A STUDY TO ESTABLISH A SCORING KEY
FOR MALE ELEMENTARY AND SECONDARY
ART TEACHERS TO BE USED WITH THE
STRONG VOCATIONAL INTEREST BLANK

This is to certify that the

thesis entitled

A Study to Establish a Scoring Key
For Male Elementary and Secondary
Art Teachers to Be Used With The
Strong Vocational Interest Blank

presented by

Victor P. Croftchik

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A STUDY TO ESTABLISH A SCORING KEY FOR MALE

ELEMENTARY AND SECONDARY ART TEACHERS

TO BE USED WITH THE STRONG VOCATIONAL
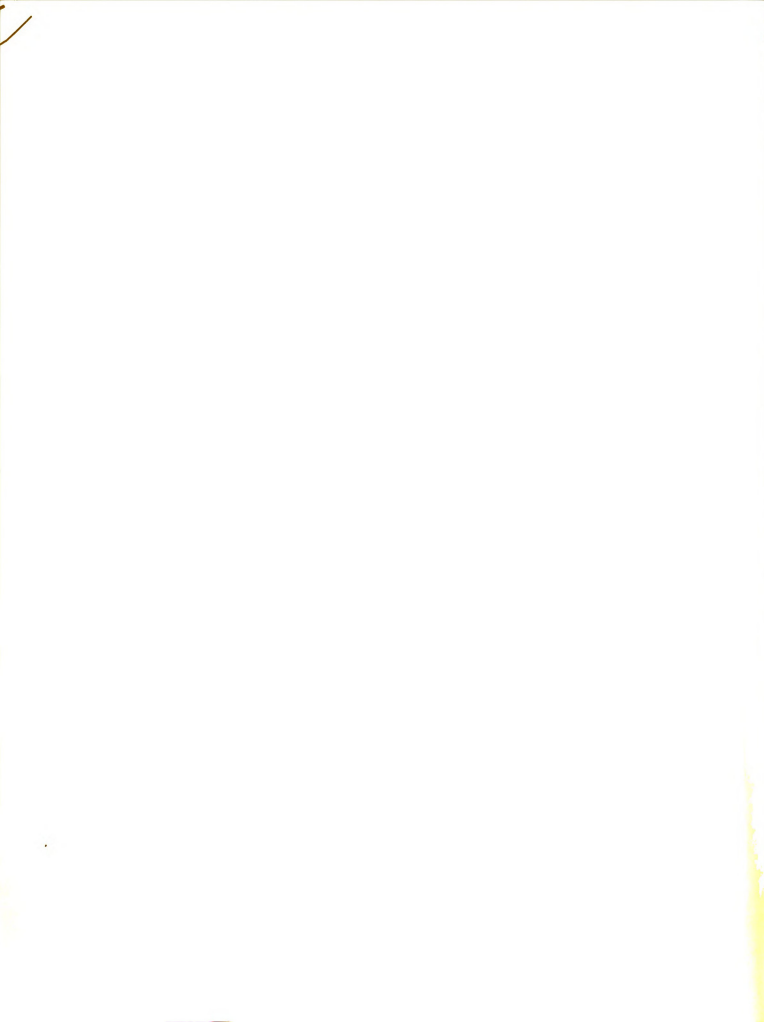
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By

VICTOR P. CROFTCHIK

A THESIS

Submitted to the School for Advanced Graduate Studies
of Michigan State University in partial
fulfillment of the requirements
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ABSTRACT

This study was designed to develop a scoring key for elementary and secondary male art teachers for the Strong Vocational Interest Blank for Men. Before the scoring key could be developed it was necessary to discover the differences in interests, if any, which existed between the art teachers criterion group and Strong's "men-in-general" criterion group. If differences did exist, it would be possible then to "weight" these differences and thereby establish a scoring key, which would measure art teaching interests on the Strong Blank. A review of the literature indicated nothing had been done in this area of art interests, either with the Strong or any other interest inventory.

The 335 male art teachers who formed the criterion group for the study were employed in the public schools of a three-state area comprising Illinois, Michigan, and Missouri. Only those teachers were used who met the requirements for a criterion group as set up by Strong. These men were asked to fill out the Interest Inventory, indicating their responses on the Hankes Scoring Sheet, and to provide personal data which established their qualifications for the criterion group. Three follow-up letters elicited over 80 per cent

usable returns, which gave a satisfactory percentage of coverage of the study area.

Using procedures approved by Strong, and further substantiated by the literature on the use of the Strong Inventory, so that the art-teachers scale would be an acceptable addition to the Strong Blank, the writer successfully developed a scoring key for male elementary and secondary teachers which could be added to the list of professions already keyed on the blank.

This key was validated by the scores of ninety-three art teachers from the Eastern Arts Association who met the group criterion in every way. They were asked to comply with the same requirements as the key group, and the percentage of response was about the same. Further validation was made by a comparison of the results on the key of the men-in-general group.

The findings of this study revealed that art teachers' interests were definitely different from the interests of men-in-general as measured by the Strong Vocational Interest Blank. These differences made it possible to establish a scoring key for art teachers which could be added to the list of professions available for counseling service.

ACKNOWLEDGMENTS

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Candidate for the Degree of

Doctor of Education

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Thesis: A Study To Establish a Scoring Key for Male Elementary and Secondary Art Teachers To Be Used with the Strong Vocational Interest Blank

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CHAPTER I

INTRODUCTION

If it is at all possible, all students should enter a vocational field for which they possess the necessary abilities and interests. Any device which would aid counselors to provide better guidance to students would contribute immeasurably to the whole field of education—not only from the viewpoint of the student, but from that of the educator as well. It is important to all fields of learning that those who possess the requisite characteristics be guided and encouraged to enter those professions for which they are best equipped and for which they show definite interest.

In the field of art education (as differentiated from professional art) there is a definite need to find these students and to guide them into art education as a profession. This guidance problem appears primarily at the undergraduate level in college where the student so often is at a loss to decide where his interests really lie. In the area of art many students are torn between interest in art itself (professionally) and the teaching of art in the public schools. Due to various reasons most male art students,

at the beginning of their college training, frown upon a career in teaching and consider themselves talented and interested enough in art to seek a professional artist's career. Hence, there is an overemphasis upon the number of women in art teaching, upon the femininity of art itself, and upon the idea that art is not a serious subject worth the time and effort of all school children. Thus, there builds up a still greater feeling in high school boys that art teaching is for women principally and that it offers very little as a suitable career for men. This emphasis upon women teachers in art has not helped to solve the continuing shortage of teachers in this area. Women often marry as soon as they are graduated (if not before) and follow their husbands to the cities in which the husbands are employed. They, thus, look for whatever teaching jobs they can find; most often these are in elementary classroom teaching rather than in art teaching, since the more acute shortage occurs in the former and more jobs are available there. Coupled with this is the problem related to family rearing and the making of a home for their families. If we are to attack the problem of the shortage of art teachers in the elementary and secondary schools, one way might be to find the male students who do possess basic interests in art teaching, even though they may not think so at the time, and to

encourage these young men into the teaching of art in the public schools.

There is a definite need to seek out those young men who do possess the same interests as practicing male art teachers. If art education is to continue as a contributing factor in public education, more competent young men should be guided into the art teaching field. Thus, persons who are responsible for the training of art teachers are those directly concerned with the identification of potentially qualified art teachers.

There are, it seems, two related problems—one of guidance and one of selection. As is well known, one of the ways counselors can assist young people in the selection of an occupation is by the use of an interest test. One of the most widely used interest inventories in guidance is the Strong Vocational Interest Blank (Appendix A). This test shows the extent to which an individual has interests in common with persons successfully engaged in various occupations. By the use of prepared keys, it is possible to arrive at scores which show this similarity in interests. Obviously, counselors are restricted in large part to a consideration of those occupations for which keys have been prepared. There is no such key for art teaching. Therefore, we are concerned here particularly with the development of a scoring key for male art teachers in

elementary and secondary schools. Such a key would enable counselors using the Strong Vocational Interest Blank to identify young men who possess an interest in art teaching.

The second problem—that of the selection of potentially qualified male art teachers—seems the more pertinent at this time. There are two important aspects of this problem: the need of the schools to find good male art teachers, and the need of the student to select a vocation in which he has some reasonable chance for success and happiness. Too many men select teaching as a stopgap measure—an easy way to earn a living while "they look around." Too many men pass up teaching because they do not think they would be happy in such work—"they have no interest in it"—only to discover years later that they do possess many interests in common with men art teachers (or that they do not possess the interests and drives required in the professional art field). Thus, young men who have interests similar to successful art teachers should be the type of persons selected for this teaching field. If an adequate art-teachers key were available, the Strong Vocational Interest Blank could be used by counselors in helping a person to gain a better over-all picture of himself in relationship to an occupational choice.

Purpose

The purpose of this study is to make the Strong Vocational Interest Blank a more useful tool in both the guidance of and in the selection of male elementary and secondary art teachers. This would be useful in the undergraduate college program and perhaps in senior high schools having a guidance program.

The present form of the Strong Vocational Interest Blank for Men does not have a key for identifying the interests of art teachers. There is a key for artists, but one may surmise that this key would not be suitable for the selection of art teachers in the public schools. The writer is of the opinion that the interests of those who teach public school children are quite different from the interests of those who make a profession of art. This perhaps should not be so, but, because of existing circumstances, the writer feels the interests which compel a man to choose between creating art to sell and teaching school children are different. If so, the artist scale would prove quite inaccurate for art teachers. This could lead into an interesting study in the future—the comparison of the interests of artists and art teachers as measured by the Strong Vocational Interest Blank, once the art teacher scale is developed.

Art education should attract more men into this field. The list of art teachers from any state will show an overwhelming majority of women teachers (the Michigan Art Education membership for 1958 lists 70 per cent). Although more men are entering the art teaching field many of them have as their goal a college art position which is part teaching and part creating art. If it could be pointed out to young men that they have interests in common with practicing art teachers, perhaps more of them could be recruited for the elementary and secondary schools. Any device which would aid this recruitment would be a useful tool in counseling. The Strong Vocational Interest Blank for Men has scoring keys for fifty-one (1958) professions, but none for art teachers. This study, therefore, was designed to identify the interest pattern of male elementary and secondary art teachers. With this information it would be possible to develop a key for this test. This should implement the recruitment program on a nationwide scale. The purpose of this study was to construct such a key.

Strong has found it inadvisable to differentiate the interests of teachers as a general professional group.[1] When

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[1] Edward K. Strong, Jr., <u>Vocational Interests of Men and Women</u> (Stanford, Calif.: Stanford University Press, 1943), pp. 20, 161, 548.

Cooper[1] suggested comparing his industrial arts teachers with "teachers-in-general," Strong wrote:

> We had a scale of teachers and school administrators. The scale was abandoned when it became obvious that teachers are not a homogeneous group. The above group (teachers-in-general) cannot be accepted as representing teachers in general. It would be foolish to construct a scale contrasting the interests of the above group and your Industrial Arts teachers. You would never be sure what you were measuring.

He found further that the teachers seemed to correlate much more closely with other occupations than with each other. In his table of correlations it will be noted that men social studies teachers seemed to be related to social welfare workers (r with YMCA Secretary = .87) and mathematics teachers resembled skilled tradesmen (r with carpenter = .68, r with printer = .72); whereas the correlation of the two teacher groups was nearly zero (r = .13).[2]

Perhaps as a more detailed breakdown of the interests of teachers in the various subject areas is made available, a general pattern of interests may emerge which would differentiate the interests of teachers-in-general from those of "men-in-general." Therefore, continued development of scoring keys for different areas may

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[1] Charles E. Cooper, Jr., "Vocational Interests of Industrial Arts Teachers" (unpublished doctoral dissertation, The University of Missouri, Columbia, 1953), p. 16.

[2] Strong, Vocational Interests of Men and Women, opp. p. 716.

contribute to the over-all interest pattern of teachers-in-general, although Strong holds little hope of this possibility.

Speculative benefits of such research as this are numerous and easily listed. However, other professional groups have found, or expected to find, several benefits from such interest measurement. These are: (1) improved guidance programs, (2) improved selection programs, (3) more efficient training programs, and (4) less loss of personnel from the professional field.

Statement of the Problem

The purpose, therefore, leads directly to a statement of the problem:

1. To determine if the interests of male elementary and secondary art teachers are significantly different from the interests of the men-in-general group as tested on the Strong Vocational Interest Blank.

2. To construct a scoring key for measuring these interests on the Strong Vocational Interest Blank.

3. To determine the validity of the scale.

Definition of Terms Used

Art education, as differentiated from professional art, is concerned with education through art, or teaching art in the public schools.

Art teacher, as differentiated from professional artist, means one who teaches art in the public schools.

Artist refers to one who professionally and commercially is engaged in the production of art products and is not engaged in teaching in the public schools as a primary source of income.

Men-in-general refers to Strong's criterion group of 4,746 cases of representative professional and businessmen.[1]

Limitations of the Study

This study was made within certain limitations:

1. The geographical area was limited to the three states of Illinois, Michigan, and Missouri. A fairly accurate list of art teachers meeting the required criterion could be obtained from reliable sources for this three-state area. It was felt that these art teachers would be representative of art teachers in general, and that a concentration in fewer states rather than a spreading out over many states would produce a more representative group. A more thorough canvas of a limited area would be more satisfactory both from a financial and time standpoint. By a systematic follow-up within a geographically limited area, all subjects could be contacted more often at a saving of time and money. Moreover, more subjects might

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[1] Strong, Vocational Interests of Men and Women, pp. 712–13.

be persuaded to respond, giving a total picture which would be more representative of these teachers, since they would represent a larger percentage of all teachers in the area (as compared to a like number from a larger number of contacts over a greater area).

2. The criterion group was limited to those art teachers who came within the framework of the criterion established by Strong.

3. Procedures for establishing the key stayed within the limits established by Strong for his original groups in order to make this study applicable to the Strong Vocational Interest Blank.

CHAPTER II

REVIEW OF THE LITERATURE

The Strong Vocational Interest Blank is so well known as to need no detailed description. It does not seem worth while to repeat here all the information available on the construction of scoring keys for given occupational groups. Strong's monumental Vocational Interests of Men and Women[1] contains this material in full detail. This is supplemented further by Strong's Vocational Interests 18 Years after College,[2] Darley and Hagenah's Vocational Interest Measurement,[3] Fryer's The Measurement of Interests,[4] and Super's

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[1]Edward K. Strong, Jr., Vocational Interests of Men and Women (Stanford, Calif.: Stanford University Press, 1943).

[2]Edward K. Strong, Jr., Vocational Interests 18 Years after College (Minneapolis: The University of Minnesota Press, 1955).

[3]John G. Darley and Theda Hagenah, Vocational Interest Measurement (Minneapolis: The University of Minnesota Press, 1955).

[4]Douglas Fryer, The Measurement of Interests (New York: Henry Holt and Company, 1931).

excellent Appraising Vocational Fitness.[1] These volumes cover extensively the nature of interests and the development of interest-measuring devices. Numerous books and articles have been written about the Strong Vocational Interest Blank—its use, its validity, its reliability, and its limitations. One needs only to consult the Mental Measurement Yearbooks[2] to find this impressive list of research.

The writer concerned himself with a survey of the literature dealing directly with the problem of developing a scoring key for art teachers. Little has been done with tests and measurements in the area of art. Strong has developed a key for artists for his interest blank. This key was based upon men who were professional artists (painters, commercial artists, sculptors, and cartoonists). Kuder has developed his scale for measuring preferences in broad areas of general interest—among them an area called "artistic." But here the area is a general one and is not related specifically to art teaching. Other art tests have attempted to measure art ability or appreciation, but without too much success.[3] Nothing has been done

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[1] Donald E. Super, Appraising Vocational Fitness (New York: Harper and Brothers, 1949).

[2] O. K. Buros (ed.)., Mental Measurement Yearbook (New Brunswick, N.J.: Rutgers University Press, 1938), pp. 1179–80; ibid., 1940, pp. 1679–82; ibid., 1949, pp. 646–53.

[3] Ibid., 1940, pp. 1679–82; ibid., 1938, p. 894; ibid., 1940, pp. 1323–40; ibid., 1949, pp. 171–79; Walter S. Monroe (ed.).,

relative to measuring interest in teaching of art in the public
schools.

Strong's Vocational Interest Blank seemed to offer the
best starting point for research into interests of this particular
group of teachers. The blank is based upon the interests of
people successfully employed in occupations and has been under-
going constant refinement for nearly thirty years. It is keyed to
specific occupations, and although the trend in counseling favors
the use of general interest areas, the writer felt that knowledge of
specific areas of interest might reveal more clearly generalized
patterns of interest on the Strong blank, and that further research
in art education could make better use of a specific interest-
measuring device than of an instrument measuring only in the
general area of artistic activity. It seemed to the writer that
further refinement of the Strong inventory offered the best possi-
bilities for art education. Kuder's Record already has developed
a broader "artistic" measurement which measures relatively pure
interest factors in the general area of interest in artistic activities,
and, although research with this instrument in the field of art

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Encyclopedia of Educational Research (New York: The Macmillan
Company, 1952), pp. 64–72.

education can be contemplated, it did not offer the better possibilities for this study.

The problem under consideration was concerned with the assisting of students interested in art in making a decision between entering the profession as producing artists or as teachers of art. It was felt that the Strong Vocational Interest Blank offered the best possibility for counseling those students. It has been used widely and is a well-established testing device. It compares the interests of those taking the test with the interests of those already engaged in the occupation under consideration. It deals more specifically with the problem considered here than does the Kuder Preference Record which measures in the area of general artistic interest. With continued use and refinement the Strong Vocational Interest Blank offers possibilities for interest measurement in the area of art teaching—an area which has been neglected heretofore.

The Strong Vocational Interest Blank and the Kuder Preference Record are the two most widely used vocational inventories among educational institutions and industrial concerns. There are distinct advantages in both, and perhaps the best counseling service is one in which both would be used. The preference of one over the other seems to depend upon the desired degree of refinement in measuring interests and upon the required saving in cost of scoring.

Both are valid and useful tests, having undergone much research and practical application through use. But the two tests cannot be interpreted as measuring the same things and, therefore, should not be used as substitutes for one another. Although Triggs,[1] Wittenborn and Triggs,[2] Anderson,[3] and Peters[4] found some intercorrelation between interest tests, these similarities were so small as to make questionable the exchange of one test for the other.

That the Strong Vocational Interest Blank is recognized as a valid and reliable instrument for measuring interests is borne out by the literature. Among those who speak favorably to this point are Bordin,[5]

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[1] Frances O. Triggs, "A Study of the Relation of Kuder Preference Record Scores to Various Other Measures," Educational and Psychological Measurement, 3:341–54, 1943.

[2] J. R. Wittenborn, Frances O. Triggs, and Daniel B. Feder, "A Comparison of Interest Measurement by the Kuder Preference Record and the Strong Vocational Interest Blank for Men and Women," Educational and Psychological Measurement, 3:239–57, 1943.

[3] Roy N. Anderson, "A Comparative Study of Three Vocational Interest Tests," Psychological Clinic, 22:117–27, 1933–1934.

[4] Edwin F. Peters, "Vocational Interests as Measured by the Strong and Kuder Inventories," School and Society, 55:453–55, 1942.

[5] Edward S. Bordin, Fourth Mental Measurement Yearbook (Highland Park, N.J.: The Gryphon Press, 1953), p. 748; Edward S. Bordin, "A Theory of Vocational Interests as Dynamic Phenomena," Educational and Psychological Measurement, 3:49–65, 1943.

Darley,[1] Carter,[2] Myers,[3] Kuder,[4] Bingham,[5] Patterson,[6] Anderson,[7] Super,[8] and McArthur.[9] In general, indications are that though the Strong Blank has faults, it is a useful tool in counseling. It would appear from comparative studies such as those of Patterson[10] and Anderson[11] that the Strong Interest Blank is more subtle in its interpretation and does what it purports to do better than most interest inventories. Although the Strong Vocational Interest Blank has

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[1] O. K. Buros (ed.), The Third Mental Measurements Yearbook (New Brunswick, N.J.: Rutgers University Press, 1949), pp. 633–56.

[2] Ibid.   [3] Ibid.

[4] Ibid.

[5] Walter V. Bingham, Aptitudes and Aptitude Testing (New York: Harper and Brothers, Publishers, 1937), pp. 72, 357.

[6] Donald G. Patterson, ''Vocational Interest Inventories in Selection,'' Occupations, 25:152–53, 1946–1947.

[7] Roy N. Anderson, ''A Comparative Study of Three Vocational Interest Blanks,'' The Psychological Clinic, 22:117–27, February–March, 1933–1934.

[8] Super, pp. 407–44.

[9] Charles McArthur, ''Long-Term Validity of the Strong Interest Test in Two Sub-Cultures,'' Journal of Applied Psychology, 38:346–53, October, 1954, p. 352.

[10] Patterson, pp. 152–53.

[11] Anderson, pp. 117–27.

shortcomings, it is a good available device for measuring art interests. The addition of a key for measuring the interests of art teachers would make a worthy contribution to the field of art education. Since nothing else had been done in this area, the development of such a key would be a start towards further research in art and teaching.

One of the questions which arose in the administration of such a test as the Strong Vocational Interest Blank concerned the degree of fakability on the returns. The art teachers used in this study gave of their time willingly. Most of them were unfamiliar with the Strong Vocational Interest Blank. Furthermore, since only one teacher did not ask for a summary of the completed study, it was assumed that nearly all were interested enough to have been sincere in their answers. Because there were no personal contacts in the relationship between tester and testee, there was no reason for the teachers to favor the art responses. The literature[1] concerning

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[1] H. C. Steinmetz, "Measuring Ability To Fake Occupational Interests," Journal of Applied Psychology, 16:123–30, 1932; Orin H. Cross, "A Study of Faking on the Kuder Preference Record," Educational and Psychological Measurement, 10:271–77, 1950; W. Scott Gehman, "A Study of Ability To Fake Scores on the Strong Vocational Interest Blank for Men," Educational and Psychological Measurement, 17:65–70, 1957; G. Frederic Kuder, "Expected Developments in Interest and Personality Inventories," Educational and Psychological Measurement, 14:265–71, 1954; Edward J. Durnall, Jr.,

this question indicated that such tests can be faked, but that, unless motivated into a situation requiring faking, most subjects will respond honestly. It was assumed, therefore, that the effect of faking was negligible upon the returns used in this study.

This study followed the procedures for the construction of keys for the Strong Vocational Interest Blank as established by Strong.[1] Much work has gone into the refinement of the instrument and into the scoring method since its first appearance. The literature indicated some disagreement with the use of multiple scoring weights as opposed to unit scoring weights. T. C. Kelley introduced weighted scoring of test items in 1914, basing them upon the judgment of specialists. Cowdery used a formula presented in class by Kelley, and this in turn was adopted by Strong using a method based upon the interests of people successfully employed in various occupations. In refining this method, Strong reduced the range of weights from

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"Falsification of Interest Patterns on the Kuder Preference Record," Journal of Educational Psychology, 45:240–43, 1954; Howard P. Longstaff, "Fakability of the Strong Interest Blank and the Kuder Preference Record," Journal of Applied Psychology, 32:360–69, 1948; A. L. Benton and S. I. Kornhauser, "A Study of 'Score Faking' on a Medical Interest Test," Journal of the Association of the American Medical College, 23:57–60, 1948; Strong, Vocational Interests of Men and Women, pp. 401–2, 683–90.

[1] Edward K. Strong, Jr., and H. D. Carter, "Efficiency Plus Economy in Scoring an Interest Test," Journal of Educational Psychology, 26:579–86, 1935.

±30 to ±15. Later, in 1934, after Kelley had revised his old formula, the weights were further reduced to a range of ±4, since the results of Strong and Carter's study on optimum weights indicated a negligible effect on reducing the scoring weights to ±4. Since Kelley believed his revised formula was better than the original, and since the findings of the above study tended to substantiate Kelley's belief, Strong accepted Kelley's revised formula and reduced the range of weights to ±4. He felt the slight loss (considered negligible) in discrimination value from ±15 was offset by the decrease in scoring time and costs.

Recent investigations have attempted to simplify the weighted scores still further, using a unit weight of ±1 instead of the multiple weights of ±4. Dunlap[1] found that the Strong Blank could be scored with the simplified keys with only a few alterations of half a letter grade and none of more than a whole grade. In addition there would be a savings of from 60 per cent to 90 per cent in scoring time. Using a test group of several hundred men from the Universities of Rochester and Minnesota and from IBM personnel, he correlated the results of their tests by both the unit-weight and multiple-weight keys. By regression equations, prediction of "original" scores from "simplified" scores was made. He substituted the "simplified" scores of his control groups in the equations and estimated the "original" scores. Correlations between

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[1] Jack W. Dunlap, "Simplification of the Scoring Key of the Strong Vocational Interest Blank," Psychological Bulletin, 37:450, 1940.
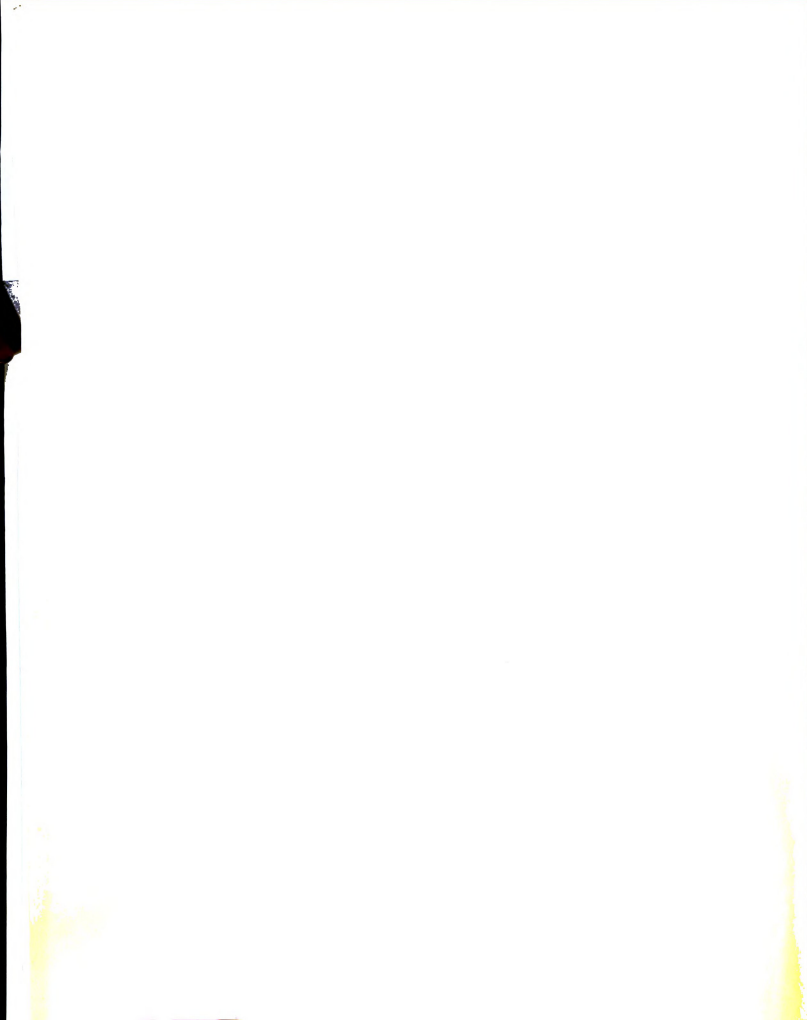
estimated scores and the original scores in the control groups ranged from .942 to .981. In 410 cases of 1,764 a letter grade was shifted a half step; in 10 cases, a whole step; advice given subjects would be altered in only one case in twenty-two. A joint study by Peterson and Dunlap[1] seemed to bear out Dunlap's conclusion. To check Dunlap's simplified scoring method with high school students, Lester and Traxler,[2] using 211 twelfth-grade boys, found correlations of .923 to .983 on twelve scales. About two-thirds of the letter grades remained the same, 32 per cent changed one-half step, and a negligible number changed a full grade (1/3 of 1 per cent). But they found, as did Dunlap and his associates, that this change, though quite small, was critical in the B+ to B− group (since important positive interests on the Strong Blank are reflected in the B to A patterns only) and that these people, in counseling situations, might have to be rescored by the original method. Another study by Kogan and Gehlmann,[3] to verify Dunlap's findings, produced

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[1]B. M. Peterson and J. W. Dunlap, "A Simplified Method for Scoring the Strong Vocational Interest Blank," Journal of Consulting Psychology, 5:269–74, 1941.

[2]Helene Lester and Arthur E. Traxler, "Simplified Method for Scoring the Strong Vocational Interest Blank Applied to a Secondary-School Group," Journal of Educational Psychology, 33:628–31, 1942.

[3]Leonard Kogan and Frederick Gehlmann, "Validation of the Simplified Method for Scoring the Strong Vocational Interest Blank for Men," Journal of Educational Psychology, 33:317–20, 1942.

approximately similar results. The scores of 208 freshmen at the University of Rochester yielded correlations of .957 to .989, with 74 per cent retaining the same letter grade, 25 per cent shifting a half grade, 1 per cent moving a whole grade. Only 3.4 per cent shifted downward from the critical area of B+ to B—, which led the authors to conclude that the simplified method was as accurate as the original method.

Strong, however, has contended that the unit weights are not as discriminating as the multiple weights. One might surmise that since he consented to reducing the scale from ±30 to ±4, he would accept a further reduction for the sake of simplifying his scoring procedure. In a study using both methods of scoring,[1] he found that correlations of the two scales on ten occupations yielded an average of .92 (ranging between .837 and .982). The unit scales did not, however, differentiate occupational groups from one another as well as did the weighted scales. Whereas 10 per cent of the architects, for example, rated A on the lawyer scale when the weighted scale was used, 30 per cent were so rated when the unit scale was employed. This represented three times as much overlapping. Of seven comparisons of A ratings, overlapping increased on an

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[1]Edward K. Strong, Jr., ''Scoring an Interest Test,'' The Psychological Clinic, 19:63–72, 1930–1931.

average more than three times. Furthermore, twice as many men definitely would be rated as not belonging to a group to which they do not belong when the weighted scales were used as when the unit scales were used.

In another later study Strong[1] took a longer and more careful look at the problem of weighted scales versus unit scales. Here he raised the question of how much reduction in validity is possible before reaching the invalid point; that is, how much validity must be sacrificed for convenience of scoring any instrument which had been devised in the beginning for as high a degree of validity as possible. He reviewed the major findings of Dunlap and others: (1) that scores on the two scales correlated .90 or higher with one another, (2) that there was over 70 per cent agreement in the ratings on the two scales, and (3) that such errors as did occur were relatively unimportant. In nine reports these studies had yielded an average coefficient of correlation of .961; in Strong's own studies the average correlation was .945. As he pointed out:

> These coefficients look very high, but when expressed in terms of per cent of efficiency, i.e., per cent better than chance, they become seventy-two and sixty-seven per cent,

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[1] Edward K. Strong, Jr., "Weighted vs. Unit Scales," _Journal of Educational Psychology_, 36:193–216, 1945.

respectively. On such a basis we cannot accept unit scales as equivalent to weighted scales.[1]

Furthermore, Strong[2] pointed out, Dunlap and his associates used an indirect method of estimating the norms, which should be based upon the scores of the criterion group or another similar group. In this way they showed about 3 per cent more agreement than actually occurred. Rescoring the critical B+ to B— group would necessitate twice scoring about 15 per cent of the tests. The range of variability of agreement from one scale to another was from 26 per cent to 95.7 per cent, and the general tendency was for a shifting upward on the unit scale (24.2 per cent of the students rated up one letter grade and up; 37.9 per cent of the librarians rated up one letter grade and up). He found also that there was a difference when measurement of agreement was in terms of scores and not in terms of letter ratings; i.e., YMCA secretary scores among students indicated 90 per cent agreement in letter ratings, but only 32.5 per cent agreement when measured in one-half sigma steps over the whole range of scores; the reason being that 84.5 per cent of weighted and 80 per cent of unit scores

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[1]Ibid., p. 196.

[2]Strong, Vocational Interests of Men and Women, pp. 623–33.

were C ratings and all shifts between scores within the C— range
were ignored when measuring agreement by ratings. Strong felt one
cannot ignore the scores lower than B—, as Dunlap and others had
done. By rescoring six scales on both the weighted and unit scales,
Strong found confusion in counseling would result in one of six
cases, not one in thirty-three as Dunlap had proposed. He con-
cluded, therefore, that percentages of agreement between ratings
was consequently a precarious method of comparing two scoring
procedures, for the percentages obtained had to be evaluated in
terms of the mean score of the blanks used. In calculating the per-
centage of overlapping between a group and the criterion group on
both unit and weighted scales, he found that weighted scales differ-
entiated these groups an average of 5.2 per cent better than unit
scales; and that in ten of the twenty-nine comparisons made, unit
scales were less valid by 6 to 16 per cent; and in two comparisons,
by 12.5 per cent to 16 per cent.

Kuder[1] and McCornack[2] supported Strong's contention that
multiple weights were as effective, if not more so, than unit weights.

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[1] Frederic G. Kuder, "A Comparative Study of Some Methods
of Developing Occupational Keys," Educational and Psychological
Measurement, 17:105–14, 1957.

[2] Robert L. McCornack, "Sex Differences in the Vocational
Interests of a Professional Group (Social Workers)," (unpublished doc-
toral dissertation, University of Minnesota, Minneapolis, 1954).

After an exceedingly thorough study of this problem with some 1,183 male and female social workers, McCornack produced evidence from which he concluded:

> These results are in complete agreement with Strong's conclusion that his multiple-weighting procedures produce keys which are superior in discriminating power to those which use unit weights. Not only were these results statistically significant, but also the differences in favor of multiple-weight keys were large enough to be of practical importance.[1]

McCornack keyed his groups to multiple weights and to two self-devised unit-weight scales. The multiple-weighted key produced overlappings of much smaller magnitude which were definitely superior statistically (i.e., 16 per cent vs. 22 per cent, 15 per cent vs. 21 per cent; the smaller the percentage of the overlapping the greater effectiveness). His correlations between scales averaged about .98 as compared to Dunlap's .961, which would seem to agree with Dunlap's findings on correlations, but his data on overlappings definitely substantiated Strong's argument that agreement between correlations of letter ratings does not mean that the two scales are as valid in terms of total scores.

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[1] Ibid., p. 88.

In developing keys for industrial arts teachers and for psychologists, Cooper[1] and Kriedt[2] both felt that the evidence favored the multiple-weighted procedure which they used in their studies with the Strong Blank.

