AN EXPERIMENTAL STUDY APPLYING NON-ARISTOTELIAN PRINCIPLES IN THE MEASUREMENT OF ADJUSTMENT AND MALADJUSTMENT

Thesis for the Degree of Ph. D.

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Thomas M. Weiss

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This is to certify that the

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Thomas Weiss

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Walter L. Johnson
Major professor

Date July 3, 1954

AN EXPERIMENTAL STUDY APPLYING NON-ARISTOTELIAN PRINCIPLES IN THE MEASUREMENT OF ADJUSTMENT AND MALADJUSTMENT

By

Thomas M. Weiss

AN ABSTRACT

Submitted to the School of Graduate Studies of Michigan State College of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Guidance and Counselor Training

Year 1954

Approved Walter F. Johnson

THESIS

THOMAS M. WEISS

ABSTRACT

Objectives

The objectives of the study were as follows: To develop a test which would discriminate between socially well-adjusted individuals and those poorly adjusted socially on the basis of the extent to which the "IS of identity" was used. The "IS of identity" was defined as any form of the verb "to be" used in such a way as to imply false-to-fact identity between class names and individual members of such classes.

A one-hundred-item test was developed through three pilot studies, the reliability of which was found to be above 0.90 in each of the studies, and the test was found to discriminate consistently at the 0.01 probability level between high and low scorers. It was further shown in the pilot studies that students scoring high on the "IS of identity" test tended to receive high teacher ratings, and conversely, those scoring low on the test received low teacher ratings. The pilot studies showed also that persons in institutions, as a group, scored considerably lower on the "IS of identity test" than did those not in institutions. Approximately two hundred persons were compared in the pilot studies.

THOMAS M. WEISS ABSTRACT

Proceding on the assumption that a valid, reliable instrument had been developed, the following objectives were attempted in the larger study:

A. To determine whether persons in correctional institutions such as Boys Vocational School or Ionia State Reformatory differed significantly in the degree to which they used the "IS of identity," as compared with persons not institutionalized.

B. To determine whether persons in secondary schools differed in the extent to which they used the "IS of identity" and whether such variation could be associated with social adjustment as measured by teacher ratings.

C. To determine whether age level, sex, church attendance or affiliation, and intelligence were factors which influenced the use of the "IS of identity."

Selection of Sample

A sample of 236 persons was randomly selected from the Lansing High School population, and a sample of 280 persons was selected at Boys Vocational School and Ionia State Reformatory. The 516 persons were tested with the "IS of identity" instrument. For each of those tested both in and out of institutions, the following information was recorded: intelligence quotients, age, sex, religious affiliation and church attendance, and self-rating. For

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persons in Boys vocational School, Mooney Problem Check List scores and prognostic and diagnostic ratings were also recorded. For the Lansing High School population, composite teacher-ratings were recorded.

Methodology

To test whether or not there were significant differences in the means of the test scores for the various categories, the method of analysis of variance was used. The analysis was applied to the following categories: (1) age, (2) sex, (3) religious affiliation, (4) church attendance, (5) self-ratings (the rating each testee gives himself with respect to his attitude toward people), (6) teacher-ratings (a composite rating given to each noninstitutional testee by two or more teachers with respect to social adjustment of the testee), (7) institutionalized versus noninstitutionalized.

A correlation between test scores and intelligence quotients indicated that allowance should be made for the influence of the variable I.Q. Therefore, for those cases where the analysis showed significance, covariance adjustment was employed to eliminate the influence of I.Q.

Findings

The analysis of variance showed no significant differences between the means of the "IS of identity" test scores for the following categories: (1) age, (2) sex, (3) church attendance, (4) diagnostic or prognostic ratings (a composite rating assigned to each enrollee at B.V.S. by B.V.S. officials, indicating probable adjustment at the institution), (5) self-ratings 102 (I am very careful in choosing my friends), 104 (I make no friends until they prove worthy of my friendship), 105 (I like and dislike about the same number of people).

The analysis of variance showed significant differences between the means of the "IS of identity" test scores for the following categories: (1) church affiliation, (2) self-rating categories 101 (I like almost everyone) and 103 (I like more people than I dislike), (3) teacher-ratings.

When covariance adjustment was applied to self-rating 103 and religious affiliation categories, both showed nonsignificance. Self-rating category 101 and teacher-ratings remained highly significant.

Analysis of variance with covariance adjustment showed highly significant differences between the means of the "IS of identity" test scores for the category institutionalized versus noninstitutionalized.

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The author wishes to express his sincere appreciation to Dr. Walter F. Johnson, under whose supervision this research was initiated and completed, and whose constant assistance and encouragement will long be remembered.

The writer is also greatly indebted to Doctors Harry Sundwall, Carl Gross, C. V. Millard, and Harry Scales for reading and criticizing the thesis in its several stages.

Grateful acknowledgment is also due to Dr. Milton Rokeach, who, from the beginning, encouraged a continuation of the study; to Dr. Chester Lawson for his critical comments and suggestions; and to Doctors Harold Dahnke and William Baten for their invaluable assistance in the statistical treatment of the data.

Many thanks are due Dr. Ernest Shelly for making available the data from the Boys Vocational School and for permitting the testing of the school's population. The author wishes also to thank the principals at Eastern High School, Sexton High School, and Walter French Junior High School for permitting the testing of their schools' populations, and especially Miss Mildred Toogood, Mrs. Helen Cleveland,

and Mr. Gary Fisher, for their persistant efforts in obtaining teacher ratings for each of the schools' testees.

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Candidate for the degree of

Doctor of Philosophy

Date of Examination, July 8, 1954, 3:00 p.m., Conference Room, Department of Guidance and Counselor Training.

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To the honorable Ed C. Johnson,

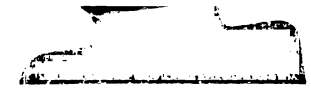
who made it possible

AUTHOR'S NOTE

When Galileo challenged Aristotle's law that heavy and light objects fell at the same rates, he was severely criticized by leading authorities. The fact that Galileo empirically demonstrated the fallacy of the "master" was denounced by many at that time. The moral is that while an authority may hold sway for great lengths of time, enforcing opinions which may be not in conformity with process reality, the soundest approach to "empirical truth" is founded in critical observation of natural phenomena.

If one were writing a doctoral thesis in the Galilean days, a bibliographical item referring the reader to Aristotle would have had the effect of substantiating the statement included, whether or not it conformed with processes in the real world.

In pre-Einstein days a thesis writer could refer the reader to Newton's laws or Euclid's axioms to validate his argument. But we now know that these laws and axioms hold strictly only for a hypothetical "Euclidian Space," and it has been found that reality can be described more exactly by non-Euclidian geometry. In addition, the writer might refer the reader to Dalton and his concept of



indestructible atoms, yet today atoms are being destroyed, and this concept has been proved incorrect.

Thus, the concepts that Aristotle, Newton, Euclid, or any authority proposes are only tentative and subject to revision when empirical testing demonstrates such a need. For this reason, the present work relies much more heavily upon empirical evidence than it does upon authoritative statements.

Chapter II, in particular, is developed on this basis. The reader is presented a discussion of non-Aristotelian principles which is not solely dependent upon what some authority has said, but on the empirical evidence available to every human who uses language, and who is his own authority so far as evaluation is concerned.

It is hoped that appeal to the individual's own experiences will make the material presented more meaningful, less cumbersome, albeit somewhat unorthodox.

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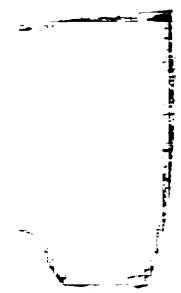

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CHAPTER I

INTRODUCTION TO THE PROBLEM

Through the medium of language, an attempt is made to convey the thought of the scientist, the educator, the psychologist, the theologian, as well as the thought of the man in the street. If one is to learn about those things which he cannot experience at first hand, he must do so through the medium of language. Without this invention of the human species future generations could not profit from the experiences of the past, nor present generations communicate through vast distances. Language is not the special province of any one area of knowledge; it is utilized by every area. For this reason, research dealing with language itself must draw from many, many areas. Examples cannot be gleaned from dictionaries nor from texts dealing with rhetoric, logic, or grammar alone; the reason for this being that the importance of language is not in the language but in what human beings do with it.

When one deals with behavior of human beings, one is involved in the sciences which deal with that aspect of nature and in the recognized provinces of many specialized sciences. Language, whether

it be spoken or written, involves an organism utilizing certain organs. The organism uses muscles, nerves, and other tissues in the process. The nervous system can be divided for convenience into two chief parts, the higher and the lower. The higher nerve centers are those assigned by neurologists to the cortex of the brain. Since muscle and nerve tissue are involved in language it is a province of anatomy, and neurology. But responses to stimuli do not just happen, and do not move by an unknown means. The nerve current appears as an electrical impulse, and as such is related to the work of the physicist. That the ability to learn a language is inheritable only in the human species relates it to the work of the geneticist. Man's ability through language to utilize the nervous system of other men relates it to the fields of administration and government. Certain "mental ills" including war-making and war-mongering are peculiar to the human species, as are schizophrenia and paranoia, all of which indicate a maladaptive use of language and which relate language to the work of the psychologist, the educator, the social worker, and others.

It would seem, on the basis of empirical evidence, that those ills which beset mankind, those which are peculiar to mankind, might be causally related to man's distinguishing characteristic--his ability to symbolize and respond to his symbols, namely his language ability (35:268).

Many authors, including Malinowski (61), Mead (63), and Whorf (94), to name but a few, have shown that the way in which man interprets his world (reality) is a function of his language. "The language which man uses is determined for him by his culture and because individuals within that culture talk fluently from early childhood each man believes himself to be an authority on the process." (95:230)

Obviously, language is the chief media for communication among humans. This language and the structure of it has been handed down through the ages, incorporating the ideas of men about the structure of their environment, both inside and outside their skins. Some of these ideas were correct; much was incorrect due to the limited knowledge early man had of his world. Through empirical testing much of the erroneous information has been corrected, but the structure of the language has not changed greatly, and it is that structure which does not correspond to empirical reality (35:115). Not knowing the part man's nervous system played when he observed something in the real world, early man ascribed a property to a thing. He saw a leaf and the physiological reaction which he experienced (color) was given a label. He therefore, on the basis of his limited information, and unaware of the part his eye, his optic nerve, and his brain played in the process (35:121-122), said, "The leaf <u>is</u> green,"

describing the green as a property "possessed" by the leaf. The greenness, however, was a joint phenomena between that which was being observed and the observer. It is easier to understand this if one considers two persons describing caviar. One of them says, "Caviar is good"; the other, "Caviar is bad"; and while both are talking about caviar, they are also talking about themselves. This "is" which identifies the thing with the label or the property ("bad") with the object ("caviar") is called by general semanticists the "IS of identity."

The discipline called general semantics (a discipline based on scientific, non-Aristotelian principles--not to be confused with semantics) is based on the premise that the structure of a language in which men expect to deal with and describe the "real world" around them should be similar to the structure of that "real world." Or, if that similarity of structure is lacking, the men who use the language should be aware of its limitations which can lead them into pitfalls of misunderstanding and misevaluation. General semanticists point to the "IS of identity" as one of these limitations. If its unthinking use can lead to misevaluation and misunderstanding, then it may be both a precursor and a symptom of maladjustment. The

problem may be one of structure, and if this be the case, the "IS of identity" may be one of the culprits.

The question arose, however, as to how this hypothesis could be tested. The idea of preparing a paper-and-pencil test to attempt a measurement of the subject's use of the "IS of identity" and of comparing that measurement with the subject's social adjustment gradually advanced in the mind of this investigator. No paper-and-pencil test based on general semantics had been reported prior to the suggestion of this doctoral candidate (49) during his first committee meeting, February, 1952. To date there is but one other. In March, 1952, Dr. Henry Peters, Chief Clinical Psychologist, Veterans Administration Hospital, Little Rock, Arkansas, presented the results of a test designed to measure the degree of supraordinality and subordinality in the testee's thinking (71). This he believed would indicate adjustment or maladjustment. The results of his test indicate that there is a definite positive correlation between supraordinal thinking and maladjustment. Although Dr. Peters' test attempts to separate adjusted and maladjusted persons on the basis of language behavior, the test itself differs greatly from that which will be developed and presented in this study. Both tests, however, are based on the principles suggested by Alfred Korzybski, as outlined

in Science and Sanity (41), and both attempt to measure the relation of an individual's language behavior to his social adjustment by paper-and-pencil means. This involves the physiological response of the organism previously measurable only by chemico-electro-physical means.

Statement of the Problem

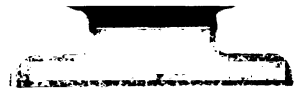
The purpose of this study is:

First, to attempt the construction of a paper-and-pencil test which will discriminate between those who habitually use the "IS of identity" and those who do not.

Second, to determine by comparing institutional and noninstitutional groups whether those institutionalized use the "IS of identity" to a greater degree than do those not institutionalized.

Third, to determine whether among the noninstitutionalized sample, differences in social adjustment are associated with differences in the degree to which they use the "IS of identity."

Fourth, to determine whether age, sex, religion, or intelligence are associated with differences in the extent to which the use of "IS of identity" is employed.



Assumptions of the Study

1. In reality there is no identity, no absolute sameness.

2. The "IS of identity" language pattern exists and is measurable.

3. Persons vary in the extent to which they use the "IS of identity."

4. A paper-and-pencil test can be constructed to measure the extent to which the "IS of identity" is employed.

5. Structure of reality as inferred from language differs from the structure in "reality."

Null Hypotheses to be Tested by Analysis of Variance (with Covariance Adjustment as Required)

1. Different age groups do not differ in the use of the "IS of identity."

2. Males and females do not differ in the use of the "IS of identity."

3. Persons of different intelligence levels do not differ in the use of the "IS of identity."

4. Persons with different social adjustment do not differ in the use of the "IS of identity."

5. Church attenders and nonattenders do not differ in the use of the "IS of identity."

6. Catholic and non-Catholic students do not differ in the use of the "IS of identity."

7. Students who rate themselves differently with respect to attitude toward people do not differ in the use of the "IS of identity."

