A STUDY OF THE RELIABILITY AND VALIDITY
OF A SOCIOMETRIC SCALE ON THE
ELEMENTARY SCHOOL LEVEL

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Dean of the Graduate School
A STUDY OF THE RELIABILITY AND VALIDITY
OF A SOCIOMETRIC SCALE ON THE
ELEMENTARY SCHOOL LEVEL

THESIS

Presented to the Graduate Council of the North
Texas State Teachers College in Partial
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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Fort Worth, Texas

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# TABLE OF CONTENTS

LIST OF TABLES ................................................................. iv
LIST OF ILLUSTRATIONS ....................................................... v

Chapter

I. INTRODUCTION ................................................................. 1

Statement of Problem
Definitions and Limitations
Sources of Data

II. A SURVEY OF OTHER STUDIES ............................................ 6

III. PRESENTATION AND INTERPRETATION OF THE DATA ............. 10

Reliability
Validity

IV. CONCLUSIONS AND RECOMMENDATIONS ................................ 43

APPENDIX .............................................................................. 46

BIBLIOGRAPHY ..................................................................... 89
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Scores for Urban Test I</td>
<td>12</td>
</tr>
<tr>
<td>2. Scores for Urban Test II</td>
<td>15</td>
</tr>
<tr>
<td>3. Scores for Rural Test I</td>
<td>19</td>
</tr>
<tr>
<td>4. Scores for Rural Test II</td>
<td>22</td>
</tr>
<tr>
<td>5. Correlation Coefficients for Urban and Rural Test-Retest</td>
<td>24</td>
</tr>
<tr>
<td>6. Analysis of Chance Expectancy of Individual Vote in Urban and Rural Test-Retest</td>
<td>28</td>
</tr>
<tr>
<td>7. Chance Expectancy of the Agreement Between Various Votes on Urban and Rural Test-Retest</td>
<td>30</td>
</tr>
<tr>
<td>8. Chance Expectancy of Interpersonal Combinations on Urban and Rural Test-Retest</td>
<td>32</td>
</tr>
<tr>
<td>9. Means and Standard Deviations for Points Received on Urban and Rural Test-Retest</td>
<td>33</td>
</tr>
<tr>
<td>10. Comparative Probability Data on Anecdotal Record and Sociometric Test</td>
<td>40</td>
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</table>
# LIST OF ILLUSTRATIONS

<table>
<thead>
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<th>Figure</th>
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<tbody>
<tr>
<td>1.</td>
<td>Sociometric Scattergram of Urban Test I</td>
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<td>5.</td>
<td>Scattergram of Anecdotal Record on a Fifth Grade Group</td>
<td>38</td>
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<tr>
<td>6.</td>
<td>Sociometric Scattergram of Test Given to a Fifth Grade Group</td>
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CHAPTER I

INTRODUCTION

Statement of Problem

In order that the problem involved may be clearly understood, it is necessary that some background into the development of the problem be given. This problem developed in a class dealing with sociometry. With the aid of the professor, M. E. Bonney, the members of the class evolved a new sociometric scale. After the scale was given to several groups of children, the need for statistical information on the reliability and the validity of the scale was seen. However, the procedure necessary to obtain information dealing with these two factors, especially the validity factor, was beyond the scope of the course. In order that future classes, or other groups, could feel free to use this scale and could rely on the results obtained from it, this study was made.

The scale itself is called "How I Feel Toward Others." It is a five point scale in which each member of the group which is to be measured rates every other member of the group, according to the criteria of these five points. A copy of the scale will be found in the appendix.
The scale is graded on the following arbitrary point system:

"Best Friend"------------- 3 points
"Friend"----------------- 1 point
"Don't Know"------------- 0 point
"Not My Friend"----------- -1 point
"Don't Want as a Friend"-- -3 points

There are several factors measured by the scale. The number of points that each person received is taken as his "social acceptance" score. The number of points that each person gave to the rest of the group is considered to measure his "emotional expansiveness."

By dividing the total number of points that one person could receive into the total number of points that any one person did receive, an index of the individual's social acceptance is obtained. This index makes it possible to compare the social acceptance of any one person with any other person, on the same test or different tests. It also is possible to compare the social acceptance of the same person in separate groups.

In order to determine how a person's own sex feels toward him, the total number of points given to him by his own sex is divided by the total number of points that he could have received from his sex. This score is called the "intrasex" index.

An "extrasex" index is obtained by dividing the total number of points received by a person from the opposite sex by...
the maximum number of points that he could have received from the opposite sex.

A mutual friendship score is obtained by using a point evaluation. For every very mutual friend a person has, he receives three points; this is indicated by a red color in the chart. For every moderately mutual friend he has, he receives one point; this is indicated by a blue color in the chart. A total summation of these points is the individual's "mutual friendship" score.