This apparent controversy over the weighting of keys seemed to have as its objective the saving of time and money. Evidence was lacking that the unit weight would produce better results in interpreting the data. Quite the contrary, some studies showed the unit weight was as good as the multiple weight at times and usually not as effective. There would be no value, then, from this standpoint, in reducing the scoring weights from the original scale. The basic objective of saving time in scoring was proposed by Dunlap and others as a sincere desire on their part to make the Strong Interest Blank more attractive to those who admit to using other interest inventories because they are easier to score. Super[3] felt

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[1] Charles E. Cooper, Jr., "Vocational Interests of Industrial Arts Teachers" (unpublished doctoral dissertation, University of Missouri, Columbia, 1953).

[2] Philip H. Kriedt, "Differential Interest Patterns of Psychologists" (unpublished doctoral dissertation, University of Minnesota, Minneapolis, 1949).

[3] Super, p. 413.

that this was a major point among school personnel in the selection

of an interest test, but he then pointed out that:

> When the cost is approximately one dollar per case (to use the Strong Blank) the price of greater validity does not seem unduly high. Public Schools and other institutions spend far more per pupil on things of less significance than finding out what kinds of educational and vocational activities are most likely to challenge them.[1]

As Strong pointed out:

> The conclusion must be at this time that if maximum differentiation is desired, weighted scales should be used in preference to unit scales. And seemingly if weighted scales differentiate occupations better than unit scales they should also provide better scores for vocational counseling. We do not know, but we can surmise, that the difference in ratings between the two types of scales which all investigators have found are expressions of the differences in the two scales as regards differentiation of occupations. . . . Shall we insist upon maximum accuracy with present cost of scoring or content ourselves with less accuracy and half the cost? Dunlap argues for the simpler scoring procedure because it permits testing more people. . . . Another correspondent stresses the desirability of making unit scales available for the Vocational Interest Blank, else some people will use inferior tests which are easy to score. If the present cost were one hundred dollars, some decreased accuracy might be justified for the sake of cutting the cost in half. But when the present cost is a dollar, one wonders about saving fifty cents at the expense of inaccurate counselling to some people. Is it worth the chance of error?[2]

It was concluded, therefore, that although there existed some

controversy over the matter of the optimum weights of scales, the

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[1] Ibid., p. 413.

[2] Strong, Vocational Interests of Men and Women, p. 632.

art teachers scale should be developed with multiple weights. The multiple-weighted scale would be as good as, or better than, a unit-weighted scale. Future research should be done in this area in an honest endeavor to reduce the cost of scoring the Strong test. Furthermore, the cost of scoring and the time saved would not be reduced when the IBM tabulator was used, for the size of weights is immaterial. Hand scoring would be facilitated by reduction in size of weights. Since this study was tabulated with IBM equipment at the University of Minnesota and since the validity of the data would not be increased by unit weights, the writer decided in favor of the multiple-weighted key. Moreover, this key should be in keeping with other already established keys approved by Strong. If future research warrants a change to unit scales, all the existing keys could be converted from the present ±4 scale without too much difficulty. For this study it would not have been more practical nor more accurate to have used the unit-weighted scale as it is presently proposed.

How large would a criterion group need to be in order to establish the most valid key for art teachers? In his early investigations Strong deemed 100 to 150 cases sufficient, but later he felt that this figure should be raised to 250. He[1] found that in a

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[1]Ibid., pp. 639–41.

comparison of lawyers only 64 per cent of a second sample would rate A instead of 75 per cent on the original scales when the norms were based upon the first sample of one hundred cases. In addition to his own findings, he was supported by the research of Manson.[1] Eight of her scales were based upon 250 cases and two upon 500 cases. She found that 250 cases were sufficient for a criterion group as new cases obtained 97 per cent as many A ratings as the criterion groups.

Strong's[2] most convincing investigation involved eleven groups of engineers of 50 cases each. He chose these groups carefully so that there would be equal representation from the various branches of the profession. Nine scales were developed, based on groups ranging in size from 50 to 500 cases. As the criterion group was increased in size, the correlations between the scores of this group and the scores of a group of 500 independent cases increased in size from .85 (scale of 50 cases) to about .99 (scale of 400 cases). The scale for 150 cases produced a coefficient of .956 which might have appeared as sufficient as those of larger groups. However,

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[1] G. E. Manson, "Occupational Interests and Personality Requirements of Women in Business and the Professions," Michigan Business Studies, Vol. 3, No. 3, 1931.

[2] Strong, Vocational Interests of Men and Women, pp. 642–49.

when the correlations were converted into coefficients of forecasting efficiency, a group of 400 forecast the results to be obtained with a group of 500 much more accurately than did a criterion group of 50 (.839 vs. .475). This correlation was .71 with 150 cases, .74 with 250 cases, .80 with 300 cases, and .84 with 400 cases. He found that the error in using a criterion group of 250 instead of 400 or 500 cases amounted to from one to two standard scores, and increased to from two to eight standard scores with 100 cases, and to larger amounts with a criterion group of only 50 cases. He also compared the percentages of overlapping between samples from two different occupations and found that differentiation between two occupations could not be accurately determined by scoring both on a scale based on less than 250 cases. Strong, therefore, concluded that criterion groups of 300 to 500 cases were needed in order to decrease the sampling errors, and that scales using 400 to 500 cases would yield more accurate results.

This study used some 335 cases as the criterion group. This is as large a number as some which were used to establish keys, but it is smaller than others. Kriedt and McCornack used over a thousand, but Cooper used only a few over two hundred. Strong expressed an opinion that the greater the number of cases the better the study would be. His investigations of optimum

numbers of cases would bear this out. However, for this study, the 335 cases fell within the range of satisfactory numbers and represented over 80 per cent of eligible cases in the three-state area canvassed. The cross-validation group of 93 could be added in establishing norms if so desired, giving a total of 428 cases. This could be done since the scores of the two groups correlated so closely. A review of the literature indicated that this might be the better procedure for establishing the norms for the art-teachers scale, but that 335 cases were sufficient in number for establishing the scoring key.

CHAPTER III

METHODS AND PROCEDURES

Selection of Subjects

The criterion for selecting the subject group was that set up by Strong.[1] Accordingly, the art teachers used in this study:

1. Had at least three years' experience as art teachers in elementary or secondary schools.

2. Were less than sixty years of age.

3. Were college graduates.

4. Were earning more than $2,500 a year as teachers (although this is no longer a meaningful restriction).

5. Indicated that they intended to remain in the occupation.

The male elementary and secondary art teachers in the states of Illinois, Michigan, and Missouri were chosen as the group to be surveyed for the development of this scale. The group was considered to be sufficiently large in numbers and appeared to be representative of such art teachers as to serve as a satisfactory

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[1] Edward K. Strong, Jr., Vocational Interests of Men and Women (Stanford, Calif.: The Stanford University Press, 1943), pp. 63, 694.

basis for the scale. This three-state area was selected because name lists were available and effective contacts could be made with the state art supervisors in Illinois and Missouri, and with the secretary of the Michigan Art Education Association, since no state art supervisor existed in Michigan. Although the population was limited to this three-state area, one may surmise these teachers were representative of teachers throughout the nation. They came from large and small schools, from cities, towns, and villages of various economic levels. They represented teachers working in areas of great art interest and in areas of little art interest. They included teachers working individually without supervision and teachers working with many colleagues under supervision. Although this study was limited to the three-state area of Illinois, Michigan, and Missouri, it was felt that the criterion group was representative of art teachers in all states. Super[1] suggested that interests may differ regionally ——that Midwest teachers might not respond similarly to Eastern teachers——and that studies should take this into account in their samplings. The completeness of the sampling for this study (as shown in Table II) established the criterion group as representative of this group of

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[1] Donald E. Super, Appraising Vocational Fitness (New York: Harper and Brothers, 1949), pp. 417–18.

art teachers. The close correlation of the results of the cross-validation group of Eastern teachers and this key group suggested that insofar as these two groups were concerned, Super's regional differences did not manifest themselves. However, this suggests the possibility of a study of interest patterns of specific occupations in various regions.

A presurvey was made of the possibility of using those teachers from every state who could meet the criterion. This was not feasible from a financial and time standpoint. Contacts were difficult to make and little incentive to answer the test was to be found for those from faraway states. Another plan was to use a larger geographical division, but this was rejected in favor of using a more limited area and in concentrating efforts toward securing a more complete return of those polled. A more complete coverage of a smaller area was thought to yield a more representative sample than a less complete coverage of a larger area, since a greater percentage of the total population could be secured. The selected three-state area offered the best possibility and became, therefore, the subject area for this study.

For cross-validating purposes a group of art teachers from the Eastern Arts Association was selected by the same criterion used for the key group. This list was furnished by the secretary

of the Eastern Art Association (at the time, Mrs. Lillian D. Sweigart of Kutztown, Pennsylvania). This group was considered sufficiently large in number and similar enough to the key group to be representative of the same type of teacher and teaching situation. Although they came from a different region, which according to Super might effect results on interest tests, the results correlated so closely one might surmise that, at least with art teachers, this scale tended to show that art teachers, even though from different regions, were inclined to have the same pattern of interests.

Data-Collection Procedures

The state art supervisors of Illinois (Mr. William Bealmer of Springfield, Illinois) and of Missouri (Mr. Alfred Bleckschmidt of Jefferson City, Missouri) and the secretary of the Michigan Art Education Association (Mr. John Linden of Midland, Michigan) were contacted and asked for lists of art teachers who met Strong's criteria in their respective states. This was the first step in selecting those teachers who qualified for this study: a selection made by men who knew these teachers. This was easier to do in Illinois and Missouri since the state supervisors had access to the offices of the state superintendents of public instruction. However, because of his personal contacts with art education in Michigan, the writer was able

to compile an accurate and complete list for Michigan with the assistance of the secretary of the Michigan Art Education Association. The tables on returns verified the thorough canvass made and the accuracy of the predetermined lists.

Each subject was mailed a Strong Vocational Interest Blank for Men (Appendix A), a Hankes' Answer Sheet (Appendix B), a personal data sheet (Appendix C), a stamped return envelope, and a letter explaining the study (Appendix D). The personal data sheet requested data for verification of the criterion group—age, salary (above or below $2,500), years of college training, degrees held, years employed as an art teacher, and a statement of intent to continue teaching. A definite figure for salary was not requested because the writer felt the $2,500 criterion minimum was no longer valid. Today most teachers make over $2,500 and nearly all teachers are on an automatic salary schedule. (Only one reported less, and he taught as a Brother in a parochial school.) The only requirement here was to check the salary as being above or below the $2,500 criterion. Many returns gave exact salaries, but, though interesting, these data were not pertinent to the study.

The original mailing was made March 7, 1958. All correspondence was kept on a rather personal basis with the hope that this would elicit a more prompt reply. Three follow-ups were made

to the key group; two to the validating group. Toops[1] developed this method of repeated follow-ups to maximize the percentage of returns. It was successfully used by McCornack in his study of social workers.[2] The first follow-up was made March 26, 1958, to all subjects who had not responded to the original letter (Appendix E). The second follow-up was made April 25, 1958 (Appendix F). The third follow-up was made May 17, 1958 (Appendix G). In all cases the content of the letter was "personalized" as much as possible. In several cases duplicate materials had to be sent to those who responded to the follow-up letters because the original material had been misplaced or thrown away. The follow-up procedure definitely brought greater response than waiting would have done.

Although it was not pertinent to the study, it was interesting to note here that only one person in the several hundred respondents did not want a summary sent to him when the study was completed. This might be interpreted as indicating a sincere interest in the study on the part of those who participated in it.

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[1] H. A. Toops, "Validating the Questionnaire Method," Journal of Personnel Research, 2:153–69, 1923.

[2] Robert L. McCornack, "Sex Differences in the Vocational Interests of a Professional Group" (unpublished doctoral dissertation, The University of Minnesota, Minneapolis, 1954), p. 22.

Both Erlandson[1] and McCornack[2] suggested that in the instructions for Part VI of the Strong Vocational Interest Blank (Appendix A) the words "three," "three," and "four" be marked in some conspicuous way in order to decrease the number of mistakes made in filling out this section of the blank. This was done, and the results proved very satisfactory. There were few errors made in these items.

Analysis of the Returns

The complete list of teachers to be contacted included 196 from Illinois, 154 from Michigan, and 52 from Missouri, making a grand total of 402 from the three-state area. Of this number 345 were returned, of which 10 were unusable for various reasons. This left a total of 335 returned blanks which could be used for developing the scale, as indicated in Table I. The low number of unusable returns was due, perhaps, to the careful screening of the subjects before the material was sent to them.

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[1] F. L. Erlandson, "The Vocational Interests and Personality Traits of Male Social Workers" (unpublished doctoral dissertation, The University of Minnesota, Minneapolis, 1951), p. 23.

[2] McCornack, p. 28.

TABLE I

POPULATION OF THE STUDY

State	Original List	Total All Returns	Pct. All Returns	Unusable Returns	Total Usable Returns	Pct. Usable Returns
Illinois	196	169	86	7	162	83
Michigan	154	136	88	3	133	86
Missouri	52	40	77	0	40	77
Totals	402	345	86	10	335	83

The effectiveness of these data-collection procedures is shown in Table II. The blanks which were returned by the post office as undeliverable for various reasons were not included in the number of returns. Only those which actually reached the subjects were considered as contacts and were included in the 402 names. Thus the percentage of returns was based upon the number actually contacted. This has been done here, and the actual denominators used in computing percentage returns are

TABLE II

PERCENTAGE OF RETURNS FROM THE ORIGINAL
MAILING AND FOLLOW-UP LETTERS

Mailing	Group	No. of Returns	Pct. of Returns
Original letter	Illinois	104	61
	Michigan	86	63
	Missouri	32	80
		222	64
First follow-up	Illinois	57	34
	Michigan	37	27
	Missouri	2	5
		96	28
Second follow-up	Illinois	7	4
	Michigan	12	9
	Missouri	4	10
		23	7
Third follow-up	Illinois	1	1
	Michigan	1	1
	Missouri	2	5
		4	1
Totals	Illinois	169	
	Michigan	136	
	Missouri	40	
		345	

shown in Table I. It is impossible to say exactly how many individuals responded to each series of letters because a return and a follow-up letter may have crossed in the same mail. However, by allowing for a reasonable period to pass after each follow-up letter, the writer could approximate the number of responses to each letter. The percentages were approximately those shown in Table II.

Strong does not publish routinely percentages of returns for his criterion groups. However, in 1929 he indicated that he received 37 per cent, 38 per cent, and 31 per cent from three groups of engineers, and that he considered these percentages to be remarkably high. Erlandson received 83 per cent returns from a group of 75 social workers who were asked to take the Strong Vocational Interest Blank and the Minnesota Multiphasic Personality Inventory. However, the men in Erlandson's study received the request for cooperation from the school where they had received their MA degrees. McCornack received about 87 per cent returns from some 1,183 social workers used in his study with the Strong Vocational Interest Blank. These subjects had no particular ties with the requesting organization, although all correspondence was sent over the

signature of the director of the School of Social Work at the University of Minnesota. Seder[1] sent both forms of the Strong Vocational Interest Blank to groups of women physicians and life insurance saleswomen. She received only 28 per cent returns from the physicians and only 34 per cent returns from the saleswomen. In his study using 1,201 psychologists, Kriedt[2] received 89 per cent returns. Cooper[3] received some 80 per cent returns from 303 industrial arts teachers used in his study.

With the studies cited as background, it may be concluded that the percentage of returns for this study was satisfactorily high in comparison to these studies. It was obvious, also, that more follow-up letters would be of little value since the number of returns had dwindled to so few, as shown in Table II. Other information pertinent to the criterion for selecting subjects for this study is shown in Table III.

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[1]M. A. Seder, "Vocational Interest Patterns of Professional Women" (unpublished doctoral dissertation, The University of Minnesota, Minneapolis, 1938).

[2]P. H. Kriedt, "Differential Interest Patterns of Psychologists" (unpublished doctoral dissertation, The University of Minnesota, Minneapolis, 1949).

[3]Charles E. Cooper, Jr., "Vocational Interests of Industrial Arts Teachers" (unpublished doctoral dissertation, The University of Missouri, Columbia, 1951).

TABLE III

OTHER INFORMATION ON CRITERION GROUP

Information	Range	Mean
Years of college	4–12	5.3
Age in years	24–57	34.7
Years of teaching experience	3–35	9.0

This criterion group of teachers compared favorably with other criterion groups which were used for developing scales on the Strong Vocational Interest Blank. Their average number of years of college training was 5.3. This compared to Strong's[1] original groups: mathematics-science teachers 4.4 years, social-science teachers 4.4 years, city school superintendents 4.9 years. Cooper's[2] industrial arts teachers averaged 4.6 years, and Mc-Cornack's[3] social workers averaged 6.3 years. One might note the

[1] Strong, Vocational Interests of Men and Women, pp. 695–98.

[2] Cooper, p. 38.

[3] McCornack, p. 39.

wide range in college training of the art teachers as shown in Table III as compared to the average number of years. However, only one subject reported 11 years and only one reported 12 years; the rest ranged up to 8 years.

The average age for the art-teacher group was 34.7 years as compared to Strong's[1] mathematics-science teachers' 33.6 years, social-science teachers' 33.7 years, and city school superintendents' 46.5 years. Cooper's[2] industrial arts teachers averaged 41.6 years, and McCornack's[3] social workers averaged 39 years.

The art teachers averaged 9.0 years in teaching experience which compared to Cooper's[4] industrial arts teachers' average of 15.1 years, and McCornack's[5] social workers' 11.4 years. Without making a scientific inquiry into these figures, one might surmise that some of this difference may be attributed to the effects of the depression of the 1930's and to World War II. During this period of approximately fifteen years, the teaching of art as a special

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[1] Strong, pp. 695—98.

[2] Cooper, p. 38.

[3] McCornack, p. 37.

[4] Cooper, p. 38.

[5] McCornack, p. 43.

subject was all but deleted from the school curriculum. It has made a comeback only in recent years. Of necessity this would limit the number of years of experience of many art teachers. Another contributing factor was the relative dominance of women in art teaching until after World War II.

This criterion group resembled closely other criterion groups used in the development of scales for other occupations. Factors which were held constant by Strong were observed in the development of this scale. The number of cases used was smaller than some criterion groups but larger than others. Strong[1] now feels that the minimum number of cases should not fall below 250, and anything higher than that would be better. Through his own research and the findings of others, he concluded that if the scales are based on 300 cases instead of 250 cases, the sampling error would be decreased from about 1.5 standard scores to 0.9 standard score, and the overlapping between occupations would be more accurately determined by about 2 per cent. Scales based on 400 or even 500 cases would give still better accuracy. Since the art teachers group numbered 335 cases (with 93 additional for validation), it was felt that this group would compare favorably with the

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[1] Strong, Vocational Interests of Men and Women, p. 649.
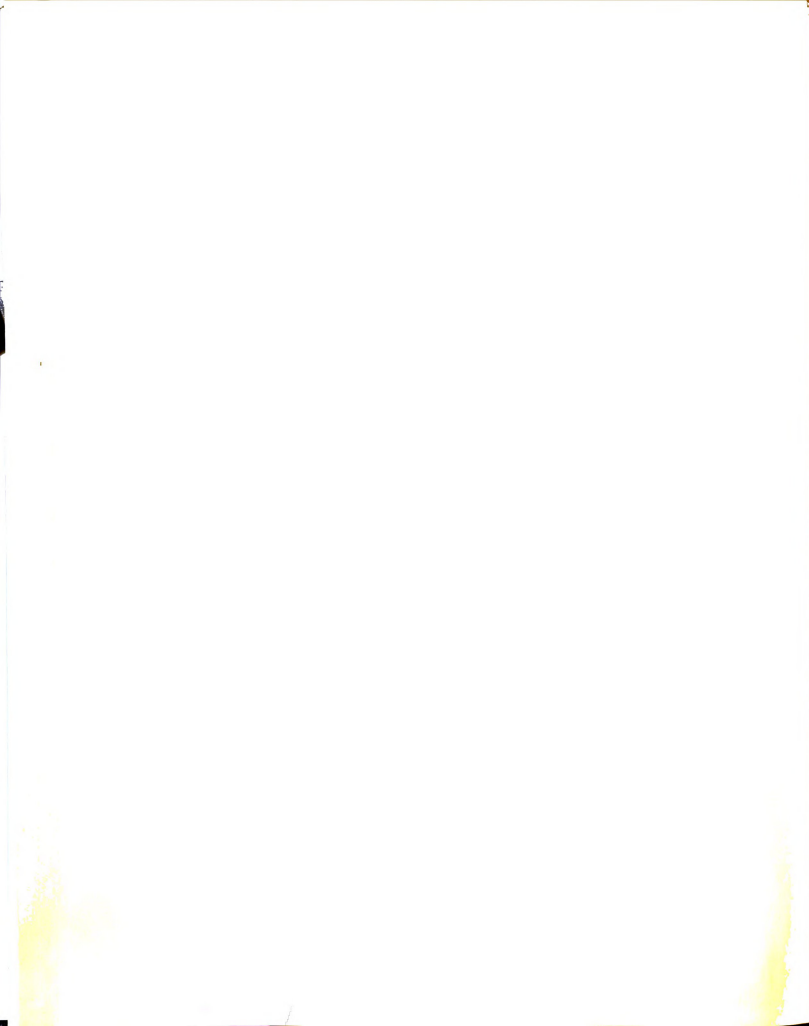
other criterion groups and would meet the requirement of sufficient numbers of cases.

With these facts in mind, the writer felt the analysis of the returns of the criterion group showed enough similarity to other criterion groups that it could be considered suitably representative of male elementary and secondary art teachers in Illinois, Michigan, and Missouri. Further use of the key developed may be necessary to determine how widely applicable the results may be.

Key Construction Procedures

The Strong Vocational Interest Blank contains four hundred items with the three possible responses of "like," "indifferent," and "dislike" (Appendix A). These four hundred items, in turn, are divided into eight separate groups. The four hundred expressed choices are combined into a summary score. The expressed answers are so weighted that the total score indicates to which occupational group the individual responding is similar. The person's score expresses how well his interests agree with the differential interests of the occupation.

As expressed by Strong:

The underlying philosophy of this procedure is that interests which are common to all are of little economic significance. . . . Consequently the interests which are significant for men in

a given occupation are the interests which set that occupation apart from the general run of men. These are the differential interests. One of the great contributions of the interest test has been its emphasis upon differential interests.[1]

It is the way in which a man differs from his fellows that determines wherein his best usefulness lies. Consequently in tests for guidance purposes the differences must be stressed.[2]

And again:

Men engaged in a particular occupation have a characteristic set of likes and dislikes which differentiate them from men in other occupations. The Vocational Interest Blank is a device by which such patterns of interests may be determined. By means of the test, it is possible also to ascertain the pattern of interests which a given individual's interest most nearly coincides, and hence the occupation for which he is presumably fitted so far at least as his interests are concerned.[3]

After it was assumed all the returns that could be expected were in, the first step in the treatment of the data was to make an item analysis of each blank. (Parenthetically, it might be of interest to note that only two additional returns have been received since the closing date.) The item analysis consisted of determining which of the three responses—"like," "indifferent," or "dislike"—the art teachers had made to each of the four hundred items on the blanks. Since this involved many thousands of responses to be tabulated,

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[1] Strong, Vocational Interests of Men and Women, p. 45.

[2] Ibid., p. 47.

[3] Ibid., p. 56.
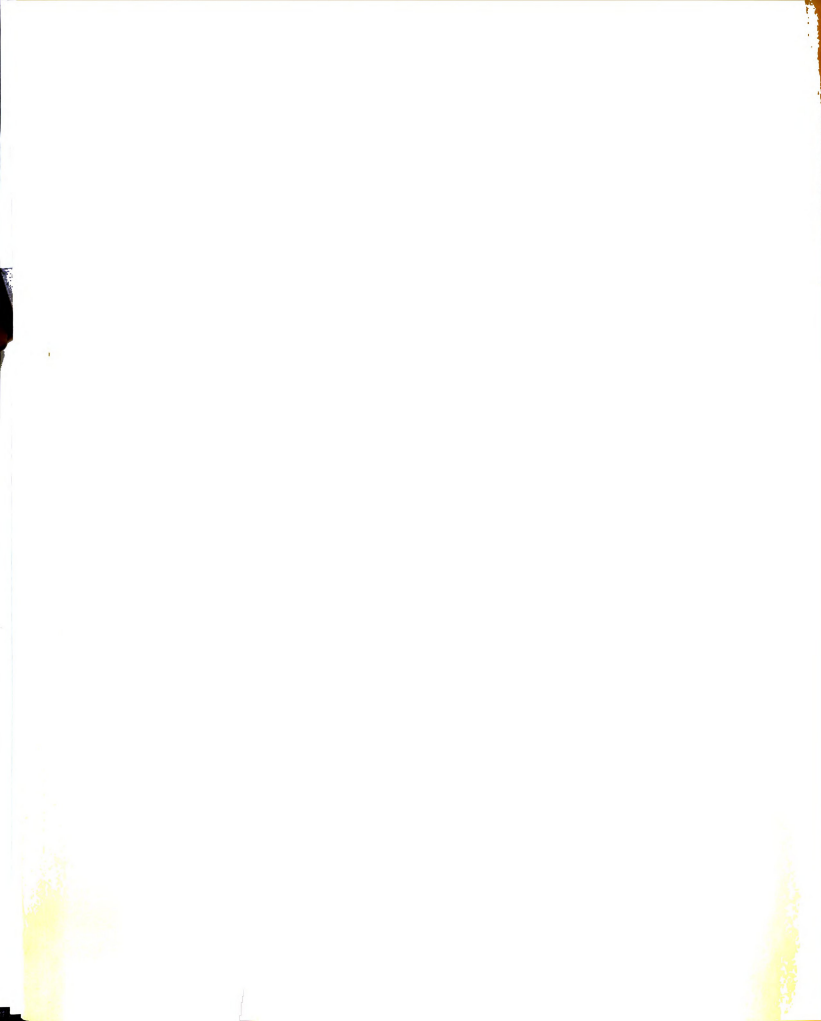
only a sample problem from the original data will be used here. The original data used in the study will be on file with Dr. Kenneth E. Clark, head of the Department of Psychology at the University of Minnesota.

Table IV is representative of the method of tabulating the responses from the blanks. Dr. Clark assisted in the tabulation of the data through the use of services which he can provide for such purposes at the University of Minnesota.

As shown in Table IV, the next step was to summarize the tabulation of the individual responses to each item. The number of "like" responses, "indifferent" responses, and "dislike" responses for each item was determined. The total number of responses was 335. The per cent of the total selecting each of these responses to each item was determined and summarized in Table V. Since these data involved six amounts for each item, or a total of 2,400 amounts, only a sample table is shown here, and full data will be found in Appendix H.

With the completion of the step shown in Table V, it was then possible to determine the weights for each response to all four hundred items. This step was necessary in constructing the scoring key for art teachers.
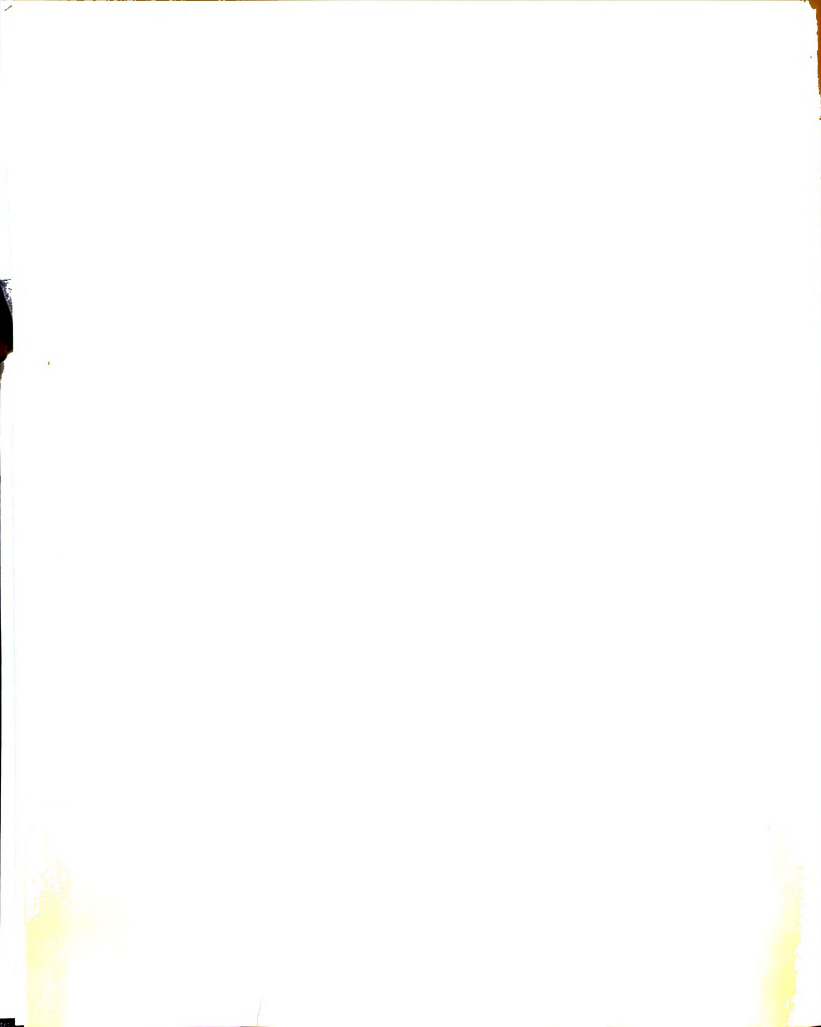
TABLE IV

TABULATION OF ITEM RESPONSES ON THE BLANKS[a]

Respondent Number	Item					
	1	2	3	. . .	399	400
1	I	I	L	. . .	L	D
2	I	L	L	. . .	L	I
3	D	L	L	. . .	L	D
. . .	. . .	. . .	. . .	. . .	. . .	. . .
335	I	L	L	. . .	D	L
Total L's	181	198	281	. . .	3	137
Total I's	111	107	47	. . .	149	171
Total D's	43	30	7	. . .	183	27

[a]Responses: L = like; I = indifferent; D = dislike.

TABLE V

NUMBER AND PER CENT OF ART TEACHERS
SELECTING EACH RESPONSE

Item	Response	Number	Per Cent
1	L	181	54
	I	111	33
	D	43	13
2	L	198	59
	I	107	32
	D	30	9
3	L	281	84
	I	47	14
	D	7	2

Table VI illustrates the calculation of percentages of response for the item "actor" of both art teachers and men-in-general. These data were required for the determining of the weight of each response.

In developing this table for determining weights, Strong relied upon the findings of Cowdery and Kelley.[1] Cowdery, in differentiating between physicians, engineers, and lawyers, used a formula presented in class by Kelley which called for a sixfold table (two

[1] Strong, Vocational Interests of Men and Women, pp. 603–22.

TABLE VI

CALCULATION OF PERCENTAGES FOR ITEM "ACTOR" FOR
ART TEACHERS AND MEN-IN-GENERAL GROUPS

Response (Item 1, Actor)	Men-in-General		Art Teachers	
	No.	Pct.	No.	Pct.
Like	997	21	181	54
Indifferent	1,519	32	111	33
Dislike	2,230	47	43	13
Totals	4,746	100	335	100

groups, three responses each) in which numbers of responses to
"like," "indifferent," and "dislike" of any two compared groups
were tabulated (i.e., medical vs. nonmedical). Cowdery made the
assumption that the exact relations between the three divisions of
attitude towards an item were not known and that the attitude
"indifferent" did not represent the same relation as "like," and
"dislike." He therefore combined the "indifferent" responses with

the "likes" or "dislikes" (depending upon which he felt the "indifferent" attitude favored). This resulted in a fourfold table in which the middle attitude was combined with one or the other extreme. With this information available, Cowdery, by the use of Kelley's formula, could determine the weight of each item.

Strong made two changes in Cowdery's procedure. He expressed all data in terms of percentages, thus automatically expressing the population of each group as 100. Whether we happen to have 500 art teachers and 900 psychologists, or some other number, both occupational groups will be considered to have 100 cases and these 100 cases will be contrasted with 100 cases representing men in general. Strong then was able to reduce Cowdery's formula to:

$$\text{Weight} = 10 \frac{\emptyset}{(1-\emptyset^2)\sigma}$$

$$\text{Where } \emptyset = \frac{a-c}{\sqrt{(a+c)\ (b+d)}}$$

$$\text{and } \sigma = 1/2 \sqrt{(a+c)\ (b+d)}$$

Table VII shows an example of the combining of responses for determining the weights—in this case, the "like" response to the item "actor"—for the two groups.
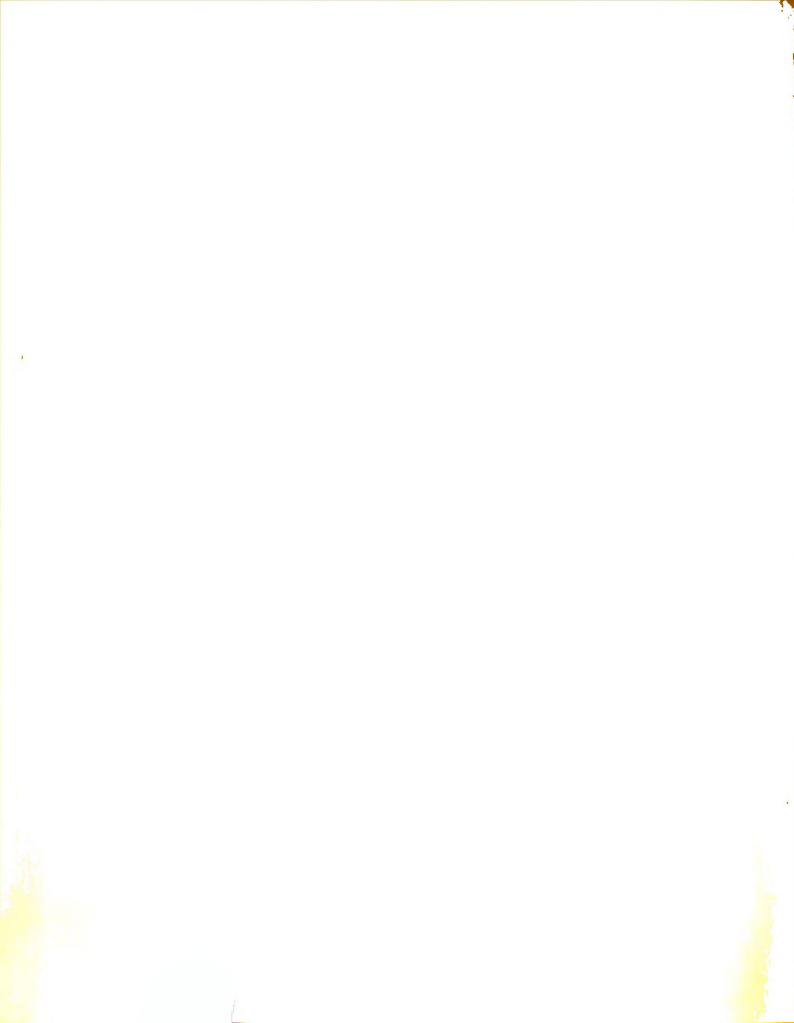
TABLE VII

**FOURFOLD TABLE FOR DETERMINING WEIGHT OF
"LIKE" RESPONSE TO ITEM "ACTOR"**

Response (Item 1, Actor)	Men-in-General		Art Teachers	
	No.	Pct.	No.	Pct.
Like	997	21] a	181	54] c
Indifferent	1,519	32]	111	33]
Dislike	2,230	47] b	43	13] d
Totals	4,746	100	335	100

By applying the data shown in Table VII to Strong's formula, the weight of the "like" response for this example may be calculated.

a	.21	.79	b	= (1.00)
c	.54	.46	d	= (1.00)

$$\emptyset = \frac{.54 - .21}{\sqrt{(.21 + .54)\ (.79 + .46)}} = .338$$

$$\sigma = 1/2\sqrt{(.21 + .54)\ (.79 + .46)} = .484$$

$$W = 10\ \frac{.338}{(1 - .338^2)\ .484} = 8\ \text{(rounded off to nearest whole number)}$$

The score 8 on the old scale is changed to 3 on the new scale (using the table which appears below) and is given a plus sign because more art teachers liked this item than did men-in-general. In this example, the combining of "indifferent" and "dislike" scores was done to compute the weight of the "like" response. When the weights for the other responses are to be computed (e.g., "indifferent") the scores of the other two responses are combined ("like" and "dislike"). In order to eliminate the tedious labor and the high cost of computing the weights for each response, Strong constructed a table from which the weights could be read directly as soon as the percentages shown in Table VII were known.