Definition of Terms

> If he contend, as sometimes he will contend, that he has defined all his terms and proved all his propositions, then either he is a performer of logical miracles or he is an ass; and as you know logical miracles are impossible. [39:252]

The pilot study: "The pilot study" refers to the preliminary research, the results of which are not included in the analysis of the data, but which suggested the type of items and type of instrument most promosing for the larger study.

Adjusted individuals: "Adjusted individuals" are those whose behavior is sufficiently acceptable to others so that society has taken no action to remove them from the "normal population." Of course, there are degrees of adjustment within this group.

Maladjusted individuals: Extreme cases are those whose behavior has caused society to take action by separating them from the "normal population"; those in institutions.

Institution: "Institution" refers to corrective or penal establishments; namely, Boys Vocational School (B.V.S.) and Ionia State Reformatory. Testees from these institutions were called the in-group.

Normal population: The "normal population" consisted of the boys and girls attending public schools in Lansing, Michigan--the enrollees at Eastern and Sexton High Schools and at Walter French Junior High School--also called the out-group.

Abstracting: The process of selecting certain characteristics of "reality" and ignoring others is termed "abstracting."

Fiction: "Fiction" refers to imaginings, occurrences in men's minds and not external to men's minds. Verbalizations which cannot be verified in reality are "fiction."

Language: "Language" is the chief form of communication in humans; the symbolic process whereby one may talk about and think about an object whether it be present or not, once a symbol has been assigned to the object.

Structure of language: "Structure of language" is described in terms of its organization or the relationship among its parts; the number of its parts, which governs the degree of differentiation among things it affords the user; and its fluidity or rate of change in line with new knowledge.

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Reality: "Reality" refers to objects and processes in "nature" to which all organisms must adjust in order to survive; that which exists irrespective of what man says about it.

Structure of reality: "Structure of reality" is the relationship among the infinite variety of facts, events, objects, et cetera, in man's environment and within man himself, including facts, events, et cetera, on submicroscopic levels, characterized by continuous change.

Communication: The attempt on the part of one person to convey some of the products of his own abstracting to another person is termed "communication."

Defined terms: "Defined terms" are definitions by common agreement.

Undefined terms: "Undefined terms" are unconscious assumptions implicit in our language structure; terms that are still undefined after all other words in a definition have been defined.

Self-rating: "Self-rating" is the testee's own appraisal of his attitude toward people. (The last five items in the "IS of identity" test--testees are asked to select the one which best describes their attitudes about people.)

Semantic reaction: The physiological response to the stimuli of words, either spoken by another or thought by the individual himself, is termed "semantic reaction."

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Teacher rating: A composite rating of several teachers of the social adjustment of an individual testee constitutes a "teacher rating."

Diagnostic and prognostic rating: This term refers to a rating made by officials of B.V.S., of social adjustment of each enrollee.

IS of identity: The term "IS of identity" refers to any form of the verb "to be" which is used to ascribe a property to a thing, process, or event, with lack of recognition that in so doing the part of the observer is ignored (34:121).

Importance of the Study

> The whole task of psychotherapy is the task of dealing with a failure in communication. The emotionally maladjusted person, the "neurotic" is in difficulty first because communication within himself has broken down, and second because as a result of this, communication with others has been damaged. [77:83]

If this be true, then any and all techniques which have been or can be developed to indicate the cause of such communication failure should afford a basis on which educators can build a communication system less subject to such failure. Great efforts have been made in this direction, and with notable success. The whole area of group dynamics involves communication between people, but if, as Rogers says, "the maladjusted is in difficulty first because

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communication within himself has broken down,'' the need is for improved communication individually, first.

Counselors and psychotherapists as well as psychiatrists attempt to do this, attempt to establish communication with those who ''are out of contact with reality.'' Each of these specialists recognizes the language peculiarities of special mentally disturbed persons, but in none of the literature outside the field of general semantics is there reference to the possibility that confusion of levels of abstraction or the habitual use of the ''IS of identity'' may be causative factors, although Katz (37) has evidenced interest in the problem and invites research.

Here, then, is the chief importance of this study. Despite the fact that since 1933 a wealth of literature has been written about the subject of general semantics, no attempt has been made to objectively test its assumptions. In science, assumptions must be treated as assumptions until verified. The general semanticists have assumed the ''IS of identity'' to be a contributive factor toward maladjustment. This study is a beginning toward establishing the truth or falsity of that assumption. It is important, for if no evidence can be found to support this basic assumption, the remaining theoretical structure needs amending.

The study is important further, in that if general semantics principles concerning the "IS of identity" and maladjustment are demonstrable, these may be applied by persons dealing with other human beings in a verbal relationship. It is recognized that these principles are no "cure-all"; neither is penicillin, but, like penicillin, they can be utilized for those areas in which empirical evidence justifies their use.

This study is in a new area of communication technique, little explored except philosophically, and, it seems, at times wishfully. If it can contribute further understanding to the area of human relations it is important, and if it shows no such promise it is still important to the degree that at least the aspect dealt with in this study need consume no other researcher's time or effort.

Limitations of the Study

The most serious limitation of this research lies in the fact that no instrument is now available against which to validate the test herein developed (49:117). The Mooney problem check list was considered as one possibility. However, since Mooney scores were available only at Boys Vocational School, their use as validating

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criteria was restricted. Moreover, there is some question as to the validity of the Mooney check list itself.

The second limitation of this research stems from the fact that the populations studied were restricted to the Lansing area, at least in-so-far as the out-group was concerned. Whatever generalizations may be drawn from the results must be handled with care and with full recognition that they are only indicative, and not to be considered final in any sense. The in-group is more representative, since students at Boys Vocational School are admitted from all parts of the State of Michigan. Nonetheless, a larger percentage of these boys are admitted from metropolitan areas, and are not necessarily truly representative of all Michigan areas.

A third limitation, which this study shares with all other pencil-and-paper tests, derives from the possibility of misinterpretation of instructions for taking the test. Although every effort was made always to administer the test in the same manner, with the same oral instructions, and under similar environmental conditions, the individual conducting the test is necessarily "different" from one administration to the next, and may have inadvertently affected the results through unintentional differing emphasis from one group to another.

A fourth limitation of this research comes from the inequality of teachers' ratings. The final teacher rating for each testee is a mean of all the teacher ratings made for that testee. But one student may have a "mean rating" which reflects ratings from ten or more teachers, whereas another student may have a "mean rating" from but one teacher. Obviously, the student who is "known" by more teachers will have more ratings and will usually be the student at one or the other extreme of the adjustment scale. While these extremes are valuable in discriminating extremes, the in-between students are equally important, and faulty rating of this group may reduce the correlations found between the test herein developed and teacher ratings.

A fifth limitation of this research is again concerned with rating, this time with the self-rate, that is, the evaluation by the student of himself with respect to his "attitude" toward other people. One cannot be sure that his self-rate actually reflects his attitude. Since he must indicate his name, it is possible that he may choose a more socially acceptable self-rate rather than his true attitude toward people because of fear that someone in authority might frown upon his actual attitude.

A sixth limitation of the study applies to the in-group. All in-group testees were male, and hence whatever difference may appear between in-group and out-group is valid for males only, unless it is demonstrated that no differences attributable to sex differences exist.

A seventh limitation of the study stems from the fact that all students taking the test were advised that the results earned on this test were not to become a part of their records in the school or institution with which they were connected. This recognition, by the student, of no personal gain or loss may have affected his approach to the test, and hence his score.

An eighth limitation of the study is in the nature of the test itself. The items are extremely simple, deliberately so. This was in order to eliminate reading ability as a factor. All items are keyed false. The rationale for this is discussed in Chapter III. Care was taken that a pattern of response could not be detected (except in rare cases), and several trial forms were used from eighth grade level to fifth year college level, which verified the fact that an all-false pattern could not be discerned. Nonetheless, in the "rare cases" mentioned (and this has not been definitely established), some detection of the all-false pattern may have occurred.

Finally, the group in mental institutions, the most seriously maladjusted, was not tested. This group, in whom communication failure is most complete, was left out of this experimental study because of insufficient time, too few cases (of the proper age group), and because of the obvious difficulties of administering the tests or even of getting permission to administer them. The results of this present research may indicate full justification for a more comprehensive testing which could then include those in mental hospitals.

Plan of the Study

The following chapter (II) is devoted to a discussion of general semantics as a framework within which the test itself was developed. While this chapter cannot be considered a review of the literature, it does, to a degree, fulfill this purpose. As indicated earlier, at the time this research was begun no paper-and-pencil test designed to measure adjustment-maladjustment in terms of misevaluations, particularly through the habitual use of the "IS of identity" was available, and hence, no literature is available to "review." However, the area of general semantics is relatively new, crystalizing with Korzybski's Science and Sanity in 1933, and while gaining recognition and momentum with each passing year, should be reviewed in this

chapter to clarify and make meaningful the purpose of the test. In addition to a brief summary of general semantics philosophy, some mention is made of the relation of this philosophy to rigidity as investigated by Rokeach and others.

Chapter III involves a discussion of the statistical design, the procedures used, the reasoning employed in justifying these procedures, a discussion of the sample and its representativeness, the development of the instrument, the pilot studies, the collection of the data, the teacher-rating scale, and the reasoning behind a self-rating scale.

Chapter IV includes a presentation of the data collected, and the statistical treatment of the data, including item analysis, reliability and validity tests, analysis of variance, and analysis of variance with covariance adjustment.

Chapter V will be devoted to a discussion of the significance of the findings, the conclusions that seem justified, the implications, the suggestions for further research, and suggestions for the application of the findings to educational processes in general.

Following Chapter V is a selected bibliography, including only those references which are pertinent to the present work, particularly those needed for the development of Chapter II.

CHAPTER II

A DISCUSSION OF NON-ARISTOTELIAN PRINCIPLES

Whenever general semantics or non-Aristotelian principles are mentioned, there are some who immediately react as if an attack has been made upon the great founder of logic, Aristotle. Actually none, at least insofar as this investigator is aware, of those who uphold general semantics principles attempt to cast any reflection upon Aristotle's contribution to the world's knowledge, or method. It is perfectly obvious, however, that the state of science in Aristotle's day was rudimentary, to say the least. The inferences which could be drawn from process reality were limited because of the limited information man had of his world. All sciences make use of logic, but logic only guarantees consistency, it does not guarantee accuracy (35 : 317). If the assumptions accepted are ill founded, it matters little how consistent or logical the reasoning; the conclusions may be in contradiction to empirically demonstrated "reality."

Quite frequently when papers on general semantics are presented, Aristotelian philosophers want to "debate" the issues, the implication being that by "right reason" (applying Aristotle's laws of

thought), process reality can be handled in the same manner as words. It would seem that such individuals confuse the laws of Aristotle with the laws of nature: "the world even today is more Aristotelian than we sometimes like to think" (23:65).

Johnson illustrates the point when he says:

> As so many psychiatrists have observed, there is, generally speaking, nothing illogical about the paranoiac. If you accept the assumptions he accepts, you will have to agree that most of his remarks, and you will grant that most of his actions, follow quite logically, indeed, from these assumptions . . . you cannot argue a paranoiac out of his delusions. By arguing, you stimulate him to "reason" and by "reasoning" he makes his delusions the more wonderful. Paranoiacs quite often exhibit a verbal brilliance, and thus they illustrate dramatically the danger involved in verbal brilliance, as such, wherever it may be found. . . . There is an old saying that it takes brains to go crazy . . . not everyone could "think up those things." [35:317-318]

Quite frequently, also, the terms "general semantics" and "semantics" are used as if they were one and the same. The distinction is an important one. Semantics is the science concerned with meaning; general semantics is concerned with the effect of language on an organism-in-an-environment. Semantics was not new in 1933; general semantics was. Anatol Rapoport (74:13) credits Alfred Korzybski with "crystalizing the work of the semanticists into a 'science'" which has had "direct impact, at least in this country, on a far wider range of people than the work of the philosopher-semanticists." Such basic

ideas as the propositional function, the predictive value as a criterion of truth, and the theory of types, were proposed and used by semanticists long before Korzybski, and are evident in the works of Bertrand Russell and Ernst Mach. These ideas are not necessarily non-Aristotelian, and, while not original with Korzybski, were used by him in conjunction with his non-Aristotelian postulates, or principles.

Basically, the three fundamental principles of the non-Aristotelian system are: (1) the principle of nonidentity, (2) the principle of nonallness, (3) the principle of self-reflexiveness.

The first principle can be simply stated as: "The word is not the thing it represents." This is often explained by the analogy, "The map is not the territory." This seems so obvious as to be ridiculous until one reflects that a person's mental picture of reality is like a "map" of a "territory." If the person acts as though his picture (in his mind) is a complete and true picture of the reality (outside his mind), he is forgetting that there may be many small facets of reality which he is completely overlooking or unaware of, just as many small features must be omitted from the most complete map. Only the large-scale features can be "abstracted" from the territory and recorded on the map. To prepare for a trip with the firm conviction that Chicago is only 18 inches from San Francisco

would be considered childish at mildest. But is this so different from the student who refuses to attempt the study of mathematics because he "knows" mathematics is "too hard" (his "map" of the "territory" of mathematics)? As Rapaport puts it, "to say the word is not the thing it signifies is not just to indicate the obvious. It is to draw attention to a fundamental inadequacy of human behavior and to trace this inadequacy to the interaction of nervous systems with language." (74:19)

Korzybski's findings, as well as findings by numerous psychologists and psychiatrists, indicate that people do behave as if they identified words with things (74:19). By identification one does not necessarily mean equated verbally. Most individuals will agree that the words "Catholic" and "Mr. Jones," to whom the labels are attached, are not the same; but many people, in evaluating Mr. Jones, react to the label rather than to Mr. Jones. This also illustrates the principle of nonallness. When you say that Mr. Jones is a Catholic you have not said all about Mr. Jones.

Since Principle (1) and Principle (2) are interconnected, both have been covered in the above discussion. Principle (3), self-reflexiveness, in terms of human behavior simply implies that one may react to the world, then react to his reaction, then to the reactions

of higher order, et cetera. In this relation, the example is given by Rapoport (74:20) of the man who, being rejected for a job, labeled the situation, "I am a failure," and reacted to the label "failure" in ways far removed from an effective remedy of the situation, which was joblessness.

