THE CONSTRUCTION AND VALIDATION OF AN
'IS OF IDENTITY' TEST

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Author's Note: *The 'IS of Identity' Test was copy-righted in December, 1954. An abstract of the original study was first published in Science Education, October, 1956. This paper reports on the author's continued research.*

Three articles based on this study were published in the March, 1959 issue of Science Education. A replication study was conducted by Robert F. Hopkins at Michigan State University during the years 1955-1958 (4). Results of his study confirmed, with minor exceptions, the findings of the original investigator. In an Associated Press release in December, 1958, Dr. Walter F. Johnson, President of the American Personnel and Guidance Association, was quoted as saying 'the test may be a reliable tool for telling socially adjusted groups from maladjusted ones. With refinement the test might be used to indicate differences in social adjustment among individuals as well as groups.'

Reference to the test is included in several publications, the most recent being that of Mother Margaret Gorman in her doctoral dissertation, The Educational Implications of the Theory of Meaning and Symbolism of General Semantics, and in Anatol Rapoport's article 'General Semantics and Thomism: Their Contrasting Metaphysical Assumptions,' ETC., Winter, 1959.

More research is needed before the test can be made available for diagnostic or prognostic uses. Nonetheless, it is being published by The William C. Brown Publishing Company on a limited scale for use by its author in an extensive research project at Arizona State University. If the results continue to indicate the validity and reliability of this instrument, the test will be made available to interested researchers, counselors, psychologists and teachers.

A sample of the 'IS of Identity' Test follows the summary and conclusions of this paper.

INTRODUCTION

If one were reporting research in the Galilean days, a bibliographical item referring the reader to Aristotle would have been enough to substantiate a statement, whether or not it conformed with processes in the observable world.

In pre-Einstein days a researcher could refer 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 that the world as we now know it can be described more adequately by non-Euclidian geometry. At one time a researcher could rely on Dalton and his concept of 'indestructible atoms,' yet today atoms are being destroyed, and this formulation has been proved inadequate.

Thus, the theories of Aristotle, Newton, Euclid, or any authority are only tentative and subject to revision when empirical testing demonstrates such a need. The present work is an attempt to check some of the principles of general semantics by empirical methods.

It would seem, on the basis of empirical evidence, that those ills 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. (6, p. 268.) Many authors, including Malinowski (12), Mead (13), and Whorf (18), to name but a few, have shown that the way in which man interprets his world is a function of his language. Whorf points out that 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. (19, p. 207.)

Obviously, language is the chief medium for communication among humans. As languages have evolved through the ages, men have incorporated in the language structure their ideas about the structure of their environment, both inside and outside their skins. Some of these ideas are still considered correct; many were inadequate because of early man's limited knowledge of his world. Through empirical testing much erroneous information has been corrected, but the structure of the language has not changed greatly; as a result it does not correspond to the structure of the world as it is known today. (6, p. 115.)

Not knowing the part man's nervous system played when he observed, early man (at least those early men who laid the foundations for the Indo-European languages) ascribed properties to things. He saw a leaf and the physiological reaction which he experienced (color) was given a label. Unaware

of the part his eye, his optic nerve, and his brain played in the process (6, pp. 121-122), he said, 'The leaf *is* green,' describing the green as a property 'possessed' by the leaf. We now know the greenness is a joint product of the observer and that which is being observed.

Consider two persons describing caviar: One of them says, 'Caviar *is* good'; the other, 'Caviar *is* bad.' While both are talking about something they call 'caviar', they are also talking about themselves. This 'is' which identifies the label or the property ('bad') with the object ('caviar') is called by general semanticians the 'is of identity'.

The discipline called general semantics (a discipline based on modern 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 world they see around them should be similar in structure to that world. Or, if similarity of structure is lacking, those who use the language should be aware of its limitations lest they be led into pitfalls of misevaluation and misunderstanding. General semanticians point to the 'is of identity' as one of these limitations.

If the unthinking use of the 'is of identity' can lead to misevaluation and misunderstanding, then it may be both a precursor and a symptom of maladjustment. The general objective of this research, then, is to test the hypothesis that an important underlying reason for an individual's lack of adjustment is his use of language patterns of a structure dissimilar to the structure of the non-verbal world, and his unawareness of the dissimilarity.

To test this hypothesis a paper-and-pencil test was developed which attempts to measure the subject's reactions with and to the 'is of identity'. Scores on this test were then related to various measures of the subject's social adjustment.