According to Strong,[1] the weights are a mathematical expression of the extent to which the data in the fourfold table differentiate art teachers from men-in-general (represented by the numerator of the equation), and the extent to which the data might be the result

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[1] Ibid., p. 611.

of chance (represented by the denominator of the equation). The more the data differentiate the two groups and the less likely the data are to be due to chance, the larger the weighting and vice versa.

In this formula the weights ranged from +15 to -15. Further research by Kelley, Strong, and Carter led to reducing the weights to ±4. Weights obtained from the revised formula were converted into the ±4 range accordingly:

Formula		±4 Scale
0 to 1	became	0
2 to 4	became	1
5 to 7	became	2
8 to 10	became	3
11—over	became	4

Dr. Clark assisted in this study at this point through the use of scoring facilities located at the University of Minnesota.

A complete tabulation of the percentages of responses of art teachers as compared to those of the men-in-general group and the differences in these responses is shown in Appendix H.

The assignment of weights of the item differences of art teachers and men-in-general is shown in Appendix I.

The itemized tabulation of weights on the Hankes Scoring Sheet is shown in Appendix J. These are the scoring weights as

determined by this study for the art-teachers scale on the Strong
Vocational Interest Blank.

Validation Design

During the past twenty years many ways have been used in
investigating the validity of the Strong Vocational Interest Blank.
Among the techniques used, there have been studies relating the
scores of its various scales to those of other tests, to school
marks, to completion of training programs, to earnings in sales
work, to rating scales, to continuation in an occupation, to job
satisfaction, and to differences between occupational groups.

Validation of the Strong Blank is discussed fully by Strong[1]
and others,[2] and for the purposes of this study, it was assumed
that the blank had been proved valid as an interest-testing device.

In the developing of a scoring key for art teachers, however,
it was necessary to validate the data used for establishing the key
itself. It was decided to validate the key by a tryout upon a new
group of art teachers. The key purports to differentiate between

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[1] Ibid., pp. 381–411.

[2] O. K. Buros (ed.), Mental Measurement Yearbook (New
Brunswick, N.J.: Rutgers University Press, 1938, 1939, 1940,
1949).

the interests of men-in-general and art teachers. Would a cross-validation with another representative group of art teachers substantiate the data of the key group? Strong[1] found that if the criterion group is representative and based upon several hundred cases (400 to 500), it is not necessary to try it out upon a new group. His experience with previous scales indicated that the scores will not vary. With the large percentage of returns for this study, the writer felt that the group could be considered representative of the elementary and secondary art teachers of Michigan, Illinois, and Missouri. However, since this scale was based upon a criterion group of 335 cases (instead of 400 to 500 cases), the writer felt that a tryout upon a new group of art teachers would help to validate the key established by the criterion group. The secretary of the Eastern Arts Association (at the time, Mrs. Lillian D. Sweigart of Kutztown, Pennsylvania) was contacted for a list of the male art teachers who would meet the same qualifications as the criterion group. One hundred and thirteen such teachers were contacted and were requested to comply with the same procedures as were used on the criterion group. From these contacts ninety-six replies were received, of which ninety-three were usable and,

[1] Strong, Vocational Interests of Men and Women, p. 131.

therefore, constituted the cross-validation group. This represented a return of 85 per cent (82 per cent usable) and corresponded closely with the criterion group percentage of returns. The response data for the validating group may be found in Appendix K.

A comparison of the percentages of responses to each item of the two groups is shown in Appendix L. It will be noted that these percentages were quite similar. A sample of this comparison is shown in Table VIII.

If the "indifferent" and "dislike" responses are grouped in a single total as compared to the "like" responses, it will be noted that the comparison of the definite "like" responses to the definite "indifferent-dislike" responses is indeed very favorable. As shown by the complete data in Appendix L, these two comparisons were favorable in nearly all cases; only an occasional discrepancy occurred.

By use of the data and formulas shown in Appendixes M and N, the mean raw scores and standard deviations for both key and cross-validation groups were computed. The results are shown below:

	Key Group	Validating Group
Mean raw score	171.69	172.43
Standard deviation . .	49.61	46.09
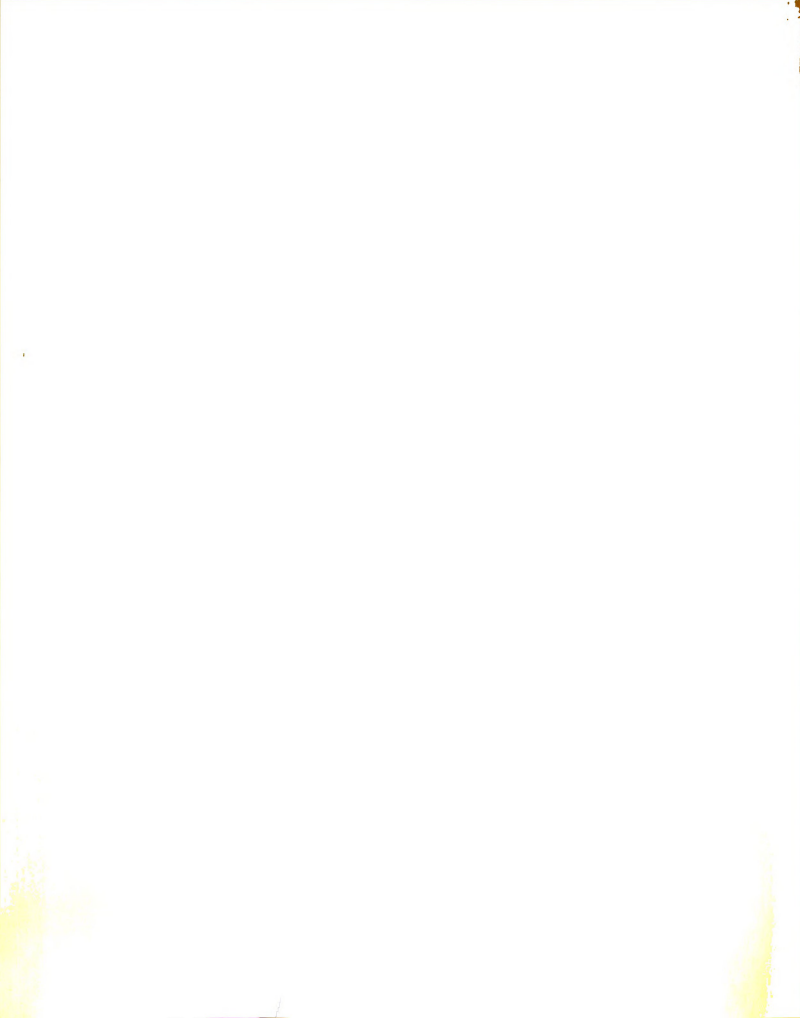
TABLE VIII

**COMPARISON OF PERCENTAGE OF RESPONSES TO ITEMS
OF KEY GROUP AND VALIDATING GROUP**

Item	Response					
	Like		Indifferent		Dislike	
	Key Group	Vali-dating Group	Key Group	Vali-dating Group	Key Group	Vali-dating Group
1	54	55	33	27	13	18
2	59	61	32	31	9	8
3	84	82	14	17	2	1
. . .	. . .	. . .	. . .	. . .	. . .	. . .
399	1	1	44	39	54	60

It may be seen from this information that there was little difference between the two groups and that the cross-validation group tended to substantiate the results obtained by the key group. A further check on the data by the t-test method to determine the significance of the difference between the two means gives a result of .13 (Appendix O). This value of t (.13) was not significant,
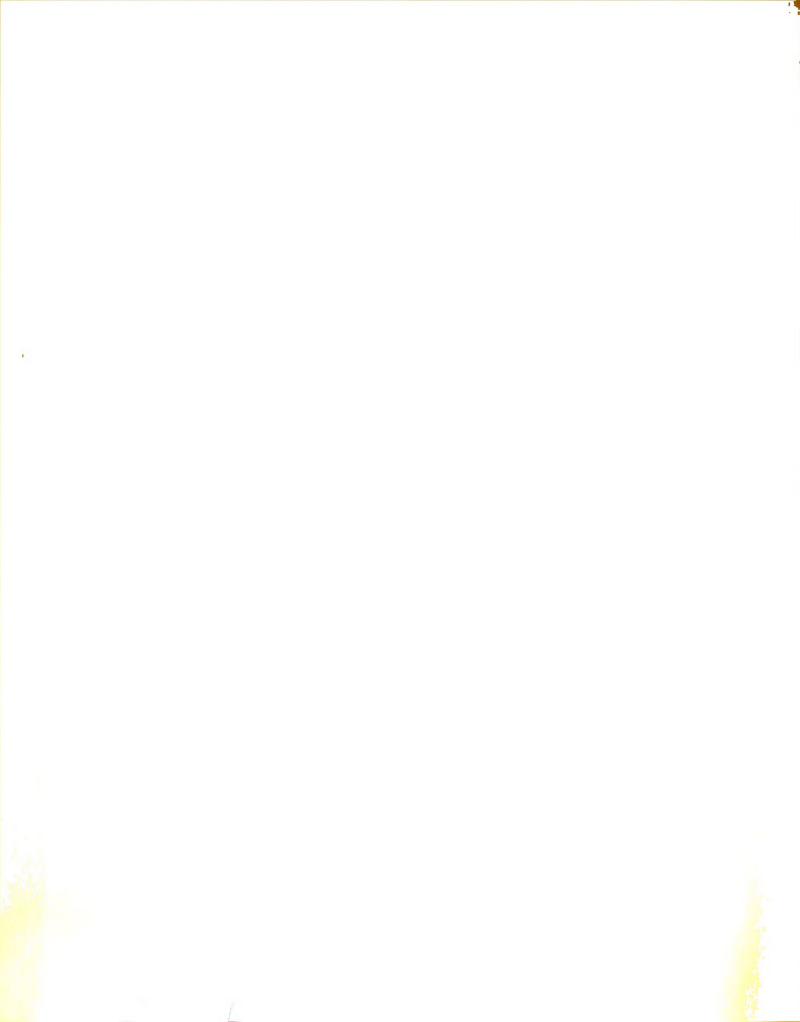
suggesting that a difference of this magnitude can be caused by chance variation.

Further evidence that this key for art teachers definitely differentiated from the men-in-general group was provided by Dr. Kenneth E. Clark in his letter to the writer (a copy of which may be found in Appendix P). He wrote:

> We have used the percentage responses on the men-in-general group which Strong collected and the weights on your keys to estimate the mean score which men-in-general would receive on this key. This mean is -64.74. Thus, hardly any art teacher scores as low as the typical professional man. In fact men-in-general will score about five standard deviations below the mean of your art teachers.

The evidence indicated that the key established by this study was valid for differentiating between the interests of elementary and secondary male art teachers and men-in-general when the Strong Vocational Interest Blank was used. If the key is adopted for use on the blank at a later date, further evidence may be obtained by working out the degree of overlapping between the art-teachers group and the men-in-general group as indicated on the profile chart of the blank.

Comparison of Art Teachers and Men-in-General

In passing, it might be of interest to note some of the differences in scores on the blank between art teachers and men-in-general.

These scores might indicate not only the differences between the interests of the two groups, but they might suggest other personality differences which could exist between art teachers and men-in-general.

As shown in Table IX, 750 out of 1,200 responses tended to discriminate to some degree between the two groups. Although the greatest number discriminated to only ±1 weight, these items tended to substantiate the interests indicated by the greater weights.

A look at the scores on Part I (Occupations) suggests that art teachers were more interested than men-in-general in occupations which involved creative activity, social service, teaching, and some degree of change. They tended to dislike definitely those occupations dealing with finance, commerce, supervision, and which might prove more stable or routine. As indicated in Table X, the two groups showed marked differences in the areas of art and teaching.

The scores on Part VI (Activities, Ideals, Club Offices, and Mechanics) tended to show the same interests. Art teachers indicated a marked interest in the creative areas and in teaching while men-in-general equally disliked these activities; art teachers disliked the areas of commerce and finance as much as men-in-general liked these areas. Table XI summarizes the general pattern of the scores on Part VI.
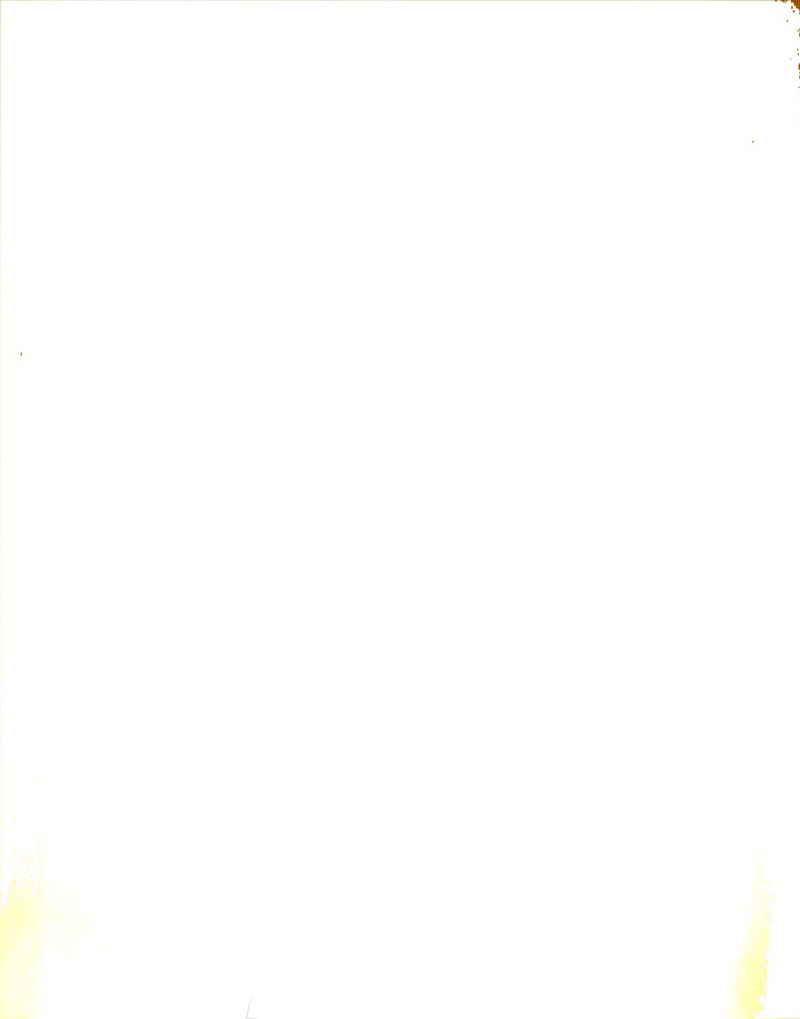
TABLE IX

NUMBER OF ITEMS AT EACH WEIGHT WHICH DISCRIMINATED
BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Weight[b]	Response			Totals
	Like	Indif-ferent	Dislike	
+1	71	94	61	226
+2	39	29	27	95
+3	12	7	12	31
+4	16	0	1	17
				369
-1	88	64	91	243
-2	33	8	42	83
-3	16	5	22	43
-4	3	3	6	12
				381
0	122	190	138	450

[a]Detailed data appear in Appendixes I and J.

[b]+1 or -1 indicates a difference of 6–15 per cent; + 2 or -2 indicates a difference of 16–25 per cent; +3 or -3 indicates a difference of 26–35 per cent; +4 or -4 indicates a difference of 36 per cent or above.

TABLE X

DISCRIMINATING ITEMS IN PART I (OCCUPATIONS) BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Item	Art Teachers	Men-in-General
Architect	+4	-2
Artist	+4	-2
Cartoonist	+4	-3
College professor	+4	-4
Interior decorator	+4	-4
School teacher	+4	-4
Sculptor	+4	-4
Actor	+3	-3
Advertiser	+3	-2
Author	+3	-2
Jeweler	+3	-3
Photo engraver	+3	-4
Poet	+3	-3
Draftsman	+2	-2
Florist	+2	-2
Foreign correspondent	+2	-2
Interpreter	+2	-2
Inventor	+2	-2
Landscape gardener	+2	-1
Magazine writer	+2	-2
Musician	+2	-2
Orchestra conductor	+2	-2
Printer	+2	-2
Secret service man	+2	-2
Carpenter	+1	-2

[a]Positive figures indicate strength of "like"; negative figures indicate strength of "dislike."

TABLE X (Continued)

Item	Art Teachers	Men-in-General
Clergyman	+1	−2
Music teacher	+1	−3
Social worker	+1	−2
YMCA worker	+1	−2
Corporation lawyer	−3	+3
Manufacturer	−3	+1
Sales manager	−3	+2
Bank cashier	−2	+3
Civil engineer	−2	+1
Factory manager	−2	+3
Office manager	−2	+2
CPA	−1	+3
Electrical engineer	−1	+2
Governor (state)	−1	+2
Mining superintendent	−1	+2
Private secretary	−1	+2
Statistician	−1	+3
Stock broker	−1	+2
Traveling salesman	−1	+2
Wholesaler	−1	+2
Factory worker	0	+2
Shop foreman	0	+2

TABLE XI

DISCRIMINATING ITEMS OF PART VI (ACTIVITIES, IDEALS, CLUB OFFICES, AND MECHANICS) BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Item	Art Teachers	Men-in-General
Ideals		
Caruso (singer)	+2	-3
Gibson (artist)	+4	-4
Tarkington (author)	+2	-2
Ford (manufacturer)	-2	+1
Morgan (financier)	-3	+3
Pershing (soldier)	-1	+2
Taft (jurist)	-2	+3
Wanamaker (merchant)	-2	+3
Club Offices		
Chairman—education committee	+2	-1
Chairman—entertainment committee	+1	-1
Chairman—program committee	+1	-1
Chairman—publicity committee	+3	-3
Chairman—membership committee	-1	+1
President	-2	+1
Secretary	-1	+2
Treasurer	-2	+3
Use of a Machine		
Operate the machine	-3	+1
Determine cost of operation	-3	+4
Supervise manufacture	-3	+2
Sell the machine	-2	+2
Improve the design	+2	-1
Create new artistic effect	+4	-3
Prepare advertising	+4	-3
Teach others its use	+1	-2

[a] Positive figures indicate strength of "like"; negative figures indicate strength of "dislike."

This same interest pattern emerged from the test sections on school subjects (Part II), amusements (Part III), and activities (Part IV). These data are shown in Tables XII, XIII, and XIV. The scores on amusements seemed to indicate that art teachers lacked an interest in outdoor physical sports, although it was not a strong pattern.

The scores on the other test sections continued somewhat the same pattern, although not so clearly pronounced. Section V (Peculiarities of People) indicated that art teachers seemed a bit more tolerant of (or at least indifferent to) physical and emotional differences, but they disliked athletic people (-3 to MIG 0), thrifty people (-3 to MIG +1), and conservative people (-3 to MIG +2). However, this seemed to continue the pattern of liking to work with people (as teachers) and of disliking outdoor physical sports and business and commerce (to which thrift and conservatism are usually linked). Subsection two of Part VI (Preferences of Activities) indicated a preference for jobs which challenge one's ingenuity, provide equality of respect, and freedom to work out one's own ideas. They did not seem to be concerned about pleasing the boss, nor about the opportunities for promotion, although they indicated that salary was a factor in liking the work. The scores on Part VII (Comparison of Two Items) substantiated further this general pattern. The art

TABLE XII

DISCRIMINATING ITEMS OF PART II (SCHOOL SUBJECTS)
BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Item	Art Teachers	Men-in-General
Art	+4	-2
Dramatics	+3	-2
Literature	+2	0
Mechanical drawing	+2	-2
Shop work	+2	-1
Sociology	+2	-1
Music	+1	-1
Public speaking	+1	-1
Arithmetic	-4	+1
Economics	-3	+2
Mathematics	-3	+1
Algebra	-2	+1
Bookkeeping	-2	+1
Chemistry	-2	+2
Physics	-2	+2
Calculus	-1	+2
Geometry	-1	+1
History	-1	+1
Military drill	-1	+1

[a]Positive figures indicate strength of ''like''; negative figures indicate strength of ''dislike.''

TABLE XIII

DISCRIMINATING ITEMS OF PART III (AMUSEMENTS) BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Item	Art Teachers	Men-in-General
Excursions	+4	-2
Art galleries	+4	-1
Picnics	+3	-1
Social problem movies	+3	-1
Auctions	+2	-2
Animal zoos	+2	-1
Museums	+2	0
Poetry	+2	-1
Symphonies	+1	-1
Pet monkeys	+1	-2
Amusement parks	+1	-1
"System"	-4	+1
"Judge"	-3	+1
Bridge	-2	+1
Detective stories	-2	+1
Boxing	-1	+2
Fishing	-1	+1
Golf	-1	+1
Hunting	-1	+2
Nature study	-1	+1
Smokers	-1	+1
Sporting pages	-1	+1

[a]Positive figures indicate strength of "like"; negative figures indicate strength of "dislike."
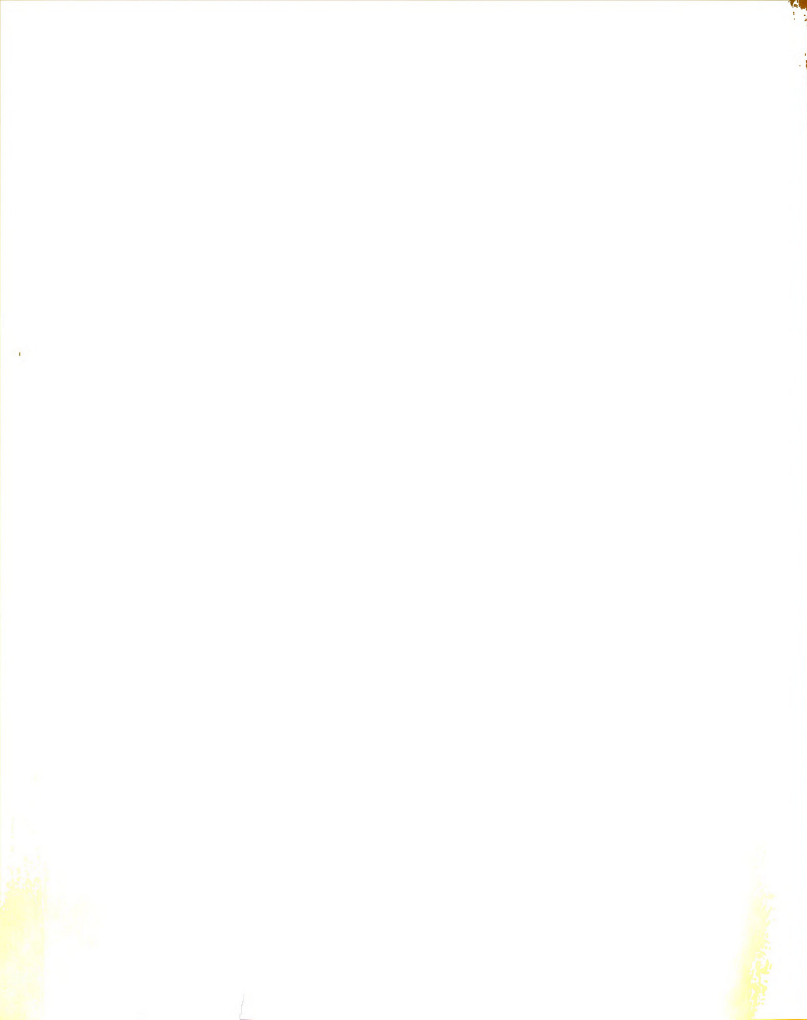
TABLE XIV

DISCRIMINATING ITEMS OF PART IV (ACTIVITIES) BETWEEN ART TEACHERS AND MEN-IN-GENERAL[a]

Item	Art Teachers	Men-in-General
Teaching children	+4	-2
Teaching adults	+4	-2
Merchandise display	+4	-2
Continually changing activities	+3	-3
Cabinet making	+2	-2
Organizing a play	+2	-3
Entertaining others	+2	-1
Window shopping	+2	-1
Looking at rare laces	+2	-1
Looking at antiques	+2	-1
Raising flowers and vegetables	+1	-1
Floral decoration	+1	-1
Making a speech	+1	-1
Shopping	+1	-1
Methodical work	-3	+3
Developing business system	-3	+3
Operating machinery	-2	+1
Handling horses	-2	+1
Interviewing prospects in selling	-2	+2
Interviewing clients	-2	+1
Regular working hours	-2	+1
Writing reports	-1	+1
Being pitted competitively against others	-1	+1

[a]Positive figures indicate strength of "like"; negative figures indicate strength of "dislike."

teachers liked creative activity, change, cooperative action, and inside work, in preference to routine work, supervision, selling, and outdoor activity. In Part VIII (Present Abilities and Characteristics) they pictured themselves somewhat the same. They rated art teachers as having mechanical ingenuity (+2 to MIG -2), as having more than their share of novel ideas (+3 to MIG -3), and as liking to discuss their ideals with others (+2 to MIG -1). At the same time, they indicated that they dislike planning their work in detail (-2 to MIG +2), that they can't remember detail too well (-1 to MIG +1), and that they usually do not drive themselves steadily (-1 to MIG +1).

The scores on the blank seemed to indicate an interest pattern from which might emerge a general picture of art teachers as compared to Strong's men-in-general group. These differences might be charted as below:

Art Teachers	Men-in-General
Preferred activities demanding creativity and ingenuity.	Preferred more routine and mechanical activities
Liked teaching and social service, but disliked the world of business and finance.	Liked finance, commerce, industry, and a chance to gain financial rewards, but disliked strongly teaching and social services.
Preferred change, adventure, mobility.	Preferred stability and steady promotion.

Favored cooperative rather than supervising action.	Favored supervisory positions.
Disliked somewhat vigorous outdoor physical activities, but still indicated some liking for participatory rather than spectator sports.	Favored outdoor activities, sports pages, and spectator sports, but still indicated a liking for ''normal'' social activities (such as bridge).
Seemed somewhat more tolerant of, or indifferent to, peculiarities of people.	Indicated stronger reactions to peculiarities of people.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The intricacies of counseling call for the widest possible selection of measuring devices by which the counselor may obtain the most pertinent information about the counselee which such measuring devices make possible. One of the important areas of counseling concerns the selection of a wise vocational choice. The Strong Vocational Interest Blank has proved to be a satisfactory counseling instrument for measuring the interests of the counselee as compared to the interests of persons successfully engaged in those occupations for which scoring keys have been developed. Many years of continuous research and refinement have made this a useful interest-measuring device. However, a search of the literature revealed that nothing had been done in the art teaching profession. Although a scale for artists had been developed early in the history of the Strong Vocational Interest Blank, it was felt by the writer that this scale would not be applicable to the teaching of art in the public schools. Therefore, the problem of this study involved the development of a scoring key for elementary and

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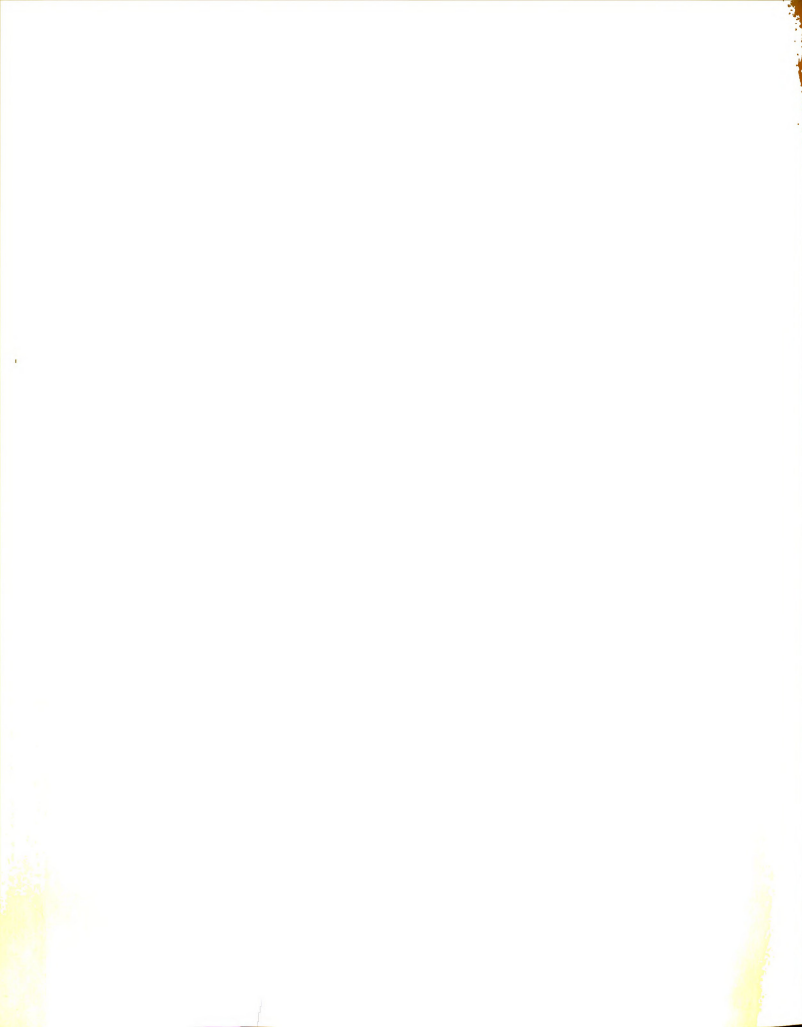
secondary male art teachers for the Strong Vocational Interest Blank.

Using procedures approved by Dr. Edward K. Strong, Jr., so that the art-teachers scale would be an acceptable addition to the Strong Vocational Interest Blank, the writer successfully developed a scoring key for male art teachers which now could be added to the list of professions already keyed on the blank. This key was developed around the responses of 335 male art teachers working in the three-state area of Illinois, Michigan, and Missouri. It was validated by comparing these responses to the responses of 93 art teachers from the Eastern Arts Association.

This study suggests further research in this area and in the area of teachers-in-general. Strong feels that the teacher-in-general does not constitute a separate and homogeneous grouping and, therefore, cannot be isolated on a general interest pattern, but rather, must be dealt with in specific areas of the teaching profession. Still it is interesting to note the possibility of developing an interest pattern for teachers-in-general once enough specific patterns have been keyed and scored on the Strong Vocational Interest Blank. Some future study may reveal such a pattern of mutual interests among teachers-in-general, or it may show no such interest among teachers-in-general but a closer relationship of teachers in specific

areas to the professions associated with these specific areas—e.g., art teacher to artist, science teacher to physician.

The developing of a scoring key for art teachers on the Strong Vocational Interest Blank opens up several problems for future research.

1. Are the interests of artists different from the interests of art teachers? It is said quite commonly that one who teaches art has different interests from those of one who earns his living by producing art. Or are these interests more closely related than usually thought? Such a study of the interest patterns of artist and art teacher would shed much light on the artist-teacher relationship.

2. Another area, a comparison of which could now be studied further, concerns the interest patterns of college art teachers with those of elementary and secondary art teachers. This study might concern itself with the interest patterns of various levels of teaching-in-general, or more specifically, with the teaching of art only. In searching for future college teachers of art, can we find a relationship between the interests of future art teachers and the interests of art teachers successfully employed at the college level? Do all art teachers reveal the same interest pattern on the Strong

Vocational Interest Blank—or are the levels of teaching indicative of different interests?

3. A scoring key could be developed for use on the Strong Vocational Interest Blank for Women (Form W) and compared with the scale developed in this study to ascertain the relationship of the interest patterns of men and women art teachers.

4. Further studies in the area of art interests might now be possible by use of the Strong Vocational Interest Blank. These might concern themselves with such aspects of art interest as the predictive value of the art teachers scale—both with high school students and college students.

5. The addition of an art teachers scale adds another area which could be compared to Kuder's artistic interest for further research in the comparison of the two tests. Also, studies might compare results of art teachers on the Strong Vocational Interest Blank and art tests such as the Meier Art Judgment, the McAdory Art Test, the Lewerenz Test, and the Knauber Art Ability Test.