Since non-Aristotelian and/or general semantics principles are adequately discussed in many source books, it is unnecessary to enlarge further upon them in the present work. However, non-Aristotelian orientations arising from them are paralleled with the old Aristotelian orientations for the convenience of any who may not be familiar with them (40:xx-xxii):

Old Aristotelian Orientations (circa 350 B.C.)	New General Semantic Non-Aristotelian Orientations (1941 A.D.)
Subject-predicate methods	Relational methods
Symmetrical relations, inadequate for proper evaluation	Asymmetrical relations, indispensable for proper evaluation
Static, "objective," "permanent," "substance," "solid matter," etc., orientations	Dynamic, ever-changing, etc., electronic process orientations
"Properties" of "substance," "attributes," "qualities" of "matter," etc.	Relative invariance of function, dynamic structure, etc.

Aristotelian Orientations	Non-Aristotelian Orientations
Two-valued, "either-or," inflexible, dogmatic orientations	Infinite-valued flexibility, degree orientations
Static, finalistic "allness"; finite number of characteristics attitudes	Dynamic nonallness; infinite number of characteristics attitudes
By definition "absolute sameness in 'all' respects" ("identity")	Empirical nonidentity, a natural law as universal as gravitation
Two-valued "certainty," etc.	Infinite-valued maximum probability
By definition "absolute emptiness," "absolute space," etc.	Empirical fullness of electromagnetic, gravitational, etc., fields
By definition "absolute time"	Empirical space-time
By definition "absolute simultaneity"	Empirical relative simultaneity
Additive ("and"), linear	Functional, nonlinear
(3 + 1)-dimensional "space" and "time"	4-dimensional space-time
Euclidean system	Non-Euclidean systems
"Sense" data predominant	Inferential data as fundamental new factors
Macroscopic and microscopic levels	Submicroscopic levels
Methods of magic (self-deception)	Elimination of self-deception

Aristotelian Orientations	Non-Aristotelian Orientations
Fibers, neurons, etc., "objective" orientations	Electrocolloidal process orientations
Eventual "organism-as-a-whole," disregarding environmental factors	Organism-as-a-whole-in-environments, introducing new unavoidable factors
Elementalistic structure of language and orientations	Nonelementalistic structure of language and orientations
"Emotion" and "intellect," etc.	Semantic reactions
"Body" and "mind," etc.	Psychosomatic integration
Tendency to split "personality"	Integrating "personality"
Influencing toward unsanity	Influencing toward sanity
Avoiding empirical paradoxes	Facing empirical paradoxes
Primitive static "science" (religions)	Modern dynamic "religions" (science)
Nonsimilarity of structure between language and facts	Similarity of structure between language and facts
Improper evaluations, resulting in:	Proper evaluations, tested by:
Impaired predictability	Maximum predictability
Elementalistic, verbal, intensional "meaning," or still worse, "meaning of meaning"	Nonelementalistic, extensional, by fact evaluations
Antiquated	Modern, 1954

As the reader can see, the so-called Non-Aristotelian Orientations do differ markedly, and whether one is in agreement with them or not, they provoke thought.

This experimental study was formulated on the basis of general semantics principles, and was further stimulated by Lee's statement (49:117) that "No validated test--paper and pencil, behavioral or clinical--is now available by which to describe the varieties of misevaluations by statistical or other reliable objective means for either diagnostic or prognostic purposes." Since the publication of this article, only Peters' test (71:37-45) has appeared in the literature. However, in spite of the fact that only rational (not corroborated by statistical tests) arguments are presented by general semanticists, their principles have influenced the work of responsible authorities in many fields, including science, education, counseling, psychology, and psychiatry. The following references will indicate the extent.

Previous Application of Non-Aristotelian Principles

In the area of communication, Hayakawa (27, 28, 29, 30), La Brant (44), Leary (45), McCrimmon (59), Chisholm (20), Murray (65, 66), and Johnson (32, 33, 36), show how general semantics principles

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may be applied. In the area of counseling, Lindgren (52:229-233) recommends general semantics "as a counseling tool because it enables the counselor to become a more effective agent to help the client to use his own resources in achieving adjustment"; Camp (13: 511) concludes, "it is possible to train children in the premises and principles of general semantics and to retrain adolescents and adults once they have developed faulty language attitudes and habits." Murray (66), Spriesterbach (86), and Yorke (97) elaborate on these topics. In the area of human relations, MacGowan (60), Berrien (5), and Roethlisberger (75) appraise the value of semantic training. The authors of Naval Leadership (90:3) say in their opening paragraph, "The naval officer, if he will invest the effort necessary to understand scientific principles and to learn a few of the scientists' skills, can become a more effective handler of men"; Cabot and Kuhl (12: 306) note occasions when "one confuses the past situation, the words and the feeling within one. A study in elementary semantics helps to overcome this tendency and aids in viewing the world more clearly." In the area of law, Burrell (11) argues for a new approach to the problem of "willful and wanton misconduct." Loevinger (53: 51) notes that "a long line of distinguished writers from Arnold to Burnham, have pointed out the need for a discipline of legal semantics

. . . it is time to insist that the garrulous goddess begin to talk sense." Pearson (70:19) says, "it seems to me fair to hold out general semantics as a useful means of orientation in the law, a means calculated to dissipate verbalistic pitfalls and furnish a technique of analysis and solution of legal problems generally." In psychotherapy, Frohman (26) sees general semantics utilized as an auxiliary to psychotherapy; Campbell (14:129) believes "these methods do not replace other psychotherapeutic procedures as much as they supplement and sharpen them," and continues, "as an educational technique, even in schizophrenics, it materially shortens the length of treatment, and, to judge from several years of experience, produces more lasting results in terms of independence, plasticity, etc." Lynn (57) discusses the treatment of alcoholism by general semantics techniques. Campbell treated one hundred cases of verbal obsessionism and seven thousand cases of traumatic neurosis in soldiers in hospitals in the European Theatre between 1943 and 1945. Thorne (88:388) writes, "From our viewpoint, it is possible to regard the whole process of case handling as an exercise in general semantics. This concept is particularly useful to all the methods which seek to improve intellectual resources. . . . One of the functions of personality counseling is to give the patient a semantic overhauling."

In the area of speech correction, Johnson (34) discusses the stutterer from the point of view of general semantics; Brown (9) presents some of the identifications which occur in the neurosemantic processes of stutterers and "how they operate to influence those evaluations of which stuttering may be the observable manifestation." Newton (68), in the area of teaching, found in Korzybski's material, a solid basis for a twentieth century attitude toward the creative arts and utilized it in his lectures and discussions in architecture, landscape architecture, and city planning at the Harvard Graduate School of Design. Loomis (55) built a course in embryology at the Massachusetts Institute of Technology along consciously non-Aristotelian lines. McNealy (62:137) saw general semantics "as an aid in acquiring the inductive approach" in classroom teaching of medical students; English (25), in describing his course in the University of Missouri School of Journalism, says, "The formulations of general semantics . . . can serve as the basic structure for understanding and synthesizing the vast amount of communications data which we have already and which will become increasingly complex as more and more information is derived." Roethlisberger (75:96-101) deals with general semantics principles in his Human Relations program in the Harvard University Graduate School, and says, "the biggest block to personal communications is

man's inability to listen intelligently, understandingly, and skillfully to another person. This deficiency in the modern world is widespread and appalling. In our universities as well as elsewhere, too little is being done about it." Hayakawa (28) discusses meaning, symbols, and levels of abstraction in applying general semantics principles in social psychology; Rapoport (73) finds general semantics principles essential in teaching information theory, physics, and mathematical biology, and says of the founder of this empirical science (74:133), "Korzybski was the precursor of an intellectual revolution which is just now beginning and which promises to match that of the Renaissance."

Other Related Research Not Based on Non-Aristotelian Principles

From another orientation and in less conventional research, the work of Rokeach (79, 80, 81, 82), Tolman (89), and Solomon (85) purport to measure factors which influence behavior. These three have contributed much significant information to personality theory and to the understanding of human behavior, especially as it applies to behavior designated by them as authoritarian or democratic. Whereas the emphasis in the present study is on the role of language, these authors do not suggest that language, per se, especially

the "IS of identity," are contributing factors in the development of "personality types." The results of this study might suggest the inclusion of language in further research related to the development of democratic or authoritarian "personalities."

CHAPTER III

STATISTICAL DESIGN OF THE STUDY

Development of the Test Instrument Through Pilot Studies

As pointed out previously, scientists develop "theories" on the basis of empirical data. The theory itself is a high-level generalization aimed at explaining and predicting observable phenomena in the "real" world. Obviously, much that a theory includes is based on inference. The inferences, however, are inferred from reality, in other words from happenings "outside" the observer. So it is with the present study.

This investigator, since his decision in 1951 to study language as it relates to behavior, has been observing, recording, and analyzing the language behavior of a variety of people.[1] This has necessitated an appraisal of their overt behavior and is necessarily subjective. However, this should not be interpreted as "mere opinion" since no

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[1] The investigator has been engaged in teaching, guidance, or supervision continuously since this research began, and has been in a position to observe the same individuals over a relatively long period of time.

judgments, as such, were made. The behavior observed was the physiological reaction, such as blushing, trembling, stuttering, fighting, withdrawal (nonparticipation), et cetera. With these as physiological evidence (inferred, of course), a record of the language used by those displaying such bodily responses was kept, along with a similar record for those persons who, at no time during the relationships with the investigator, displayed such reactions. After a year of such observation, a comparison was made between the language used by the persons who displayed overt physiological reactions and that used by those who did not. In the opinion of the investigator, there was a sound basis for inferring that a difference did exist between the two language behaviors. In the former there seemed to be a much greater use of the "IS of identity," a much greater degree of "over-generalization," a much more frequent confusing of the levels of abstraction. To put it more simply, those who displayed a bodily reaction were, on the basis of empirical evidence, less conscious of the role language was playing in the physiological response of their organisms. This is not to say that such reactions did not occur in the latter group, simply that they occurred less noticeably, from which one can infer that the internal tensions were less.

If the inferences drawn from the happenings outside the skin of this observer were correct--if, in fact, there was a connection between the language and the behavior pattern, it should be measurable by some type of instrument specifically developed for such use.

The instrument, this investigator believed, again basing his belief on the types of language behavior used by those individuals whom he had observed, should be simple, for the reason that the physiological reactions of the observed seemed to develop as often from simple remarks and statements as from more complex ones. Further, since it would be desirable to test several age and intelligence groups, the test should not involve "reading ability" nor "intelligence." While, quite probably, the use of the "IS of identity" and confusion of levels of abstraction occur more frequently in more involved language (such as political speeches, propaganda, and religious literature), from an educator's standpoint it seems more important to determine: (1) if this habitual tendency is contained in less involved language; (2) if, perhaps, such a reaction to language is implicit in the language itself; and (3) if such a reaction may be deliberately taught.

Assuming, on the basis of empirical evidence, that in process reality there is no excluded middle, which is in contrast to Aristotle's

law, it is apparent that there is no "true" nor "false" statement, in the absolute sense. "True" and "false" are evaluations or judgments, which occur "inside the skin" of the observer. Even scientific "truths" are tentative, "true" only to a degree, "true" only so far as is known. For example, "matter cannot be created nor destroyed" was a scientific "truth" which was justified on an empirical basis, true only so far as was known in 1900. It is not "true" in 1954, as nuclear physicists have demonstrated (43:667). If, then, no absolute "truth" can be found in reality, on what basis is a true-false test adopted for this study? It would seem that measurement of the tendency to operate in an either-or, two-valued manner could be accomplished by forcing the testee to react to an evaluation, judgment, or fiction on a true-false instrument, in which a false response was the only empirically sound basis for displaying lack of identity, lack of an either-or orientation, and an awareness of levels of abstraction, and on which a true response would indicate the opposite types of language behavior. Whether this reasoning was correct or not is resolved by demonstration rather than argumentation.

A fifty-item test (true-false) was therefore developed, with full awareness of the "pitfalls" as outlined by Adkins (2), but with recognition that the difficulties inherent in this type of response on

the "usual" test do not apply since the test is aimed at discovering whether the testee is aware that there is no "absolute standard of truth." The instructions required a "false" answer to all items that were NOT ALWAYS true. Since, as has been seen, in process reality there is no "allness" and "no identity" there can be no "always true" response; that is, there cannot be in the world outside our skins. All fifty items, then, on an empirical, true-to-fact basis, must be marked false. But, an all-false pattern might be discerned by the "intelligent" testee. This, however, is a generalization that fits many true-false tests, but which may not fit "all" true-false tests. Whether such a pattern could be discerned needed to be shown rather than forecast.

Fifty students were selected "at random" from the Eaton Rapids high school body--twenty-five boys and twenty-five girls. The "social behavior" of each student was rated by three teachers, the students were administered the test, and a simple correlation between social behavior and rating on the test was run. The correlation was +0.47. The correlation between I.Q. and test score showed +0.03. These results seemed to indicate that whatever the test measured, it was more closely related to adjustment to society than it was to intelligence, and further seemed to indicate that an "all-false

pattern'' could not be discerned any better by those with high I.Q. than by those with lower I.Q. Obviously, fifty students is too few on which to make a generalization with much certainty.

An item analysis was made, and from the original fifty items, the thirty-five which showed highest discriminative value were retained and fifteen new items added. The new test was then given to fifty additional students. Approximately the same results were obtained. On the suggestion of Doctor Harry Sundwall,[1] the test was administered to a group of graduate students enrolled in Education 510, fall term, 1952. This testing substantiated the fact that an all-false pattern could not be detected by those particular graduate-level students, or at least provided no evidence that such a pattern was detected.

The test was next administered to one hundred enrollees at Boys Vocational School in Lansing, Michigan. At this institution, in addition to I.Q. scores, Mooney Problem Check List Scores were available, as well as diagnostic and prognostic rating scores. (The latter are composite psychological ratings assigned each boy by psychologists, social workers, and teachers at B.V.S.) It was assumed

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[1] A member of the graduate faculty in educational psychology at Michigan State College.

that a check of validity might be made by correlating scores earned on the "IS of identity" test with Mooney check list scores and with diagnostic-prognostic ratings. The correlations obtained again showed a very slight nonsignificant positive correlation (0.013) between I.Q. and "IS of identity" test scores, and a correlation between Mooney and "IS of identity" test scores significant at the 0.10 level. Correlation with diagnostic and with prognostic ratings was not significant. These correlations were not sufficiently high to justify a larger study in and of themselves; however, the obvious difference between in-group means and out-group means plus empirical evidence that the two groups did in fact use the "IS of identity" in different degrees, suggested the probability that if the sample were increased, the procedure standardized, and the items refined, such a test might well distinguish between groups who had adjusted differently to society.