No paper-and-pencil test based on general semantics had been reported prior to the suggestion of this investigator at the beginning of this study in February, 1952. Shortly afterwards, 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 (14). 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 the 'IS of Identity' Test. Both tests, however, are based on the principles suggested by Alfred Korzybski, as outlined in *Science and Sanity* (8), and both attempt to measure the relation of an individual's language behavior to his social adjustment by paper-and-pencil means.

More recently Haney (2, 3) developed a test of uncritical inference behavior and Johnson (5) found differences in scale-checking behavior before and after training in general semantics.

PURPOSE OF THE STUDY

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 groups in correctional institutions with non-institutionalized groups, whether those who have been institutionalized use the 'is of identity' to a greater degree than do those not institutionalized.

Third, to determine whether, among those not institutionalized, 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, church attendance, intelligence, or self ratings are associated with differences in the extent to which the 'is of identity' is used.

The test developed in this study involves two basic assumptions:

1. In the non-verbal process world there is no identity, no absolute sameness.
2. The structure of the world as inferred from language differs from the structure of the non-verbal process world.

In addition, the author began with three additional assumptions which were verified by the study:

1. The 'is of identity' language pattern can be observed and measured.
2. Persons vary in the extent to which they use the 'is of identity'.
3. A paper-and-pencil test can be constructed to measure the extent to which the 'is of identity' is employed.

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 his communication with others has been damaged. (16, p. 83.)

If this be true, then any technique which can indicate the causes of communication failure should afford educators bases on which to build communication systems less subject to 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 communication within himself has broken down,' the need is for improved communication within the individual, 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 disturbed persons, but in the literature outside the field of general semantics, there is little reference to the possibility that confusion of levels and orders of abstraction or the habitual use of the 'is of identity' may be causative factors, although Katz (7) 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, there are no recorded attempts to test its assumptions objectively and rigorously. In science, assumptions must be treated as assumptions until verified. The general semanticians have assumed, on the basis of gross observation, not rigorous testing, that belief in 'identity' is a contributive factor in maladjustment. This study is a beginning toward establishing the validity 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 supported or verified, they 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; if it shows no such promise, it is still important to the degree that at least the aspect dealt with in this study needs consume no other researcher's time or effort.

DEVELOPMENT OF THE TEST INSTRUMENT THROUGH PILOT STUDIES

Since 1951 this investigator has been studying language as it relates to behavior by observing, recording, and analyzing the language behavior of a variety of people.[1] The behaviors observed included such physiological reactions as blushing, trembling, stuttering, fighting, and withdrawal (non-participation). A record of the language used by those displaying such bodily responses was also kept, along with a similar record for those persons who, during their relationships with the investigator, displayed no such reactions.

After a year of 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 sorts of language behaviors. In the former there seemed to be a much greater use of the 'is of identity', a much greater degree of 'overgeneralization', a much more frequent confusing of the orders of abstraction. To put it more simply, those who displayed a bodily reaction appeared to be less aware 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 other group, simply that they occurred less noticeably.

If the inferences drawn from the observation of happenings outside the skin of this observer were correct—if, in fact, there were a connection between the language and the behavior pattern, it should be possible to develop some type of instrument to measure this relationship.

The instrument, this investigator believed, should be simple, for the physiological reactions 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 depend upon 'reading ability' nor 'intelligence' as measured by I.Q. tests. While the 'is of identity' and confusion of orders of abstraction probably 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 if this habitual tendency is found in less involved language.

Assuming, on the basis of empirical evidence, that in the process world there is no 'excluded middle', 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 in 1900. It is not 'true' in 1960, as nuclear physicists have demonstrated (9, p. 667).

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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 many individuals over relatively long periods of time.

If, then, no absolute 'truth' can be found, 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 orders 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 50-item true-false test was therefore developed, with full awareness of the 'pitfalls' of true-false tests as outlined by Adkins (1), but with recognition that the difficulties inherent in this type of response on the 'usual' test do not apply since this test is aimed at discovering whether the testee is aware that there is no 'absolute standard of truth.' The instructions required the answer 'false' to all items that were NOT ALWAYS true. Since in a process world 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 50 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; evidence that this did not occur will be presented shortly.