6. Investigations into the relationships of interest and personality—especially as related to artists and art teachers—might be possible through the use of the Strong Vocational Interest Blank and other instruments such as the Minnesota Multiphasic Personality
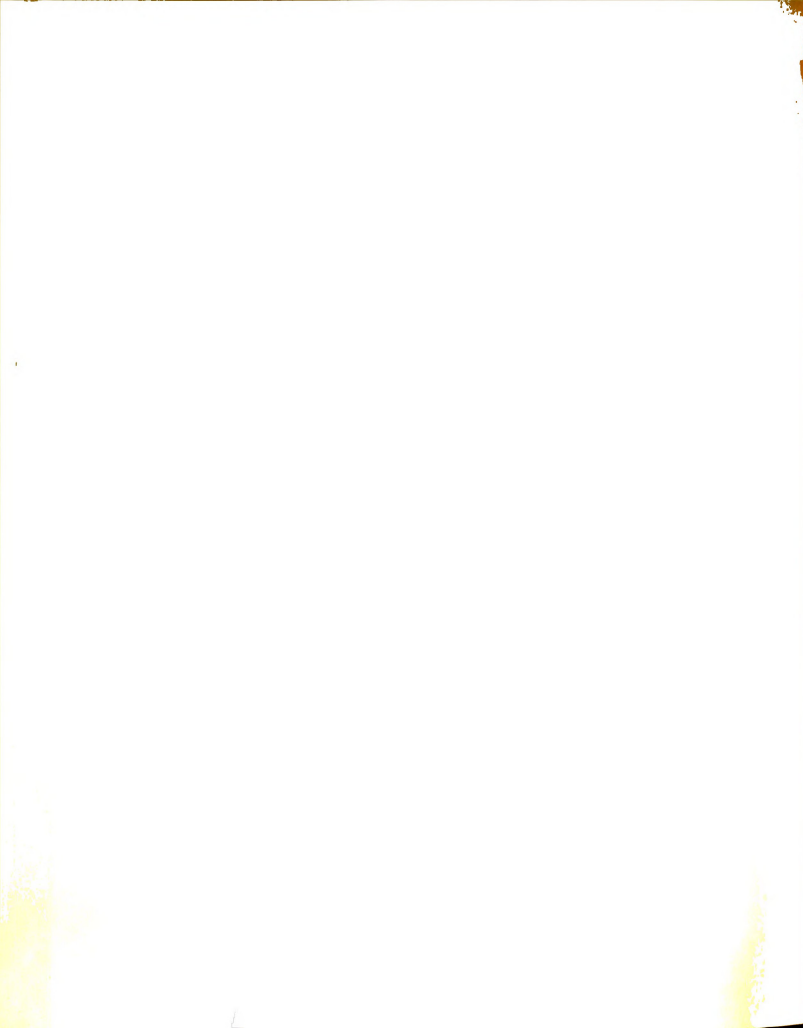
Inventory. These might follow predetermined hypotheses, as Spiaggia[1] did in his study with New York City high school art students, or these investigations into interests and personality might follow clinical "hunches" which, statistically correlated, might be made up as the studies progressed, as suggested by Cottle.[2]

7. The use of the art-teachers scale on the Strong Vocational Interest Blank might suggest further investigations into areas pertinent to art education; such as what makes an art teacher, regional differences in interests, et cetera. There is a great need for research in all areas of art education in order to evaluate and to clarify our purposes. As Hastie pointed out recently, "Our problem is not whether we should or should not do research. We will be required to. . . ."[3]

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[1]Martin Spiaggia, "An Investigation of the Personality Traits of Art Students," Educational and Psychological Measurement, 10: 285–93, 1950.

[2]William C. Cottle, "Interest and Personality Inventories," Personnel and Guidance Journal, 33:162–67, 1954–1955; William C. Cottle, "A Factorial Study of the Multiphasic, Strong, Kuder, and Bell Inventories Using a Population of Male Adults," Psychometrika, 15:25–47, 1950.

[3]Reid Hastie, "Introduction to Research in Art Education," Ninth Yearbook of the National Art Education Association (Kutztown, Pa.: State Teachers College, 1959).

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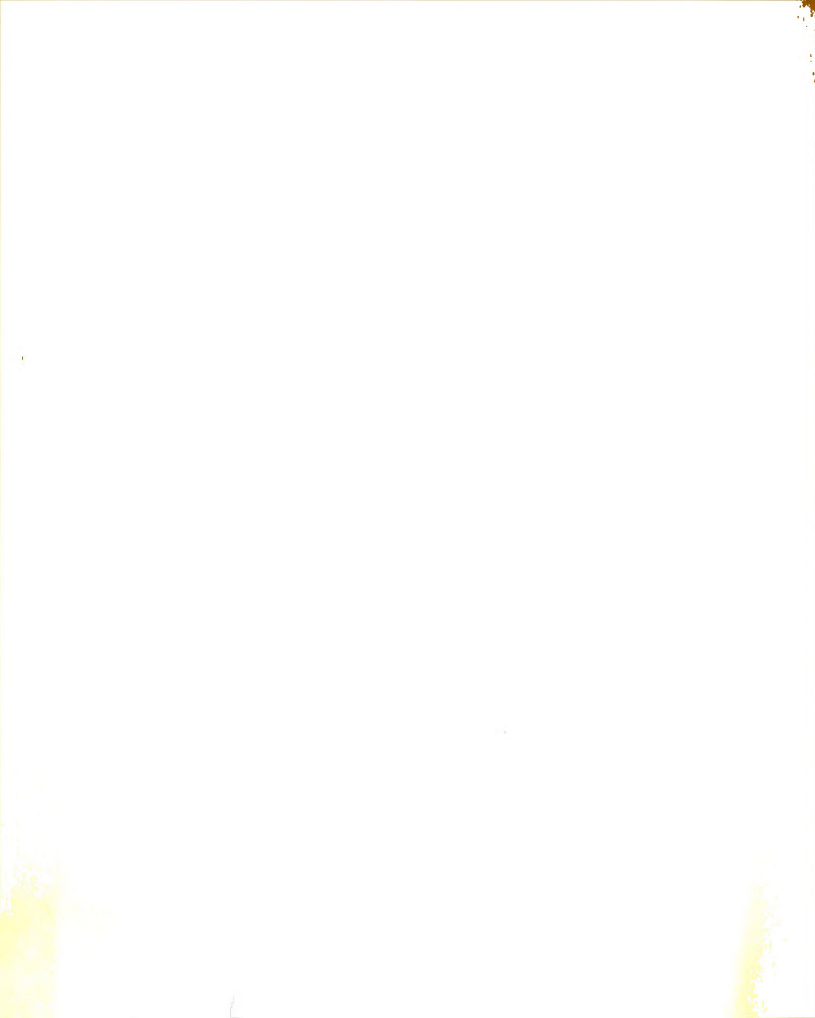
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APPENDIXES

APPENDIX A

STRONG VOCATIONAL INTEREST BLANK

Rating			Occupation	Rating	Standard Score	Raw Score	Occupation	Rating	Standard Score	Raw Score
			Junior Accountant				Author-Journalist			
			Office Worker				President, Mfg. Concern			
			Purchasing Agent				Occupational Level			
			Banker				Masculinity-Femininity			
			Mortician				Specialization Level			
			Pharmacist				Interest Maturity			
			Sales Manager				Social Worker			
			Real Estate Salesman							
			Life Insurance Salesman							
			Advertising Man							
			Lawyer							

APPENDIX B

HANKES SCORING SHEET FORM ME

5. Use a soft lead pencil... select, making broad, **heavy glossy black** lines from **Corner to corner** of the square—thus

Erase your first mark if you change your mind and mark another square.

Make sure your marks are carefully made—thus

Go from **Corner to corner** of the square; make **heavy glossy black** lead pencil lines.

It is important that you keep your pencil sharp & use enough pressure to make **heavy glossy black** lines.

Be sure each vertical group of 3 squares has __one__ and __only one mark.__

4. **Be sure to read the instructions in the booklet as they vary from part to part.**

TESTSCOR

Minneapolis

APPENDIX C

PERSONAL DATA SHEET
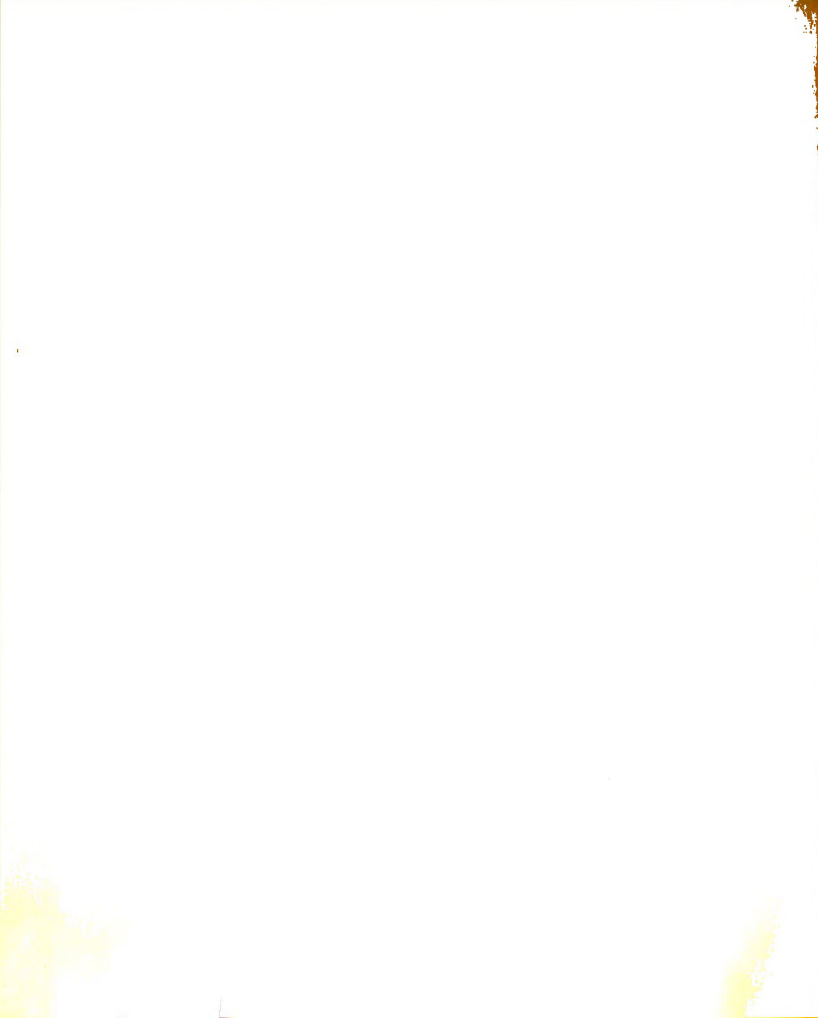
PERSONAL DATA SHEET

NAME _____ AGE _____

ADDRESS _____

EDUCATION:

      Number of years of college _____

      Highest degree _____ Major _____

TEACHING EXPERIENCE:

      Years of teaching _____

      Present position _____

SALARY:

      Over $2500 _____ Under $2500 _____

Do you intend to stay in art teaching? Yes _____ No _____

COMMENTS: _____

      _____

      _____

Would you like a summary of this study? _____

USE THIS SHEET INSTEAD OF PAGE ONE OF THE STRONG

BLANK—PUT ONLY YOUR NAME ON THE

HANKES' ANSWER SHEET

APPENDIX D

ORIGINAL LETTER TO SUBJECTS

Mount Pleasant, Michigan

Dear

Will you do me a favor? This will take only a little of your time but can make a very significant contribution to art education. You have been referred to me as a teacher who is interested in the growth of art education as a profession, and as one who can make a contribution to this growth. I hope that you will be willing to take a little of your time to give my request serious consideration. I know that you are extremely busy and so I ask for this favor with all due respect.

I am doing some research in the field of art interests, using the Strong Vocational Interest Blank. As you probably know, the SVIB is one of the most widely used tools in the vocational guidance of profession-bound young people. It is used throughout the country in colleges and universities as well as other counseling centers. This Blank has some 42 keys established for various professions, but there is no key for art teachers. Thus counselors have no way of helping a person gauge his interest in art teaching. I am attempting to discover if male art teachers in elementary and secondary schools have specific interests differentiating them from people in general, so that I might be able to establish an art teachers scale for the SVIB. This key would make it possible for counselors to point out to young people their common interests with art teachers. It is hoped that we will thus be able to encourage more young men into art teaching who at the time of counseling are uncertain about their interests. The establishing of such a key would contribute greatly then to both counseling services and art education.

This is where you can lend a helping hand. I have selected a number of well qualified and established art teachers, and you are one of those selected. I ask you to fill in the SVIB as one of the "norm-setting" group. This will take about 30 or 40 minutes of your time. If this project is to be successful and representative of male art teachers, I will need a 100% return from those of you who are participating. This means I really need and must have every blank returned. Will you do this and return it to me right away? As partial repayment for your cooperation, I will send you a summary of the report if you wish.

Enclosed you will find a copy of the SVIB, Hankes' answer sheet, a personal data form, and a self-addressed, stamped envelope. Please record your answers on the Hankes' answer sheet and return it, together with the unused interest blank and completed personal data blank, and you will be contributing in a most important way to this study. If you will read the instructions carefully before taking the test, you will not find it very difficult. On the Hankes' answer sheet put only your name; other data should be reported on the personal data form. It goes without saying that your scores will be held in strict confidence and will be used only in developing this key.

I wish to thank you in advance for your cooperation and kind consideration.

Sincerely,

Victor Croftchik
Art Department, CMC

APPENDIX E

FIRST FOLLOW-UP LETTER

ART DEPARTMENT
CENTRAL MICHIGAN COLLEGE

MOUNT PLEASANT, MICHIGAN

Dear

I hope that you will not think me too demanding, but I am wondering
if you have completed the SVIB which I sent you several weeks ago
and if perhaps you have just neglected to return it to me. If this
is the case, could you please put the SVIB, the Hankes' answer
sheet, and the Personal Data Form in the stamped, addressed envel-
ope and drop them in the mail.

If you have not had time to take the test, I would be most grateful
to you if you could possibly find the time to complete the test as
per my previous letter.

I ask for this 30 or 40 minutes of your time with all due respect to
the busy schedule under which you are operating, but I assure you
your contribution is most vital to the completion of the study which
I have undertaken. This study will make a definite contribution to
our profession of art education and will lead to further research
which is needed badly if we are to grow professionally. Since I am
using only selected teachers, it is necessary that I obtain a response
from all those participating. So I am hoping that you will be willing
to contribute to this research.

May I receive your return within the near future?

Very sincerely yours,

Victor Croftchik

APPENDIX F

SECOND FOLLOW-UP LETTER

ART DEPARTMENT
CENTRAL MICHIGAN COLLEGE

MOUNT PLEASANT, MICHIGAN

Dear

I hope you will not mind my reminding you of the Strong's Vocational Interest Blank which I sent to you some time ago. No doubt it lies buried somewhere on your desk. I sincerely hope you can find time to fill out the blanks and return them to me in the near future.

If you did not receive the blanks or if you have mislaid them, please let me know and I will send you another set. I will be glad to do this since it is very important that I receive a response from each of you who were selected as representative art teachers. Over 70% have returned their blanks, so I am appealing to you to help me reach the desired 100% goal.

I know how busy you are and I do respect your time, but I am sure your contribution to this study will help art education through better counseling services for prospective art teachers.

Will you join your fellow art teachers by filling in and returning the blanks? Thanks a million for helping out.

Very respectfully yours,

Victor Croftchik

APPENDIX G

THIRD FOLLOW-UP LETTER

ART DEPARTMENT
CENTRAL MICHIGAN COLLEGE

MOUNT PLEASANT, MICHIGAN

Dear

Since it is nearing the end of the school year and I would like to
complete this phase of my study before you are off for the summer,
I am writing again to remind you of the SVIB and accompanying
blanks which I sent to you sometime ago. I do hope you will be
able to complete the blanks and return them to me real soon. In
doing so you will be making a contribution to art education in as
much as this study will have a direct bearing upon counseling of
young men into art teaching.

About 80 % of the participants have returned the blanks to me, but
it is quite necessary that I obtain as near a 100% return as pos-
sible. If I did not think your contribution to this study to be nec-
essary, I would not ask for 30 or 40 minutes out of your busy day.
Be assured, I do appreciate your doing this. In order that art edu-
cation might progress towards a more effective relationship in the
school curriculum, studies such as this and contributions such as
yours, are quite necessary. This is why I feel you will want to do
this if it is at all possible.

If you have lost or misplaced the blanks I will be very happy to
send you new ones. Just let me know.

Thank you again for your cooperation and kind consideration.

Sincerely yours,

Victor Croftchik

APPENDIX H

NUMBERS AND PERCENTAGES OF ART TEACHERS AND

PERCENTAGES OF MEN-IN-GENERAL SELECTING

EACH ITEM RESPONSE

APPENDIX H

NUMBERS AND PERCENTAGES OF ART TEACHERS (N=335)
AND PERCENTAGES OF MEN-IN-GENERAL (N=4,746)
SELECTING EACH ITEM RESPONSE[a]

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
1	181	111	43	54	33	13	21	32	47	33		-34
2	197	107	31	59	32	9	33	38	29	26	- 6	-20
3	281	47	7	84	14	2	37	40	23	47	-26	-21
4	50	104	181	15	31	54	22	29	49	- 7		
5	325	7	3	97	2	1	24	40	36	73	-38	-35
6	130	161	44	39	48	13	26	44	30	13		-17
7	70	141	124	21	42	37	26	41	33			
8	20	94	221	6	28	66	8	27	65			
9	219	92	24	65	27	7	32	38	30	33	-11	-23
10	125	125	85	37	37	25	31	41	28	6		
11	31	88	216	9	26	64	13	35	52		- 9	12
12	47	90	198	14	27	59	12	25	63			
13	57	87	191	17	26	57	19	27	54			
14	134	124	77	40	37	23	30	36	34	10		-11
15	10	101	224	3	30	67	10	33	57	- 7		10
16	10	77	248	3	23	74	12	29	59	- 9	- 6	15
17	94	151	90	28	45	27	35	40	25	- 7		
18	127	144	64	38	43	19	35	37	28		6	- 9
19	144	141	50	43	42	15	28	38	34	15		-19
20	228	93	14	68	27	4	24	46	30	44	-19	-26
21	13	94	228	4	28	68	20	38	42	-16	-10	26
22	13	74	248	4	22	74	19	33	48	-15	-11	26
23	79	136	120	24	41	36	35	36	29	-11		7
24	77	154	104	23	46	31	41	37	22	-18	9	9

[a]Differences under 6 are not significant. Positive figures indicate "more art teachers favored"; negative figures indicate "fewer art teachers favored."

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
25	23	184	128	7	55	38	8	39	53		16	-15
26	76	133	126	23	40	38	14	29	57	9	11	-19
27	289	42	4	87	12	1	33	30	37	54	-18	-36
28	144	148	43	43	44	13	34	40	26	9		-13
29	52	103	180	16	31	54	7	24	69	9	7	-15
30	154	118	63	46	35	19	23	36	41	23		-22
31	138	144	53	41	43	16	36	36	28		7	-12
32	63	121	151	19	36	45	32	41	27	-13		18
33	98	125	112	29	37	33	30	40	30			
34	215	94	26	64	28	8	50	31	19	14		-11
35	50	121	164	15	36	49	39	38	23	-24		26
36	3	61	271	1	18	81	6	29	65		-11	16
37	53	152	130	16	45	39	37	28	35	-21	17	
38	13	84	238	4	25	71	2	18	80		7	- 9
39	118	144	73	35	43	22	19	35	46	16	8	-24
40	161	124	50	48	37	15	26	39	35	22		-20
41	67	114	154	20	34	46	30	41	29	-10	- 7	17
42	67	130	138	20	39	41	20	37	43			
43	255	70	10	76	21	3	18	38	44	58	-17	-41
44	97	144	94	29	43	28	13	40	47	16		-19
45	224	91	20	67	27	6	47	34	19	20	- 7	-13
46	124	141	70	37	42	21	4	46	50	33		-29
47	87	126	121	26	38	36	36	39	25	-10		11
48	53	91	191	16	27	57	19	34	47		- 7	10
49	38	145	152	11	43	45	19	36	45	- 8	7	
50	178	104	53	53	31	16	36	35	29	17		-13
51	80	97	158	24	29	47	24	27	49			
52	31	111	193	9	33	58	43	27	30	-34	6	28
53	61	114	160	18	34	48	13	43	44		- 9	
54	10	67	258	3	20	77	8	25	67			10
55	47	138	150	14	41	45	25	36	39	-11		6
56	50	117	168	15	35	50	24	34	42	- 9		8

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
57	171	117	47	51	35	14	32	37	31	19		-17
58	84	161	90	25	48	27	52	34	14	-27	14	13
59	57	144	134	17	43	40	18	47	35			
60	74	122	139	22	36	41	34	38	28	-12		13
61	24	128	183	7	38	54	18	45	37	-11	- 7	17
62	208	93	34	62	28	10	37	35	28	25	- 7	-18
63	66	156	113	20	47	34	5	30	65	15	17	-31
64	3	84	248	1	25	74	5	28	67			7
65	40	118	177	12	35	53	33	39	28	-21		25
66	137	114	84	41	34	25	19	33	48	22		-23
67	34	147	154	10	44	46	9	37	54		7	- 8
68	118	150	67	35	45	20	5	39	56	30	6	-36
69	122	113	100	37	34	30	39	30	31			
70	79	156	100	24	47	30	15	43	42	9		-12
71	150	115	70	45	34	21	16	32	52	29		-31
72	53	86	196	16	26	59	18	28	54			
73	101	147	87	30	44	26	7	41	52	23		-26
74	17	95	223	5	28	66	15	43	42	-10	-15	24
75	24	91	220	7	27	65	8	35	57		- 8	8
76	121	130	84	36	39	25	43	30	27	- 7	9	
77	23	98	214	7	29	63	14	33	53	- 7		10
78	97	144	94	29	43	28	18	42	40	11		-12
79	73	107	155	22	32	46	16	40	44	6	- 8	
80	48	152	135	14	45	40	15	41	44			
81	31	124	180	9	37	54	37	34	29	-28		25
82	293	39	3	88	11	1	21	31	48	67	-20	-47
83	125	125	85	37	37	25	44	31	25	- 7	6	
84	312	20	3	94	6	1	14	41	45	80	-35	-44
85	13	117	205	4	35	61	13	40	47	- 9		14
86	121	121	93	36	36	28	20	35	45	16		-17
87	80	137	118	24	41	35	20	38	42			- 7
88	31	114	190	9	34	57	14	45	41		-11	16

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
89	94	137	104	28	41	31	17	34	49	11	7	-18
90	23	90	222	7	27	66	13	36	51	- 6	- 9	15
91	17	70	248	5	21	74	19	40	41	-14	-19	33
92	31	90	214	9	27	64	19	39	42	-10	-12	22
93	119	100	116	36	30	35	39	25	36			
94	64	115	156	19	34	47	16	38	46			
95	17	73	245	5	22	73	16	32	52	-11	-10	21
96	17	104	214	5	31	64	4	26	70			- 6
97	13	53	269	4	16	81	3	11	86			
98	47	130	158	14	39	47	5	35	60	9		-13
99	26	130	179	8	39	53	23	43	34	-15		19
100	63	152	120	19	46	36	11	33	56	8	13	-20
101	130	104	101	39	31	30	57	24	19	-18	7	11
102	64	164	107	19	49	32	38	45	17	-19		15
103	124	141	70	37	42	21	74	16	10	-37	26	11
104	328	7	0	98	2	0	35	44	21	63	-42	-21
105	26	141	168	8	42	50	29	36	35	-21	6	15
106	168	130	37	50	39	11	38	42	20	12		- 9
107	48	122	165	14	36	49	29	41	30	-15		19
108	97	134	104	29	40	31	52	34	14	-23	6	17
109	148	134	53	44	40	16	53	37	10	- 9		
110	186	118	31	56	35	9	29	43	28	27	- 8	-19
111	95	155	85	28	46	25	61	32	7	-33	14	18
112	187	111	37	56	33	11	45	39	16	11	- 6	
113	208	107	20	62	32	6	77	20	3	-15	12	
114	171	138	26	51	41	8	54	39	7			
115	154	101	80	46	30	24	58	27	15	-12		9
116	211	84	40	63	25	12	76	18	6	-13	7	6
117	70	141	124	21	42	37	19	38	43			- 6
118	134	134	67	40	40	20	39	41	20			
119	251	64	20	75	19	6	57	34	9	18	-15	
120	121	121	93	36	36	28	69	20	11	-33	16	17

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
121	202	96	37	60	29	11	48	37	15	12	- 8	
122	202	111	22	60	33	7	41	36	23	19		-16
123	57	118	160	17	35	48	29	35	36	-12		12
124	210	94	31	63	28	9	49	35	16	14	- 7	- 7
125	206	116	13	61	34	4	52	38	10	9		- 6
126	229	89	17	69	27	5	57	35	8	12	- 8	
127	144	121	70	43	36	21	54	34	12	-11		9
128	111	130	94	33	39	28	58	32	10	-25	7	18
129	232	83	20	70	25	6	64	29	7	6		
130	124	158	53	37	47	16	50	40	10	-13	7	6
131	171	124	40	51	37	12	41	35	24	10		-12
132	184	104	47	55	31	14	38	38	24	17	- 7	-10
133	178	134	23	53	40	7	34	45	21	19		-14
134	138	144	53	41	43	16	53	32	15	-12	11	
135	107	161	67	32	48	20	21	51	28	11		- 8
136	148	144	43	44	43	13	38	46	16	6		
137	154	108	73	46	32	22	56	34	10	-10		12
138	185	97	53	55	29	16	65	24	11	-10		
139	127	87	121	38	26	36	54	31	15	-16		21
140	168	124	43	50	37	13	55	33	12			
141	229	92	14	68	27	4	77	19	4	- 9	8	
142	252	70	13	75	21	4	61	31	8	14	-10	
143	77	90	168	23	27	50	29	39	32	- 6	-12	18
144	97	120	118	29	36	35	25	41	34			
145	122	88	125	36	26	37	37	30	33			
146	90	110	135	27	33	41	51	23	26	-24	10	15
147	138	132	65	41	39	19	47	41	12	- 6		7
148	121	124	90	36	37	27	39	34	27			
149	80	138	117	24	41	35	18	51	31	6	-10	
150	55	108	172	16	32	51	12	43	45		-11	6
151	64	90	181	19	27	54	18	32	50			
152	88	142	105	26	42	31	36	37	27	-10		

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
153	115	143	77	34	43	23	21	43	36	13		-13
154	258	64	13	77	19	4	48	35	17	29	-16	-13
155	252	70	13	75	21	4	39	36	25	36	-15	-21
156	88	125	122	26	37	36	32	41	27	- 6		9
157	16	56	263	5	17	79	8	24	68		- 7	11
158	120	130	85	36	39	26	28	41	31	8		
159	97	120	118	29	36	35	21	40	39	8		
160	131	131	73	39	39	22	17	39	44	22		-22
161	26	106	203	8	32	60	5	28	67			- 7
162	251	77	7	75	23	2	56	33	11	19	-10	- 9
163	328	7	0	97	2	0	59	33	8	38	-31	- 8
164	305	27	3	90	8	1	68	27	5	22	-19	
165	178	124	33	53	37	10	59	31	10	- 6	6	
166	252	63	20	75	19	6	75	20	5			
167	235	80	20	70	24	6	56	31	13	14	- 7	- 7
168	43	161	131	13	48	39	16	45	39			
169	50	130	155	15	39	46	8	29	63	7	10	-17
170	17	114	204	5	34	61	3	24	73		10	-12
171	130	115	90	39	34	27	50	36	14	-11		13
172	175	127	33	52	38	10	36	46	18	16	- 8	- 8
173	118	130	87	35	39	26	51	34	15	-16		11
174	245	77	13	73	23	4	70	26	4			
175	50	231	54	15	69	16	49	43	8	-34	26	8
176	61	221	53	18	66	16	24	63	13	- 6		
177	7	263	65	2	78	19	40	50	10	-38	28	9
178	282	50	3	84	15	1	83	15	2			
179	97	208	30	29	62	9	53	38	9	-24	24	
180	194	115	26	58	34	8	49	41	10	9	- 7	
181	173	149	13	51	44	4	43	50	7	8	- 6	
182	264	64	7	79	20	2	71	25	4	8		
183	281	47	7	84	14	2	80	17	3			
184	185	117	33	56	35	10	29	47	24	27	-12	-14

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
185	73	121	141	22	36	42	24	39	37			
186	100	130	105	30	39	32	29	34	37			
187	84	118	133	25	35	40	33	35	32	- 8		8
188	106	126	103	32	38	31	43	29	28	-11	9	
189	179	112	44	53	33	13	31	38	31	22		-18
190	101	137	97	30	41	29	54	26	20	-24	15	9
191	84	157	94	25	47	28	47	31	22	-22	16	6
192	94	177	64	28	53	19	40	42	18	-12	11	
193	187	115	33	56	34	10	49	35	16	7		- 6
194	143	149	43	42	44	13	29	49	22	13		- 9
195	111	94	130	33	28	39	39	31	30	- 6		9
196	118	150	67	35	45	20	35	35	30		10	-10
197	40	113	182	12	34	55	35	31	34	-23		21
198	78	145	112	23	43	33	46	35	19	-23	8	14
199	136	122	77	41	37	23	34	28	38	7	9	-15
200	130	124	81	39	37	24	14	35	51	25		-27
201	127	151	57	38	45	17	32	39	29	6	6	-12
202	300	29	6	90	9	2	42	39	19	48	-30	-17
203	293	39	3	88	11	1	43	37	20	45	-26	-19
204	171	124	40	51	37	12	40	37	23	11		-11
205	148	130	57	44	39	17	39	38	23			- 6
206	188	127	20	56	38	6	58	30	12		8	- 6
207	238	87	10	71	26	3	82	15	3	-11	11	
208	235	87	13	70	26	4	82	14	4	-12	12	
209	173	129	33	52	39	10	58	27	15	- 6	12	
210	50	97	188	15	29	56	25	29	46	-10		10
211	37	124	174	11	37	52	15	33	52			
212	175	110	50	53	33	15	49	31	20			
213	20	80	235	6	24	70	5	27	68			
214	94	140	101	28	42	30	30	35	35		7	
215	47	138	150	14	41	45	27	41	32	-13		13
216	197	107	31	59	32	9	41	39	20	18	- 7	-11

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
217	97	131	107	29	39	32	25	36	39			− 7
218	218	97	20	65	29	6	44	38	18	21	− 9	−12
219	122	148	65	36	44	19	27	44	29	9		−10
220	211	90	34	63	27	10	20	47	33	43	−20	−23
221	134	144	57	40	43	17	36	39	25			− 8
222	94	141	100	28	42	30	41	38	21	−13		9
223	73	110	152	22	33	46	48	32	20	−26		26
224	132	123	80	40	37	24	58	25	17	−18	12	7
225	205	87	43	61	26	13	30	31	39	31		−26
226	37	124	174	11	37	52	43	36	21	−32		31
227	191	118	26	57	35	8	61	30	9			
228	111	186	38	33	55	11	52	40	8	−19	15	
229	57	163	115	17	49	34	19	38	43		11	− 9
230	130	97	108	39	29	32	44	28	28			
231	57	94	184	17	28	55	15	28	57			
232	73	106	156	22	31	46	6	37	57	16	− 6	−11
233	166	92	77	49	27	23	28	40	32	21	−13	− 9
234	253	62	20	76	19	6	85	11	4	− 9	8	
235	94	157	84	28	47	25	56	35	9	−28	12	16
236	282	43	10	84	13	3	89	9	2			
237	42	167	126	13	50	38	5	32	63	8	18	−25
238	20	130	185	6	39	56	2	19	79		20	−23
239	13	80	242	4	24	73	7	26	67			6
240	222	95	18	66	28	5	75	20	5	− 9	8	
241	13	90	232	4	27	69	3	27	70			
242	254	69	12	76	21	4	88	10	2	−12	11	
243	198	102	35	59	30	10	47	25	28	12		−18
244	34	134	167	10	40	50	5	40	55			
245	96	202	37	29	60	11	52	42	6	−23	18	
246	73	147	115	22	44	34	16	41	43	6		− 9
247	134	161	40	40	48	12	74	22	4	−34	26	8
248	23	172	140	7	51	42	5	29	66		22	−24

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
249	94	157	84	28	47	25	14	36	50	14	11	-25
250	131	164	40	39	49	12	32	46	22	7		-10
251	37	180	118	11	54	35	6	48	46		6	-11
252	242	90	3	72	27	1	83	16	1	-11	11	
253	17	166	152	5	49	45	3	44	53			- 8
254	26	141	168	8	42	50	13	37	50			
255	154	174	7	46	52	2	23	62	15	23	-10	-13
256	53	209	73	16	62	22	20	52	28		10	- 6
257	20	177	138	6	53	41	5	43	52		10	-11
258	125	190	20	38	57	6	46	47	7	- 8	10	
259	84	220	31	25	66	9	30	51	19		15	-10
260	17	126	192	5	38	58	4	21	75		17	-17
261	23	262	50	7	78	15	3	53	44		25	-29
262	35	269	31	10	80	9	4	56	40	6	24	-31
263	31	273	31	9	82	9	3	61	36	6	21	-27
264	80	242	13	24	72	4	23	64	13		8	- 9
265	61	248	26	18	74	8	16	64	20		10	-12
266	53	198	84	16	59	25	10	58	32	6		- 7
267	31	122	182	9	37	55	5	38	57			
268	13	97	225	4	29	67	1	19	80		10	-13
269	26	207	102	8	61	30	11	55	34		6	
270	20	127	188	6	38	56	1	23	76		15	-10
271	198	130	7	59	39	2	38	54	8	21	-15	- 6
272	23	174	138	7	52	41	5	40	55		12	-14
273	33	252	50	10	76	15	10	66	24		10	- 9
274	31	243	61	9	73	18	6	46	48		27	-30
275	7	179	149	2	53	44	2	23	75		30	-31
276	179	142	14	53	42	4	52	43	5			
277	13	193	129	4	57	38	5	61	34			
278	10	154	171	3	46	51	1	25	74		21	-23
279	17	248	70	5	74	21	2	66	32		8	-11
280	150	175	10	45	53	3	73	26	1	-28	27	