Selection of the Sample

After consultation with the guidance committee, the sample agreed upon was:

> Approximately 250 individuals in correctional institutions.
>
> Approximately 250 individuals in Lansing Public High Schools.

Approximately equal numbers of boys and girls in the noninstitutionalized group.

Randomness was assured in the out-group by selection of individuals within schools and grades after having assigned each member of the school a number and then selecting the sample from the total population by use of a table of random numbers.

At Boys Vocational School the total school population was tested at one time.

At Ionia, the representativeness of the sample used in the study could not be established, because the sample was chosen by the warden, on the basis, probably, of that which was most expedient for him.

Collection of the Data

On the standard IBM scoring sheet the following data were entered by the testee: (1) age, (2) sex, (3) church attendance, (4) church affiliation, (5) self-rate.[1] In addition to this, the test administrator entered: (1) I.Q. score, (2) score earned on the test (these two items for all schools), (3) Mooney scores, (4) diagnostic

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[1] As defined in Chapter I.

ratings (these latter for testees at Boys Vocational School only), and (5) teacher-rating (for public school testees).

The teacher-rating was made in the following manner: Lists of the testees were supplied to each "home room" teacher with the request to rate each student he knew on a scale from 1 to 5. This corresponded to adjective ratings: (1) very well adjusted socially, (2) well adjusted socially, (3) adequately adjusted socially, (4) poorly adjusted socially, and (5) very poorly adjusted socially. (One student was rated 5 by one teacher, so the category 5 was not used in the analysis of the data.) After all ratings were made, a "mean" was determined for each testee. As pointed out earlier, some of these "means" reflect ratings by only one or two teachers, while others reflect ten or more teachers' judgments. In spite of this, it was felt that the use of a "mean" for the final teacher-rating score would tend to eliminate the possibility of teacher-bias in this subjective rating.

Following the one hundred test items on the test sheet are five statements of attitude intended to elicit from the testee his personal judgment of his feelings toward other people. Since adjustment is a "getting along with people," it was felt that attitudes indicating a hostility toward or distrust of others should also indicate

more or less maladjustment in the individual manifesting these attitudes. A comparison between the test score and the attitude evidenced by the testee might then shed some light on whether or not the subject rated by the former as maladjusted reflected that rating in his own judgment of his feelings toward society. Consistency between the two scores would tend to buttress the validity of each of them.

However, we are here confronted with the problem common to all tests dealing with attitudes or self-judgment: whether the testee will show his "true" attitude or one (to his mind) more socially acceptable. How to eliminate the possibility of conscious "cheating" to produce an impression deemed desirable by the testee has never been satisfactorily determined. Therefore, inconsistency between the two ratings (test score and self-rating) need not imply lack of differentiation by the test. In spite of this objection, it was decided to include the five self-rating statements, not making any distinction between them and the one hundred test items by heading, new numbering, or even a space.

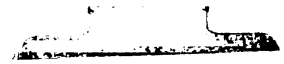
Immediately after testing a group, the papers were scored and all information entered and checked in a table of raw data (see Appendix).

Procedures Used

Reliability. Reliability was determined by first making an item analysis. This permitted equating two halves of the test, by including parallel items of equal difficulty in each of the halves. The correlation thus obtained indicated the reliability of a test of fifty items. Reliability on the full-length test was determined by the Spearman Brown prophesy formula.

Validity. Validation of the test could only be accomplished by: (a) comparing by correlation and analysis of variance or analysis of variance with covariance adjustment teacher ratings with "IS of identity" test scores for those in the out-group; (b) comparing by analysis of variance "IS of identity" test scores of the total out-group with "IS of identity" test scores of the total in-group; (c) comparing the "IS of identity" test scores of in- and out-groups for individual self-rate categories by analysis of variance and for self-rate category 101 by analysis of variance with covariance adjustment.

That these techniques had to suffice for validation purposes is indicated by the previous statements that "no paper and pencil test designed to measure . . . now exists [etc.]." (49:1-12).



Analysis of variance. Analysis of variance was agreed upon as the most desirable method of analyzing the types of data gathered. This method tests whether class means differ significantly among themselves when class variances are taken into account. However, despite the fact that two pilot studies showed no significant correlation between I.Q. and test score, the larger study indicated that I.Q. might be suspected of contributing to the relationship. Therefore, certain of the data (those which showed significant relationships between test scores and criteria) were treated by analysis of variance with covariance adjustment.

Analysis of variance with covariance adjustment. This statistical technique is utilized when it is desirable to control the influence of an additional variable which may contribute to the relationship being tested. That only those data which showed significant relationships by analysis of variance need to be treated by covariance adjustment, is supported by McNemar (58:329):

> But, if the within-groups correlation is low and/or there is only small chance difference between the groups on the uncontrolled variable, the use of covariance adjustment may not be worth the effort.

Correlational procedures. Simple correlation was used for comparing "IS of identity" test scores and I.Q. scores, and test

scores and Mooney scores, since these (Mooney and I.Q.) were not divided into categories, or classes. Correlation coefficients were also computed for teacher-rating versus "IS of identity" test scores and for teacher-rating versus I.Q.; the former to show the strength of the test in indicating adjustment, and the latter to determine if there was a relation between them.

CHAPTER IV

ANALYSIS OF THE DATA

For data which are separated into classes, an analysis of variance provides an efficient and accepted method for comparing the class means. To test the significance of the differences between class means, one compares the variance within classes with the variance of the class means. This is done by first analyzing the total sum of squares of the deviations of the test scores from their grand mean, into two parts. The first part is the sum of squares of deviation of the test scores from their class means. The second is the sum of squares of the deviations of the class means from the grand mean. Each of these parts divided by the appropriate degrees of freedom gives a separate estimate of the variance of the parent population. The ratio of these two estimates--with the larger as the numerator--is the value of F. This value can be compared to a critical table of F values in a standard F table (in any good statistics text). If it exceeds the value in the table, the means of the classes differ significantly at the indicated probability level. In the following tables, arranged as in Table I to show the steps in

computation, the usual practice has been followed; i.e., "not sig." means not significant at the 0.05 probability level, "sig." means significant at the 0.05 probability level, and "highly sig." means significant at the 0.01 probability level.

The process of the analysis is shown in the symbolic general case in Table I.

This analysis presupposes a normal distribution of the class items and equality of the class variances. Tests are available to determine whether or not the data meet these requirements. However, departures from normality may be quite large before they seriously affect the results of the analysis. For examination scores the distribution is usually assumed to be normal, and that assumption will be made here. The test for homogeneity of the class variances which was applied to the data in this study was that given in Dixon and Massey, Introduction to Statistical Analysis, McGraw-Hill, 1951, pp. 90-91. It is summarized as follows:

k = number of classes (with normally distributed items)

n_i = sample size (number of items in class i)

$\sum_{1}^{k} n_i = N$ = total number of items in the k classes

S_i^2 = variance of class i

$$M = (N-k)\ell n\, S_p^2 - \Sigma[(n_i-1)\ell n\, S_i^2]$$

$$A = 1/3(k-1)\ [\Sigma(1/n_i-1) - 1/N-k]$$

ℓn = natural logarithm

$$S_p^2 = [\Sigma(n_i-1)S_i^2]/[N-k]$$

$$f_1 = k - 1$$

$$f_2 = (k+1)/A^2$$

$$b = f_2/[1-A-(2/f_2)]$$

The significance ratio is then given by:

$$F^{f_1}_{f_2} = f_2 M/[f_1(b-M)]$$

If this ratio is found to exceed that in a critical table of F, the hypothesis of equal variances is rejected.

The data for the example case of Sexton High School for classes of teacher-ratings are given below:

Teacher-Rating	S_i^2	n_i
4	257	22
3	157	34
2	94	26
1	662	3

$M = 9$

$A = 0.0672$

$S_p^2 = 176$

$f_1 = 3$

$f_2 = 1105$

$b = 119.5$

$F^3_{1105} = 2.8$

This is found to be not significant and the hypothesis is accepted that the variances are homogeneous.

For the present study, institutional-noninstitutional, self-rating, teacher-rating, age, sex, religion, prognostic and diagnostic rating are subdivided into such classes. The analysis was first applied to the classes of male and female. This was possible only in the out-group since the institutionalized portion of the sample was entirely male. The analysis of variance applied to this out-group is shown in Table II. The analysis shows that the test score variation can not reasonably be associated with sex differences in the testees.

TABLE I

ANALYSIS OF VARIANCE--GENERAL CASE[1]

Source of Variation	Divisor Degrees of Freedom	Sum of Squares	Mean Square (estimate of population variance)= s.s./d.f.
Between class means	$k - 1$	$\sum_{i=1}^{k} n_i (\bar{X}_{c_i} - \bar{\bar{X}})^2$	σm^2
Within classes	$N - k$	$\sum_{c_i=1}^{k} \sum_{r=1}^{N_i} (X_{r_c} - \bar{X}_{c_i})^2$	σc^2
Total	$N - 1$	$\sum_{r=1}^{N} (X_r - \bar{\bar{X}})^2$	

k = number of classes

N = total number of scores

n_i = number of items in class i

$\bar{\bar{X}}$ = total mean of scores (mean of the class means)

$\bar{X}_{c_i}$ = class mean for class i

X_r = individual score

X_{r_c} = individual score in class c

$F = \frac{\text{Greatest M.S.}}{\text{Smallest M.S.}}$ i.e., $= \sigma m^2 / \sigma c^2$ (if $\sigma m^2 > \sigma c^2$)

or $= \sigma c^2 / \sigma m^2$ (if $\sigma c^2 > \sigma m^2$)

[1] (98:448)

TABLE II

EASTERN, SEXTON, WALTER FRENCH "IS OF IDENTITY" TEST SCORES--CLASSES (MALE AND FEMALE)

	d.f.	s.s.	M.S.	
Between class means	1	463	463	
Within classes	114	34,488	302	F = 1.53 (not sig.)
Total	115	34,951		

The analysis was then applied to the classes of age groups. It was applied separately to each school, as shown in Tables III, IV, V, VI, and VII. The analysis shows that the "IS of identity" test score variation can not reasonably be associated with differences in age of the testees.

TABLE III

BOYS VOCATIONAL SCHOOL "IS OF IDENTITY" TEST SCORES --CLASSES (AGE LEVELS)

	d.f.	s.s.	M.S.	
Between class means	7	2,616	374	
Within classes	185	40,314	218	F = 1.72 (not sig.)
Total	192	42,930		

TABLE IV

IONIA "IS OF IDENTITY" TEST SCORES
--CLASSES (AGE LEVELS)

	d.f.	s.s.	M.S.	
Between class means	5	1,039	260	
Within classes	92	23,329	254	F = 1.02 (not sig.)
Total	97	24,368		

TABLE V

EASTERN "IS OF IDENTITY" TEST SCORES
--CLASSES (AGE LEVELS)

	d.f.	s.s.	M.S.	
Between class means	5	1,827	365	
Within classes	96	23,966	250	F = 1.46 (not sig.)
Total	101	25,793		

TABLE VI

SEXTON "IS OF IDENTITY" TEST SCORES
--CLASSES (AGE LEVELS)

	d.f.	s.s.	M.S.	
Between class means	5	2,783	557	
Within classes	80	20,498	256	F = 2.18 (not sig.)
Total	85	23,281		

TABLE VII

WALTER FRENCH "IS OF IDENTITY" TEST SCORES
--CLASSES (AGE LEVELS)

	d.f.	s.s.	M.S.	
Between class means	3	1,037	346	
Within classes	44	9,396	214	F = 1.62 (not sig.)
Total	47	10,433		

When the analysis was applied to the classes of diagnostic ratings and prognostic ratings at Boys Vocational School (Tables VIII and IX), it showed that the "IS of identity" test score variations cannot reasonably be associated with differences in diagnostic or prognostic ratings.

TABLE VIII

BOYS VOCATIONAL SCHOOL "IS OF IDENTITY" TEST SCORES --CLASSES (DIAGNOSTIC RATINGS)

	d.f.	s.s.	M.S.	
Between class means	7	1,306	186.6	
Within classes	108	21,062	195.0	F = 1.05 (not sig.)
Total	115	22,368		

TABLE IX

BOYS VOCATIONAL SCHOOL "IS OF IDENTITY" TEST SCORES --CLASSES (PROGNOSTIC RATINGS)

	d.f.	s.s.	M.S.	
Between class means	5	972	194.4	
Within classes	116	23,426	201.9	F = 1.04 (not sig.)
Total	121	24,398		

The analysis was then applied to the classes of religion; first divided into Catholic and non-Catholic, and second into those who recorded church attendance and those who did not. These two analyses are shown in Tables X and XI.

TABLE X

ALL SCHOOLS "IS OF IDENTITY" TEST SCORES--CLASSES (CATHOLIC, NON-CATHOLIC)

	d.f.	s.s.	M.S.	
Between class means	1	1,256	1,256	
Within classes	491	136,607	278	F = 4.52 (sig.)
Total	492	137,863		

TABLE XI

ALL SCHOOLS "IS OF IDENTITY" TEST SCORES--CLASSES (CHURCH ATTENDANCE, NONATTENDANCE)

	d.f.	s.s.	M.S.	
Between class means	1	0	-	
Within classes	491	-	-	(not sig.)
Total	492	137,860		

The first (Table X) shows significance at the 0.05 probability level and indicates those professing Catholic religious affiliation on the average achieve lower scores on the "IS of identity" test than do those of the non-Catholic affiliation. The analysis in Table XI indicates nonsignificance. Thus "IS of identity" test score differences are not associated with attendance or nonattendance.

The analysis was then applied to the classes of self-ratings 101, 102, 103, 104, and 105. This is shown in Table XII.

TABLE XII

ALL SCHOOLS TEST SCORES--CLASSES (SELF-RATINGS, 101, 102, 103, 104, AND 105)

	d.f.	s.s.	M.S.	
Between class means	4	386	96.5	
Within classes	512	142,916	279.1	F = 2.895 (not sig.)
Total	516	143,302		

The analysis was also applied to the classes of ins and outs for each of the self-ratings categories 101, 102, 103, 104, and 105. These are shown in Tables XIII, XIV, XV, XVI, and XVII.