In much the same way a score for "unrequited friendship" is figured. However, this is a negative score, an undesirable one. Each time a person is the negative member of the very unreciprocated pair, he receives three points; this is indicated by the orange color in the chart. When he is the negative member of the moderately unreciprocated pair, he receives one point; this is indicated by a yellow color in the chart. A summation of these points is the individual's "unrequited friendship" score.

A "prestige" score is also obtained for each person. The members of the upper quartile, in points received, are determined. Each person is graded as to the number of points that he received from this upper quartile group. His score is then divided by the maximum number of points that he could have received from this group. The quotient is considered to be a measure of the individual's prestige in the group.
Definitions and Limitations

In addition to the background given in stating the problem, the definition of terms and the limitations involved are given to insure a better understanding of the problem.

A sociometric test is a device to measure the amount and the kind of organization of a social group.

Sociometry deals with the mathematical study of the psychological properties of a population through the experimental techniques of quantitative measures.

Emotional expansiveness is used to mean the individual's emotional needs for other people.

This study is limited to the elementary white students of the north Texas area surrounding Denton, Texas.

Sources of Data

Data for the reliability of the scale were obtained from two test-retest groups of students: one fourth grade group and one fifth grade group. The fourth grade was a Denton Public School group. The fifth grade was a group from a rural school near Denton. The fourth grade was tested two days apart; the fifth grade was tested on consecutive days. The scores of the test-retests are correlated, and the chi square method is used to determine the chance relation of the tests.

The data for the validity of the scale were obtained from anecdotal notes taken by the investigator of a fifth grade group
in the Demonstration School of North Texas State College. In
order to evaluate the record, a copy of which is in the appendix,
one scale was given in April, upon the completion of the record.
The test-retest data on the other two groups also reveal some
information that is pertinent to validity.
CHAPTER II

A SURVEY OF OTHER STUDIES

In order to better evaluate the work being done, a survey of other studies in this same field would be advisable. There seemed no point in duplicating a problem that had been solved before. Effective methods that had been used by previous investigators in solving similar problems might prove useful in this study. However, a review of the related literature revealed that very few other investigations on this type of problem had been done. There are a few that are merely "arm chair" discussions of the problem; there are even fewer objective studies with statistical procedure used.

J. L. Moreno presents a valuable discussion of why a sociometric test should be valid and reliable, but he has very little objective data indicating that the tests which he used were actually either one. He did make a retest, after ninety days, and he reports a correlation of .90 between the tests.¹

Helen Jennings retested one house of girls in her study, using a four day interval. She found a correlation of .96 for acceptance and .93 for rejection. These findings were based

¹J. L. Moreno, Who Shall Survive, p. 91.
only on the ratings given, not on those received. She stated that the validity of the findings could be ascertained by reviews of the behavior data and case studies, but she did not review them.  

The study that comes nearest to being parallel to this one is by Leslie D. Zeleny. He made three test-retests which all correlated over .910. In his discussion of validity he says, "The validity of the measured attitudes is not so easily determined; but correlations of $r = .538 \pm .082$ between attractions and ratings on the Partridge scale, and $r = .87 \pm .027$ between choices and the Partridge ratings, as well as the logic of the Record imply its validity."  

This study was on the junior college level. His Record rates every one in the group "yes," "no," or "indifferent." This is much the same way that the scale for this study does.  

In a four year study made by M. E. Bonney, social acceptance was found to be as consistent as intelligence and academic achievement. This study was made using the second grade through the sixth grade.  

---

2 Helen Jennings, Leadership and Isolation, p. 31.  


4 Ibid.  

5 M. E. Bonney, "Consistency of Sociometric Scores and Their Relationship to Teacher Judgments of Social Success and to Personality Self Ratings," Sociometry, VI, No. 4 (November, 1943), 409-424.
In a retest given at the end of six weeks, Joan Criswell found some change and asked that the reasons for the change be stated. The criterion was "Name two people you wish to sit by." The chart of change which follows was given:

<table>
<thead>
<tr>
<th>Type of Choice</th>
<th>Number</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st. choice</td>
<td>236</td>
<td>31</td>
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<tr>
<td>2nd. choice</td>
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<td>Reciprocated 1st. choice</td>
<td>123</td>
<td>20</td>
</tr>
<tr>
<td>Reciprocated 2nd. choice</td>
<td>60</td>
<td>40</td>
</tr>
<tr>
<td>Totals</td>
<td>460</td>
<td>41</td>
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</table>

After going over the reasons given for the changes, she concluded that there were three primary reasons for the differences in the tests. Some of the changed choices were just as well liked as the first person chosen; some of the choices were made hurriedly and later were reconsidered; some real change is due to disagreements and fights.\(^7\)

Helen Jennings made still another study of reliability in which she gave a reliability coefficient of .95 for a test-retest.\(^8\)

The majority of the work done on the problem involved has been with respect to consistency. Studies of reliability are made based on a short time interval. A time lag of more than several days is a consistency measure, not a measure of reliability.