For the first pilot study fifty students were selected 'at random' from the Eaton Rapids, Michigan, high school body—25 boys and 25 girls. The 'social behavior' of each student was rated by three teachers, the students were given the 'IS of Identity' Test, and a simple correlation was run between social behavior rating and score on the test. The correlation was +0.47. The correlation between I.Q. (as measured by the California Test of Mental Maturity) and test score was +0.03. These results indicate that whatever the test measured, it was more closely related to social adjustment than it was to I.Q., 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, 50 students is too few on which to make a generalization with much certainty.

An item analysis was made, and from the original 50 items, the 35 which showed highest discriminative value were retained and 15 new items added. The new test was then given to 50 additional students. Approximately the same results were obtained.

On the suggestion of Dr. Harry Sundwell,[2] the test was administered to a group of graduate students enrolled in education 510 at Michigan State University, 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 100 enrollees at Boys Vocational School (B.V.S.), a correctional institution 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 Mooney Problem Check List is a series of 330 problems arranged in 11 categories. Students mark items that 'trouble them,' such as 'losing my temper,' 'being talked about,' 'feeling hurt too easily,' etc. Although widely used and fairly well standardized, many researchers, including this one, question whether students will honestly divulge their 'innermost secrets' since they know their teachers or counselors will see their responses. The test was developed by Ross L. Mooney in 1947. Many references to it can be found in the Education Index from 1948 on, the most recent being (17). The diagnostic and prognostic ratings are composite ratings assigned each boy by psychologists, social workers, and teachers at B.V.S.

It was assumed that some evidence of the validity of the 'IS of Identity' Test might be obtained by correlating test scores with Mooney Check List scores and with diagnostic-prognostic ratings. The results again showed a 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 which was significant at the 0.10 level. Correlation with diagnostic and with prognostic ratings was not significant.

TESTING THE INSTRUMENT

The correlations obtained in the pilot studies were not sufficiently high to justify a larger study in and of themselves; however, the obvious difference between the mean scores of the B.V.S. group and the high school group on the 'IS of Identity' Test, plus empirical evidence that the two groups did in fact use the 'IS of Identity' in different degrees, suggested 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.

The Sample

The samples used in the major study consisted of:

1. 280 individuals in correctional institutions (the 'in' group, consisting of boys at the Boys

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Vocational School and Ionia State Reformatory, Ionia, Michigan).

2. 236 individuals in Lansing public high schools (the 'out' group, consisting of approximately equal numbers of boys and girls from Eastern and Sexton high schools and Walter French junior high school.)

Randomness was assured in the 'out' group by assigning each student a number, then selecting the sample (236) from the total population (5500) by means of a table of random numbers.

At Boys Vocational School the total school population was tested at one time. At Ionia State Reformatory, the representativeness of the sample used in the study could not be established, because it was chosen by the warden, on the basis, probably, of expedience.

Collection of the Data

On standard IBM scoring sheets testees entered the following data: (1) age, (2) sex, (3) church attendance, (4) church affiliation, (5) self rating. In addition to this, the test administrator entered: (1) I.Q. score, (2) score earned on the 'IS of Identity' Test (these two items for all schools), (3) Mooney scores, (4) diagnostic ratings (items 3 and 4 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 corresponding 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. (Only 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. 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 minimize teacher-bias in this subjective rating.

The 50 item test developed in the pilot studies was expanded to 100 items to increase its reliability. Additional items were constructed in the same way as the original fifty to incorporate the 'is of identity.' Following these 100 'is of identity' items on the test sheet were five statements of attitude intended to elicit from the testee expressions of his feelings toward other people. (These will be referred to as 'self rating item 101, 102, etc.' See the sample test at the end of this report.) Since social adjustment is defined as 'getting along with people,' it was felt that attitudes indicating hostility toward or distrust of others should also indicate more or less maladjustment. A comparison be-

tween a person's test score and his 'attitude' might reveal whether or not these two measures of 'maladjustment' are related. Consistency between the two scores would tend to buttress the validity of each of them.

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

Limitations

The most serious limitation of this research lies in the fact that no instrument is now available against which to validate the 'IS of Identity' Test (10, p. 117). The Mooney Problem Check List was considered as one possibility. However, since Mooney scores were available only for a part of the test population, their use as validating 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 in age and geographic location. Whatever generalizations may be drawn from the results must be handled with full recognition that they are only indicative, not final in any sense. Subjects ranged in age from 13 to 24 years. The entire 'out' group was drawn from high schools in Lansing, Michigan. The 'in' group is more representative geographically, 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 fully representative of all Michigan areas.