TABLE XIII

"IS OF IDENTITY" TEST SCORES FOR CATEGORY 101
--CLASSES (INS AND OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	9,699	9,699	
Within classes	219	55,942	255	F = 38.04 (highly sig.)
Total	220	65,641		

TABLE XIV

"IS OF IDENTITY" TEST SCORES FOR CATEGORY 102
--CLASSES (INS AND OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	201	201	
Within classes	72	18,392	255	F = 1.27 (not sig.)
Total	73	18,593		

TABLE XV

"IS OF IDENTITY" TEST SCORES FOR CATEGORY 103
--CLASSES (INS AND OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	1,226	1,226	
Within classes	149	37,580	252	F = 4.86 (sig.)
Total	150	38,806		

TABLE XVI

"IS OF IDENTITY" TEST SCORES FOR CATEGORY 104
--CLASSES (INS AND OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	54	54	
Within classes	45	13,534	308	F = 5.70 (not sig.)
Total	46	13,588		

TABLE XVII

"IS OF IDENTITY" TEST SCORES FOR CATEGORY 105
--CLASSES (INS AND OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	660	660	
Within classes	21	4,779	228	F = 2.89 (not sig.)
Total	22	5,439		

For 102, 104, and 105, no significant differences appear between those in and out; 103 shows significance at the 0.05 probability level, and 101 at the 0.01 level.

Finally the analysis was applied to the classes of teacher-ratings 1, 2, 3, and 4 (only outs available), first for each school separately, and second for the composite grouping of all three schools. These are shown in Tables XVIII, XIX, XX, and XXI.

TABLE XVIII

EASTERN HIGH SCHOOL "IS OF IDENTITY" TEST SCORES --CLASSES (TEACHER-RATINGS 1, 2, 3, AND 4)

	d.f.	s.s.	M.S.	
Between class means	3	11,018	3,673	
Within classes	96	13,733	143	F = 25.68 (highly sig.)
Total	99	24,751		

TABLE XIX

SEXTON HIGH SCHOOL "IS OF IDENTITY" TEST SCORES --CLASSES (TEACHER-RATINGS 1, 2, 3, AND 4)

	d.f.	s.s.	M.S.	
Between class means	3	7,172	2,391	
Within classes	81	15,481	191	F = 12.52 (highly sig.)
Total	84	22,653		

TABLE XX

WALTER FRENCH JUNIOR HIGH SCHOOL "IS OF IDENTITY" TEST SCORES--CLASSES (TEACHER-RATINGS 1, 2, 3, AND 4)

	d.f.	s.s.	M.S.	
Between class means	4	2,774	694	
Within classes	43	7,282	169	F = 4.11 (highly sig.)
Total	47	10,056		

TABLE XXI

THREE SCHOOLS, COMPOSITE "IS OF IDENTITY" TEST SCORES --CLASSES (TEACHER-RATINGS 1, 2, 3, AND 4)

	d.f.	s.s.	M.S.	
Between class means	4	17,591	4,398	
Within classes	228	42,670	187	F = 23.52 (highly sig.)
Total	232	60,261		

In each of these four, differences significant at the 0.01 probability level occur. This indicates a high association between teacher-ratings and the "IS of identity" test scores. A measure of the strength of this association is given by the correlation coefficients for the individual test scores versus the teacher-ratings. The data are summarized in Table XXII.

The correlation of "IS of identity" test scores with I.Q. was determined. The data are summarized in Table XXIII. Those for test scores with Mooney scores at Boys Vocational School are summarized in Table XXIV.

The analysis of variance of I.Q. for the ins and outs is shown in Table XXV.

TABLE XXII

CORRELATION BETWEEN "IS OF IDENTITY" TEST SCORES AND TEACHER-RATINGS AT EASTERN, SEXTON, AND WALTER FRENCH SCHOOLS

	N	Sum of Teacher Ratings	Sum of Test Scores	(Sum of Teacher Ratings)^2	(Sum of Test Scores)^2	Sum of Cross Products	Correlation Coefficient	Sig. Level
Eastern	100	259	5,141	741	288,894	12,489	-0.63	0.001
Sexton	85	245	4,614	765	237,112	12,660	-0.55	0.001
Walter French	48	131	2,175	393	108,935	5,656	-0.46	0.001

TABLE XXIII

CORRELATION BETWEEN I.Q. AND "IS OF IDENTITY" TEST SCORES, ALL GROUPS

	N	Sum of I.Q. Scores	Sum of Test Scores	(Sum of I.Q. Scores)^2	(Sum of Test Scores)^2	Sum of Cross Products	Coefficient of Correlation r
B.V.S.	182	16,705	6,983	1,561,897	309,137	648,654	+0.25
Ionia	98	9,426	5,038	928,328	283,420	495,399	+0.47
Eastern	102	10,653	5,250	1,133,043	295,758	556,058	+0.34
Sexton	85	8,964	4,555	967,323	265,029	485,318	+0.23
Walter French	48	5,170	2,175	565,832	108,935	238,630	+0.45
Composite	515	50,918	24,001	5,156,423	1,262,279	2,424,059	+0.24

TABLE XXIV

CORRELATION BETWEEN "IS OF IDENTITY" TEST SCORES AND MOONEY SCORES AT BOYS VOCATIONAL SCHOOL

	N	Sum of Mooney Scores	Sum of Test Scores	(Sum of Mooney Scores)^2	(Sum of Test Scores)^2	Sum of Cross Products	Correlation Coefficient	Sig-Level
B.V.S.	124	4,012	4,786	208,444	215,258	149,222	-0.11	(not sig.)

TABLE XXV

I.Q.--CLASSES (INS, OUTS)

	d.f.	s.s.	M.S.	
Between class means	1	18,576	18,576	
Within classes	514	142,312	2,763	F = 67.2 (highly sig.)
Total	515	160,888		

The results in Table XXIII indicate an association of "IS identity" test scores with I.Q., and those in Table XXV indicate a significant difference of I.Q. between the ins and outs; therefore, for those cases where significant relation was indicated between test scores and the factor being studied, covariance adjustment was employed to control the influence of I.Q. In those analyses of variance which showed no significant relationship between test scores and the factors being studied, covariance adjustment was considered unnecessary. In the application of the covariance adjustment, one may either adjust the means by

$$\bar{X}_{ja} = \bar{X}_j - b_{xy}(\bar{Y}_j - \bar{Y})$$

where $\bar{X}_{ja}$ is the adjusted value for the jth group and b_{xy} is the within-groups regression coefficient and there apply tests for

significance of the differences of the adjusted means. Or one may make the adjustments in the sum of squares and test the differences of the adjusted means by the use of the variance ratio F. The latter has been used here.

The process of analysis of variance by covariance adjustment is shown in the symbolic general case, Table XXVI. In the following tables, x's represent the deviations from their mean of the test scores, and y's, the deviations of the I.Q.'s.

Analysis with covariance adjustment was done for one school (Eastern; boys versus girls), and with I.Q. controlled, no significant difference was found. This is summarized in Table XXVII. This supports the findings obtained by analysis of variance for all schools, and eliminates the necessity for covariance adjustment in the other schools.

Analysis of variance with covariance adjustment was done for religious affiliation, Catholic versus non-Catholic. The results are tabulated in Table XXVIII.

Analysis of variance with covariance adjustment was done for self-rate categories 101 and 103 for Ins versus Outs; the results are summarized in Tables XXIX and XXX.

TABLE XXVI

SETUP FOR ANALYSIS OF VARIANCE WITH COVARIANCE ADJUSTMENT[1]

	Total	Within	Between
Sum of products	$\sum_i \sum_j (X_{ij}-\bar{X})(Y_{ij}-\bar{Y})$	$\sum_i \sum_j (X_{ij}-\bar{X}_j)(Y_{ij}-\bar{Y}_j)$	$\sum_i n_j (\bar{X}_j-\bar{X})(\bar{Y}_j-\bar{Y})$
	(A_t)	(A_w)	(A_b)
Sum of squares for x's	$\sum_i \sum_j (X_{ij}-\bar{X})^2$	$\sum_i \sum_j (X_{ij}-\bar{X}_j)^2$	$\sum n_j (\bar{X}_j-\bar{X})^2$
	(B_t)	(B_w)	(B_b)
Sum of squares for y's	$\sum_i \sum_j (Y_{ij}-\bar{Y})^2$	$\sum_i \sum_j (Y_{ij}-\bar{Y}_j)^2$	$\sum_j n_j (\bar{Y}_j-\bar{Y})^2$
	(C_t)	(C_w)	(C_b)
df	N - 1	N - k	k - 1
b_{xy}	A_t / C_t	A_w / C_w	A_b / C_b
Adjusted Σx^2	$(B_t - A^2_t / C_t)$ minus $(B_w - A^2_w / C_w)$ = adjusted B_b		
df	N - 2	N - k - 1	k - 1

[1] (58:321)

TABLE XXVII

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE (EASTERN) "IS OF IDENTITY" TEST SCORES--CLASSES (MALE, FEMALE)

	Total	Within	Between
Sum of products xy	$7593_{(At)}$	$7501_{(Aw)}$	92
Sum of squares for x's	$25152_{(Bt)}$	$24995_{(Bw)}$	157
Sum of squares for y's	$20373_{(Ct)}$	$20323_{(Cw)}$	50
d.f.	100	99	1
Adjusted Σx^2	22322	22227	95
d.f.	99	98	1
M.S.		226.6	94

F = 0.41 (not sig.)

TABLE XXVIII

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE. "IS OF IDENTITY" TEST SCORES --CLASSES (CATHOLIC, NON-CATHOLIC)

	Total	Within	Between
Sum of products xy	38,892	38,666	226
Sum of squares of x's	135,748	134,918	830
Sum of squares of y's	118,983	118,921	62
d.f.	494	493	1
Adjusted Σx^2	123,035	122,347	688
d.f.	493	492	1
M.S.		248.6	688

F = 2.76 (not sig.)

TABLE XXIX

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE FOR SELF-RATING CATEGORY 101. "IS OF IDENTITY" TEST SCORES--CLASSES (INS, OUTS)

	Total	Within	Between
Sum of products xy	17,842	7,656	10,186
Sums of squares of x's	59,813	50,768	9,045
Sums of squares of y's	42,959	31,488	11,471
d.f.	214	213	1
Adjusted Σx^2	52,403	48,907	3,496
d.f.	213	212	1

F = 15.15 (highly sig.)

TABLE XXX

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE FOR SELF-RATING CATEGORY 103. CLASSES (INS, OUTS)

	Total	Within	Between
Sum of products xy	14,756	12,454	2,306
Sums of squares of x's	38,226	37,168	1,064
Sums of squares of y's	32,634	27,637	4,997
d.f.	145	144	1
Adjusted Σx^2	31,554	31,553	1
d.f.	144	143	1

F = 0.005 (not sig.)

Analysis of variance with covariance adjustment was performed for test scores versus teacher-ratings 1, 2, 3, and 4, for composite out-group. The results are tabulated in Table XXXI.

TABLE XXXI

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE. "IS OF IDENTITY" TEST SCORES --CLASSES (TEACHER-RATINGS)

	Total	Within	Between
Sum of products xy	15,757	9,662	6,095
Sum of squares of x's	56,969	38,664	18,305
Sum of squares of y's	51,595	48,957	2,638
d.f.	224	221	3
Adjusted Σx^2	52,157	19,595	32,562
M.S.		89.07	10,854.00

F = 121.85 (highly sig.)

And finally, analysis of variance with covariance adjustment was done for test scores of the total in-group versus those for the total out-group. The results are tabulated in Table XXXII.

TABLE XXXII

ANALYSIS OF VARIANCE (WITH COVARIANCE ADJUSTMENT) AND TEST OF SIGNIFICANCE. "IS OF IDENTITY" TEST SCORES --CLASSES (INS, OUTS)

	Total	Within	Between
Sums of products xy	51,082	36,445	14,637
Sums of squares of x's	143,739	122,490	21,249
Sums of squares of y's	122,165	101,719	20,446
d.f.	514	513	1
Adjusted Σx^2	122,380	109,422	12,958
d.f.	513	512	1
M.S.		213.71	12,958

F = 60.6 (highly sig.)

An item analysis (see Appendix) of the instrument was made and it was found that with few exceptions the individual items discriminated consistently at the 0.01 level of confidence, which in turn made the total test a highly discriminating instrument. A coefficient of reliability above 0.90 for the three pilot studies was refined to 0.94 in the final instrument.

CHAPTER V

SUMMARY AND CONCLUSIONS

The General Research Objective

In any society one can find individuals ranging in a continuum from the completely adjusted to the totally maladjusted. The problem of the social adjustment or maladjustment of its individuals is and has been one of the most fundamental for all cultures. The division of the adjusted from the maladjusted is usually an arbitrary or legal line. Those in the former category are usually the happiest and most useful members of the group, while those in the latter are often unhappy, nonuseful, or even dangerous, against whom society may protect itself by confining them in institutions. This treatment of the symptom rather than the treatment of the cause has probably been due to the lack of knowledge of the underlying reasons for the lack of adjustment. In an earlier chapter it was suggested that maladaptive language habit patterns may contribute to maladjustment. The general objective of this research then has been to test the hypothesis that an important underlying reason for an individual's

lack of adjustment is his use of language or language patterns of a structure dissimilar to the structure of the real world, and his unawareness of the dissimilarity.

Statement of the Problem--Specific Objectives

It was felt that the broad general hypothesis could best be tested by the following specific objectives.

1. The attempt to construct a paper-and-pencil test which would measure the use of the "IS of identity."

2. To determine by the use of the "IS of identity test" whether persons institutionalized use the "IS of identity" to a greater degree than do those not institutionalized.

3. To determine whether among the noninstitutionalized students differences in social adjustment as determined by teacher-ratings are associated with the degree to which the "IS of identity" is employed.

4. To determine if differences in age, sex, religion, or intelligence are factors which influence the habitual use of the "IS of identity."

5. To determine whether a rating which the student gave himself with respect to his attitude toward other people might be associated with scores on the "IS of identity" test.