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
281	77	158	100	23	47	30	36	32	32	-13	15	
282	37	197	101	11	59	30	44	40	16	-33	19	14
283	185	137	13	56	41	4	38	47	15	18	- 6	-11
284	3	87	245	1	26	73	29	44	27	-28	-18	46
285	13	185	137	4	56	41	30	47	23	-26	9	18
286	311	17	7	93	5	2	21	51	28	72	-46	-26
287	10	114	211	3	34	63	26	32	42	-23		21
288	215	100	20	64	30	6	25	40	35	39	-10	-29
289	121	191	23	36	57	7	27	48	25	9	9	-18
290	34	149	152	10	44	45	24	21	55	-14	23	-10
291	116	155	64	35	47	19	28	35	37	7	12	-18
292	118	160	57	35	48	17	37	45	18			
293	53	139	143	16	41	42	41	39	20	-25		22
294	61	170	104	18	51	31	10	51	39	8		- 8
295	226	82	27	67	24	8	61	31	8	6	- 7	
296	23	148	164	7	44	49	12	46	42			7
297	7	104	224	2	31	67	5	44	51		-13	16
298	37	168	130	11	50	39	20	50	30	- 9		9
299	265	50	20	79	15	6	60	25	15	19	-10	- 9
300	97	161	77	29	48	23	24	44	32			- 9
301	97	161	77	29	48	23	36	38	26	- 7	10	
302	122	129	84	36	38	25	14	26	60	22	12	-35
303	194	121	20	58	36	6	55	38	7			
304	84	178	73	25	53	22	50	37	13	-25	16	9
305	248	77	10	74	23	3	8	37	55	66	-14	-52
306	43	138	154	13	41	46	43	39	18	-30		28
307	23	110	202	7	33	60	17	45	38	-10	-12	22
308	13	158	164	4	47	49	26	53	21	-22	- 6	28
309	154	134	47	46	40	14	21	45	34	25		-20
310	26	136	173	8	41	52	30	47	23	-22	- 6	29
311	158	70	107	47	21	32	67	15	18	-20	6	14
312	23	80	232	7	24	69	21	31	48	-14	- 7	21

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
313	31	87	217	9	26	65	27	38	35	-18	-12	30
314	121	183	31	36	55	9	42	44	14	- 6	11	
315	46	204	85	14	61	26	19	58	23			
316	151	158	26	45	47	8	26	53	21	19	- 6	-13
317	130	144	61	39	43	18	26	40	34	13		-16
318	20	173	142	6	51	42	17	49	34	-11		8
319	137	137	61	41	41	18	26	50	24	15	- 9	- 6
320	181	107	47	54	32	14	23	36	41	31		-27
321	115	126	94	34	38	28	45	33	22	-11		6
322	139	116	80	42	35	24	28	36	36	14		-12
323	115	67	153	34	20	46	71	15	14	-37		32
324	127	77	131	38	23	39	31	21	48	7		- 9
325	13	84	238	4	25	71	5	16	79		9	- 8
326	34	34	267	10	10	80	12	10	78			
327	44	53	238	13	16	71	7	14	79	6		- 8
328	181	118	36	54	35	11	34	30	36	20		-25
329	212	90	33	63	27	10	48	24	28	15		-18
330	205	90	40	61	27	12	51	22	27	10		15
331	100	120	115	30	36	34	25	25	50		11	-16
332	136	63	70	41	41	19	25	28	47	16	13	-28
333	64	137	134	19	41	40	50	26	24	-31	15	16
334	70	130	135	21	39	40	31	25	44	-10	14	
335	218	90	27	65	27	8	44	22	34	21		-26
336	184	104	47	55	31	14	69	19	12	-14	12	
337	287	36	12	86	10	3	76	11	13	10		-10
338	53	73	209	16	22	62	23	17	60	- 7		
339	81	127	127	31	56	13	24	38	38	7	18	-25
340	209	90	36	62	27	11	77	14	9	-15	13	
341	101	141	93	30	42	28	36	28	36	- 6	14	- 8
342	83	169	83	25	50	25	52	29	19	-27	21	6
343	73	107	155	22	32	46	17	27	56			-10
344	252	60	23	75	18	7	69	20	11	6		

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
345	40	201	94	12	60	28	16	44	40		16	-12
346	310	22	3	92	7	1	79	16	5	13	- 9	
347	179	112	44	53	33	13	34	19	47	19	14	-34
348	90	111	134	27	33	40	42	23	35	-15	10	
349	97	171	67	29	51	20	50	35	15	-21	16	
350	138	107	90	41	32	27	34	24	42	7	8	-15
351	57	151	127	17	45	38	19	29	52		16	-14
352	172	140	23	51	42	7	74	22	4	-23	20	
353	118	160	57	35	48	17	57	32	11	-22	16	6
354	29	53	262	6	16	78	10	13	77			
355	132	123	80	39	36	24	59	18	23	-20	18	
356	104	178	53	31	53	16	17	38	45	14	15	-29
357	10	238	87	3	71	26	8	72	20			6
358	57	268	10	17	80	3	28	69	3	-11	11	
359	34	263	38	10	78	11	20	68	12	-10	10	
360	23	212	100	7	63	30	17	55	28	-10	8	
361	201	83	51	60	25	16	54	24	22	6		- 6
362	202	43	90	60	13	27	71	12	17	-11		10
363	197	87	51	59	26	16	59	27	14			
364	174	104	57	52	31	17	67	20	13	-15	11	
365	147	115	73	44	34	22	31	41	28	13	- 7	- 6
366	187	87	61	56	26	18	56	30	14			
367	224	70	41	67	21	12	75	16	9	- 8		
368	182	85	68	54	25	20	36	20	44	18		-24
369	200	104	31	60	32	9	26	36	38	34		-29
370	289	32	14	87	9	4	85	11	4			
371	287	45	3	86	13	1	88	10	2			
372	258	43	34	77	13	10	84	11	5	- 7		
373	191	53	91	57	16	27	58	17	25			
374	70	99	166	21	29	49	30	28	42	- 9		7
375	172	147	16	51	44	5	59	33	8	- 8	11	
376	218	101	16	65	30	5	65	30	5			

APPENDIX H (Continued)

Item	Number of Responses, Art Teachers			Pct. of Responses						Difference, in Percentages		
				Art Teachers			Men-in-General					
	L	I	D	L	I	D	L	I	D	L	I	D
377	37	70	228	11	21	68	12	20	68			
378	215	77	43	64	23	13	66	23	11			
379	224	101	10	67	30	3	58	35	7	9		
380	122	83	130	37	25	39	58	22	20	-21		19
381	141	169	25	42	50	8	53	36	11	-11	14	
382	148	144	43	44	43	13	50	38	12	- 6		
383	144	158	33	43	47	10	55	40	5	-12	7	
384	179	116	40	54	35	12	56	33	11			
385	233	99	3	69	29	1	79	20	1	-10	9	
386	164	130	41	49	39	12	63	29	8	-14	10	
387	303	26	6	90	8	2	90	8	2			
388	284	31	20	85	9	6	67	15	18	18	- 6	-12
389	50	209	76	15	62	23	20	59	21			
390	21	98	216	6	29	64	4	33	63			
391	80	85	170	24	26	51	15	32	53	9	- 6	
392	60	104	171	18	31	51	19	36	45			6
393	53	206	76	16	61	23	15	52	33		9	-10
394	64	258	13	19	77	4	39	58	3	-20	19	
395	64	227	44	19	68	13	37	52	11	-18	16	
396	13	129	193	4	38	57	3	28	69		10	-12
397	133	142	60	40	43	18	33	53	14	7	-10	
398	155	167	13	47	50	4	44	53	3			
399	3	147	185	1	44	54	7	52	41	- 6	- 8	13
400	(Omitted by Clark as unnecessary.)											

APPENDIX I

ASSIGNMENT OF WEIGHTS OF THE ITEM DIFFERENCES

OF ART TEACHERS AND MEN-IN-GENERAL

APPENDIX I

ASSIGNMENT OF WEIGHTS OF THE ITEM DIFFERENCES OF ART TEACHERS AND MEN-IN-GENERAL

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
6-L	25-I	1-L	3-L	2-I	2-D	1-D	5-I
10-L	30-L	2-L	5-L	4-L	3-D	3-I	27-L
11-D	32-D	9-L	20-L	9-I	6-D	5-D	43-D
14-L	36-D	21-D	27-L	11-I	9-D	20-D	68-D
15-D	37-I	22-D	43-L	14-D	19-D	46-D	82-D
16-D	39-L	35-D	82-L	15-L	20-I	52-L	84-D
18-I	40-L	46-L	84-L	16-L	21-L	58-L	103-L
19-L	41-D	52-D	104-L	16-I	24-L	63-D	104-I
23-D	44-L	68-L	155-L	17-L	26-D	71-D	177-L
24-I	45-L	71-L	163-L	18-D	27-I	81-L	286-I
24-D	50-L	91-D	202-L	21-I	30-D	84-I	305-D
26-L	57-L	103-I	203-L	22-D	35-L	111-L	323-L
26-I	61-D	110-L	220-L	22-I	37-L	120-L	
28-L	62-L	154-L	284-D	23-L	39-D	163-I	
29-L	63-I	175-I	286-L	25-D	40-L	175-L	
29-I	65-D	177-I	288-L	28-D	43-I	200-D	
31-I	66-L	184-L	305-L	29-D	44-D	202-I	
34-L	73-L	223-D		31-D	57-D	203-I	
38-I	74-L	225-L		32-L	62-D	223-L	
39-I	81-D	226-D		34-D	65-L	225-D	
47-D	86-L	247-I		36-I	66-D	226-L	
48-D	88-D	274-I		38-D	73-D	235-L	
49-I	92-D	275-I		41-L	82-I	247-L	
52-I	95-D	280-I		41-I	86-D	261-D	
54-D	99-D	306-D		45-I	89-D	262-D	
55-D	107-D	308-D		45-D	91-I	263-D	
56-D	108-D	310-D		47-L	100-D	274-D	
58-I	111-L	313-D		48-I	101-L	275-D	
58-D	119-L	320-L		49-L	102-L	280-L	

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
60-D	120-I	323-D		50-D	104-D	282-L	
63-L	120-D	369-L		53-I	105-L	284-L	
64-D	122-L			55-L	108-L	285-L	
67-I	128-D			56-L	110-D	286-D	
68-I	132-L			60-L	122-D	288-D	
70-L	133-L			61-L	128-L	302-D	
75-D	139-D			61-I	146-L	306-L	
76-I	143-D			62-I	154-I	320-D	
77-D	160-L			67-D	155-D	332-D	
78-L	162-L			70-L	160-D	335-D	
79-L	164-L			74-L	164-I	342-L	
83-I	172-L			74-I	169-D	347-D	
85-D	179-I			75-I	173-L	356-D	
89-L	189-L			76-L	179-L	369-D	
89-I	191-I			77-L	189-D		
90-D	197-D			78-D	190-L		
98-L	200-L			79-I	191-L		
100-L	216-L			83-L	197-L		
100-I	218-L			85-L	198-L		
101-I	232-L			87-D	202-D		
101-D	233-L			88-I	203-D		
102-D	235-D			90-L	220-I		
103-D	237-I			90-I	220-D		
105-I	238-I			91-L	224-L		
105-D	245-L			92-L	228-L		
106-L	245-I			92-I	237-D		
108-I	248-I			95-L	238-D		
111-I	255-L			95-I	243-D		
112-L	260-I			96-D	248-D		
113-I	261-I			98-D	249-D		
115-D	262-I			99-L	260-D		
116-I	263-I			106-D	278-D		

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
116-D	271-L			107-L	287-L		
121-L	278-I			109-L	289-D		
123-D	282-I			110-I	291-D		
124-L	283-L			112-I	293-L		
125-L	284-I			113-L	304-L		
126-L	285-D			115-L	308-L		
127-D	287-D			116-L	309-L		
128-I	290-I			117-D	310-L		
129-L	293-D			119-I	311-L		
130-I	297-D			121-I	313-L		
130-D	299-L			123-L	328-D		
131-L	302-L			124-I	329-D		
134-I	304-I			124-D	331-D		
135-L	307-D			125-D	339-D		
136-L	309-L			126-I	349-L		
137-D	312-D			127-L	352-L		
141-I	316-L			130-L	353-L		
142-L	328-L			131-D	355-L		
146-I	332-L			132-I	368-D		
146-D	335-L			132-D	380-L		
147-D	339-I			133-D	394-L		
149-L	342-I			134-L	395-L		
150-D	345-I			135-D			
153-L	347-L			137-L			
156-D	349-I			138-L			
157-D	351-I			139-L			
158-L	352-I			141-L			
159-L	353-I			142-I			
165-I	355-I			143-L			
167-L	368-L			143-I			
169-L	380-D			147-L			
169-I	388-L			149-I			

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
170-I	394-I			150-I			
171-D	395-I			152-L			
173-D				153-D			
175-D				154-D			
177-D				155-I			
180-L				156-L			
181-L				157-I			
182-L				161-D			
187-D				162-I			
188-I				162-D			
190-I				163-D			
190-D				165-L			
191-D				167-I			
192-I				167-D			
193-L				170-D			
194-L				171-L			
195-D				172-I			
196-I				172-D			
198-I				176-L			
198-D				180-I			
199-L				181-I			
199-I				184-I			
201-L				184-D			
201-I				187-L			
204-L				188-L			
206-I				192-L			
207-I				193-D			
208-I				194-D			
209-I				195-L			
210-D				196-D			
214-I				199-D			
215-D				201-D			

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
219-L				204-D			
222-D				205-D			
224-I				206-D			
224-D				207-L			
228-I				208-L			
229-I				209-L			
234-I				210-L			
235-I				215-L			
237-L				216-I			
239-D				216-D			
240-I				217-D			
242-I				218-I			
243-L				218-D			
246-L				219-D			
247-D				221-D			
249-L				222-L			
249-I				229-D			
250-L				232-I			
251-I				232-D			
252-I				233-I			
256-I				233-D			
257-I				234-L			
258-I				240-L			
259-I				242-L			
262-L				246-D			
263-L				250-D			
264-I				251-D			
265-I				252-D			
266-L				253-D			
268-I				255-I			
269-I				255-D			
270-I				256-D			

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
272- I				257-D			
273- I				258-L			
279- I				259-D			
281- I				264-D			
282-D				265-D			
285- I				266-D			
289-L				268-D			
289- I				270-D			
291-L				271- I			
291- I				271-D			
294-L				272-D			
295-L				273-D			
296-D				279-D			
298-D				281-L			
301- I				283- I			
302- I				283-D			
304-D				288- I			
311- I				290-L			
311-D				290-D			
314- I				294-D			
317-L				295- I			
318-D				297- I			
319-L				298-L			
321-D				299- I			
322-L				299-D			
324-L				300-D			
325- I				301-L			
327-L				305- I			
329-L				307-L			
330-L				307- I			
331- I				308- I			
332- I				310- I			

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
334-I				312-L			
336-I				312-I			
337-L				313-I			
339-L				314-L			
340-I				316-I			
341-I				316-D			
342-D				317-D			
344-L				318-L			
346-L				319-I			
347-I				319-D			
348-I				321-L			
350-L				322-D			
350-I				324-D			
353-D				325-D			
356-L				327-D			
356-I				330-D			
357-D				334-L			
358-I				336-L			
359-I				337-D			
360-I				338-L			
361-L				340-L			
362-D				341-L			
364-I				341-D			
365-L				343-D			
374-D				345-D			
375-I				346-I			
379-L				348-L			
381-I				350-D			
383-I				351-D			
385-I				358-L			
386-I				359-L			
391-L				360-L			

APPENDIX I (Continued)

Plus One: Pct. Diff., 6–15	Plus Two: Pct. Diff., 16–25	Plus Three: Pct. Diff., 26–35	Plus Four: Pct. Diff., 36 & Over	Minus One: Pct. Diff., 6–15	Minus Two: Pct. Diff., 16–25	Minus Three: Pct. Diff., 26–35	Minus Four: Pct. Diff., 36 & Over
392-D				361-D			
393-I				362-L			
396-I				364-L			
397-L				365-I			
399-D				365-D			
				367-L			
				372-L			
				374-L			
				375-L			
				381-L			
				382-L			
				383-L			
				385-L			
				386-L			
				388-I			
				388-D			
				391-I			
				393-D			
				396-D			
				397-I			
				399-L			
				399-I			

APPENDIX J

SCORING WEIGHTS FOR ART TEACHERS KEY

APPENDIX J

SCORING WEIGHTS FOR ART TEACHERS KEY

Item	L	I	D	Item	L	I	D
1	3		-3	36		-1	2
2	3	-1	-2	37	-2	2	
3	4	-3	-2	38		1	-1
4	-1			39	2	1	-2
5	4	-4	-3	40	2		-2
6	1		-2	41	-1	-1	2
7				42			
8				43	4	-2	-4
9	3	-1	-2	44	2		-2
10	1			45	2	-1	-1
11		-1	1	46	3		-3
12				47	-1		1
13				48		-1	1
14	1		-1	49	-1	1	
15	-1		1	50	2		-1
16	-1	-1	1	51			
17	-1			52	-3	1	3
18		1	-1	53		-1	
19	1		-2	54			1
20	4	-2	-3	55	-1		1
21	-2	-1	3	56	-1		1
22	-1	-1	3	57	2		-2
23	-1		1	58	-3	1	1
24	-2	1	1	59			
25		2	-1	60	-1		1
26	1	1	-2	61	-1	-1	2
27	4	-2	-4	62	2	-1	-2
28	1		-1	63	1	2	-3
29	1	1	-1	64			1
30	2		-2	65	-2		2
31		1	-1	66	2		-2
32	-1		2	67		1	-1
33				68	3	1	-4
34	1		-1	69			
35	-2		3	70	1		-1

APPENDIX J (Continued)

Item	L	I	D	Item	L	I	D
71	3		-3	108	-2	1	2
72				109	-1		
73	2		-2	110	3	-1	-2
74	-1	-1	2	111	-3	1	2
75		-1	1	112	1	-1	
76	-1	1		113	-1	1	
77	-1		1	114			
78	1		-1	115	-1		1
79	1	-1		116	-1	1	1
80				117			-1
81	-3		2	118			
82	4	-2	-4	119	2	-1	
83	-1	1		120	-3	2	2
84	4	-3	-4	121	1	-1	
85	-1		1	122	2		-2
86	2		-2	123	-1		1
87			-1	124	1	-1	-1
88		-1	2	125	1		-1
89	1	1	-2	126	1	-1	
90	-1	-1	1	127	-1		1
91	-1	-2	3	128	-2	1	2
92	-1	-1	2	129	1		
93				130	-1	1	1
94				131	1		-1
95	-1	-1	2	132	2	-1	-1
96			-1	133	2		-1
97				134	-1	1	
98	1		-1	135	1		-1
99	-1		2	136	1		
100	1	1	-2	137	-1		1
101	-2	1	1	138	-1		
102	-2		1	139	-1		2
103	-4	3	1	140			
104	4	-4	-2	141	-1	1	
105	-2	1	1	142	1	-1	
106	1		-1	143	-1	-1	2
107	-1		2	144			

APPENDIX J (Continued)

Item	L	I	D	Item	L	I	D
145				182	1		
146	-2	1	1	183			
147	-1		1	184	3	-1	-1
148				185			
149	1	-1		186			
150		-1	1	187	-1		1
151				188	-1	1	
152	-1			189	2		-2
153	1		-1	190	-2	1	1
154	3	-2	-1	191	-2	2	1
155	4	-1	-2	192	-1	1	
156	-1		1	193	1		-1
157		-1	1	194	1		-1
158	1			195	-1		1
159	1			196		1	-1
160	2		-2	197	-2		2
161			-1	198	-2	1	1
162	2	-1	-1	199	1	1	-1
163	4	-3	-1	200	2		-3
164	2	-2		201	1	1	-1
165	-1	1		202	4	-3	-2
166				203	4	-3	-2
167	1	-1	-1	204	1		-1
168				205			-1
169	1	1	-2	206		1	-1
170		1	-1	207	-1	1	
171	-1		1	208	-1	1	
172	2	-1	-1	209	-1	1	
173	-2		1	210	-1		1
174				211			
175	-3	3	1	212			
176	-1			213			
177	-4	3	1	214		1	
178				215	-1		1
179	-2	2		216	2	-1	-1
180	1	-1		217			-1
181	1	-1		218	2	-1	-1

APPENDIX J (Continued)

Item	L	I	D	Item	L	I	D
219	1		-1	256		1	-1
220	4	-2	-2	257		1	-1
221			-1	258	-1	1	
222	-1		1	259		1	-1
223	-3		3	260		2	-2
224	-2	1	1	261		2	-3
225	3		-3	262	1	2	-3
226	-3		3	263	1	2	-3
227				264		1	-1
228	-2	1		265		1	-1
229		1	-1	266	1		-1
230				267			
231				268		1	-1
232	2	-1	-1	269		1	
233	2	-1	-1	270		1	-1
234	-1	1		271	2	-1	-1
235	-3	1	2	272		1	-1
236				273		1	-1
237	1	2	-2	274		3	-3
238		2	-2	275		3	-3
239			1	276			
240	-1	1		277			
241				278		2	-2
242	-1	1		279		1	-1
243	1		-2	280	-3	3	
244				281	-1	1	
245	2	2		282	-3	2	1
246	1		-1	283	2	-1	-1
247	-3	3	1	284	-3	2	4
248		2	-2	285	-3	1	2
249	1	1	-2	286	4	-4	-3
250	1		-1	287	-2		2
251		1	-1	288	4	-1	-3
252		1	-1	289	1	1	-2
253			-1	290	-1	2	-1
254				291	1	1	-2
255	2	-1	-1	292			

APPENDIX J (Continued)

Item	L	I	D	Item	L	I	D
293	-2		2	330	1		-1
294	1		-1	331		1	-2
295	1	-1		332	2	1	-3
296			1	333			
297		-1	2	334	-1	1	
298		-1	1	335	2		-3
299	2	-1	-1	336	-1	1	
300			-1	337	1		-1
301	-1	1		338	-1		
302	2	1	-3	339	1	2	-2
303				340	-1	1	
304	-2	2	1	341	-1	1	-1
305	4	-1	-4	342	-3	2	1
306	-3		3	343			-1
307	-1	-1	2	344	1		
308	-2	-1	3	345		2	-1
309	2		-2	346	1	-1	
310	-2	-1	3	347	2	1	-3
311	-2	1	1	348	-1	1	
312	-1	-1	2	349	-2	2	
313	-2	-1	3	350	1	1	-1
314	-1	1		351		2	-1
315				352	-2	2	
316	2	-1	-1	353	-2	2	1
317	1		-1	354			
318	-1		1	355	-2	2	
319	1	-1	-1	356	1	1	-3
320	3		-3	357			1
321	-1		1	358	-1	1	
322	1		-1	359	-1	1	
323	-4		3	360	-1	1	
324	1		-1	361	1		-1
325		1	-1	362	-1		1
326				363			
327	1		-1	364	-1	1	
328	2		-2	365	1	-1	-1
329	1		-2	366			

APPENDIX J (Continued)

Item	L	I	D	Item	L	I	D
367	-1			384			
368	2		-2	385	-1	1	
369	3		-3	386	-1	1	
370				387			
371				388	2	-1	-1
372	-1			389			
373				390			
374	-1		1	391	1	-1	
375	-1	1		392			1
376				393		1	-1
377				394	-2	2	
378				395	-2	2	
379	1			396	1		-1
380	-2		2	397	1	-1	
381	-1	1		398			
382	-1			399	-1	-1	1
383	-1	1		400			

APPENDIX K

NUMBERS AND PERCENTAGES OF VALIDATING

GROUP SELECTING EACH ITEM RESPONSE

APPENDIX K

NUMBERS AND PERCENTAGES OF VALIDATING GROUP
(N=93) SELECTING EACH ITEM RESPONSE

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
1	51	55	25	27	17	18
2	57	61	29	31	7	8
3	76	82	16	17	1	1
4	13	14	31	33	49	53
5	91	98	2	2	0	0
6	29	31	48	52	16	17
7	16	17	41	44	36	39
8	4	4	31	33	58	62
9	55	59	25	27	13	14
10	37	40	38	41	18	19
11	5	5	22	24	66	71
12	4	4	24	26	65	70
13	14	15	34	37	45	48
14	24	26	44	47	25	27
15	3	3	32	34	58	62
16	2	2	27	29	64	69
17	22	24	47	51	24	26
18	28	30	43	46	22	24
19	40	43	39	42	14	15
20	62	67	22	24	9	10
21	4	4	33	35	55	59
22	1	1	30	32	62	67
23	17	18	48	52	28	30
24	19	20	48	52	26	28
25	5	5	57	61	31	33
26	20	22	35	38	38	41
27	80	86	13	14	0	0
28	34	37	45	48	14	15
29	8	9	33	35	52	56
30	50	54	32	34	11	12
31	36	39	45	48	12	13
32	11	12	42	45	40	43

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
33	16	17	42	45	35	38
34	53	57	31	33	9	10
35	6	6	36	39	51	55
36	1	1	17	18	75	81
37	20	22	43	46	30	32
38	1	1	21	23	71	76
39	35	38	36	39	22	24
40	40	43	32	34	21	23
41	13	14	41	44	39	42
42	23	25	40	43	30	32
43	72	77	20	22	1	1
44	22	24	50	54	21	23
45	57	61	29	31	7	8
46	28	30	44	47	21	23
47	14	15	48	52	31	33
48	7	8	30	32	56	60
49	8	9	52	56	33	35
50	52	56	28	30	13	14
51	13	14	36	39	44	47
52	4	4	38	41	51	55
53	18	19	48	52	27	29
54	1	1	19	20	73	78
55	12	13	33	35	48	52
56	11	12	32	34	50	54
57	39	42	34	37	20	22
58	15	16	47	51	31	33
59	13	14	39	42	41	44
60	16	17	46	48	31	33
61	1	1	46	49	46	49
62	55	59	30	32	8	9
63	25	27	43	46	25	27
64	1	1	25	27	67	72
65	9	10	36	39	48	52
66	46	49	34	37	13	14
67	8	9	49	53	36	29

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
68	27	29	53	57	13	14
69	24	26	43	46	26	28
70	19	20	43	46	31	33
71	40	43	34	37	19	20
72	6	6	26	28	61	66
73	27	29	50	54	16	17
74	2	2	41	44	50	54
75	2	2	32	34	59	63
76	25	27	40	43	28	30
77	4	4	30	32	59	63
78	19	20	47	51	27	29
79	11	12	35	38	47	51
80	8	9	38	41	47	51
81	10	11	30	32	53	57
82	88	95	4	4	1	1
83	35	38	42	45	16	17
84	88	95	5	5	0	0
85	0	0	48	52	45	48
86	26	28	35	38	32	34
87	21	23	41	44	31	33
88	2	2	38	41	53	57
89	21	23	47	51	25	27
90	2	2	33	35	58	62
91	6	6	33	35	54	58
92	7	8	38	41	48	52
93	29	31	29	31	35	38
94	17	18	40	43	36	39
95	4	4	28	30	61	66
96	7	8	36	39	50	54
97	2	2	18	19	73	78
98	13	14	40	43	40	43
99	1	1	42	45	50	54
100	15	16	42	45	36	39
101	36	39	33	35	24	26
102	19	20	51	55	23	25
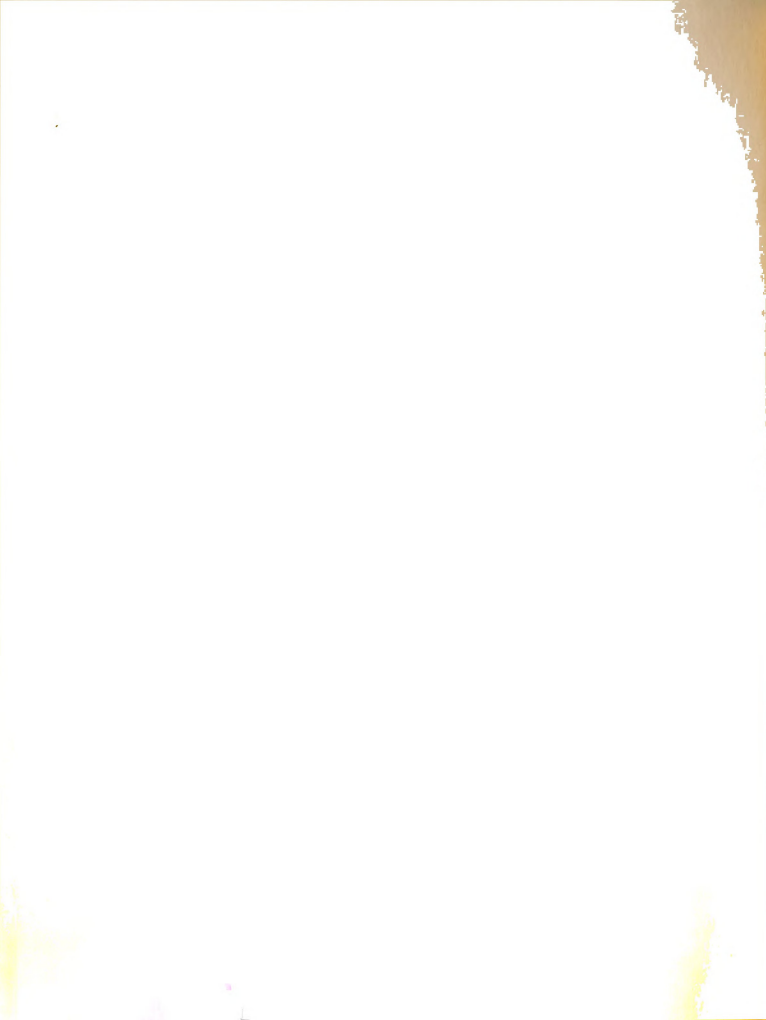
APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
103	40	43	36	39	17	18
104	90	97	3	3	0	0
105	6	6	40	43	47	51
106	60	65	29	31	4	4
107	8	9	39	42	46	49
108	28	30	43	46	22	24
109	42	45	44	47	7	8
110	53	57	32	34	8	9
111	26	28	51	55	16	17
112	43	46	37	40	13	14
113	69	74	23	25	1	1
114	43	46	43	46	7	8
115	38	41	30	32	25	27
116	69	74	16	17	8	9
117	21	23	29	31	43	46
118	29	31	44	47	20	22
119	64	69	21	23	8	9
120	32	34	41	44	20	22
121	56	60	24	26	13	14
122	67	72	23	25	3	3
123	13	14	35	38	45	48
124	63	68	24	26	6	6
125	60	65	29	31	4	4
126	70	75	21	23	2	2
127	39	42	32	34	22	24
128	29	31	44	47	20	22
129	65	70	23	25	5	5
130	33	35	48	52	12	13
131	40	43	33	35	20	22
132	55	59	28	30	10	11
133	41	44	46	49	6	6
134	38	41	33	35	22	24
135	26	28	48	52	19	20
136	38	41	47	51	8	9
137	33	35	42	45	18	19

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
138	39	42	35	38	19	20
139	22	24	37	40	34	37
140	51	55	33	35	9	10
141	68	73	21	23	4	4
142	77	83	13	14	3	3
143	15	16	28	30	50	54
144	31	33	36	39	26	28
145	30	32	20	22	43	46
146	23	25	31	33	39	42
147	43	46	38	41	12	13
148	29	31	37	40	27	29
149	22	24	36	39	35	38
150	17	18	32	34	44	47
151	12	13	26	28	55	59
152	30	32	42	45	21	23
153	30	32	42	45	21	23
154	67	72	22	24	4	4
155	64	69	25	27	4	4
156	20	22	32	34	41	44
157	2	2	18	19	73	78
158	44	47	37	40	12	13
159	22	24	39	42	32	34
160	31	33	39	42	23	25
161	5	5	27	29	61	66
162	68	73	22	24	3	3
163	91	98	2	2	0	0
164	88	95	5	5	0	0
165	47	51	42	45	4	4
166	78	84	13	14	2	2
167	77	83	14	15	2	2
168	10	11	48	52	35	38
169	8	9	40	43	45	48
170	4	4	38	41	51	55
171	32	34	40	43	21	23
172	52	56	31	33	10	11

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
173	38	41	34	37	21	23
174	75	81	17	18	1	1
175	16	17	61	66	16	17
176	17	18	61	66	15	16
177	3	3	73	78	17	18
178	79	85	14	15	0	0
179	25	27	60	65	8	9
180	51	55	32	34	10	11
181	56	60	32	34	5	5
182	80	86	12	13	1	1
183	84	90	9	10	0	0
184	62	67	28	30	3	3
185	21	23	33	35	39	42
186	23	25	39	42	31	33
187	22	24	33	35	38	41
188	34	37	32	34	27	29
189	52	56	33	35	8	9
190	25	27	37	40	31	33
191	16	17	48	52	29	31
192	30	32	41	44	22	24
193	59	63	23	25	11	12
194	44	47	40	43	9	10
195	26	28	27	29	40	43
196	28	30	43	46	22	24
197	4	4	37	40	52	56
198	15	16	44	47	34	37
199	24	26	48	52	21	23
200	40	43	31	33	22	24
201	33	35	46	49	14	15
202	85	91	8	9	0	0
203	79	85	14	15	0	0
204	39	42	45	48	9	10
205	38	41	41	44	14	15
206	53	57	38	41	2	2
207	75	81	16	17	2	2