A third limitation, which this study shares with all other pencil-and-paper tests, has to do with the possibility of misinterpretation of instructions for taking the test. Every effort was made to administer the test in the same manner each time. The same oral instructions and similar environmental conditions were used throughout, but the individual conducting the test was necessarily 'different' from one administration to the next, and may have 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. The student who is 'known' by more teachers will have more ratings and will usually be 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 test scores and teacher ratings.

A fifth limitation of this research is again

concerned with rating, this time with the self ratings; that is, the student's evaluation of his 'attitude' toward other people. One cannot be sure that his self rating actually represents his attitude. Since he must indicate his name, he may report a 'socially acceptable' self rating rather than his own felt attitude because of fear that someone in authority might frown upon his attitude.

A sixth limitation applies to the 'in' group. All 'in' group testees were male, and hence whatever differences in test scores may appear between 'in' group and 'out' group are valid for males only, unless it can subsequently be demonstrated that no differences are attributable to sex differences.

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

An eighth limitation is in the nature of the test itself. The items are extremely simple—deliberately so. This was done to eliminate as much as possible the factor of reading ability. All items are keyed false. The rationale for this is discussed elsewhere. Several trial forms which were used from eighth grade to fifth year college level verified the fact that most students could not discern the all-false pattern. Nonetheless, in rare cases some detection of the all-false pattern may have occurred.

Finally, the instrument was not tested on the most seriously maladjusted—those who are in mental institutions. This group, in whom communication failure is most complete, was left out of this experimental study because of insufficient time 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 justify a more comprehensive testing which could then include those in mental hospitals.

ANALYSIS OF THE DATA

A number of statistical techniques were used in the analysis of the data. These techniques will be discussed briefly and the results summarized in tabular form.

Statistical Procedures Used

Reliability   The evaluation of the reliability of any measurement procedure consists in determining how much of the variation in scores among individuals is due to inconsistencies in measurement. The reliability of the 'IS of Identity' Test was determined by first making an item analysis, then equating two halves of the test by including parallel items of equal difficulty in each of the halves. The correlation between scores on the two halves indicated the reliability of the 50-item test. Reliability on the

full-length (100-item) test was determined by Spearman-Brown prophesy formula.

The item analysis showed that with few exceptions the individual items discriminated consistently at the 0.01 level of confidence, which in turn makes 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.

Validity   Validation of the test was accomplished by:

1. comparing teacher ratings with 'IS of Identity' Test scores for those in the 'out' group, by means of correlation, analysis of variance, or analysis of variance with covariance adjustment;
2. 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;
3. comparing the 'IS of Identity' Test scores of 'in' and 'out' groups for individual self rating items by analysis of variance and for self rating item 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.).'

Correlations   Simple Pearson product-moment correlation was used for comparing 'IS of Identity' Test scores with I.Q. scores and Mooney scores, since these (Mooney and I.Q.) were in the form of continuous variables, not 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.

Analysis of Variance   Analysis of variance was used to test many of the hypotheses of this study. For example, to determine if the scores obtained by males and females on the 'IS of Identity' Test were statistically different or merely represent chance variations, the problem was first stated in the form of a 'null hypothesis.' That is, the hypothesis became 'Males and females do *not* differ in their use of the "is of identity".' The test of the null hypothesis tells what the chances are that two samples differing to this extent would have been drawn from two populations that are in fact alike. If such a difference can be expected *more* than 5 times in 100, the null hypothesis is accepted; that is, the difference may well have occurred by chance so it is considered 'not significant.' On the other hand, if such a difference could be expected *less* than 5 times in 100, the hypothesis that there is no difference is rejected and the difference is considered

'significant.' The term 'highly significant' means that such a difference could be expected by chance *less* than 1 time in 100.

In the following tables '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. Other abbreviations used are: d.f. = degrees of freedom; s.s. = sum of squares; M.S. = mean square; F = F ratio; N = number of subjects. A further discussion of analysis of variance will be found in MacNemar (11).

Analysis of variance presupposes a normal distribution of the class items and equality of the class variances. For examination scores the distribution is usually assumed to be normal, and that assumption will be made here. Homogeneity of variances was tested by the method given in Dixon and Massey, *Introduction to Statistical Analysis,* McGraw-Hill, 1951, pp. 90-91.