Methodology

The "IS of identity" is, by definition, the language pattern which evidences false-to-empirical-fact "allness" and "identity." A test containing one hundred statements reflecting this language pattern was constructed and refined by means of item analysis (see Appendix) to discriminate between high and low scorers. The individual items, with few exceptions, discriminated consistently at the 0.01 level of confidence, which in turn made the total test a highly discriminating instrument. The "IS of identity" test proved itself reliable in the pilot studies, with a coefficient of reliability of above 0.90 attained for each, and a coefficient of reliability for the larger study of 0.94.

The pilot studies showed a correlation between scores earned on the "IS of identity" test and teacher-ratings of degree of adjustment. Approximately two hundred persons were tested in the pilot studies from eighth-grade level to graduate level.

The final revised test was administered to a sample of 236 persons randomly selected from the Lansing High School Population and to 280 persons from Boys Vocational School and Ionia State Reformatory. Representativeness of the noninstitutionalized sample was assured by random selection. The total school population was

tested at Boys Vocational School. Representativeness of the sample from Ionia State Reformatory had to be assumed, for these were selected by the warden.

The raw data ("IS of identity" test scores and data on age, sex, religious affiliation, church attendance, self-ratings, teacher-ratings, diagnostic and prognostic ratings, and institutionalized and noninstitutionalized) were subjected to analysis by various statistical procedures--simple correlation, analysis of variance, and analysis of variance with covariance adjustment whenever necessary to eliminate the influence of I.Q.

Findings

Highly significant differences (0.01) were found between the means of the "IS of identity" test scores and (1) teacher-ratings, (2) institutionalized versus noninstitutionalized, (3) self-rating category 101. (Covariance adjustment was applied in these analyses.)

Significant differences (0.05) were found between the means of the "IS of identity" test scores and (1) church affiliation, (2) self-rating category 103. (When covariance adjustment was applied, these showed nonsignificance.)

No significant differences were found between the means of "IS of identity" test scores and (1) age, (2) sex, (3) church attendance, (4) diagnostic and prognostic ratings, (5) self-rating categories 102, 104, and 105.

Conclusions

It would seem a safe conclusion from these results that the test developed in this study gives in the mean a satisfactory indication of social adjustment or maladjustment, and that therefore a person's use of the "IS of identity" is connected with his degree of adjustment to society. This is based on the finding that institutionalized boys (thereby classified as maladjusted by society) do use the "IS of identity" to a greater degree than those not institutionalized, as evidenced by a lower mean score on the "IS of identity" test.

The consistency between teacher-ratings of social adjustment and scores earned on the "IS of identity" test provides further foundation for the conclusions of validity of the test and interconnection between "IS of identity" and degrees of adjustment. The greater the use of the "IS of identity," the poorer the teacher-rating, and conversely, the lesser the use of the "IS of identity," the better the teacher-rating.

Analysis of variance clearly shows that in each school separately, as well as in the composite analysis, age and sex are not factors which influence the use of the "IS of identity." The null hypothesis was accepted for both age and sex. Religious affiliation or regularity of church attendance, likewise, do not influence the use of the "IS of identity," according to the analysis of variance, and again the null hypothesis was accepted.

Despite the fact that little or no relationship was found in the pilot studies between intelligence and the use of the "IS of identity," in the larger study a degree of relationship was found. Applying covariance adjustment to eliminate the influence of I.Q. did not alter the findings as derived from the analysis of variance; the results as indicated above still obtained and to the same significant degree. It may be of interest to note that while teacher-ratings and scores on the "IS of identity" test correlate highly, teacher-ratings and intelligence scores do not.

The analysis of variance showed no significant relationship between self-ratings and "IS of identity" test scores, and the null hypothesis was accepted. The suspicion that the self-ratings (an introspective device) were unreliable as indicators of social adjustment was sustained by the analysis of individual self-rating categories,

which showed that the difference in the means of the "IS of identity" test scores of the ins[1] and outs for category 101 was highly significant, while for the remaining categories it was not significant. Since the composite ins-versus-outs scores were significantly different, this indicates the nonrandom nature of the division into samples by the self-rating categories.

Implications Arising from the Study

General implications. The results of this study seem to imply that the principles of general semantics which underlie this investigation are sound. They seem to imply further that the reasoning based on these principles is correct, namely that when the structure of the language used by an individual is dissimilar to the structure of the real world and the individual is unaware of the dissimilarity it can lead him into misevaluations and consequent maladjustment.

Specific implications. The implications for elementary education or preschool home education arise from the finding that for the range of age covered in this study (13-24), no variation of the "IS of identity" test scores was found. This seems to imply that the

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[1] "Ins" refers to the institutionalized group; "outs," to the Lansing high school population.

individual's language-habit patterns had become fixed at age levels much below those studied here. This suggests that measures aimed at the prevention of maladjustive language-habit patterns should be undertaken at elementary or preschool-age periods.

The implication for education beyond elementary years is that at higher levels the "IS of identity" test can be used to determine which individuals are in need of remedial treatment aimed at a development of an awareness of their language-habit patterns. Such remedial training would enable those discovered to avoid misevaluations, and hence to increase their adjustment to society or the process world as a whole.

The implication for teacher and counselor training is that if they were trained in the principles of general semantics, not only would their own professional orientation be improved, but it would enable them to apply the test and to undertake the remedial measures necessary.

The implication for general democratic living is that were it possible to develop an awareness in the total population of the dissimilarity between the language structure and process reality, it might decrease enormously the maladjustment in our society. Our language appears to reflect a static concept of "reality." Identification

seems to contribute to this static reflection. Teaching the individual character of all things, processes, and events might aid in the awareness of process reality and might contribute to the development of a more flexible, dynamic, multioriented individual, who in turn might well be a less likely candidate for institutional life.

Suggestions for Further Research

Sweeping generalizations cannot be based on this single study, nor on the additional evidence provided by the earlier pilot studies. However, the findings of this study suggest the following research:

1. Verification of the results of this study is needed. This verification should consist of similar studies conducted with other schools and institutions. Particularly, this enlargement of the research should specifically include a comparison of normal groups with the more severely maladjusted found in mental institutions.

2. Further, while on the basis of these findings there can be little doubt that groups of individuals can be distinguished as to whether they as a group are well or poorly adjusted socially, the prediction possible for a single case is not too precise. A project already under way by the present author includes a variation of

possible responses (rather than simple true or false) to determine if finer distinctions between individuals can be made.

3. One phase of a current research program under the direction of Dr. C. A. Lawson, head of the Natural Science Department at Michigan State College, is concerned with the influence of language-habit patterns with respect to change in beliefs and attitudes. The results of the study described in this thesis appear to be pertinently related. As a member of the Lawson research group, this investigator is attempting to determine whether Michigan State College freshmen who, on the basis of the "IS of identity" test, score low, are less amenable to belief or attitude change.

4. Research should eventually include two groups of elementary children, one of whom had been taught nonidentity, the other taught in the usual way, to determine if the former group, through teaching, can be oriented more satisfactorily from a social adjustment standpoint.

5. Research is needed to determine if the "IS of identity" contributes to rigidity factors or if the rigidity factor results in greater use of the "IS of identity."

6. Research is needed to show what part intelligence plays in the acquisition or loss of the use of identity or whether the "IS of identity" is a contributing factor in the development of intelligence.

APPENDIXES

APPENDIX I

CORRELATION I.Q.-T.R.

Schools	N	ΣI.Q.	ΣT.R.	$\Sigma I.Q.^2$	$T.R.^2$	Σ(T.R.)(I.Q.)	Coefficient of Correlation r
Sexton	85	8,965	247	968,189	773	25,919	-0.12 (not sig.)
Walter French	48	5,170	129	565,832	363	13,876	-0.05 (not sig.)

APPENDIX II

RELIABILITY (EQUIVALENT FORMS)

$N = 369$

$\Sigma A = 9795$	$\Sigma B = 9518$	
$\Sigma A^2 = 290467$	$\Sigma B^2 = 275868$	$\Sigma AB = 279962$
$\frac{(\Sigma A)^2}{369} = 260005$	$\frac{(\Sigma B)^2}{369} = 245508$	$\frac{(\Sigma A)(\Sigma B)}{369} = 252653$
30,462	30,360	27,309

$r^2 = [(27,309)^2]/[(30,462)(30,360)] = [745,781,481]/[924,826,320] = 0.8064$

$r = + 0.90$

Estimate of reliability if each half were full length:

$r = [2(0.90)]/[1 + 0.90] = 0.94$

APPENDIX III

ITEM ANALYSIS--"IS OF IDENTITY" TEST

Item	H	L	Diff.	Disc.
1	60	21	40(A)	0.41
2	80	18	49(A)	0.61
3	68	17	42(A)	0.52
4	7	3	5(A)	0.16
5	97	90	94(A)	0.24
6	94	63	78(A)	0.46
7	92	50	71(A)	0.52
8	70	41	56(A)	0.30
9	67	12	40(A)	0.58
10	91	42	66(A)	0.56
11	92	36	64(A)	0.61
12	94	59	76(A)	0.49
13	94	51	72(A)	0.56
14	100	65	82(A)	0.66
15	74	16	45(A)	0.58
16	18	6	12(A)	0.26
17	43	11	27(A)	0.40

APPENDIX III (Continued)

Item	H	L	Diff.	Disc.
18	56	16	36(A)	0.44
19	99	84	92(B)	0.49
20	62	22	42(B)	0.42
21	92	28	60(A)	0.66
22	68	3	36(B)	0.74
23	82	27	54(A)	0.55
24	94	71	82(B)	0.39
25	51	41	46(A)	0.10
26	85	40	62(A)	0.49
27	68	32	50(A)	0.37
28	87	27	57(A)	0.61
29	97	67	82(A)	0.53
30	43	17	30(A)	0.31
31	44	7	26(A)	0.50
32	51	2	26(B)	0.69
33	15	2	8(B)	0.39
34	53	6	30(A)	0.58
35	81	31	56(A)	0.51

APPENDIX III (Continued)

Item	H	L	Diff.	Disc.
36	80	6	43(A)	0.74
37	97	8	52(A)	0.86
38	98	52	75(A)	0.67
39	44	1	22(A)	0.70
40	91	13	52(B)	0.76
41	72	10	41(A)	0.64
42	81	19	50(A)	0.61
43	87	8	48(A)	0.77
44	60	5	32(A)	0.65
45	94	23	58(B)	0.73
46	59	20	40(B)	0.41
47	76	17	46(B)	0.59
48	68	24	46(B)	0.45
49	95	55	75(B)	0.55
50	98	33	66(B)	0.76
51	53	4	28(B)	0.63
52	43	23	33(B)	0.23
53	87	18	52(B)	0.68

APPENDIX III (Continued)

Item	H	L	Diff.	Disc.
54	20	7	14(A)	0.26
55	59	20	40(B)	0.41
56	76	44	60(B)	0.34
57	81	27	54(B)	0.54
58	97	61	79(A)	0.58
59	81	44	62(B)	0.40
60	100	100	100(B)	0.00
61	81	6	44(B)	0.75
62	87	26	56(B)	0.62
63	82	19	50(B)	0.62
64	86	32	59(A)	0.56
65	44	21	32(B)	0.26
66	96	48	72(A)	0.62
67	20	3	12(B)	0.41
68	72	29	50(B)	0.43
69	44	13	28(B)	0.38
70	82	36	59(A)	0.48
71	29	3	16(A)	0.50

APPENDIX III (Continued)

Item	H	L	Diff.	Disc.
72	93	50	72(B)	0.54
73	94	38	66(A)	0.64
74	90	53	72(B)	0.46
75	82	44	63(B)	0.41
76	75	18	46(B)	0.57
77	84	44	64(B)	0.44
78	30	7	18(A)	0.38
79	97	46	72(B)	0.67
80	60	23	42(A)	0.39
81	55	7	31(A)	0.58
82	92	65	78(B)	0.39
83	65	9	37(B)	0.61
84	35	30	32(B)	0.06
85	71	21	46(A)	0.51
86	47	23	35(A)	0.27
87	66	17	42(B)	0.51
88	96	28	62(B)	0.73
89	52	11	32(B)	0.48

APPENDIX III (Continued)

Item	H	L	Diff.	Disc.
90	68	26	47(B)	0.42
91	99	43	71(B)	0.76
92	18	12	15(B)	0.11
93	18	6	12(B)	0.26
94	80	4	42(B)	0.77
95	34	21	28(B)	0.16
96	41	18	30(B)	0.28
97	91	38	65(B)	0.59
98	86	60	73(B)	0.33
99	93	40	66(B)	0.61
100	97	24	60(B)	0.78

APPENDIX IV

SAMPLE "IS OF IDENTITY" TEST

Name_____Age_____

Do you attend church regularly?_____

Catholic or Protestant?_____Is any other language spoken in your home?_____

Instruction: There are no right or wrong answers to the following questions. You are to answer them as quickly as you can. Answer those statements which you believe are ALWAYS true by filling in between the small dotted lines in the true column. For those you believe to be NOT ALWAYS TRUE fill in the dotted lines in the false column. Any number may be true, any number may be false. For some they might be all true, for some all might be false, for others there may be an equal number of true and false.

1. A statement is either true or false.
2. Mules are stubborn.
3. A pig is a dirty animal.
4. God is everywhere.
5. A boy who won't fight is a coward.
6. Snake is an ugly word.
7. College graduates earn more than other people.
8. The word dog is a four footed animal.
9. A person who kills another person is a murderer.