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
208	67	72	22	24	4	4
209	45	48	37	40	11	12
210	9	10	27	29	57	61
211	9	10	30	32	54	58
212	56	60	30	32	7	8
213	3	3	27	29	63	68
214	27	29	34	37	32	34
215	17	18	38	41	38	41
216	48	52	31	33	14	15
217	21	23	40	43	32	34
218	67	72	22	24	4	4
219	38	41	31	33	24	26
220	67	72	21	23	5	5
221	30	32	39	42	24	26
222	13	14	41	44	39	42
223	26	28	37	40	30	32
224	38	41	33	35	22	24
225	56	60	22	24	15	16
226	13	14	34	37	46	49
227	48	52	39	42	6	6
228	34	37	52	56	7	8
229	14	15	39	42	40	43
230	30	32	31	33	32	34
231	11	12	26	28	56	60
232	10	11	48	52	35	38
233	43	46	31	33	19	20
234	69	74	17	18	7	8
235	32	34	47	51	14	15
236	74	80	14	15	5	5
237	7	8	51	55	35	38
238	1	1	42	45	50	54
239	3	3	23	25	67	72
240	48	52	38	41	7	8
241	2	2	37	40	54	58
242	72	77	19	20	2	2
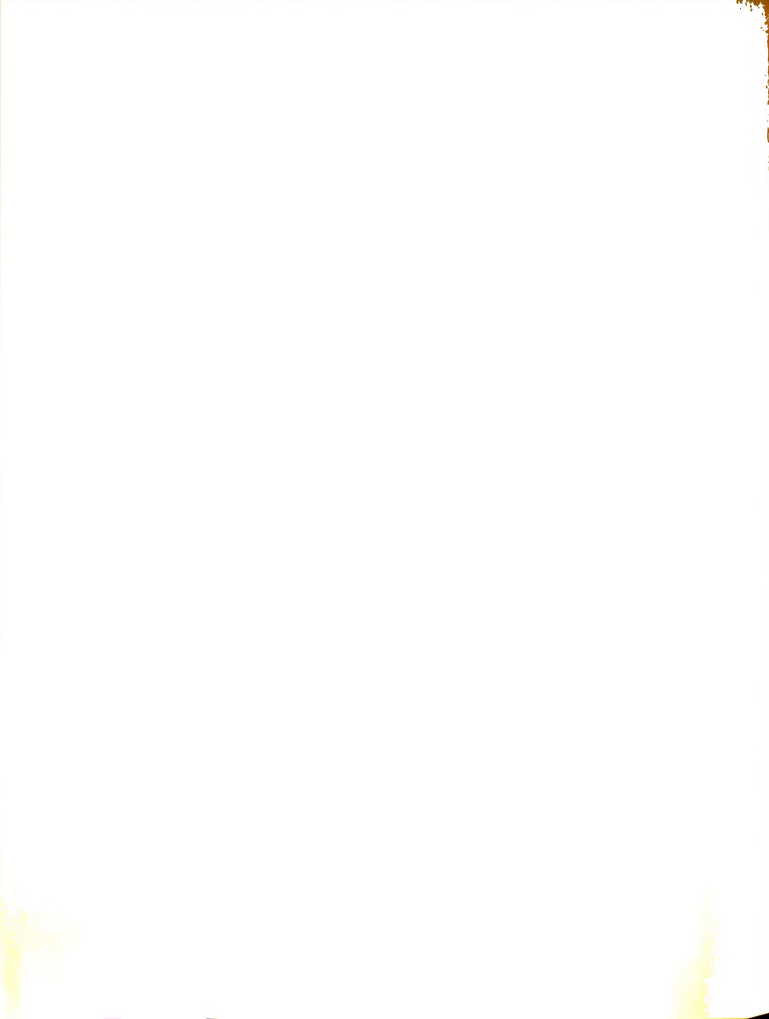
APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
243	62	67	20	22	11	12
244	6	6	39	42	48	52
245	15	16	70	75	8	9
246	19	20	47	51	27	29
247	31	33	53	57	9	10
248	4	4	50	54	39	42
249	15	16	45	48	33	35
250	24	26	60	65	9	10
251	1	1	57	61	35	38
252	55	59	37	40	1	1
253	4	4	41	44	48	52
254	4	4	35	38	54	58
255	31	33	61	66	1	1
256	9	10	65	70	19	20
257	3	3	54	58	36	39
258	27	29	63	68	3	3
259	14	15	74	80	5	5
260	2	2	47	51	44	47
261	4	4	77	83	12	13
262	3	3	83	89	7	8
263	5	5	80	86	8	9
264	23	25	65	70	5	5
265	17	18	71	76	5	5
266	13	14	64	69	16	17
267	7	8	47	51	39	42
268	1	1	33	35	59	63
269	8	9	57	61	28	30
270	4	4	38	41	51	55
271	49	53	40	43	4	4
272	6	6	46	49	41	44
273	2	2	82	88	9	10
274	8	9	71	76	14	15
275	0	0	55	59	38	41
276	43	46	48	52	2	2
277	2	2	60	65	31	33

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
278	2	2	45	48	46	49
279	4	4	65	70	24	26
280	27	29	65	70	1	1
281	14	15	50	54	29	31
282	7	8	65	70	21	23
283	55	59	34	37	4	4
284	1	1	33	35	59	63
285	2	2	51	55	40	43
286	91	98	2	2	0	0
287	0	0	25	27	68	73
288	62	67	28	30	3	3
289	39	42	49	53	5	5
290	8	9	35	38	50	54
291	22	24	50	54	21	23
292	33	35	33	35	27	29
293	17	18	42	45	34	37
294	16	17	47	51	30	32
295	59	63	25	27	9	10
296	10	11	43	46	40	43
297	7	8	28	30	58	62
298	10	11	49	53	34	37
299	75	81	14	15	4	4
300	30	32	41	44	22	24
301	44	47	34	37	15	16
302	33	35	41	44	19	20
303	50	54	40	43	3	3
304	17	18	45	48	31	33
305	75	81	15	16	3	3
306	13	14	39	42	41	44
307	7	8	21	23	65	70
208	2	2	44	47	47	51
309	32	34	45	48	16	17
310	6	6	48	52	39	42
311	42	45	25	27	26	28
312	6	6	25	27	62	67

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
313	17	18	21	23	55	59
314	35	38	52	56	6	6
315	13	14	56	60	24	26
316	46	49	42	45	5	5
317	25	27	33	35	35	38
318	5	5	48	52	39	42
319	40	43	38	41	15	16
320	50	54	31	33	12	13
321	29	31	43	46	21	23
322	29	31	42	45	22	24
323	30	32	28	30	35	38
324	31	33	26	28	36	39
325	4	4	30	32	59	63
326	3	3	5	5	85	91
327	10	11	17	18	66	71
328	53	57	38	41	2	2
329	55	59	30	32	8	9
330	57	61	25	27	11	12
331	30	32	30	32	33	35
332	39	42	39	42	15	16
333	10	11	48	52	35	38
334	18	19	38	41	37	40
335	65	70	20	22	8	9
336	51	55	33	35	9	10
337	77	83	11	12	5	5
338	9	10	27	29	57	61
339	27	29	54	58	12	13
340	58	62	26	28	9	10
341	26	28	39	42	28	30
342	21	23	47	51	25	27
343	25	27	33	35	35	38
344	69	74	18	19	6	6
345	6	6	64	69	23	25
346	79	85	12	13	2	2
347	48	52	31	33	14	15

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
348	29	31	29	31	35	38
349	29	31	48	52	16	17
350	25	27	33	35	34	37
351	12	13	39	42	42	45
352	42	45	48	52	3	3
353	32	34	43	46	18	19
354	6	6	24	26	63	68
355	40	43	36	39	17	18
356	20	22	53	57	20	22
357	3	3	74	80	16	17
358	17	18	75	81	1	1
359	10	11	76	82	7	8
360	6	6	62	67	25	27
361	66	71	17	18	10	11
362	56	60	8	9	29	31
363	58	62	21	23	14	15
364	42	45	27	29	24	26
365	39	42	38	41	16	17
366	53	57	26	28	14	15
367	64	69	25	27	4	4
368	47	51	21	23	25	27
369	52	56	33	35	8	9
370	85	91	5	5	3	3
371	83	89	9	10	1	1
372	74	80	13	14	6	6
373	59	63	12	13	22	24
374	18	19	22	24	53	57
375	44	47	38	41	11	12
376	66	71	24	26	3	3
377	17	18	18	19	58	62
378	51	55	32	34	10	11
379	72	77	20	22	1	1
380	45	48	17	18	31	33
381	47	51	38	41	8	9
382	47	51	34	37	12	13

APPENDIX K (Continued)

Item	Like		Indifferent		Dislike	
	No.	Pct.	No.	Pct.	No.	Pct.
383	49	53	39	42	5	5
384	45	48	31	33	17	18
385	65	70	26	28	2	2
386	49	53	34	37	10	11
387	90	97	3	3	0	0
388	79	85	6	6	8	9
389	19	20	57	61	16	17
390	8	9	24	26	60	65
391	24	26	43	25	46	49
392	14	15	24	26	55	59
393	13	14	55	59	25	27
394	21	23	71	76	1	1
395	13	14	72	77	8	9
396	0	0	34	37	59	63
397	39	42	34	37	20	22
398	46	49	44	47	3	3
399	1	1	36	39	56	60
400	49	53	40	43	4	4
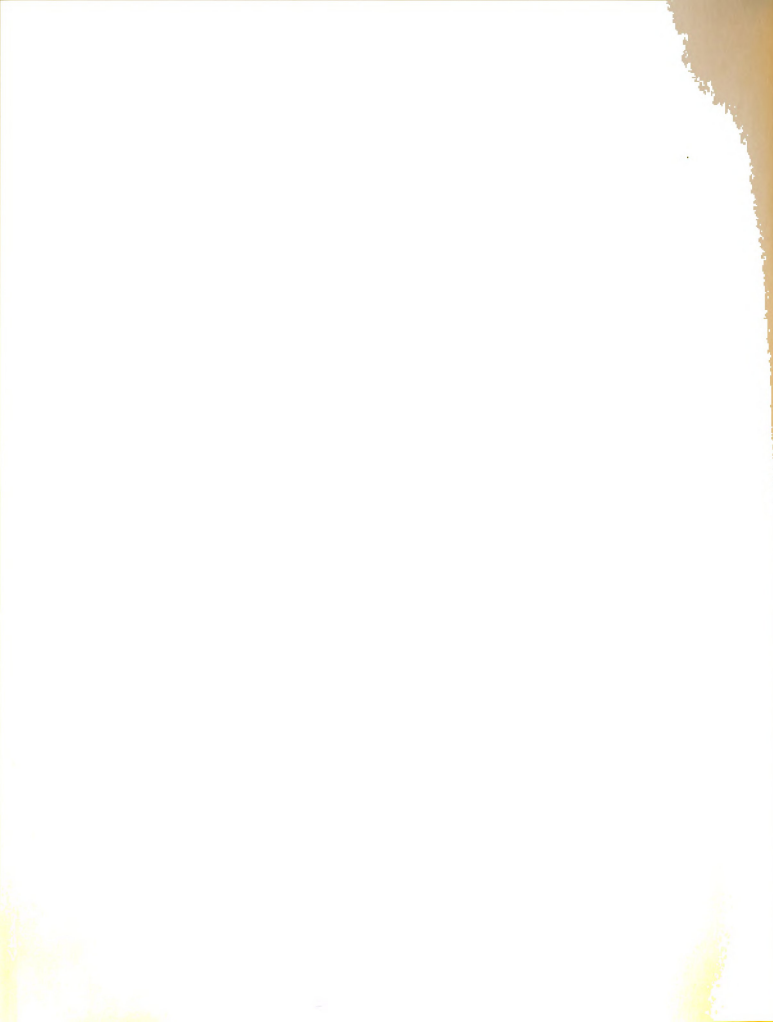
APPENDIX L

COMPARISON OF PERCENTAGES OF RESPONSES OF KEY

GROUP AND VALIDATING GROUP TO EACH ITEM
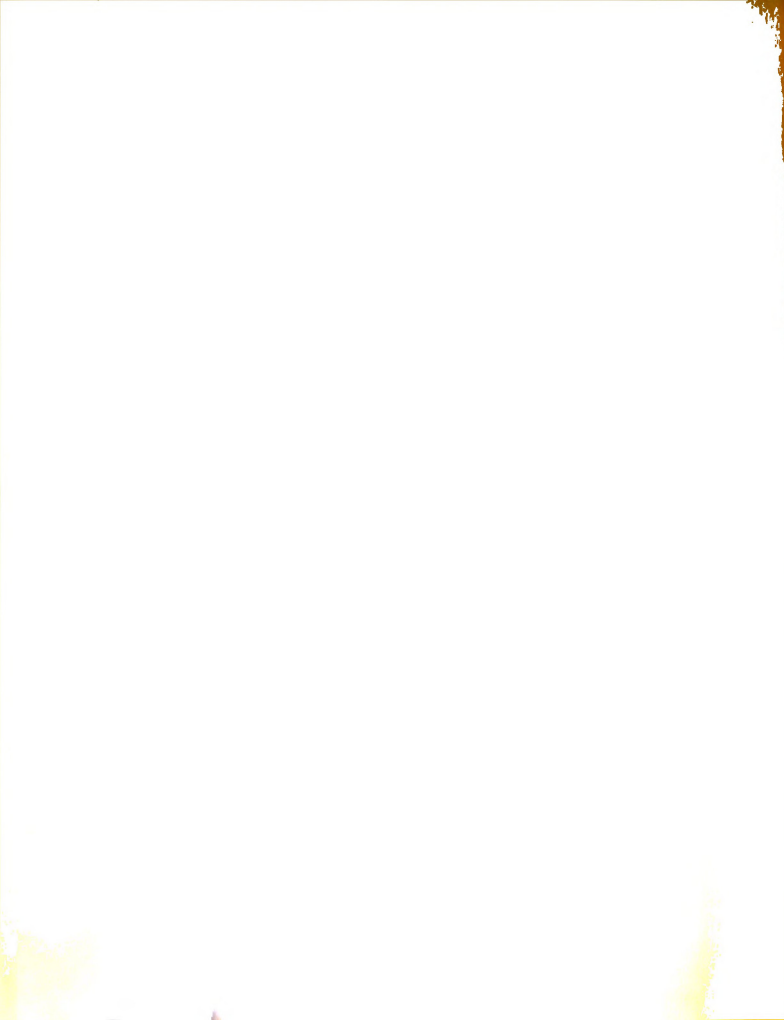
APPENDIX L

COMPARISON OF PERCENTAGES OF RESPONSES
OF KEY GROUP (N=335) AND VALIDATING
GROUP (N=93) TO EACH ITEM

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
1	54	55	33	27	13	18
2	59	61	32	31	9	8
3	84	82	14	17	2	1
4	15	14	31	33	54	53
5	97	98	2	2	1	0
6	39	31	48	52	13	17
7	21	17	42	44	37	39
8	6	4	28	33	66	62
9	65	59	27	27	7	14
10	37	40	37	41	25	19
11	9	5	26	24	64	71
12	14	4	27	26	59	70
13	17	15	26	37	57	48
14	40	26	37	47	23	27
15	3	3	30	34	67	62
16	3	2	23	29	74	69
17	28	24	45	51	27	26
18	38	30	43	46	19	24
19	43	43	42	42	15	15
20	68	67	27	24	4	10
21	4	4	28	35	68	59
22	4	1	22	32	74	67
23	24	18	41	52	36	30
24	23	20	46	52	31	28
25	7	5	55	61	38	33
26	23	22	40	38	38	41
27	87	86	12	14	1	0
28	43	37	44	48	13	15
29	16	9	31	35	54	56
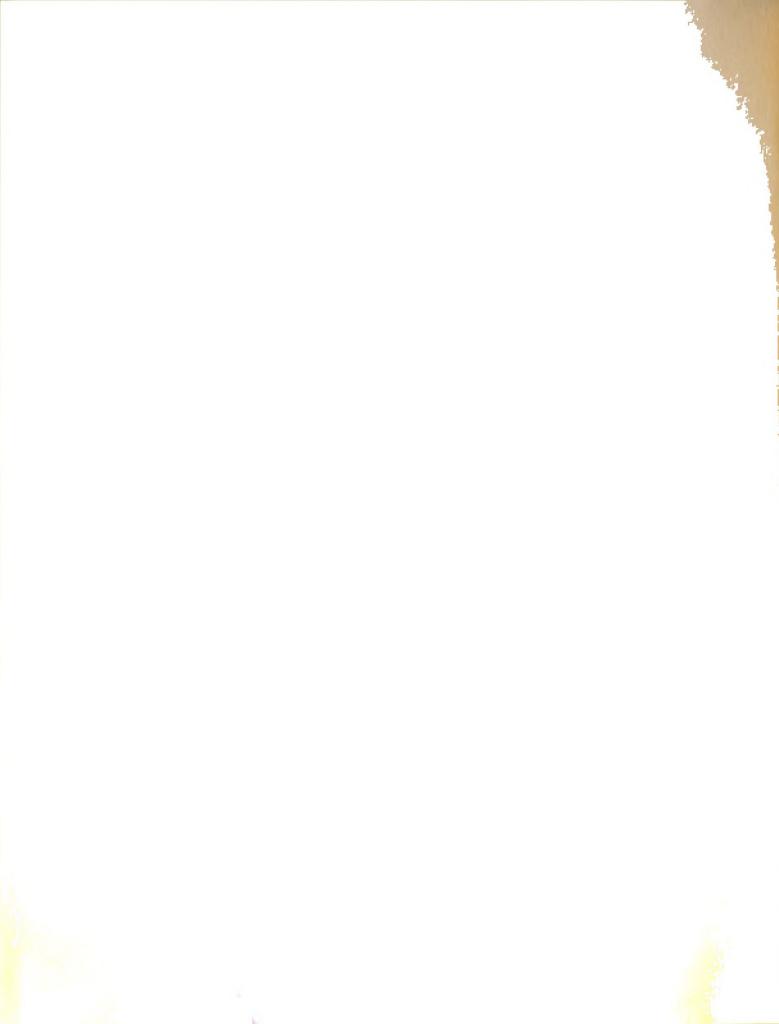
APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
30	46	54	35	34	19	12
31	41	39	43	48	16	13
32	19	12	36	45	45	43
33	29	17	37	45	33	38
34	64	57	28	33	8	10
35	15	6	36	39	49	55
36	1	1	18	18	81	81
37	16	22	45	46	39	32
38	4	1	25	23	71	76
39	35	38	43	39	22	24
40	48	43	37	34	15	23
41	20	14	34	44	46	42
42	20	25	39	43	41	32
43	76	77	21	22	3	1
44	29	24	43	54	28	23
45	67	61	27	31	6	8
46	37	30	42	47	21	23
47	26	15	38	52	36	33
48	16	8	27	32	57	60
49	11	9	43	56	45	35
50	53	56	31	30	16	14
51	24	14	29	39	47	47
52	9	4	33	41	58	55
53	18	19	34	52	48	29
54	3	1	20	20	77	78
55	14	13	41	35	45	52
56	15	12	35	34	50	54
57	51	42	35	37	14	22
58	25	16	48	51	27	33
59	17	14	43	42	40	44
60	22	17	36	48	41	33
61	7	1	38	49	54	49
62	62	59	28	32	10	9

APPENDIX L (Continued)

Item	Like Key Group	Like Validating Group	Indifferent Key Group	Indifferent Validating Group	Dislike Key Group	Dislike Validating Group
63	20	27	47	46	34	27
64	1	1	25	27	74	72
65	12	10	35	39	53	52
66	41	49	34	37	25	14
67	10	9	44	53	46	29
68	35	29	45	57	20	14
69	37	26	34	46	30	28
70	24	20	47	46	30	33
71	45	43	34	37	21	20
72	16	6	26	28	59	66
73	30	29	44	54	26	17
74	5	2	28	44	66	54
75	7	2	27	34	65	63
76	36	27	39	43	25	30
77	7	4	29	32	63	63
78	29	20	43	51	28	29
79	22	12	32	38	46	51
80	14	9	45	41	40	51
81	9	11	37	32	54	57
82	88	95	11	4	1	1
83	37	38	37	45	25	17
84	94	95	6	5	1	0
85	4	0	35	52	61	48
86	36	28	36	38	28	34
87	24	23	41	44	35	33
88	9	2	34	41	57	57
89	28	23	41	51	31	27
90	7	2	27	35	66	62
91	5	6	21	35	74	58
92	9	8	27	41	64	52
93	36	31	30	31	35	38
94	19	18	34	43	47	39
95	5	4	22	30	73	66

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
96	5	8	31	39	64	54
97	4	2	16	19	81	78
98	14	14	39	43	47	43
99	8	1	39	45	53	54
100	19	16	46	45	36	39
101	39	39	31	35	30	26
102	19	20	49	55	32	25
103	37	43	42	39	21	18
104	98	97	2	3	0	0
105	8	6	42	43	50	51
106	50	65	39	31	11	4
107	14	9	36	42	49	49
108	29	30	40	46	31	24
109	44	45	40	47	16	8
110	56	57	35	34	9	9
111	28	28	46	55	25	17
112	56	46	33	40	11	14
113	62	74	32	25	6	1
114	51	46	41	46	8	8
115	46	41	30	32	24	27
116	63	74	25	17	12	9
117	21	23	42	31	37	46
118	40	31	40	47	20	22
119	75	69	19	23	6	9
120	36	34	36	44	28	22
121	60	60	29	26	11	14
122	60	72	33	25	7	3
123	17	14	35	38	48	48
124	63	68	28	26	9	6
125	61	65	34	31	4	4
126	69	75	27	23	5	2
127	43	42	36	34	21	24
128	33	31	39	47	28	22

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
129	70	70	25	25	6	9
130	37	35	47	52	16	13
131	51	43	37	35	12	22
132	55	59	31	30	14	11
133	53	44	40	49	7	6
134	41	41	43	35	16	24
135	32	28	48	52	20	20
136	44	41	43	51	13	9
137	46	35	32	45	22	19
138	55	42	29	38	16	20
139	38	24	26	40	36	37
140	50	55	37	35	13	10
141	68	73	27	23	4	4
142	75	83	21	14	4	3
143	23	16	27	30	50	54
144	29	33	36	39	35	28
145	36	32	26	22	37	46
146	27	25	33	33	41	42
147	41	46	39	41	19	13
148	36	31	37	40	27	29
149	24	24	41	39	35	38
150	16	18	32	34	51	47
151	19	13	27	28	54	59
152	26	32	42	45	31	23
153	34	32	43	45	23	23
154	77	72	19	24	4	4
155	75	69	21	27	4	4
156	26	22	37	34	36	44
157	5	2	17	19	79	78
158	36	47	39	40	26	13
159	29	24	36	42	35	34
160	39	33	39	42	22	25
161	8	5	32	29	60	66

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Vali- dating Group	Key Group	Vali- dating Group	Key Group	Vali- dating Group
162	75	73	23	24	2	3
163	97	98	2	2	0	0
164	90	95	8	5	1	0
165	53	51	37	45	10	4
166	75	84	19	14	6	2
167	70	83	24	15	6	2
168	13	11	48	52	39	38
169	15	9	39	43	46	48
170	5	4	34	41	61	55
171	39	34	34	43	27	23
172	52	56	38	33	10	11
173	35	41	39	37	26	23
174	73	81	23	18	4	1
175	15	17	69	66	16	17
176	18	18	66	66	16	16
177	2	3	78	78	19	18
178	84	85	15	15	1	0
179	29	27	62	65	9	9
180	58	55	34	34	8	11
181	51	60	44	34	4	5
182	79	86	20	13	2	1
183	84	90	14	10	2	0
184	56	67	35	30	10	3
185	22	23	36	35	42	42
186	30	25	39	42	32	33
187	25	24	35	35	40	41
188	32	37	38	34	31	29
189	53	56	33	35	13	9
190	30	27	41	40	29	33
191	25	17	47	52	28	31
192	28	32	53	44	19	24
193	56	63	34	25	10	12
194	42	47	44	43	13	10
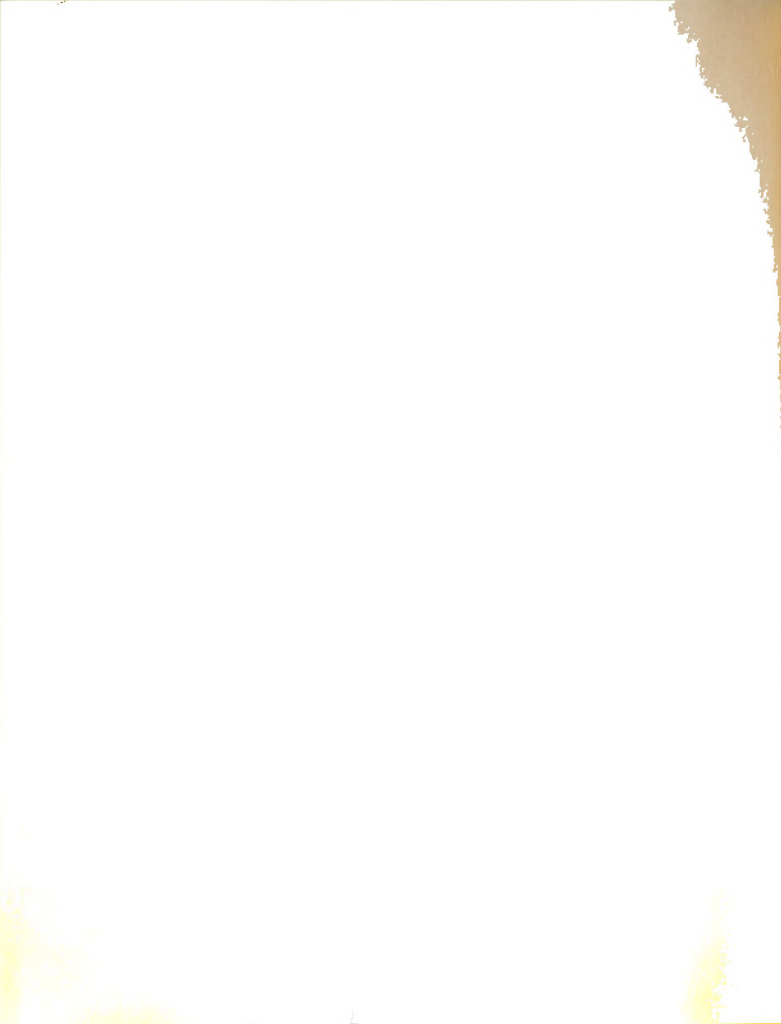
APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
195	33	28	28	29	39	43
196	35	30	45	46	20	24
197	12	4	34	40	55	56
198	23	16	43	47	33	37
199	41	26	37	52	23	23
200	39	43	37	33	24	24
201	38	35	45	49	17	15
202	90	91	9	9	2	0
203	88	85	11	15	1	0
204	51	42	37	48	12	10
205	44	41	39	44	17	15
206	56	57	38	41	6	2
207	71	81	26	17	3	2
208	70	72	26	24	4	4
209	52	48	39	40	10	12
210	15	10	29	29	56	61
211	11	10	37	32	52	58
212	53	60	33	32	15	8
213	6	3	24	29	70	68
214	28	29	42	37	30	34
215	14	18	41	41	45	41
216	59	52	32	32	9	15
217	29	23	39	43	32	34
218	65	72	29	24	6	4
219	36	41	44	33	19	26
220	63	72	27	23	10	5
221	40	32	43	42	17	26
222	28	14	42	44	30	42
223	22	28	33	40	46	32
224	40	41	37	35	24	24
225	61	60	26	24	13	16
226	11	14	37	37	52	49
227	57	52	35	42	8	6

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
228	33	37	55	56	11	8
229	17	15	49	42	34	43
230	39	32	29	33	32	34
231	17	12	28	28	55	60
232	22	11	31	52	46	38
233	49	46	27	33	23	20
234	76	74	19	18	6	8
235	28	34	47	51	25	15
236	84	80	13	15	3	5
237	13	8	50	55	38	38
238	6	1	39	45	56	54
239	4	3	24	25	73	72
240	66	52	28	41	5	8
241	4	2	27	40	69	58
242	76	77	21	20	4	2
243	59	67	30	22	10	12
244	10	6	40	42	50	52
245	29	16	60	75	11	9
246	22	20	44	51	34	29
247	40	33	48	57	12	10
248	7	4	51	54	42	42
249	28	16	47	48	25	35
250	39	26	49	65	12	10
251	11	1	54	61	35	38
252	72	59	27	40	1	1
253	5	4	49	44	45	52
254	8	4	42	38	50	58
255	46	33	52	67	2	1
256	16	10	62	70	22	20
257	6	3	53	58	41	39
258	38	29	57	68	6	3
259	25	15	66	80	9	5
260	5	2	38	51	58	47

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Vali-dating Group	Key Group	Vali-dating Group	Key Group	Vali-dating Group
261	7	4	78	83	15	13
262	10	3	80	89	9	8
263	9	5	82	86	9	9
264	24	25	72	70	4	5
265	18	18	74	76	8	5
266	16	14	59	69	25	17
267	9	8	37	51	55	42
268	4	1	29	35	67	63
269	8	9	61	61	30	30
270	6	4	38	41	56	55
271	59	53	39	43	2	4
272	7	6	52	49	41	44
273	10	2	76	88	15	10
274	9	9	73	76	18	15
275	2	0	53	59	44	41
276	53	46	42	52	4	2
277	4	2	57	65	38	33
278	3	2	46	48	51	49
279	5	4	74	70	21	26
280	45	29	53	70	3	1
281	23	15	47	54	30	31
282	11	8	59	70	30	23
283	56	59	41	37	4	4
284	1	1	26	35	73	63
285	4	2	56	55	41	43
286	93	98	5	2	2	0
287	3	0	34	27	63	73
288	64	67	30	30	6	3
289	36	42	57	53	7	5
290	10	9	44	38	45	54
291	35	24	47	54	19	23
292	35	35	48	35	17	29
293	16	18	41	45	42	37

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Validating Group	Key Group	Validating Group	Key Group	Validating Group
294	18	17	51	51	31	32
295	67	63	24	27	8	10
296	7	11	44	46	49	43
297	2	8	31	30	67	62
298	11	11	50	53	39	37
299	79	81	15	15	6	4
300	29	32	48	44	23	24
301	29	47	48	37	23	16
302	36	35	38	44	25	20
303	58	54	36	43	6	3
304	25	18	53	48	22	33
305	74	81	23	16	3	3
306	13	14	41	42	46	44
307	7	8	33	23	60	70
308	4	2	47	47	49	51
309	46	34	40	48	14	17
310	8	6	41	52	52	42
311	47	45	21	27	32	28
312	7	6	24	27	69	67
313	9	18	26	23	65	59
314	36	38	55	56	9	6
315	14	14	61	60	26	26
316	45	49	47	45	8	5
317	39	27	43	35	18	38
318	6	5	51	52	42	42
319	41	43	41	41	18	16
320	54	54	32	33	14	13
321	34	31	38	46	28	23
322	42	31	35	45	24	24
323	34	32	20	30	46	38
324	38	33	23	28	39	39
325	4	4	25	32	71	63
326	10	3	10	5	80	91

APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Vali- dating Group	Key Group	Vali- dating Group	Key Group	Vali- dating Group
327	13	11	16	18	71	71
328	54	57	35	41	11	2
329	63	59	27	32	10	9
330	61	61	27	27	12	12
331	30	32	36	32	34	35
332	41	42	41	42	19	16
333	19	11	41	52	40	38
334	21	19	39	41	40	40
335	65	70	27	22	8	9
336	55	55	31	35	14	10
337	86	83	10	12	3	5
338	16	10	22	29	62	61
339	31	29	56	58	13	13
340	62	62	27	28	11	10
341	30	28	42	42	28	30
342	25	23	50	51	25	27
343	22	27	32	35	46	38
344	75	74	18	19	7	6
345	12	6	60	69	28	25
346	92	85	7	13	1	2
347	53	52	33	33	13	15
348	27	31	33	31	40	38
349	29	31	51	52	20	17
350	41	27	32	35	27	37
351	17	13	45	42	38	45
352	51	45	42	52	7	3
353	35	34	48	46	17	19
354	6	6	16	26	78	68
355	39	43	36	39	24	18
356	31	22	53	57	16	22
357	3	3	71	80	26	17
358	17	18	80	81	3	1
359	10	11	78	82	11	8
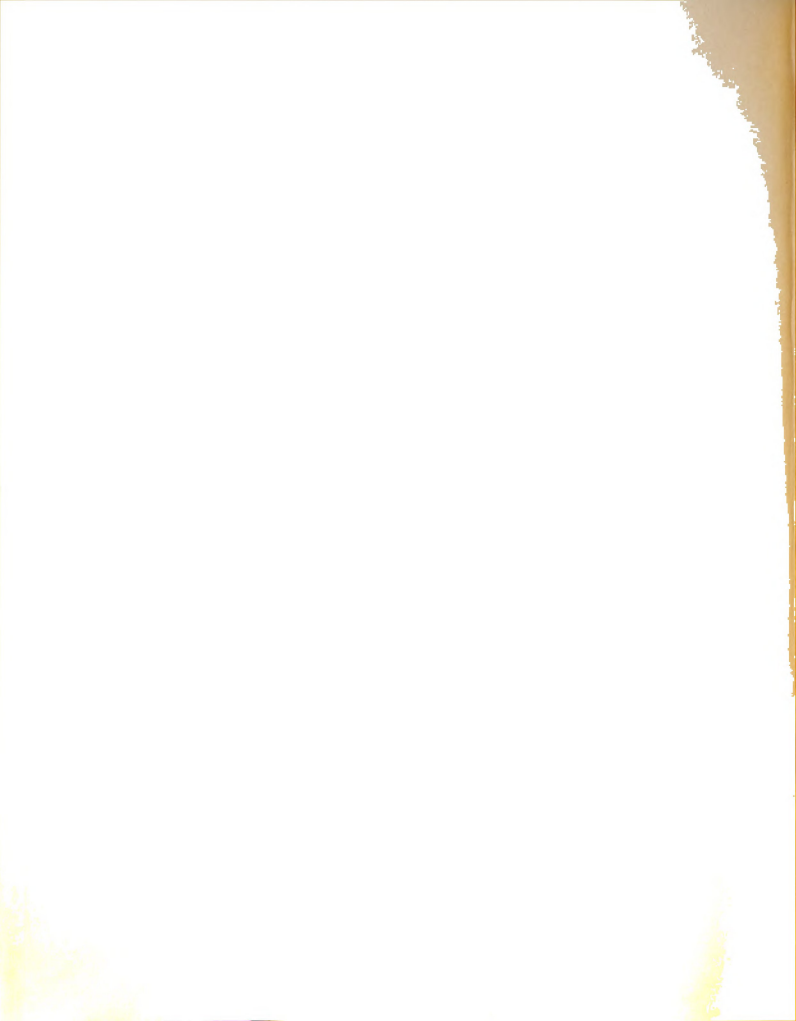
APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Vali-dating Group	Key Group	Vali-dating Group	Key Group	Vali-dating Group
360	7	6	63	67	30	27
361	60	71	25	18	16	11
362	60	60	13	9	27	31
363	59	62	26	23	16	15
364	52	45	31	29	17	26
365	44	42	34	41	22	17
366	56	57	26	28	18	15
367	67	69	21	27	12	4
368	54	51	25	23	20	27
369	60	56	32	35	9	9
370	87	91	9	5	4	3
371	86	89	13	10	1	1
372	77	80	13	14	10	6
373	57	63	16	13	27	24
374	21	19	29	24	49	57
375	51	47	44	41	5	12
376	65	71	30	26	5	3
377	11	18	21	19	68	62
378	64	55	23	34	13	11
379	67	77	30	22	3	1
380	37	48	25	18	39	33
381	42	51	50	41	8	9
382	44	51	43	37	13	13
383	43	53	47	42	10	5
384	54	48	35	33	12	18
385	69	70	29	28	1	2
386	49	53	37	39	12	11
387	90	97	8	3	2	0
388	85	85	9	6	6	9
389	15	20	62	61	23	17
390	6	9	29	26	64	65
391	24	26	26	25	51	49
392	18	15	31	26	51	59
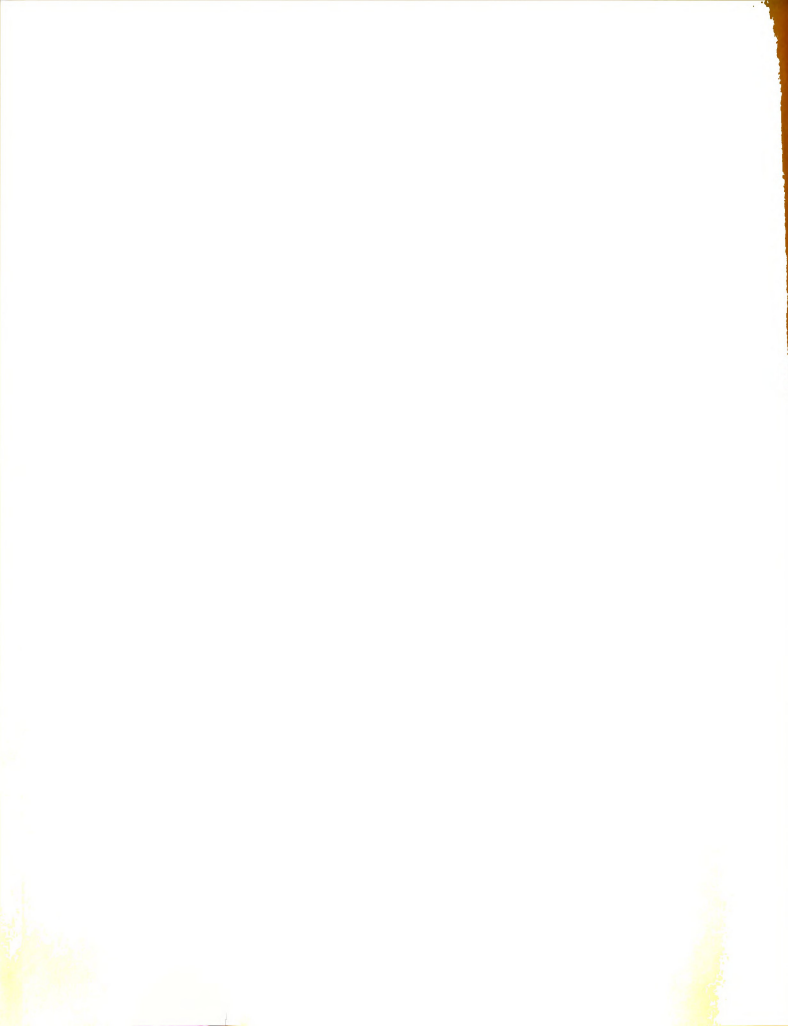
APPENDIX L (Continued)

Item	Like		Indifferent		Dislike	
	Key Group	Vali-dating Group	Key Group	Vali-dating Group	Key Group	Vali-dating Group
393	16	14	61	59	23'	27
394	19	23	77	76	4	1
395	19	14	68	77	13	9
396	4	0	38	37	57	63
397	40	42	43	37	18	22
398	47	49	50	47	4	3
399	1	1	44	39	54	60
400	(Omitted by Clark.)					