Analysis of Variance with Covariance Adjustment This statistical technique is used when it is desirable to control for the influence of an additional variable which may contribute to the relationship being tested. Despite the fact that two pilot studies showed no significant correlation between I.Q. and 'IS of Identity' Test scores, 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 by analysis of variance) were treated by analysis of variance with a covariance adjustment to correct for the effect of I.Q.

Null Hypotheses The following null hypotheses were tested by means of analysis of variance (with covariance adjustment as required):

1. Males and females do not differ in their use of the 'is of identity.'
2. Different age groups do not differ in their use of the 'is of identity.'
3. Persons with different social adjustment do not differ in their use of the 'is of identity.'
4. Catholic and non-Catholic students do not differ in their use of the 'is of identity.'
5. Church attenders and non-attenders do not differ in their use of the 'is of identity.'
6. Students who rate themselves differently with respect to attitude toward people do not differ in their use of the 'is of identity.'

RESULTS

Table 1 summarizes the analysis of variance of 'IS of Identity' Test scores by sex for students in Lansing high schools. The analysis shows that differences in test scores cannot reasonably be associated with sex differences. Such an analysis was not possible for the institutionalized portion of the sample because it was entirely male.

That variations in test scores are not significantly related to age (for the ages covered in this study) is shown in Tables 2 through 6. Subjects ranged in age from 13 to 24 years.

When the analysis was applied to the classes of diagnostic and prognostic ratings at Boys Vocational School (Tables 7 and 8), it showed that the 'IS of Identity' Test score variations cannot reasonably be associated with differences in diagnostic or prognostic ratings.

Table 9 shows significance at the 0.05 probability level and indicates that those professing Catholic religious affiliation on the average obtained significantly lower scores on the 'IS of Identity' Test than did the non-Catholics (but see Table 27; this relationship becomes nonsignificant when the effect of I.Q. is controlled by covariance adjustment). Table 10 indicates that 'IS of Identity' Test score differences are not associated with church attendance or nonattendance.

The analysis was then applied to classes based on a composite of self rating items 101, 102, 103, 104, and 105. Table 11 shows that these classes are not significantly related to scores on the 'IS of Identity' Test.

The analysis was also applied to the classes of 'ins' and 'outs' for each of the self rating items 101, 102, 103, 104, and 105 (Tables 12 through 16). For items 102, 104, and 105 no significant differences appeared between those 'in' and 'out'. Item 103 shows significance at the 0.05 probability level and item 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, then for the composite of all three schools. The results are shown in Tables 17 through 20. In each of these Tables, 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 shown in Table 21.

Correlations of 'Is of Identity' Test scores with I.Q. are summarized in Table 22. Those for test scores with Mooney scores at Boys Vocational School are summarized in Table 23. The analysis of variance of I.Q. for the 'ins' and 'outs' is shown in Table 24.

The results in Table 22 indicate an association of 'IS of Identity' Test scores with I.Q., and those in Table 24 indicate a significant difference of I.Q. between the 'ins' and 'outs'. These results raise a question: Are the differences in test scores for the 'ins' and the 'outs' merely a result of I.Q. differences? To answer this question, 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

ANALYSIS OF VARIANCE SUMMARIES

Table 1. 'IS of Identity' Test Scores by Sex
(Eastern, Sexton, and Walter French Schools)

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

Table 2. 'IS of Identity' Test Scores by Age
(Boys Vocational School)

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

Table 3. 'IS of Identity' Test Scores by Age
(Ionia State Reformatory)

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

Table 4. 'IS of Identity' Test Scores by Age
(Eastern High School)

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

Table 5. 'IS of Identity' Test Scores by Age
(Sexton High School)

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

Table 6. 'IS of Identity' Test Scores by Age
(Walter French Junior High School)

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

Table 7. 'IS of Identity' Test Scores by Diagnostic Ratings
(Boys Vocational School)

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

Table 8. 'IS of Identity' Test Scores by Prognostic Ratings
(Boys Vocational School)

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

Table 9. 'IS of Identity' Test Scores by Religious Affiliation
(Catholic vs. Non-Catholic; All Schools)

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

Table 10. 'IS of Identity' Test Scores by Church Attendance
(Attend vs. Not Attend; All Schools)

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

Table 11. 'IS of Identity' Test Scores by Self Ratings
(Classes based on composite of self-rating items;
All Schools)