10. Women are mothers.

11. A boy who never lies is good.

12. Teachers think they're smarter than other people.

13. Neighbors are nosey.

14. Pretty girls are stuck up.

15. Seeing is believing.

16. Adam and Eve were the first human beings.

17. It takes two to make a bargain.

18. He that believeth not shall be damned.

19. The good die young.

20. There is one basic cause for all effects.

21. The wildest colts make the best horses.

22. Humans can talk.

23. No one wants to die.

24. Barking dogs don't bite.

25. Death is not forever.

26. Americans are not communists.

27. Dreams often foretell our lives.

28. Everything comes if only a man will wait.

29. Anything believed by most of the people must be true.

30. What goes up must come down.

31. Water flows downhill.

32. A wool shirt is warm.

33. A circle is round.

34. Iron is strong.

35. An orange is not green.

36. A leaf is green.

37. A knife is sharp.

38. A pencil is round.

39. Feathers are soft.

40. The sky is blue.

41. Needles are sharp.

42. One sits on a chair.

43. A pitcher holds water.

44. A piece of iron is heavy.

45. A house is either frame or brick.

46. A drunkard is a sinner.

47. Ministers are good men.

48. Everything that is true can be proved.

49. Negroes are Africans.

50. Criminals are in jails.

51. Exercise is good.

52. Everyone is an image of God.

53. Two heads are better than one.

54. God is everything good.

55. A good man never cheats.

56. We must be Christian to be saved.

57. Laugh last laugh best.

58. Rich men can buy what they want.

59. Love is blind.

60. Jesus was all things to all men.

61. Doctors save lives.

62. Elephants never forget.

63. Money is the root of all evil.

64. A mother is the holiest thing alive.

65. All children should be Christians.

66. Opportunity only knocks once.

67. Prayer is the voice of faith.

68. Revenge is an inhuman word.

69. He profits best who serves best.

70. All socialism threatens democracy.

71. Freedom of speech is good.

72. Anyone who talks against OUR country should be imprisoned.

73. You can't teach old dogs new tricks.

74. Time is money.

75. The voice of the people is the voice of God.

76. We live in the best of all possible worlds.

77. Russia is the worst country in the world.

78. The sun rises in the east and sets in the west.

79. Big boys are bullies.

80. It is never all right to kill.

81. Children should always obey their parents.

82. Children are born bad.

83. Plants grow in soil.

84. Questions have no answer.

85. No one gets by with anything bad without getting caught.

86. Telling dirty jokes is bad.

87. A good soldier is a patriot.

88. Women movie stars are beautiful.

89. Every communist should be run out of the country.

90. People are just naturally mean.

91. Cats hate dogs.

92. Better a clean soul than a clean body.

93. The bible is the greatest source of truth.

94. Flowers are pretty.

95. Health is wealth.

96. Love is holy.

97. Money is evil.

98. Any man can become president.

99. The smartest people are the most successful.

100. Insane people are in asylums.

101. I like almost everyone.

102. I am very careful in choosing my friends.

103. I like more people than I dislike.

104. I make no friends until they prove worthy of my friendship.

105. I like and dislike about the same number of people.

APPENDIX V

RAW SCORES FOR SEXTON HIGH SCHOOL

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	116	17	C	Y	103	36	4
F	83	18	P	Y	105	48	3
F	90	18	P	N	101	43	3
M	97	19	-	-	-	-	
M	101	18	P	Y	101	59	3
M	130	18	P	Y	101	86	2
F	102	18	P	Y	103	47	3
M	113	18	P	N	103	76	2
M	117	18	P	Y	101	44	2
F	118	18	C	Y	101	71	3
F	110	18	P	Y	103	59	3
M	110	18	-	-	101	38	4
F	95	18	P	N	103	44	3
F	97	19	P	Y	103	41	3
F	117	18	-	-	-	-	
M	82	20	C	Y	103	31	4
F	109	18	P	Y	103	57	2

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	95	18	-	-	-	-	
F	112	18	C	Y	101	42	3
M	107	19	C	Y	101	37	4
F	103	18	P	N	101	42	3
F	99	18	-	-	-	-	
M	109	18	P	Y	103	70	2
M	106	18	P	Y	101	78	2
M	53	19	P	Y	101	39	4
F	105	18	-	-	-	-	
F	101	18	P	Y	103	53	3
F	117	18	P	Y	103	69	2
F	97	18	P	Y	103	50	2
F	95	18	P	N	103	63	2
M	123	18	C	Y	103	68	2
M	108	18	P	Y	101	68	2
F	76	18	-	-	-	-	
M	109	18	P	N	103	62	3
M	105	18	P	Y	103	62	2

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	124	18	P	Y	101	82	4
M	-	17	P	Y	101	98	1
F	97	16	P	N	101	53	3
F	112	16	P	Y	101	57	4
M	125	17	P	Y	103	54	3
F	115	17	P	Y	101	77	2
M	84	18	-	-	-	-	
F	103	16	P	Y	101	57	3
M	86	18	P	Y	104	71	3
F	97	17	P	Y	101	39	4
F	91	17	P	Y	103	46	4
M	108	17	C	Y	101	73	2
M	98	17	P	Y	101	42	4
M	104	17	-	-	-	-	
F	120	17	P	Y	101	66	2
F	85	17	-	-	-	-	
F	105	17	P	Y	101	79	2
F	109	18	P	Y	101	76	4

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
M	87	17	P Y	101	30	4
F	126	17	P Y	101	39	4
M	86	17	P Y	102	65	2
M	111	16	P Y	102	29	3
F	100	17	P Y	103	70	3
M	93	17	- -	-	-	
F	97	18	- -	-	-	
F	93	16	P Y	104	39	-
F	107	17	NO	101	61	2
F	104	17	P Y	103	62	3
F	107	17	P N	101	67	3
F	168	17	P Y	101	43	4
F	116	16	P Y	101	64	2
F	124	17	P Y	101	56	2
F	110	16	P Y	102	52	3
F	113	17	J Y	101	88	3
M	101	17	P N	101	47	4
F	110	17	- -	-	-	

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
F	85	17	P	Y	101	43	3
F	108	17	P	Y	101	77	2
M	89	18	P	N	101	35	4
F	94	16	-	-	-	-	3
F	106	16	-	-	-	-	-
F	93	17	C	Y	101	26	4
M	95	16	P	N	-	46	3
M	163	15	P	Y	103	44	3
M	128	15	P	Y	103	61	2
M	128	15	P	N	103	27	3
M	121	16	P	Y	101	71	4
F	74	17	P	Y	101	36	4
M	104	16	-	-	-	-	-
M	107	16	P	N	101	62	2
M	92	16	P	Y	101	47	3
F	110	16	P	Y	103	58	3
F	118	17	-	-	-	-	-
M	96	16	-	-	-	-	-

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	93	16	P	Y	103	46	3
M	104	16	P	Y	101	34	4
F	112	16	-	-	-	-	-
F	123	16	P	Y	103	58	2
M	104	16	P	N	102	49	3
F	103	16	-	-	-	-	-
M	87	17	P	Y	104	17	4
F	112	16	P	Y	101	22	4
F	93	16	P	Y	101	52	3
F	114	16	P	N	102	43	3
F	74	16	-	-	-	-	-
M	108	16	P	N	103	72	3
F	111	17	-	-	-	-	-
M	97	16	-	-	-	-	-
F	84	17	P	Y	101	68	1
M	103	16	P	N	102	46	3
M	112	17	-	-	-	-	-
M	87	16	C	Y	103	62	2

APPENDIX V (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
F	90	16	P N	101	51	2
F	108	16	P N	101	35	1

APPENDIX VI

RAW SCORES FOR WALTER FRENCH JUNIOR HIGH SCHOOL

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
F	120	15	P	Y	103	52	2
F	100	15	-	-	-	-	
M	130	15	P	Y	101	71	3
F	106	15	P	Y	101	75	2
F	100	16	P	Y	101	35	3
M	127	15	P	Y	101	65	3
F	117	15	P	Y	101	58	2
F	115	15	P	Y	103	34	1
M	135	15	P	Y	101	66	2
M	82	16	-	-	-	-	
F	68	17	P	Y	104	18	4
F	98	15	P	Y	101	33	3
M	95	15	-	-	-	-	
M	103	16	P	Y	103	34	2
F	110	15	P	Y	-	66	3
M	133	16	C	Y	103	45	3
M	105	14	P	Y	101	70	2

APPENDIX VI (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
F	115	15	P	N	103	55	2
M	117	15	-	-	-	-	
F	110	15	C	Y	101	43	3
F	81	16	P	N	101	36	4
F	113	14	P	Y	101	34	3
F	110	15	P	Y	101	32	3
F	120	15	P	N	103	63	1
M	112	15	P	Y	101	35	4
M	115	15	P	Y	101	47	2
F	105	15	P	Y	103	37	3
M	94	16	P	Y	-	33	2
F	125	16	P	Y	101	38	4
M	113	15	P	Y	101	26	4
F	125	15	P	Y	101	58	2
M	110	15	P	Y	101	49	2
F	100	15	P	Y	103	61	2
F	133	15	P	Y	101	63	3
F	115	15	-	-	-	-	

APPENDIX VI (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
F	100	17	P Y	103	47	3
M	103	15	P Y	-	70	3
F	105	15	- -	-	-	
M	89	15	P Y	101	35	4
M	111	15	- -	-	-	
M	88	16	NO	101	44	2
F	-	16	- -	-	-	-
M	124	17	- -	-	-	-
M	89	15	- -	-	-	-
M	120	16	- -	-	-	-
M	92	15	P N	-	36	3
M	106	16	C Y	101	63	2
M	105	15	P Y	102	38	2
F	96	16	C Y	101	16	4
M	112	16	P N	-	43	3
F	111	15	P Y	101	42	2
M	117	15	P Y	103	29	3
F	110	15	P Y	101	28	4

APPENDIX VI (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
M	97	16	P N	101	28	2
F	104	15	P N	-	37	2
M	109	15	P Y	101	46	3
M	94	16	P Y	-	59	2
F	102	15	P Y	101	44	4
M	87	15	P Y	103	38	3

APPENDIX VII

RAW SCORES FOR EASTERN HIGH SCHOOL

Sex	I.Q. Scores	Age	Religion		Self Rate	Test Scores	Teacher Rating
M	77	18	P	Y	101	39	4
M	115	17	P	N	101	64	3
F	90	18	P	N	101	44	3
M	99	19	P	Y	101	44	2
F	152	18	P	N	102	72	1
M	109	17	C	Y	103	28	3
M	112	21	P	N	103	50	3
M	108	18	P	Y	101	47	3
F	90	17	P	Y	101	33	3
F	105	17	-	Y	101	31	3
F	120	17	-	Y	101	61	2
F	129	18	-	N	101	68	2
M	111	18	P	Y	103	44	3
F	130	16	C	Y	101	33	3
M	86	17	P	Y	102	66	2
F	114	18	P	Y	101	53	2
M	100	17	C	Y	105	41	1

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	112	16	P	Y	103	51	3
M	101	19	P	N	101	31	4
M	112	18	-	-	-	-	-
M	86	19	C	-	103	23	4
M	132	18	P	N	101	65	2
M	96	17	P	Y	103	33	3
-	73	19	-	-	-	-	-
F	117	17	P	N	102	36	3
F	110	18	P	Y	101	52	3
F	106	18	C	Y	101	59	2
F	104	18	-	Y	103	40	3
M	75	19	-	-	-	-	-
F	70	19	P	N	104	79	3
M	110	19	-	N	101	54	2
F	80	17	P	Y	101	48	2
M	115	16	P	N	101	71	1
M	75	20	-	N	103	20	4
M	120	17	-	Y	103	78	3

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
M	117	16	- Y	101	57	3
F	91	18	P Y	101	42	2
M	120	18	- -	-	-	-
M	97	16	- Y	101	57	3
M	115	18	P Y	101	53	3
M	105	18	AGN	103	59	2
M	107	17	P N	101	78	2
M	106	18	P Y	101	75	2
M	98	16	- Y	101	37	3
F	95	17	- Y	101	53	3
F	124	17	P N	103	34	4
F	125	18	P Y	101	73	3
M	126	16	P N	101	71	1
M	95	19	P Y	103	46	3
F	105	18	- Y	102	50	3
M	93	18	C Y	101	46	3
M	102	16	- -	101	64	3
F	97	16	P Y	102	56	2

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
M	115	16	- Y	103	44	3
M	118	18	- N	103	74	1
M	103	16	- Y	101	77	1
M	80	19	P Y	104	24	4
F	102	16	- Y	101	75	3
F	93	19	P N	102	48	3
F	100	18	- Y	101	48	3
M	103	18	P N	101	58	3
F	117	18	P Y	103	41	2
F	86	19	P Y	103	27	4
F	108	19	C Y	103	81	1
F	106	18	- N	101	46	2
M	108	17	AGN	101	61	1
F	101	16	- Y	105	63	2
F	104	16	P Y	101	69	2
M	102	17	- -	-	-	-
M	92	17	- -	-	-	-
F	99	16	- -	-	-	-

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion	Self-Rate	Test Scores	Teacher Rating
M	97	16	- -	101	57	2
F	101	16	- N	101	39	3
F	121	16	- Y	101	35	4
F	84	17	P Y	101	68	2
M	108	19	- N	103	71	2
F	101	16	P N	101	33	3
M	92	17	C -	101	32	3
F	111	16	P Y	103	53	3
F	106	17	P Y	103	62	2
F	100	16	P Y	103	35	3
F	128	17	- Y	101	53	1
M	111	17	P Y	101	50	2
M	104	16	P Y	101	58	3
M	99	17	AGN	103	59	3
M	128	18	- -	105	83	1
M	80	19	- N	101	71	2
M	101	17	- N	103	51	1
F	94	16	- Y	102	57	3

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
F	107	17	P	Y	101	49	3
F	109	17	P	N	102	47	3
M	108	18	P	N	105	65	2
M	81	18	C	Y	103	32	4
M	105	19	P	N	101	77	2
F	111	17	P	Y	101	24	3
M	120	19	-	N	103	52	3
F	134	17	P	Y	101	59	3
M	106	18	-	N	104	33	4
F	96	16	P	Y	103	49	3
F	90	16	-	Y	103	48	3
M	98	16	-	-	-	-	-
F	98	16	-	-	-	-	-
M	87	16	P	N	103	25	4
F	87	17	P	Y	103	34	3
M	93	16	P	Y	103	54	1
M	98	17	P	Y	103	21	3
F	105	18	-	Y	103	45	3

APPENDIX VII (Continued)

Sex	I.Q. Scores	Age	Religion		Self-Rate	Test Scores	Teacher Rating
M	126	16	-	Y	103	64	2
F	88	17	P	Y	103	26	4
F	101	16	-	Y	105	63	1
M	112	18	-	Y	-	71	1

