependency was found to correlate, at the five per cent level of significance, with Factors B and M, as well as with the second-order factor measures of High Neuroticism and Responsive Emotionality.

The study showed quite clearly that the two measures of dependency were not related. Six possible explanations were put forth. First, the lack of relationship may have been due to the different measuring techniques involved, one projective and the other questionnaire. Second, the low correlation may have been due to the different domains of personality in which the dependency constructs may rest. Third, the relatively low reliabilities of the tests involved may also have been a factor. Fourth, the small range of the dependency scores on the Hand Test may have been responsible. Fifth, whereas a linear correlation between the two measures does not seem to exist, perhaps a non-linear correlation does. Sixth, the discrepancy between the two measures may have been due to the shortcomings this writer found in the Hand Test itself.

Recommendations and suggestions for the improvement of the Hand Test included more ambiguous hand poses on Cards I, III, VI and VIII. an increase in the number of

cards, the possible introduction of groups of hands rather than one alone, the creation of weightings for several categories in order to improve the test's sensitivity and, finally, the extension of the scoring system to include a category for symbolic responses.