APPENDIX M

ALGEBRAIC TOTALS OF RAW SCORES OF KEY GROUP

AND DETERMINATION OF MEANS AND

STANDARD DEVIATIONS

APPENDIX M

ALGEBRAIC TOTALS OF RAW SCORES OF KEY GROUP AND DETERMINATION OF MEANS AND STANDARD DEVIATIONS

Re-spond-ent	Weight			Weight			Weight			Weight			Total Diff.[a]
	+1	-1	Diff.	+2	-2	Diff.	+3	-3	Diff.	+4	-4	Diff.	
1	104	51	53	60	11	49	22	1	21	15	0	15	274
2	100	55	45	54	24	30	24	6	18	13	1	12	177
3	96	71	25	49	19	30	20	5	15	11	1	10	170
4	95	74	21	44	20	24	17	7	10	15	1	14	155
5	84	81	3	47	24	23	12	10	2	10	2	8	87
6	88	68	20	45	13	32	11	1	10	14	0	14	170
7	98	64	34	55	18	37	17	7	10	14	1	13	190
8	96	69	27	53	14	39	22	4	18	14	1	13	211
9	105	65	40	55	16	39	23	5	18	14	0	14	228
10	81	81	0	29	31	-2	10	12	-2	6	5	1	-6
11	82	56	26	44	16	28	18	5	13	15	2	13	173
12	100	61	39	49	13	36	17	5	12	15	0	15	207
13	101	60	41	51	15	36	16	4	12	12	0	12	197
14	98	56	42	59	15	44	17	7	10	15	2	13	212
15	101	65	36	52	17	35	19	4	15	14	1	13	203
16	101	65	36	53	15	38	20	4	16	16	0	16	224
17	109	59	50	52	14	38	21	2	19	17	0	17	251
18	100	66	34	49	15	34	19	4	15	16	1	15	207
19	92	68	24	59	17	42	18	9	9	15	0	15	195
20	90	78	12	52	21	31	23	9	14	15	0	15	176
21	84	80	4	37	21	16	17	9	8	13	0	13	112
22	100	53	47	50	17	33	18	8	10	16	3	13	195
23	86	70	16	42	20	22	19	11	8	14	0	14	140
24	92	78	14	45	22	23	20	7	13	13	1	12	147
25	102	63	39	46	15	31	18	8	10	14	1	13	183
26	96	74	22	45	13	32	10	12	-2	14	1	13	132
27	83	88	-5	45	18	27	11	5	6	11	4	7	95
28	80	65	15	45	13	32	18	9	9	16	1	15	166
29	99	74	25	51	18	33	17	6	11	14	1	13	176

[a]Each difference multiplied by the weight.

APPENDIX M (Continued)

Respond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
30	106	66	40	55	13	42	18	2	16	14	1	13	224
31	89	60	29	42	22	20	20	6	14	16	2	14	167
32	100	63	37	49	27	22	17	8	9	17	0	17	176
33	104	61	43	51	14	37	17	3	14	14	0	14	215
34	99	66	33	51	19	32	19	6	13	12	2	10	176
35	82	84	-2	44	16	28	11	11	0	15	2	13	106
36	92	81	11	51	21	30	19	9	10	13	1	12	149
37	85	64	21	37	13	24	13	7	6	13	0	13	139
38	92	62	30	45	17	28	20	7	13	13	0	13	177
39	96	65	31	41	27	14	18	7	11	14	3	11	136
40	102	65	37	52	17	35	16	6	10	14	1	13	189
41	95	59	36	40	22	18	16	4	12	13	1	12	156
42	93	56	37	59	14	45	23	4	19	16	0	16	248
43	85	73	12	48	15	33	17	7	10	13	1	12	156
44	82	78	4	44	24	20	22	10	12	14	1	13	132
45	90	73	17	49	21	28	12	9	3	16	2	14	138
46	87	63	24	44	14	30	17	5	12	14	1	13	172
47	94	56	38	52	9	43	25	2	23	15	0	15	253
48	72	86	-14	41	31	10	13	15	-2	14	2	12	48
49	91	74	17	43	21	22	16	10	6	14	1	13	131
50	95	64	31	52	16	36	17	14	3	16	2	14	168
51	104	56	48	54	13	41	24	6	18	14	1	13	236
52	95	67	28	51	19	32	11	6	5	13	4	9	143
53	104	49	55	48	11	37	14	6	8	16	1	15	213
54	95	67	28	55	19	36	17	12	5	12	0	12	163
55	105	70	35	50	14	36	20	5	15	15	1	14	208
56	104	62	42	35	12	23	17	4	13	11	1	10	167
57	105	72	33	48	23	25	16	10	6	11	1	10	141
58	81	75	6	51	27	24	13	10	3	16	1	15	123
59	97	65	32	52	25	27	21	9	12	15	1	14	178
60	99	60	39	59	13	46	21	4	17	13	1	12	230
61	103	71	32	49	15	34	20	3	17	13	2	11	195
62	114	57	57	53	17	36	15	7	8	12	0	12	201
63	89	71	18	40	21	19	15	9	6	11	0	11	118
64	85	83	2	38	23	15	9	14	-5	16	2	14	73
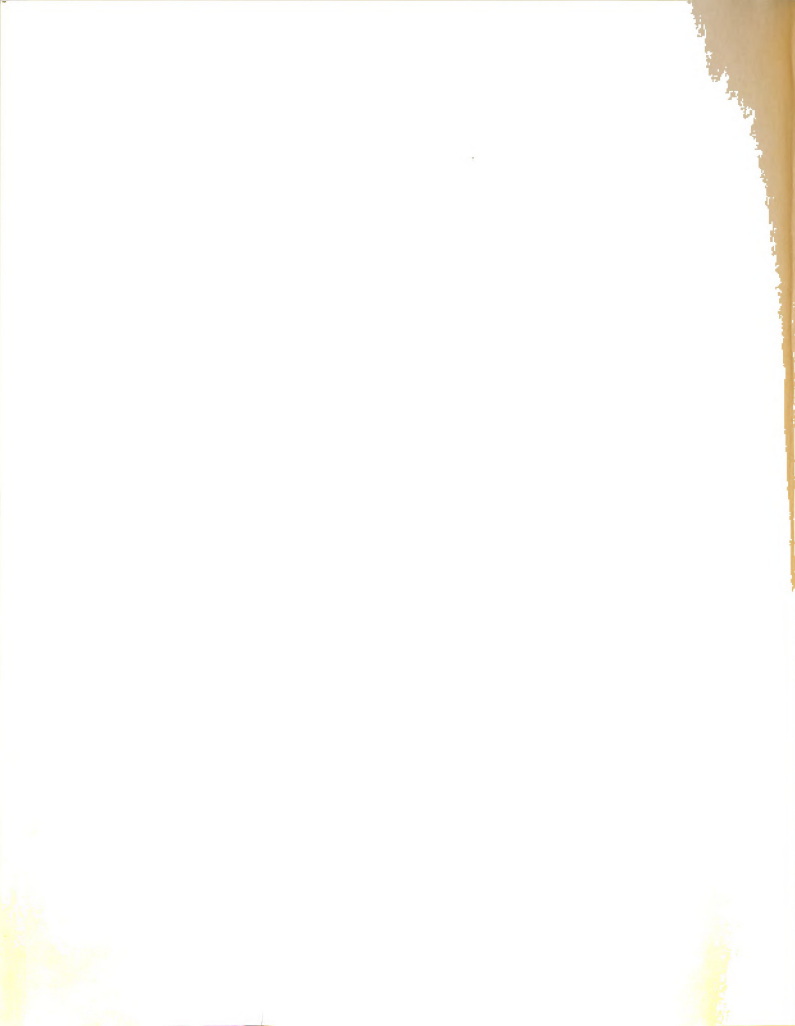
APPENDIX M (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
65	101	62	39	49	18	31	15	9	6	15	3	12	167
66	92	77	15	50	14	36	21	4	17	16	2	14	194
67	93	61	32	64	16	48	18	7	11	13	0	13	213
68	94	62	32	58	9	49	19	4	15	15	1	14	231
69	90	81	9	46	27	19	14	11	3	13	0	13	108
70	108	70	38	55	18	37	20	10	10	15	0	15	202
71	83	80	3	49	23	26	11	14	-3	13	3	10	86
72	99	81	18	41	23	18	15	7	8	9	3	6	102
73	97	71	26	51	22	29	13	10	3	15	1	14	149
74	102	59	43	49	12	37	20	2	18	10	1	9	207
75	90	70	20	41	12	29	17	8	9	12	1	11	149
76	79	64	15	49	15	34	19	8	11	15	1	14	172
77	88	74	14	33	27	6	12	15	-3	8	1	7	45
78	87	72	15	41	21	20	23	6	17	16	0	16	170
79	87	74	13	54	21	33	18	9	9	16	0	16	170
80	89	85	4	49	18	31	20	4	16	14	3	11	158
81	87	75	12	48	25	23	12	15	-3	14	3	11	93
82	99	69	30	39	13	26	16	1	15	16	1	15	187
83	96	63	33	54	15	39	17	6	11	14	3	11	188
84	92	72	20	55	20	35	14	8	6	16	1	15	168
85	96	64	32	46	15	31	12	3	9	15	0	15	181
86	110	43	67	62	10	52	18	6	12	16	1	15	267
87	95	66	29	45	15	30	17	7	10	15	1	14	175
88	87	71	16	46	19	27	20	6	14	11	1	10	152
89	89	75	14	38	24	14	11	11	0	13	3	10	82
90	92	78	14	46	23	23	17	11	6	16	1	15	138
91	97	64	33	48	20	28	18	5	13	16	1	15	188
92	102	60	42	52	13	39	20	4	16	16	1	15	228
93	96	69	27	57	15	42	22	2	20	16	0	16	235
94	88	71	17	42	26	16	9	11	-2	13	3	10	83
95	101	58	43	46	14	32	20	4	16	16	0	16	219
96	85	80	5	43	26	17	21	8	13	10	3	7	106
97	101	68	33	40	18	22	19	5	14	12	0	12	167
98	91	63	28	42	14	28	21	5	16	17	1	16	196
99	96	79	17	37	25	12	14	12	2	17	1	16	111

APPENDIX M (Continued)

Re-spond-ent	Weight			Weight			Weight			Weight			Total Diff.
	+1	-1	Diff.	+2	-2	Diff.	+3	-3	Diff.	+4	-4	Diff.	
100	92	61	31	47	11	36	18	5	13	15	2	13	194
101	95	66	29	47	25	22	15	15	0	13	2	11	117
102	92	63	29	42	23	19	16	6	10	14	2	12	145
103	96	79	17	61	15	46	23	4	19	15	1	14	222
104	98	53	45	69	13	56	22	1	21	14	0	14	276
105	101	68	33	48	13	35	20	1	19	14	1	13	212
106	86	76	10	45	19	26	9	13	-4	13	2	11	94
107	85	81	4	32	31	1	12	14	-2	6	1	5	20
108	81	75	6	49	25	24	12	12	0	16	2	14	110
109	80	81	-1	49	19	30	16	6	10	16	2	14	145
110	96	52	44	48	17	31	15	4	11	16	2	14	195
111	106	62	44	68	13	55	21	6	15	14	1	13	251
112	99	52	47	51	12	39	22	5	17	16	0	16	240
113	95	59	36	49	12	37	21	5	16	16	0	16	222
114	97	73	24	46	20	26	9	6	3	14	0	14	141
115	97	76	21	41	16	25	13	7	6	12	3	9	125
116	80	86	-6	39	20	19	12	17	-5	11	1	10	57
117	90	72	18	52	22	30	18	10	8	15	2	13	154
118	103	63	40	53	15	38	16	3	13	14	1	13	207
119	106	65	41	45	17	28	19	6	13	11	2	9	172
120	88	69	19	38	14	24	14	5	9	15	1	14	150
121	95	73	22	50	23	27	21	5	16	10	1	9	160
122	102	62	40	58	17	41	20	3	17	12	1	11	217
123	101	68	33	45	24	21	16	6	10	13	1	12	153
124	101	71	30	60	15	45	16	5	11	14	1	13	205
125	92	60	32	56	12	44	22	5	17	13	1	12	219
126	82	74	8	43	22	21	16	6	10	14	3	11	124
127	86	81	5	44	26	18	18	12	4	14	2	12	101
128	113	61	52	46	11	35	19	6	13	15	1	14	217
129	90	64	26	48	16	32	18	6	12	14	1	13	178
130	83	91	-8	38	24	14	12	12	0	16	2	14	76
131	95	62	33	61	9	52	22	4	18	14	1	13	243
132	98	68	30	49	16	33	23	5	18	16	0	16	214
133	95	66	29	54	24	30	20	8	12	15	0	15	185
134	96	86	10	37	20	17	14	8	6	14	1	13	114

APPENDIX M (Continued)

Re- spond- ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
135	94	76	18	48	15	33	15	4	11	14	0	14	173
136	90	67	23	48	11	37	18	5	13	12	0	12	184
137	99	76	23	50	15	35	18	5	13	12	1	11	176
138	100	57	43	47	17	30	22	5	17	14	1	13	206
139	90	79	11	36	22	14	10	10	0	15	1	14	95
140	81	84	-3	25	28	-3	11	13	-2	9	3	6	9
141	88	82	6	51	18	33	11	10	1	12	2	10	115
142	97	59	38	62	19	43	20	4	16	13	2	11	216
143	99	60	39	46	13	33	15	7	8	12	3	9	165
144	87	79	8	49	16	33	15	7	8	14	3	11	142
145	102	61	41	57	17	40	21	6	15	11	1	10	206
146	93	64	29	53	12	41	16	3	13	16	1	15	210
147	94	77	17	53	23	30	18	12	6	13	1	12	143
148	88	77	11	50	20	30	20	6	14	16	0	16	177
149	97	60	37	47	17	30	16	8	8	15	1	14	177
150	78	89	-11	39	23	16	20	7	13	17	1	16	124
151	97	68	29	44	22	22	20	6	14	15	1	14	171
152	83	84	-1	35	27	8	14	9	5	17	2	15	90
153	106	65	41	42	15	27	20	4	16	14	0	14	199
154	94	78	16	46	17	29	18	7	11	14	1	13	159
155	99	58	41	50	14	36	16	8	8	16	0	16	201
156	92	73	19	48	20	28	16	11	5	11	3	8	122
157	88	68	17	55	23	32	20	10	10	16	1	15	171
158	103	72	31	53	15	38	16	4	12	13	0	13	195
159	90	72	18	50	16	34	20	5	15	14	2	12	179
160	99	76	23	62	18	44	22	5	17	15	1	14	218
161	102	61	41	50	14	36	12	7	5	15	0	15	188
162	103	71	32	49	15	34	19	7	12	15	1	14	192
163	92	79	13	44	26	18	16	12	4	14	2	12	109
164	107	63	44	47	16	31	21	2	19	15	0	15	223
165	95	76	19	56	14	42	19	4	15	15	1	14	204
166	81	84	-3	50	22	28	19	9	10	15	2	13	135
167	104	70	34	52	11	41	23	1	22	17	0	17	250
168	100	64	36	52	17	35	20	7	13	15	0	15	205
169	91	65	26	47	12	35	16	2	14	16	2	14	194

APPENDIX M (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
170	85	71	14	44	16	28	17	8	9	15	0	15	157
171	103	62	41	50	14	36	19	7	12	15	1	14	205
172	96	71	25	61	18	43	20	8	12	13	1	12	195
173	93	61	32	55	16	39	16	12	4	17	1	16	186
174	90	76	14	36	20	16	9	10	-1	15	0	15	103
175	92	69	23	60	13	47	16	5	11	16	1	15	210
176	93	61	32	56	17	39	19	5	14	15	0	15	212
177	96	79	17	41	16	25	11	7	4	13	2	11	123
178	94	67	27	59	19	40	20	4	16	17	3	14	211
179	98	63	35	53	13	40	22	5	17	16	0	16	230
180	102	65	37	57	16	41	21	5	16	15	0	15	227
181	101	64	37	58	21	37	23	3	20	16	2	14	227
182	100	62	38	48	15	33	17	3	14	14	1	13	198
183	84	65	19	53	22	31	17	8	9	12	3	9	144
184	99	74	25	44	17	27	21	2	19	9	1	8	168
185	94	74	20	53	15	38	20	6	14	13	1	12	186
186	98	57	41	51	18	33	20	3	17	14	2	12	206
187	88	79	9	49	19	30	20	8	12	12	3	9	141
188	93	70	23	42	20	22	16	11	5	11	2	9	118
189	83	75	8	53	27	26	15	16	-1	16	2	14	113
190	112	61	51	62	10	52	24	5	19	14	1	13	264
191	75	86	-11	51	20	31	17	9	8	15	2	13	127
192	93	76	17	60	11	49	21	7	14	17	0	17	225
193	89	77	12	44	11	33	13	9	4	17	1	16	154
194	101	52	49	55	15	40	22	8	14	16	0	16	235
195	92	63	29	45	21	24	17	5	12	16	1	15	173
196	88	78	10	49	21	28	20	6	14	13	2	11	152
197	89	80	9	38	27	11	12	13	-1	12	0	12	76
198	85	74	11	54	20	34	20	9	11	16	0	16	176
199	88	62	26	56	13	43	17	10	7	16	1	15	193
200	111	63	48	52	17	35	16	5	11	15	1	14	207
201	81	88	-7	55	22	33	17	10	7	13	1	12	128
202	104	57	47	52	10	42	18	4	14	17	2	15	233
203	108	52	56	51	13	38	16	4	12	13	0	13	220
204	104	63	41	67	19	48	22	4	18	17	0	17	259
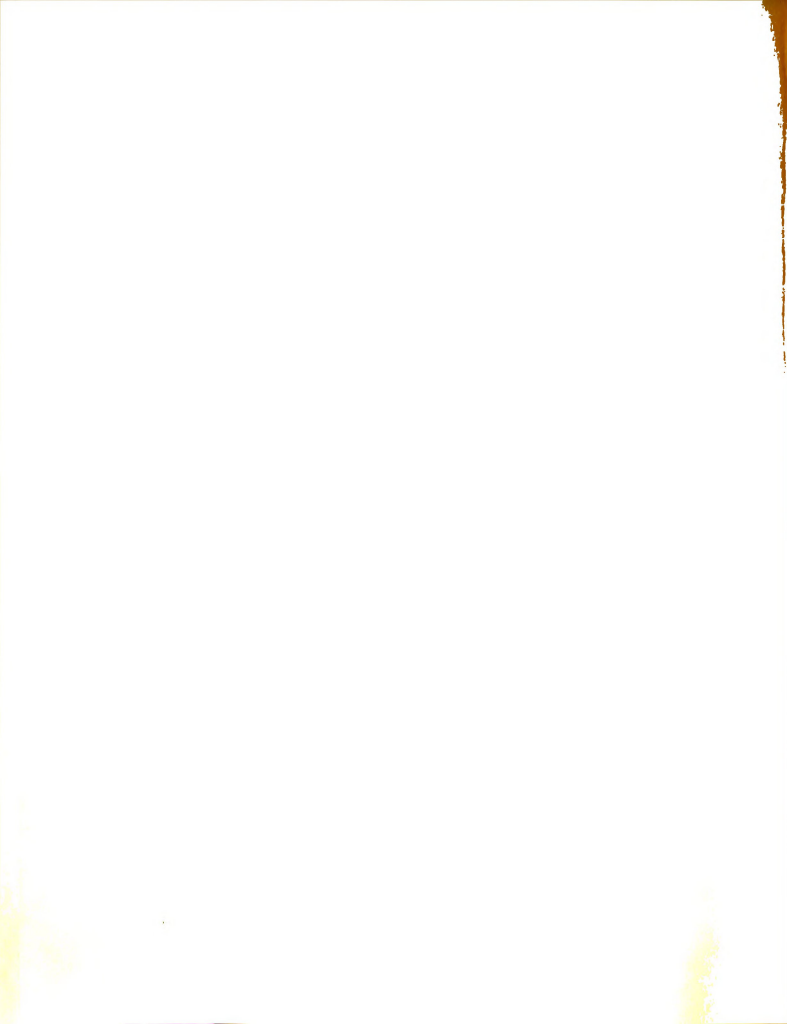
APPENDIX M (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
205	112	50	62	55	13	42	19	4	15	12	0	12	239
206	89	71	18	45	26	19	15	8	7	15	2	13	129
207	94	68	26	48	18	30	18	8	10	17	0	17	184
208	114	52	62	51	9	42	20	4	16	17	2	15	254
209	92	70	22	46	21	25	17	6	11	12	2	10	145
210	93	77	16	46	31	15	21	4	17	13	3	10	137
211	97	65	32	45	21	24	18	5	13	15	1	14	175
212	93	80	13	41	22	19	13	16	-3	8	2	6	66
213	94	71	23	42	20	22	19	8	11	17	1	16	164
214	105	63	42	54	17	37	17	7	10	17	1	16	210
215	90	77	13	50	23	27	20	4	16	17	1	16	179
216	101	64	37	63	14	49	20	3	17	17	0	17	254
217	94	62	32	52	30	22	19	9	10	16	3	13	158
218	90	56	34	61	10	51	19	3	16	14	0	14	240
219	111	55	56	45	13	32	23	3	20	15	0	15	240
220	84	72	12	40	23	17	10	18	-8	11	2	9	58
221	85	92	-9	39	29	10	13	12	1	10	1	9	50
222	90	76	14	46	22	24	16	9	7	15	1	14	139
223	83	75	8	45	20	25	16	13	3	15	1	14	123
224	87	65	22	50	6	44	20	6	14	13	1	12	200
225	108	57	51	61	12	49	18	3	15	14	0	14	250
226	92	73	19	61	7	54	25	2	23	16	0	16	260
227	90	69	21	37	20	17	16	6	10	14	2	12	133
228	99	62	37	55	19	36	21	8	13	15	1	14	204
229	95	61	34	49	7	42	10	8	2	15	1	14	180
230	110	70	40	41	14	27	20	7	13	9	1	8	165
231	96	65	31	50	13	37	22	2	20	13	1	12	213
232	93	60	33	48	19	29	15	5	10	11	1	10	161
233	91	72	19	47	20	27	16	12	4	16	1	15	145
234	107	59	48	55	17	38	18	6	12	17	1	16	224
235	88	72	16	49	24	25	16	8	8	15	2	13	142
236	91	74	17	53	10	43	17	4	13	13	1	12	190
237	98	63	35	53	17	36	20	4	16	13	1	12	203
238	101	66	35	56	16	40	17	4	13	12	0	12	202
239	91	65	26	39	20	19	17	7	10	11	0	11	138

APPENDIX M (Continued)

Re- spond- ent	Weight			Weight			Weight			Weight			Total Diff.
	+1	-1	Diff.	+2	-2	Diff.	+3	-3	Diff.	+4	-4	Diff.	
240	102	66	36	55	15	40	12	5	7	14	1	13	189
241	99	60	39	60	16	44	16	4	12	16	1	15	223
242	98	73	25	47	19	28	16	12	4	11	0	11	137
243	93	71	22	49	17	32	18	8	10	16	2	14	172
244	91	80	11	41	26	15	15	8	7	13	1	12	110
245	94	74	20	55	19	36	20	4	16	10	2	8	172
246	95	64	31	55	11	44	15	6	9	14	1	13	198
247	100	63	37	47	14	33	19	4	15	11	1	10	188
248	98	65	33	49	20	29	12	10	2	13	1	12	145
249	97	67	30	44	18	26	8	15	-7	11	3	8	93
250	95	71	24	46	13	33	19	6	13	17	1	16	193
251	105	64	41	51	23	28	17	4	13	16	0	16	200
252	86	78	8	46	17	29	16	8	8	14	1	13	142
253	87	74	13	38	22	16	18	6	12	10	1	9	117
254	94	71	23	44	24	20	16	8	8	16	0	16	151
255	105	59	46	54	15	39	17	6	11	14	1	13	209
256	96	72	24	33	22	11	18	10	8	17	0	17	138
257	98	74	24	40	23	17	19	8	11	17	1	16	155
258	71	92	-21	43	26	17	12	15	-3	14	1	13	56
259	87	68	19	38	24	14	12	14	-2	11	1	10	81
260	86	77	9	48	23	25	17	14	3	14	2	12	116
261	90	67	23	52	17	35	17	6	11	17	2	15	186
262	89	70	19	55	14	41	13	4	9	14	2	12	176
263	87	75	12	44	23	21	11	15	-4	15	1	14	98
264	84	69	15	50	28	22	11	12	-1	12	1	11	100
265	91	57	34	44	17	27	15	6	9	15	1	14	171
266	86	64	22	59	11	48	21	4	17	16	1	15	229
267	99	67	32	53	16	37	22	7	15	17	0	17	219
268	90	73	17	44	21	23	22	8	14	16	0	16	169
269	107	62	45	60	16	44	22	4	18	15	0	15	247
270	96	68	28	56	14	42	18	12	6	16	1	15	190
271	99	68	31	49	19	30	19	5	14	16	1	15	193
272	106	50	56	58	11	47	18	10	8	17	1	16	238
273	81	85	-4	47	18	29	12	10	2	15	2	13	112
274	101	68	33	40	13	27	14	2	12	16	1	15	183

APPENDIX M (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
275	106	53	53	49	27	22	16	11	5	12	1	11	156
276	90	73	17	52	20	32	19	9	10	15	2	13	163
277	92	80	12	41	14	27	21	8	13	17	1	16	169
278	104	68	36	58	18	40	24	2	22	17	2	15	242
279	104	67	37	53	10	43	15	2	13	13	0	13	214
280	101	70	31	46	16	30	16	6	10	14	1	13	173
281	102	53	49	54	17	37	21	7	14	11	1	10	205
282	105	61	44	50	18	32	21	4	17	13	1	12	207
283	88	61	27	54	23	31	19	7	12	15	2	13	177
284	96	77	19	60	17	43	22	5	17	12	2	10	196
285	92	69	23	49	15	34	24	5	19	16	0	16	212
286	110	58	52	51	14	37	20	4	16	16	1	15	234
287	94	67	27	37	18	19	15	4	11	11	0	11	142
288	92	60	32	53	20	33	20	3	17	14	1	13	201
289	95	75	20	40	17	23	18	10	8	10	2	8	122
290	104	55	49	58	17	41	25	7	18	10	0	10	225
291	97	66	31	56	13	43	23	7	16	13	0	13	217
292	90	67	23	50	20	30	19	6	13	17	2	15	182
293	93	66	27	54	20	34	20	6	14	16	0	16	201
294	108	53	55	53	15	38	21	6	15	15	1	14	232
295	89	73	16	49	23	26	14	7	7	10	2	8	121
296	101	69	32	54	13	41	23	13	10	16	1	15	204
297	83	89	-6	43	17	26	17	15	2	15	1	14	108
298	97	62	35	44	22	22	21	7	14	16	0	16	185
299	108	55	53	62	12	50	23	2	21	17	0	17	284
300	98	61	37	62	13	49	22	3	19	16	1	15	252
301	91	76	15	48	26	22	22	10	12	12	0	12	143
302	93	73	20	47	24	23	17	7	10	12	2	10	136
303	85	70	15	57	23	34	23	9	14	17	0	17	193
304	94	66	28	44	17	27	18	5	13	10	1	9	157
305	103	63	40	58	8	50	15	7	8	15	2	13	216
306	88	78	10	52	21	31	17	6	11	11	1	10	145
307	99	59	40	57	17	40	23	6	17	17	0	17	239
308	100	62	38	43	18	25	14	9	5	15	0	15	163
309	74	80	-6	47	23	24	17	10	7	15	1	14	119

APPENDIX M (Continued)

Re-spond-ent	Weight			Weight			Weight			Weight			Total Diff.
	+1	-1	Diff.	+2	-2	Diff.	+3	-3	Diff.	+4	-4	Diff.	
310	84	79	5	46	26	20	17	7	10	10	3	7	103
311	104	70	34	52	12	40	15	5	10	13	0	13	196
312	90	71	19	42	20	22	14	6	8	11	4	7	115
313	104	54	50	56	10	46	24	3	21	17	1	16	269
314	83	74	9	47	22	25	20	7	13	14	2	12	146
315	102	62	40	51	19	32	19	5	14	11	1	10	186
316	96	69	27	44	16	28	16	5	11	16	0	16	180
317	96	66	30	47	13	34	21	8	13	16	1	15	197
318	97	80	17	52	15	37	20	6	14	12	2	10	173
319	74	72	2	58	26	32	16	7	9	17	2	15	153
320	94	72	22	42	26	16	15	9	6	12	0	12	120
321	89	70	19	56	21	35	18	8	10	11	2	9	155
322	92	64	28	45	22	23	17	12	5	14	1	13	141
323	98	74	24	38	18	20	10	5	5	15	1	14	135
324	97	76	21	52	19	33	13	7	6	14	2	12	153
325	94	64	30	54	14	40	18	6	12	17	1	16	210
326	103	66	37	51	15	36	18	4	14	15	0	15	211
327	100	65	35	52	11	41	19	5	14	15	1	14	215
328	100	67	33	56	19	37	19	6	13	13	1	12	194
329	94	64	30	55	12	43	20	7	13	16	0	16	219
330	91	71	20	57	21	36	22	5	17	14	0	14	199
331	89	74	15	46	26	20	15	12	3	15	2	13	116
332	92	73	19	55	18	37	22	4	18	14	0	14	203
333	81	87	-6	45	25	20	12	9	3	10	2	8	75
334	87	82	5	54	12	42	21	3	18	13	1	12	191
335	99	69	30	48	20	28	14	10	4	11	1	10	138
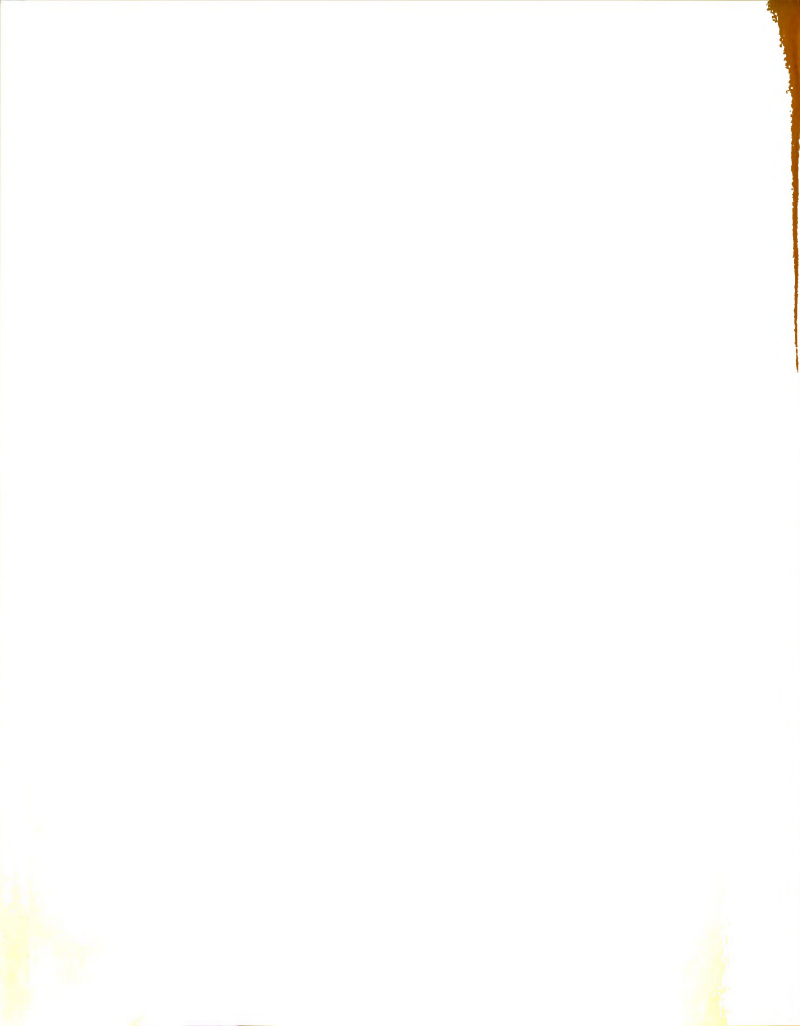
APPENDIX M (Continued)