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

Table 12. Scores for Self Rating Item 101 by Type of Institution ('Ins' vs. 'Outs')

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

Table 13. Scores for Self Rating Item 102 by Type of Institution ('Ins' vs. 'Outs')

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

Table 14. Scores for Self Rating Item 103 by Type of Institution ('Ins' vs. 'Outs')

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

Table 15. Scores for Self Rating Item 104 by Type of Institution ('Ins' vs. 'Outs')

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

Table 16. Scores for Self Rating Item 105 by Type of Institution ('Ins' vs. 'Outs')

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

Table 17. 'IS of Identity' Test Scores by Teacher Ratings
(Eastern High School)

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

Table 18. 'IS of Identity' Test Scores by Teacher Ratings
(Sexton High School)

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

Table 19. 'IS of Identity' Test Scores by Teacher Ratings
(Walter French Junior High School)

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

Table 20. 'IS of Identity' Test Scores by Teacher Ratings
(Eastern, Sexton, and Walter French Schools)

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

factors being studied, *covariance adjustment* was considered unnecessary. In applying covariance adjustment 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 results of an analysis of variance with covariance adjustment for test scores of the total 'in' group versus those of the total 'out' group are shown in Table 25. The differences between the two groups remain highly significant, indicating that these differences are *not* a function of I.Q. differences.

When an analysis with covariance adjustment for I.Q. was done for one school (Eastern; boys versus girls), no significant difference was found (Table 26). In other words, even with I.Q. differences 'eliminated,' differences in test scores are not associated with sex differences. This supports the findings obtained by simple analysis of variance for all schools (Table 1), and eliminates the need for covariance adjustment in the other schools.

When an analysis of variance with covariance adjustment for I.Q. was done for religious affiliation, Catholic versus non-Catholic (Table 27), the differences reported in Table 29 as 'significant' are no longer significant. Apparently I.Q. differences between the groups operated to give a spurious significant difference.

Tables 28 and 29 summarize analyses of variance with covariance adjustment for I.Q. for self rating items 101 and 103 for 'ins' versus 'outs.' Even with the adjustment for I.Q., differences in response to self rating item 101 were highly significant. Self rating item 103, on the other hand, fails to distinguish between the two groups at a significant level when the analysis is adjusted for I.Q. differences.

A summary of the analysis of variance with

covariance adjustment for test scores versus teacher ratings for the composite 'out' group is shown in Table 30. Here again the differences remain highly significant, indicating that the relationship between test scores and teacher ratings is not simply a result of teachers giving favorable ratings to high I.Q. students who, in turn, do well on the test.

SUMMARY AND CONCLUSIONS

In any society one can find individuals ranging in a continuum from those who are considered completely adjusted to those who are considered severely 'maladjusted.' The division of the adjusted from the maladjusted is usually arbitrary. Those considered 'adjusted' are usually the most useful members of the group, while those considered maladjusted are often unhappy, nonuseful, or even dangerous; society may protect itself by confining them in institutions. Symptoms rather than causes have generally been treated, probably because of a lack of knowledge of the underlying reasons for maladjustment.

The general objective of this research 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

Table 21. Correlation Between 'IS of Identity' Test Scores
and Teacher-Ratings
(Eastern, Sexton, and Walter French Schools)

	N	Correlation Coefficient	Significance Level
Eastern	100	-0.63	0.001
Sexton	85	-0.55	0.001
Walter French	48	-0.45	0.001

Table 22. Correlation Between I.Q. and 'IS of Identity' Test
Scores (All Groups)

	N	Coefficient of Correlation r
B.V.S.	182	+0.25
Ionia	98	+0.47
Eastern	102	+0.34
Sexton	85	+0.23
Walter French	48	+0.45
Composite	515	+0.24

Table 23. Correlation Between 'IS of Identity' Test Scores
and Mooney Scores (Boys Vocational School)

	N	Correlation Coefficient	Significance Level
B.V.S.	124	-0.11	(not sig.)

Table 24. Summary of Analysis of Variance of I.Q. Scores
by Type of Institution ('Ins' vs. 'Outs')

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

SUMMARIES OF ANALYSES OF VARIANCE WITH COVARIANCE ADJUSTMENT FOR I.Q.

Table 25. 'IS of Identity' Test Scores by Type of Institution ('Ins' vs. '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.)