APPENDIX VIII

RAW SCORES FOR BOYS VOCATIONAL SCHOOL

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
105	7	3A	C2	16	P	Y	103	49
99	36	-	-	15	-	-	104	18
95	22	3A	C3	16	P	Y	104	36
91	-	3A	B1	15	P	Y	101	40
98	17	3A	B1	14	P	Y	105	34
106	9	-	-	15	C	Y	103	44
-	-	C2	C1	15	P	Y	105	33
85	22	-	-	16	P	N	101	41
111	11	C2	D2	16	P	N	103	75
81	13	-	-	15	P	N	103	43
107	18	-	-	16	P	Y	103	68
105	-	-	-	14	C	N	101	47
138	18	3B	C1	15	P	Y	105	35
100	25	-	-	15	P	Y	103	56
73	-	-	-	17	P	Y	102	28
92	2	-	-	13	P	Y	101	34

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
123	13	3A	C3	16	C	Y	103	64
90	18	3A	B1	14	C	Y	103	45
100	30	3A	B1	15	C	N	103	73
72	-	2	B1	17	P	N	101	50
98	46	3A	B1	16	C	N	102	67
-	-	-	-	18	P	Y	-	44
83	-	3A	C2	15	P	N	101	41
75	40	3B	C1	12	-	-	104	34
84	77	-	-	15	P	Y	101	34
105	26	3A	C2	19	P	N	103	77
107	27	-	-	14	P	Y	101	24
103	10	-	-	16	P	Y	103	39
-	-	-	-	16	P	N	104	47
-	-	-	-	15	C	Y	104	25
89	7	3A	C1	15	P	Y	104	32
-	-	2	C2	16	C	Y	103	29
87	12	2	C1	15	P	Y	103	48

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
93	11	-	-	16	P	Y	101	32
82	-	3A	B1	16	P	Y	101	28
80	-	2	B1	15	P	N	103	25
82	4	2	B1	16	P	N	105	46
90	6	-	-	14	P	Y	101	50
115	28	2	C1	15	P	Y	105	46
74	-	3A		15	P	N	104	31
105	12	-	-	16	P	Y	101	43
103	27	3A	B2	15	-	-	101	77
99	51	2	B2	16	P	Y	103	42
109	46	-	-	17	P	Y	103	40
80	50	-	-	17	C	Y	104	53
90	97	3B	B1	12	P	N	103	35
91	14	3A	B2	15	P	Y	102	33
-	-	2	C2	17	P	Y	103	44
78	-	-	-	18	P	N	102	22
87	32	-	-	17	-	-	-	39

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
76	91	-	-	15	P	Y	101	45
97	35	2	B1	15	-	-	-	12
83	-	3B	C2	15	C	Y	102	30
105	13	3A	C2	16	P	Y	103	34
92	-	C1	C2	14	P	Y	101	33
109	23	3A	B1	16	C	Y	103	75
94	62	-	-	-	-	-	103	40
84	85	3A	B1	13	C	Y	103	23
86	37	-	-	16	-	-	-	15
92	4	3B	C2	16	P	N	103	33
76	-	3B	B1	15	P	Y	101	36
83	97	3B	C3	15	C	Y	101	18
93	-	-	-	16	C	Y	101	49
100	24	-	-	16	C	Y	101	17
-	-	3A	C2	16	P	Y	101	37
77	65	2	C2	15	P	N	104	41
78	113	3A	C2	15	P	Y	104	21

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
85	27	-	-	17	P	Y	102	30
83	-	-	-	14	P	N	103	27
85	26	-	-	15	P	N	103	49
82	-	B1	B1	15	P	N	103	32
79	17	2	B1	16	P	N	101	20
81	-	3C	C3	-	-	-	103	29
102	21	-	-	14	P	Y	101	41
83	-	3A	-	15	P	Y	101	54
88	-	3B	B1	15	P	N	104	33
94	12	-	-	-	P	N	104	31
-	-	-	-	15	P	Y	103	31
95	-	3A	B1	16	P	N	102	45
101	5	3A	-	16	P	Y	102	73
87	-	2	B1	12	P	N	104	36
93	35	-	-	16	P	Y	103	39
101	32	-	-	17	C	N	104	42
76	37	3B	C3	16	P	Y	102	49

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
79	17	3A	C1	17	P	N	101	31
87	2	-	-	18	P	N	104	30
96	35	3A	C2	15	P	Y	103	32
87	31	3B	B1	15	P	N	101	34
-	-	-	-	15	-	-	101	18
121	45	2	D2	17	P	Y	103	33
74	17	2	B1	16	C	N	101	25
108	11	-	-	13	-	-	101	31
92	-	3A	C2	14	-	-	101	57
74	-	C2	B1	16	P	Y	105	42
93	25	-	-	13	P	Y	101	49
67	-	3A	C1	14	P	N	103	38
69	-	D3	C3	14	C	Y	103	34
105	12	-	-	16	P	Y	101	28
83	-	2	D2	16	P	Y	104	28
100	36	-	-	15	P	Y	101	47
81	24	3A	C2	16	C	Y	103	46

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
125	24	-	-	15	C	Y	101	25
-	-	-	-	-	C	Y	103	46
97	-	3A	B1	15	-	-	101	30
108	19	2	C1	15	C	Y	103	30
-	-	2B	B2	-	-	-	-	-
95	40	2	B1	16	P	Y	101	32
102	55	-	-	15	-	-	101	35
100	70	3A	C2	15	P	Y	101	37
89	6	3B	C3	15	C	Y	101	29
107	30	-	-	15	P	Y	103	45
79	71	2	B1	14	P	Y	103	15
91	78	3A	C3	15	P	Y	101	24
93	13	3A	B2	14	P	N	102	24
98	22	3A	B1	15	P	Y	102	41
89	5	2	C1	16	P	N	104	37
76	23	3A	D1	14	P	N	104	55
81	-	2	C1	14	-	-	101	28

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
98	18	-	-	-	-	-	101	58
110	-	3A	B1	14	-	-	102	27
81	-	3A	D3	13	C	Y	104	39
110	-	3A	C1	15	C	Y	104	26
82	-	3B	D3	16	P	Y	103	40
100	32	3A	B1	14	C	Y	101	33
103	36	3A	C2	14	P	N	103	25
110	31	3A	D3	16	P	N	101	43
79	34	-	-	14	P	N	102	31
100	3	2	C3	16	C	Y	101	3
76	-	2	C2	14	P	Y	101	15
79	38	3A	B1	14	P	Y	103	54
76	-	3A	C3	16	-	-	-	32
84	-	D2	B1	17	P	Y	101	44
82	114	-	-	16	P	Y	105	55
-	-	-	-	15	P	Y	104	24
102	53	3A	B1	15	P	N	103	29

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
103	20	2	C1	15	-	-	101	29
107	65	-	-	14	P	N	104	49
90	-	2	B1	16	P	Y	103	33
120	-	-	-	16	P	Y	105	43
88	-	-	-	13	C	Y	104	21
105	-	-	-	16	P	Y	105	66
96	51	-	-	16	-	-	103	32
98	54	3A	C3	16	C	Y	103	34
95	-	-	-	15	P	Y	101	38
92	5	3A	C2	16	P	N	102	74
85	-	2	C2	16	P	Y	105	28
120	10	3B	-	15	C	Y	103	46
96	-	3A	B1	15	-	-	104	37
100	-	3B	B1	15	C	Y	103	58
77	-	3B	C2	16	P	N	103	41
73	59	-	-	16	P	Y	101	45
78	11	3A	C2	16	P	N	101	16

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
88	-	-	-	15	P	Y	103	21
-	-	2	-	16	C	N	104	21
98	45	-	-	16	P	Y	101	34
85	-	C2	B1	15	C	Y	101	47
70	76	3D	C3	15	P	Y	103	39
95	22	2	C2	-	-	-	102	38
-	-	-	-	15	P	N	101	48
95	-	3A	B1	14	C	N	101	44
100	41	-	-	14	P	N	103	78
97	-	-	-	16	C	Y	101	98
86	-	2	C2	14	C	N	103	37
82	-	-	-	15	P	N	101	36
-	-	3A	B1	16	P	N	103	47
-	-	-	-	17	C	Y	101	21
97	-	2	C2	16	N	O	102	62
84	-	3A	C3	14	C	N	103	26
74	6	2	C1	15	C	Y	103	17

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostci Ratings	Age	Religion		Self-Rate	Test Scores
94	56	-	-	15	C	Y	101	32
82	42	-	-	15	-	-	105	77
81	16	-	-	15	-	-	102	27
90	74	-	-	16	C	N	101	15
81	10	3A	B1	14	-	-	103	33
80	-	3D	D3	16	P	Y	103	32
86	14	-	-	15	C	N	101	31
83	31	-	-	15	P	Y	102	46
95	17	3A	C2	15	P	Y	103	19
91	24	-	-	14	-	-	101	60
90	-	3A	B1	-	-	-	101	36
94	14	-	-	15	C	N	101	35
100	19	2	C1	16	C	Y	102	30
70	21	3A	C2	16	P	Y	101	17
86	114	-	-	16	P	Y	103	21
80	32	3A	C2	16	C	N	103	45
82	-	3A	C3	15	C	N	101	27

APPENDIX VIII (Continued)

I.Q. Scores	Mooney Scores	Diag-nostic Ratings	Prog-nostic Ratings	Age	Religion		Self-Rate	Test Scores
-	-	-	-	15	P	Y	102	39
87	78	3A	C3	13	P	Y	105	42
89	-	3A	C2	13	P	N	103	31
-	-	2D	B1	15	P	N	101	28
-	-	-	-	16	P	Y	102	30
93	21	-	-	16	-	-	-	17
129	-	3B	D3	17	P	Y	101	45
69	5	-	-	16	C	Y	101	43
98	23	3A	C2	15	-	-	102	20
101	20	-	-	16	C	N	103	48
103	-	-	-	16	C	Y	103	65
92	51	-	-	15	C	N	101	16
114	25	3A	C2	16	C	Y	103	42
81	-	3A	C3	14	P	N	105	29
92	26	3A	D3	15	C	Y	101	39

APPENDIX IX

RAW SCORES FOR IONIA REFORMATORY

I.Q. Scores	Age	Religion		Self-Rate	Test Scores
85	19	P	N	101	50
81	20	P	N	101	32
73	20	P	Y	102	46
98	20	P	N	102	44
105	19	P	Y	104	69
115	18	P	Y	103	58
117	17	P	N	102	35
87	18	P	N	104	51
70	19	P	N	101	64
79	19	P	Y	101	30
110	18	P	N	101	54
74	20	P	N	101	32
83	18	P	Y	103	31
95	18	C	Y	102	25
113	18	C	Y	101	36
104	17	P	Y	104	39
104	20	P	N	104	53

APPENDIX IX (Continued)

I.Q. Scores	Age	Religion	Self-Rate	Test Scores
70	20	P Y	-	28
97	17	P N	101	42
78	18	- -	-	40
77	19	P Y	101	33
85	20	C N	101	40
122	20	P Y	103	78
87	17	P N	102	41
90	19	C Y	101	35
87	16	C Y	102	33
93	20	C Y	101	34
110	17	C Y	101	79
110	17	C Y	102	83
100	19	P Y	102	47
115	20	AGN	102	60
78	17	P N	101	36
133	18	AGN	102	87
122	18	C Y	101	78
102	16	P N	102	52

APPENDIX IX (Continued)

I.Q. Scores	Age	Religion		Self-Rate	Test Scores
122	19	C	Y	101	79
83	19	P	Y	103	53
102	18	P	N	102	56
100	20	C	N	103	49
83	19	P	Y	102	32
93	18	P	N	103	54
75	19	P	N	101	31
87	20	P	N	101	32
73	18	P	N	102	34
103	18	P	Y	103	44
67	20	P	Y	102	30
95	20	C	N	101	50
88	20	P	Y	102	42
115	17	C	Y	105	53
110	18	C	N	103	95
93	17	P	Y	105	59
85	16	P	Y	102	75
120	16	P	Y	102	53

APPENDIX IX (Continued)

I.Q. Scores	Age	Religion		Self-Rate	Test Scores
95	16	C	N	103	76
90	19	P	Y	102	74
102	17	C	N	103	30
98	23	P	Y	102	52
107	20	P	Y	104	44
82	19	P	N	101	42
102	20	P	Y	101	36
82	20	C	Y	102	36
103	20	C	N	102	54
100	18	P	Y	105	67
82	18	P	N	102	32
93	19	P	Y	104	69
93	19	P	Y	104	65
95	20	C	N	104	52
115	19	P	N	101	58
64	20	P	Y	104	57
78	20	P	Y	104	55
107	20	P	N	102	51

APPENDIX IX (Continued)

I.Q. Scores	Age	Religion		Self-Rate	Test Scores
103	17	C	N	102	49
117	19	C	Y	102	68
90	18	C	Y	101	27
95	20	P	Y	103	40
100	20	P	Y	104	71
100	20	P	N	104	57
78	20	P	Y	103	62
100	16	P	N	103	44
85	20	P	Y	104	56
83	20	P	N	102	28
98	18	P	N	104	66
108	20	P	Y	102	41
107	18	P	Y	102	76
108	20	P	Y	104	61
100	18	P	N	103	67
90	18	P	Y	102	57
95	19	P	Y	102	41
103	17	C	Y	102	47

APPENDIX IX (Continued)

I.Q. Scores	Age	Religion	Self-Rate	Test Scores
108	17	P N	101	57
75	18	C Y	102	67
95	16	P Y	105	71
78	20	P Y	101	52
130	19	C N	102	70
122	20	AGN	102	50
105	17	P N	102	51
115	17	C Y	102	46
107	20	P N	104	72

APPENDIX X

SAMPLE TEACHER-RATING SCALE

During the past week a random sample of the student body at Walter French Junior High School was tested with a new-type personality instrument. In an effort to validate this test, ratings of the students tested, by teachers who have or have had these students in classes or home rooms, are needed. Do not rate any student unless you have had a good opportunity to evaluate that student on the basis of how he gets along with his fellow students. Please rate students according to the following scale:

Rate 1: Unusually friendly, helpful, and cooperative.
Rate 2: Above average in friendliness, helpfulness, and cooperativeness.
Rate 3: About average in the three qualities mentioned.
Rate 4: Below average in the three qualities mentioned.
Rate 5: Far below average, displaying almost no friendly, helpful, or cooperative qualities.

Thank you for your cooperation. Please return this form to Mr. Fisher when completed.

Student Name	Rating	Student Name	Rating

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