χ	χ²	f	χ	χ²	f	χ	χ²	f
284	80,656	1	240	57,600	3	203	41,209	3
276	76,176	1	239	57,121	2	202	40.804	2
275	75,625		238	56,644	1	201	40,401	4
274	75,076	1	237	56,169		200	40,000	2
273	74,529		236	55,696	1	199	39,601	2
272	73,984		235	55,225	2	198	39,204	2
271	73,441		234	54,756	1	197	38,809	2
270	72,900		233	54,289	1	196	38,416	3
269	72,361	1	232	53,824	1	195	38,025	6
268	71,824		231	53,361	1	194	37,636	4
267	71,289	1	230	52,900	2	193	37,249	4
266	70,756		229	52,441	1	192	36,864	1
265	70,225		228	51,984	2	191	36,481	1
264	69,696	1	227	51,529	2	190	36,100	3
263	69,169		226	51,076		189	35,721	2
262	68,644		225	50,625	2	188	35,344	4
261	68,121		224	50,176	3	187	34,969	1
260	67,600	1	223	49,729	2	186	34,596	4
259	67,081	1	222	49,284	2	185	34,225	2
258	66,564		221	48,841		184	33,856	2
257	66,049		220	48,400	1	183	33,489	2
256	65,536		219	47,961	4	182	33,124	1
255	65,025		218	47,524	1	181	32,761	1
254	64,516	2	217	47,089	3	180	32,400	2
253	64,009	1	216	46,656	2	179	32,041	2
252	63,504	1	215	46,225	2	178	31,684	2
251	63,001	2	214	45,796	2	177	31,329	5
250	62,500	2	213	45,369	3	176	30,976	7
249	62,001		212	44,944	4	175	30,625	2
248	61,504	1	211	44,521	3	174		
247	61,009	1	210	44,100	4	173	29,929	5
246	60,516		209	43,681	1	172	29,584	5
245	60,025		208	43,264	1	171	29,241	3
244	59,536		207	42,849	6	170	28,900	4
243	59,049	1	206	42,436	3	169	28,561	2
242	58,564	1	205	42,025	4	168	28,224	3
241	58,081		204	41,616	3	167	27,889	4

APPENDIX M (Continued)

χ	χ^2	f	χ	χ^2	f	χ	χ^2	f
166	27,556	1	129	16,641	1	92		
165	27,225	2	128	16,384	1	91		
164	26,896	1	127	16,129	1	90	8,100	1
163	26,569	3	126			89		
162	26,244		125	15,625	1	88		
161	25,921	1	124	15,376	2	87	7,569	1
160	25,600	1	123	15,129	3	86	7,396	1
159	25,281	1	122	14,884	2	85		
158	24,964	2	121	14,641	1	84		
157	24,649	2	120	14,400	1	83	6,889	1
156	24,336	3	119	14,161	1	82	6,724	1
155	24,025	3	118	13,924	2	81	6,561	1
154	23,716	2	117	13,689	2	80		
153	23,409	3	116	13,456	2	79		
152	23,104	2	115	13,225	2	78		
151	22,801	1	114	12,996	1	77		
150	22,500	1	113	12,769	1	76	5,776	2
149	22,201	3	112	12,544	2	75	5,625	1
148			111	12,321	1	74		
147	21,609	1	110	12,100	2	73	5,329	1
146	21,316	1	109	11,881	1	72		
145	21,025	6	108	11,664	2	71		
144	20,736	1	107	11,449		70		
143	20,449	3	106	11,236	2	69		
142	20,164	4	105			68		
141	19,881	4	104			67		
140	19,600	1	103	10,609	2	66	4,356	1
139	19,321	2	102	10,404	1	65		
138	19,044	5	101	10,201	1	64		
137	18,769	2	100	10,000	1	63		
136	18,496	2	99	9,801		62		
135	18,225	2	98	9,604	1	61		
134			97			60		
133	17,689	1	96			59		
132	17,424	2	95	9,025	2	58	3,364	1
131	17,161	1	94	8,836	1	57	3,249	1
130			93	8,649	2	56	3,136	1
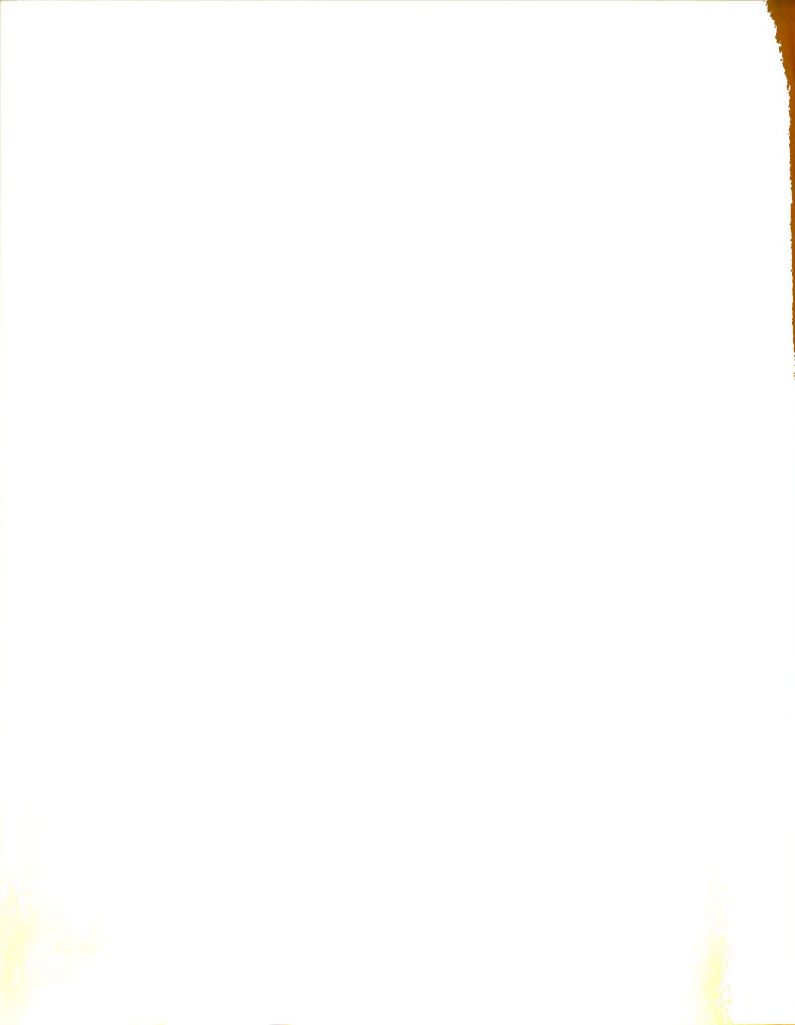
APPENDIX M (Continued)

χ	χ^2	f	χ	χ^2	f	χ	χ^2	f
55			34			13		
54			33			12		
53			32			11		
52			31			10		
51			30			9	81	1
50	2,500	1	29			8		
49			28			7		
48	2,304	1	27			6		
47			26			5		
46			25			4		
45	2,025	1	24			3		
44			23			2		
43			22			1		
42			21			0		
41			20	400	1	-1		
40			19			-2		
39			18			-3		
38			17			-4		
37			16			-5		
36			15			-6	36	1
35			14					
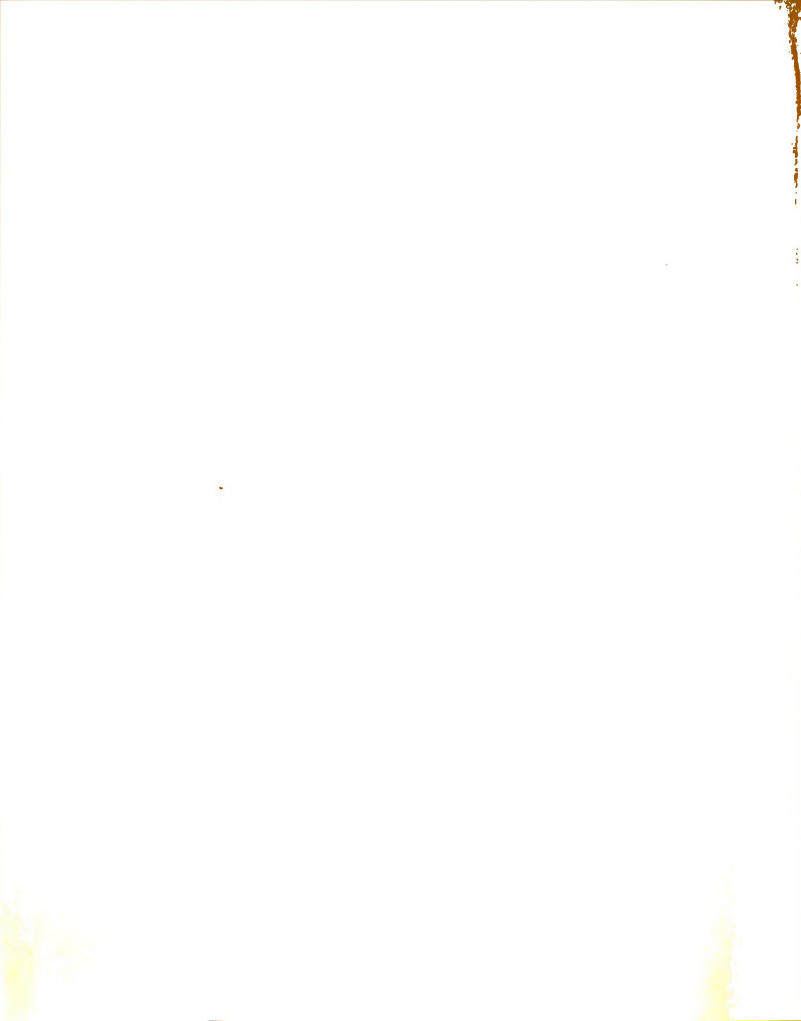
APPENDIX M (Continued)

$\Sigma f\chi = 57{,}517$

$\Sigma f\chi^2 = 10{,}699{,}603$

$$M = \frac{\Sigma f\chi}{N} = \frac{57{,}517}{335} = 171.69254$$
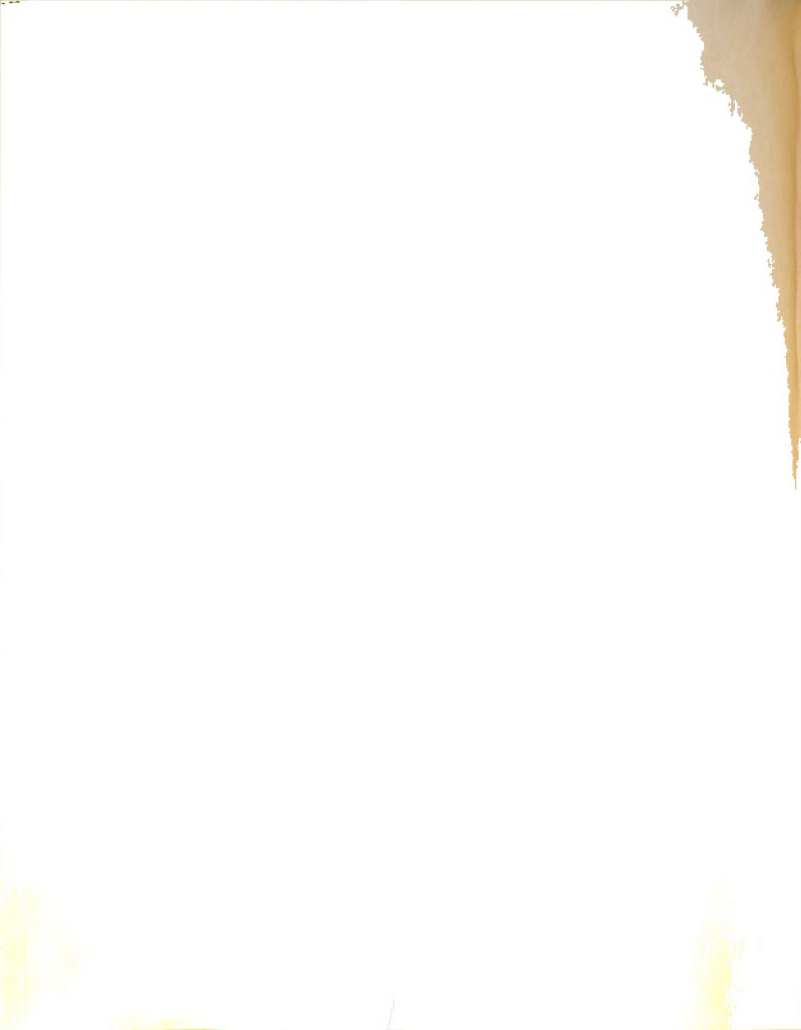
$$\sigma = \sqrt{\frac{\Sigma f\chi^2}{N} - \left(\frac{\Sigma f\chi}{N}\right)^2}$$

$$= \sqrt{\frac{10{,}699{,}603}{335} - \left(\frac{57{,}517}{335}\right)^2}$$

$$= \sqrt{31{,}939.11343 - 29{,}478.32829}$$

$$= \sqrt{2{,}460.78514}$$

$$\sigma = 49.6063$$

APPENDIX N

ALGEBRAIC TOTALS OF RAW SCORES OF VALIDATION

GROUP AND DETERMINATION OF MEANS

AND STANDARD DEVIATIONS

APPENDIX N

ALGEBRAIC TOTALS OF RAW SCORES OF VALIDATION GROUP AND DETERMINATION OF MEANS AND STANDARD DEVIATIONS

Re-spond-ent	Weight			Weight			Weight			Weight			Total Diff.
	+1	-1	Diff.	+2	-2	Diff.	+3	-3	Diff.	+4	-4	Diff.	
1	102	68	34	50	10	40	18	3	15	12	2	10	199
2	111	61	50	55	14	41	20	4	16	16	1	15	240
3	97	68	29	52	12	40	20	5	15	13	1	12	202
4	97	71	26	47	19	28	18	6	12	16	2	14	174
5	104	62	42	60	18	42	22	3	19	14	2	12	231
6	107	60	47	58	19	39	20	3	17	14	2	12	224
7	83	69	14	48	21	27	13	17	-4	14	0	14	112
8	103	61	42	48	16	32	19	1	18	17	0	17	228
9	92	80	12	38	19	19	10	8	2	10	1	9	92
10	108	69	39	49	15	34	15	6	9	12	0	12	182
11	110	69	41	52	11	41	17	7	10	16	0	16	217
12	96	74	22	48	14	34	9	8	1	15	2	13	145
13	83	74	9	40	18	22	18	10	8	16	2	14	133
14	92	69	23	50	20	30	19	5	14	12	1	11	169
15	102	68	34	50	15	35	17	5	12	14	1	13	192
16	100	72	28	45	17	28	18	7	11	15	0	15	177
17	75	77	-2	49	18	31	14	9	5	16	1	15	135
18	91	72	19	54	11	43	14	4	10	15	1	14	191
19	95	63	32	43	13	30	19	1	18	17	0	17	214
20	103	56	47	46	20	26	19	7	12	12	0	12	183
21	87	77	10	51	25	26	18	4	14	11	2	9	140
22	85	82	3	41	24	17	16	16	0	15	1	14	93
23	94	71	23	49	24	25	15	12	3	14	1	13	134
24	107	57	50	56	11	45	19	4	15	14	0	14	241
25	96	59	37	46	17	29	10	8	2	13	1	12	149
26	96	64	32	53	13	40	18	7	11	13	0	13	197
27	88	73	15	48	27	21	23	9	14	14	1	13	151
28	116	60	56	46	13	33	21	7	14	15	2	13	216
29	96	70	26	44	31	13	13	11	2	12	2	10	98
30	101	60	41	49	10	39	18	4	14	17	0	17	229
31	102	62	40	60	14	46	21	3	18	17	1	16	250

APPENDIX N (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
32	93	55	38	60	12	48	21	6	15	15	0	15	239
33	105	62	43	54	13	41	23	2	21	16	0	16	252
34	87	80	7	48	17	31	16	8	8	15	2	13	145
35	89	83	6	45	28	17	15	8	7	13	0	13	113
36	94	71	23	51	16	35	15	5	10	16	1	15	183
37	99	57	42	57	17	40	22	1	21	12	1	11	229
38	83	78	5	41	22	19	21	7	14	15	1	14	141
39	83	75	8	40	18	22	10	6	4	14	0	14	120
40	98	65	33	52	17	35	16	6	10	13	1	12	181
41	90	72	18	54	21	33	15	2	13	16	1	15	183
42	93	76	17	61	16	45	17	5	12	12	0	12	191
43	100	68	32	57	14	43	22	4	18	14	1	13	224
44	90	84	6	46	20	26	11	9	2	14	2	12	112
45	106	75	31	45	25	20	11	13	-2	13	2	11	109
46	94	83	11	44	18	26	17	12	5	14	2	12	126
47	107	58	49	54	11	43	17	4	13	12	0	12	222
48	106	72	34	50	14	36	21	6	15	14	3	11	195
49	90	72	18	48	15	3	14	1	3	10	3	7	121
50	87	72	15	53	13	40	19	5	14	15	1	14	193
51	70	90	-20	39	26	13	15	13	2	15	3	12	60
52	101	61	40	57	16	41	19	1	18	14	1	13	228
53	105	61	44	58	18	40	18	3	15	14	2	12	217
54	100	67	33	55	19	36	15	8	7	16	1	15	186
55	97	63	34	50	18	32	13	6	7	12	1	11	163
56	85	62	23	52	6	46	13	2	11	16	1	15	208
57	103	57	46	49	17	32	18	8	10	9	1	8	172
58	104	60	44	57	12	45	21	2	19	16	0	16	255
59	97	66	31	51	18	33	18	2	16	17	2	15	205
60	88	67	21	50	18	32	16	9	7	14	1	13	158
61	92	77	15	50	15	35	17	7	10	16	1	15	175
62	80	75	5	55	20	35	15	7	8	15	1	14	155
63	79	77	2	37	22	15	9	14	-5	15	2	13	69
64	95	66	29	39	22	17	15	6	9	15	1	14	146
65	87	71	16	50	16	34	18	9	9	14	1	13	163
66	94	79	15	47	18	29	18	12	6	13	0	13	143

APPENDIX N (Continued)

Re-spond-ent	Weight +1	-1	Diff.	Weight +2	-2	Diff.	Weight +3	-3	Diff.	Weight +4	-4	Diff.	Total Diff.
67	92	66	26	48	16	32	17	4	13	16	1	15	189
68	94	71	23	42	22	20	11	11	0	13	0	13	115
69	92	80	12	49	18	31	22	5	17	15	1	14	181
70	94	67	27	44	19	25	17	8	9	17	0	17	172
71	89	84	5	40	32	8	13	10	3	12	2	10	70
72	90	70	20	50	14	36	15	5	10	16	1	15	182
73	94	62	32	41	18	23	15	2	13	15	3	12	165
74	87	66	21	47	22	25	16	6	10	14	2	12	149
75	97	78	19	48	31	17	11	12	-1	13	0	13	102
76	90	67	23	58	16	42	21	6	15	16	1	15	212
77	89	60	29	60	13	47	20	6	14	16	0	16	229
78	99	77	22	52	19	33	17	5	12	12	1	11	168
79	100	65	35	49	11	38	20	8	12	14	0	14	203
80	101	61	40	47	13	34	19	9	10	16	2	14	194
81	86	81	5	46	25	21	19	11	8	13	1	12	119
82	91	66	25	42	23	19	17	6	11	16	1	15	156
83	94	66	28	51	16	35	16	7	9	10	2	8	157
84	93	68	25	49	18	31	16	5	11	16	1	15	180
85	89	71	18	51	23	28	17	8	9	13	2	11	145
86	105	59	56	52	15	37	23	4	19	16	0	16	251
87	96	73	23	30	20	10	15	8	7	14	0	14	120
88	96	65	31	46	19	27	14	11	3	11	2	9	130
89	106	56	50	59	11	48	20	4	16	16	1	15	254
90	95	65	30	47	30	17	20	15	5	12	1	11	123
91	102	69	33	47	16	31	17	7	10	12	1	11	169
92	103	72	31	44	13	31	16	6	10	16	1	15	183
93	96	76	20	52	15	37	21	5	16	15	1	14	198

APPENDIX N (Continued)

χ	χ^2	f	χ	χ^2	f	χ	χ^2	f
255	65,025	1	218	47,524		181	32,761	2
254	64,516	1	217	47,089	2	180	32,400	1
253	64,009		216	46,656	1	179		
252	63,504	1	215			178		
251	63,001	1	214	45,796	1	177	31,329	1
250	62,500	1	213			176		
249	62,001		212	44,944	1	175	30,625	1
248	61,504		211			174	30,276	1
247	61,009		210			173		
246	60,516		209			172	29,584	2
245	60,025		208	43,264	1	171		
244	59,536		207			170		
243	59,049		206			169	28,561	2
242	58,564		205	42,025	1	168	28,224	1
241	58,081	1	204			167		
240	57,600	1	203	41,209	1	166		
239	57,121	1	202	40,804	1	165	27,225	1
238	56,644		201			164		
237	56,169		200			163	26,569	2
236	55,696		199	39,601	1	162		
235	55,225		198	39,204	1	161		
234	54,756		197	38,809	1	160		
233	54,289		196			159		
232	53,824		195	38,025	1	158	24,964	1
231	53,361	1	194	37,636	1	157	24,649	1
230	52,900		193	37,249	1	156	24,336	1
229	52,441	3	192	36,864	1	155	24,025	1
228	51,984	2	191	36,481	2	154		
227	51,529		190			153		
226	51,076		189	35,721	1	152		
225	50,625		188			151	22,801	1
224	50,176	2	187			150		
223	49,729		186	34,596	1	149	22,201	2
222	49,284	1	185			148		
221	48,841		184			147		
220	48,400		183	33,489	4	146	21,316	1
219	47,961		182	33,124	2	145	21,025	3
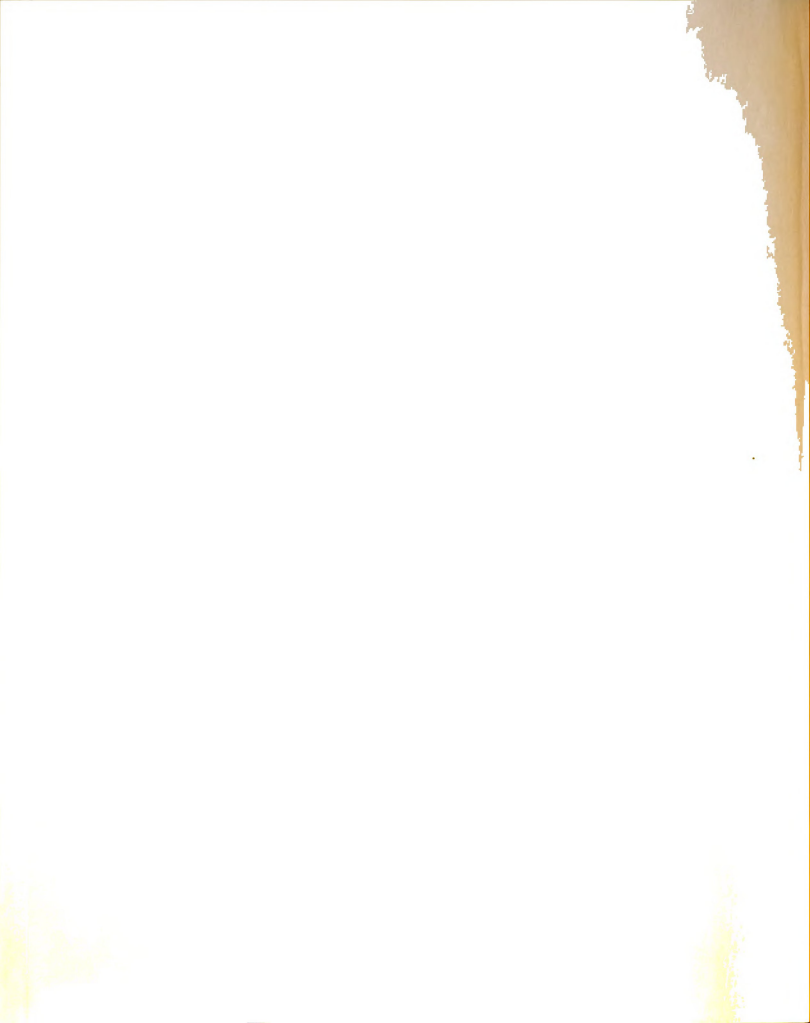
APPENDIX N (Continued)

χ	χ^2	f	χ	χ^2	f	χ	χ^2	f
144			115	13,225	1	86		
143	20,449	1	114			85		
142			113	12,769	1	84		
141	19,881	1	112	12,544	2	83		
140	19,600	1	111			82		
139			110			81		
138			109	11,881	1	80		
137			108			79		
136			107			78		
135	18,225	1	106			77		
134	17,956	1	105			76		
133	17,689	1	104			75		
132			103			74		
131			102	10,404	1	73		
130	16,900	1	101			72		
129			100			71		
128			99			70	4,900	1
127			98	9,604	1	69	4,761	1
126	15,876	1	97			68		
125			96			67		
124			95			66		
123	15,129	1	94			65		
122			93	8,649	1	64		
121	14,641	1	92	8,464	1	63		
120	14,400	2	91			62		
119	14,161	1	90			61		
118			89			60	3,600	1
117			88					
116			87					

APPENDIX N (Continued)

$\Sigma f \chi = 16,036$

$\Sigma f \chi^2 = 2,962,632$

$M = \dfrac{\Sigma f \chi}{N} = \dfrac{16,036}{93} = 172.43011$

$\sigma = \sqrt{\dfrac{\Sigma f \chi^2}{N} - \left(\dfrac{\Sigma f \chi}{N}\right)^2}$

$= \sqrt{\dfrac{2,962,632}{93} - \left(\dfrac{16,036}{93}\right)^2}$

$= \sqrt{31,856.258 - 29,732.14283}$

$= \sqrt{2,124.11517}$

$\sigma = 46.08812$

APPENDIX O

COMPUTATION OF THE SIGNIFICANCE OF THE DIFFERENCE

BETWEEN THE TWO MEANS BY THE t-TEST

APPENDIX O

COMPUTATION OF THE SIGNIFICANCE OF THE DIFFERENCE BETWEEN THE TWO MEANS BY THE t-TEST[1]

Key Group	Validating Group
$\overline{X}_1 = 171.69$	$\overline{X}_2 = 172.43$
$S_1 = 49.61$	$S_2 = 46.09$
$N_1 = 335$	$N_2 = 93$

1. Standard error for $\overline{X}_1$:

$$S_{\overline{X}_1} = \frac{49.61}{\sqrt{335}} = \frac{49.61}{18.30} = 2.71$$

2. Standard error for $\overline{X}_2$:

$$S_{\overline{X}_2} = \frac{46.09}{\sqrt{93}} = \frac{46.09}{9.64} = 4.78$$

3. Standard error of the difference between the two means:

$$S_{\overline{X}_1} - \overline{X}_2 = \sqrt{S_{\overline{X}_1}^2 + S_{\overline{X}_2}^2}$$

$$= \sqrt{2.71^2 + 4.78^2}$$

$$= \sqrt{7.34 + 22.85}$$

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[1]N. N. Downie, <u>Fundamentals of Measurement: Techniques and Practices</u> (New York: Oxford University Press, 1958), pp. 48—51.
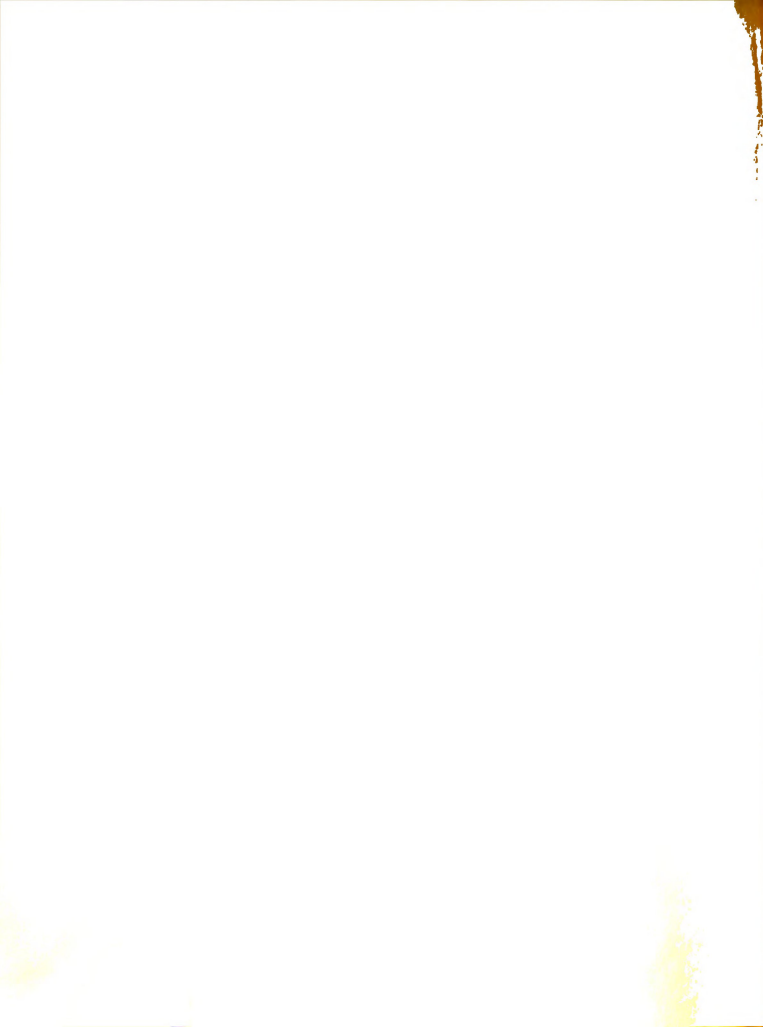
$$= \sqrt{30.19}$$

$$= 5.5$$

4. t:

$$t = \frac{\overline{x}_1 - \overline{x}_2}{S_{\overline{x}_1} - S_{\overline{x}_2}}$$

$$= \frac{172.43 - 171.69}{5.5}$$

$$= \frac{.74}{5.5}$$

$$= .13$$

APPENDIX P

COPY OF ORIGINAL LETTER FROM

DR. KENNETH E. CLARK

UNIVERSITY OF MINNESOTA
College of Science, Literature, and the Arts
Minneapolis 14

Department of Psychology   February 3, 1959

Mr. Victor Croftchik
Art Department
Central Michigan College
Mount Pleasant, Michigan

Dear Mr. Croftchik:

I enclose the final material for the analysis of the Strong Vocational
Interest Blank data for your art teachers group. You will find
rosters of scores on your key for your original group of 335 and
your cross-validation group of 93. You will also find distributions
of these scores for each group.

We have used the percentage responses on the men-in-general group
which Strong collected and the weights on your keys to estimate the
mean score which men-in-general would receive on this key. This
mean is -64.74. Thus, hardly any art teacher scores as low as the
typical professional man. In fact, men-in-general will score about
five standard deviations below the mean of your art teachers.

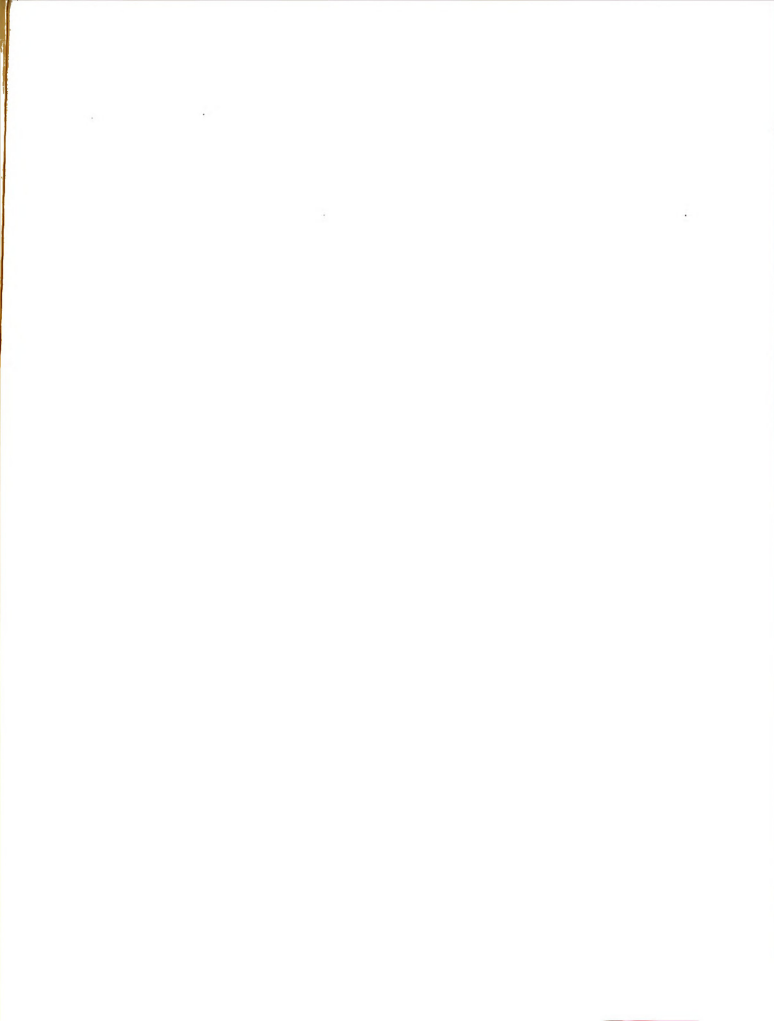   Sincerely yours,

                              Kenneth E. Clark,
                              Chairman
                              Department of Psychology

KEC/js
Encl.