Table 26. 'IS of Identity' Test Scores by Sex (Eastern High School)

	Total	Within	Between
Sum of products xy	$7593_{(At)}$	$7501_{(Aw)}$	92
Sum of squares for x's	$25,152_{(Bt)}$	$24,995_{(Bw)}$	157
Sum of squares for y's	$20,373_{(Ct)}$	$20,323_{(Cw)}$	50
d.f.	100	99	1
Adjusted Σx^2	22,322	22,227	95
d.f.	99	98	1
M.S.		226.6	94

F = 0.41 (not sig.)

Table 27. 'IS of Identity' Test Scores by Religious Affiliation (Catholic vs. Non-Catholic, All Schools)

	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 28. Scores on Self Rating Item 101 by Type of Institution ('Ins' vs. '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 29. Scores on Self Rating Item 103 by Type of Institution ('Ins' vs. '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.)

Table 30. 'IS of Identity' Test Scores by Teacher Ratings (Eastern, Sexton, and Walter French Schools)

	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.)

dissimilar to the structure of the non-verbal world, and his unawareness of the dissimilarity.

Methodology

The 'is of identity' is, by definition, the language pattern which evidences false-to-empirical-fact 'allness' and 'identity.' A test containing 100 statements reflecting this language pattern was constructed and refined by means of item analysis 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.

Pilot studies showed a correlation between scores made on the 'IS of Identity' Test and teacher ratings of degree of adjustment. Approximately 200 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 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 the subjects 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 non-institutionalized categories) 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 for groups sorted on the basis of (1) teacher ratings, (2) institutionalized versus non-institutionalized, and (3) self-rating item 101. (Covariance adjustment for I.Q. was applied in these analyses.)

Significant differences (0.05) were found between the means of the 'IS of Identity' Test scores for groups sorted on the basis of (1) church affiliation, (2) self-rating item 103. However, when covariance adjustment for I.Q. was applied, these showed nonsignificance.

No significant differences were found between the means of 'IS of Identity' Test scores for groups sorted on the basis of (1) age, (2) sex, (3) church attendance, (4) diagnostic and prognostic ratings, (5) self-rating items 102, 104, and 105.

Conclusions

The results indicate that the test developed in this study gives a satisfactory indication of social adjustment or maladjustment; that a person's use of the 'is of identity' is related to his degree of social adjustment. This conclusion 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 made on the 'IS of Identity' Test provides further evidence of validity of the test and relationship between 'is of identity' and degrees of adjustment. The greater the use of the 'is of identity,' the poorer the teacher rating; 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 related to the use of the 'is of identity.' Religious affiliation or regularity of church attendance, likewise, do not influence the use of the 'is of identity,' according to the analysis of variance (with covariance adjustment for I.Q. in the case of religious affiliation).

Despite the fact that little or no relationship was found in the pilot studies between I.Q. 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, except in the case of religious affiliation mentioned above. It may be of interest to note that while teacher ratings and scores on the 'IS of Identity' Test correlate highly, teacher ratings and I.Q. do not.

The analysis of variance showed no significant relationship between a composite self rating and 'IS of Identity' Test scores. The suspicion that the self ratings (an introspective device) were unreliable as indicators of social adjustment was sustained by an item analysis which showed that the difference in scores of the 'ins' and 'outs' for item 101 was highly significant, while for the remaining items it was not significant.

Implications

The results of this study provide further evidence that the principles of general semantics which underlie this investigation are sound; that the reasoning based on these principles is fruitful, namely that when the structure of the language used by an individual is dissimilar to the structure of the non-verbal world and the individual is unaware of the dissimilarity it can lead him into misevaluations and consequent maladjustment.

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 with age was found. This seems to imply that the individual's language-habit patterns had become fixed at age levels much below those studied here. It suggests that measures aimed at preventing maladjustive language-habit patterns should be undertaken during the elementary or preschool-age periods.

Implications for education beyond elementary years lie in the fact that at higher levels the 'IS of Identity' Test can be used to determine which individuals are in need of treatment aimed at developing an awareness of their language-habit patterns. Such remedial training would enable them to avoid misevaluations, and hence to increase their adjustment to society and the process world as a whole.

The findings suggest that if teachers and counselors were trained in the principles of general semantics, not only would their own professional orientation be improved, but the training would enable them to apply the 'IS of Identity' Test and to undertake remedial measures.

Were it possible to develop an awareness in the total population of the dissimilarity between the structure of our language and the structure of the process world, it might decrease enormously the maladjustment in our society. Our language reflects a static concept of an ever-changing process world. Identification seems to contribute to this static orientation. Teaching the uniqueness of all things, processes, and events might help students to develop an awareness of the 'process' nature of the world about them and might contribute to the development of more flexible, dynamic, multioriented individuals, who, in turn, might well be less likely candidates for corrective institutions.

SAMPLE 'IS OF IDENTITY' TEST

Name_____ Age_____

Do you attend church regularly?_____

Catholic or Protestant?_____

Is any other language spoken in your home?

_____

Instructions: 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
true and false.

1. Women are mothers.
2. A circle is round.
3. A leaf is green.
4. Seeing is believing.
5. The sky is blue.
6. Exercise is good.
7. Love is blind.
8. Time is money.
9. Money is evil.
10. Health is wealth.

. . . .
. . . .

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.

BIBLIOGRAPHY

1. Adkins, Dorothy, *Construction and Analysis of
   Achievement Tests*, Washington, D. C.: U.S.
   Government Printing Office, 1947.
2. Haney, William V., 'Measurement of the Ability
   to Discriminate Between Inferential and De-
   scriptive Statements,' *General Semantics Bul-
   letin*, Nos. 16 & 17, 1955.
3. Haney, William V., 'Police Experience and Un-
   critical Inference Behavior,' *General Semantics
   Bulletin*, Nos. 22 & 23, 1958.
4. Hopkins, Robert F., 'A Replication Study of an
   Experiment Applying Non-Aristotelian Prin-
   ciples in the Measurement of Adjustment and
   Maladjustment.' Unpublished doctoral disserta-
   tion, Michigan State University, 1958.
5. Johnson, Kenneth G., 'Patterns of Response to
   a Semantic Differential Test Before and After
   Training in General Semantics,' *General Se-
   mantics Bulletin*, Nos. 22 & 23, 1958.
6. Johnson, Wendell, *People in Quandaries*. New
   York: Harper and Bros., 1946.
7. Katz, Daniel, 'Psychological Barriers to Com-
   munication,' *Language . . . Man . . . Society.*
   Harold E. Briggs, Editor. New York: Rhine-
   hart and Company, 1949, pp. 379-389.
8. Korzybski, Alfred, *Science and Sanity: An
   Introduction to Non-aristotelian Systems and
   General Semantics* (1933). Lakeville: Inter-
   national Non-aristotelian Library Publishing
   Company, 4th Edition, 1958.
9. Krauskopf, Konrad Bates. *Fundamentals of
   Physical Science*. 3rd Edition. New York:
   McGraw-Hill Book Company, 1953.
10. Lee, Irving J., 'General Semantics 1952,'
    Quarterly Journal of Speech, 39: 1-12, 1952;
    Reprinted with some modification in ETC.,
    9:103-118, 1952.
11. MacNemar, Quinn, *Psychological Statistics*.
    New York: John Wiley and Sons, Inc., 1949.
12. Malinowski, Bronislaw, *Magic, Science and
    Religion and Other Essays*. Garden City:
    Doubleday and Company, Inc., 1954.
13. Mead, Margaret, *Growing Up in New Guinea*.
    New York: New American Library of World
    Literature, Inc., 1954.
14. Peters, Henry N., 'Supraordinality of Associa-
    tions and Maladjustment,' *The Journal of Psy-
    chology*, 33:217-225, 1952. Reprinted in *ETC.*,
    10:37-45, 1952.
15. Rogers, Carl R., *Dealing With Social Tensions*.
    New York: Hinds, Hayden and Eldridge, 1948.
16. Rogers, Carl R., 'Communication: Its Blocking
    and Its Facilitation,' *ETC.*, 9:83-88, 1952.
17. Singer, S. L., and Stefflre, B. F., 'Concurrent
    Validation of the Mooney Problem Check List,'
    Personnel and Guidance Journal, 35:298-301,
    1957.
18. Whorf, Benjamin Lee, 'The Relation of Habitual
    Thought and Behavior to Language,' in *Language,
    Thought, and Reality*. John B. Carroll, Editor.
    New York and Cambridge: John Wiley & Sons
    and Massachusetts Institute of Technology Press,
    1956, pp. 134-159.
19. Whorf, Benjamin Lee, 'Science and Linguistics,'
    ibid, pp. 207-219.