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\(^7\) Ibid., pp. 69-74.

\(^8\) Helen Jennings, The Sociometry of Leadership, p. 15.
From this meager amount of literature very little of importance can be seen with respect to the reliability of sociometric scales, and almost nothing concerning the validity of them. The coefficients that have been quoted are all very high and are encouraging to the investigator. Still it is altogether too evident that individual responses must be checked and compared in some way in order that a fully objective study may be made. In that the scale to be studied is a different one from any other scale reported; that the criteria are different from any other criteria used; and that the method is more completely a measure of the social picture presented by a group than any other method employed, it is felt that this study is justified.
CHAPTER III

PRESENTATION AND INTERPRETATION OF THE DATA

Reliability

The data collected to determine the reliability of the scale began with a test-retest of a fourth grade group in a Denton elementary school. The data were gathered two days apart. There were thirty-four class members, seventeen boys and seventeen girls.

Due to the nature of a test-retest, it is deemed desirable to present the figures and tables relating to the test-retest in consecutive order for the sake of coherence. A test-retest is considered to be one unit of information; therefore it should be presented in close proximity. To separate the parts with intervening material would lessen its effective presentation.

Scattergrams were drawn up to facilitate accurate and effective calculations of the votes. The first scattergram, Figure 1, will herein be referred to as Urban Test I. It shows the votes as they were cast and the relationships as they existed; Table 1 shows the eight different scores for this test. The retest, Urban Test II shown in Figure 2, shows the votes and relationships for the second test; Table 2 gives the eight different scores for this test.
Fig. 1--Sociometric scattergram of Urban Test I
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<th>Prestige Score</th>
<th>Extrasex Index</th>
<th>Intrasex Index</th>
<th>Unrequited Score</th>
<th>Mutual Friendship</th>
<th>Social Acceptance Index</th>
<th>Points Given</th>
<th>Points Received</th>
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Fig. 2--Sociometric scattergram of Urban Test II
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SCORES FOR URBAN TEST II

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In order to respect the integrity of the students, each individual was given a number. This system serves as well in a study of this kind, as the identity necessary on this test is only for the purpose of comparison. The numbers are arranged in sex groups to allow a showing of intrasex and extrasex relationships.

A brief explanation of the method of coloring which was used in Figure 1, and each of the subsequent sociometric scattergrams, is expedient. The corresponding colors, relationships, and vote combinations were used in the following manner:

Red; very mutual; 1-1
Blue; moderately mutual; 1-2, 2-2
Yellow; moderately unreciprocated; 1-4, 2-4, 2-5
Orange; very unreciprocated; 1-5
Green; mutually rejected; 4-4, 4-5, 5-5

The numbers appearing in the colored squares indicate the vote number which was given and received. The pupils whose numbers appear on the horizontal lines gave the vote indicated, and the pupils whose numbers appear on the vertical lines received the vote.

Before considering the results of this urban data, the test-retest given to a fifth grade group in a small, rural, consolidated school near Denton is presented because the two sets of tests are interpreted as a whole. The first test, Rural Test I, is presented in Figure 3 with its corresponding data tabulated in Table 3; likewise, the second test, Rural Test II, and its data are presented in Figure 4 and Table 4.
Fig. 3—Sociometric scattergram of Rural Test I
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Fig. 4--Sociometric scattergram of Rural Test II
TABLE 4

SCORES FOR RURAL TEST II

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One method of determining reliability is to compare the scores made on both portions of a test-retest, when the two tests are given a short time apart. The time lag between the tests is usually one or two days. The correlation coefficient, when obtained from two such tests, is considered to be indicative of the reliability of the test. The more alike the participating individuals' answers are, the higher the coefficient will be; and the more reliable the test may be said to be. This is the first method used to determine the reliability of this scale. The correlation coefficients will be found in Table 5.

**TABLE 5**

**CORRELATION COEFFICIENTS FOR URBAN AND RURAL TEST-RETESTS**

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<td>Prestige score</td>
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The first data for reliability of "How I Feel About Others" are the correlations given in Table 5. A coefficient over .40 shows at least moderate correlation and a substantial relationship.\(^1\) All of the coefficients were found to be above this level.

number, and may thus be considered to be significant. The standard errors of all of the coefficients are less than one-fourth the size of the corresponding coefficients. This is another indication that the coefficients are reliable. That is, if the data were collected again, the scores correlated again, the coefficients could be expected to fall within the range limited by the standard error. The larger the coefficient, the more reliable the score may be said to be. It is generally understood that coefficients of reliability derived in the manner used for these should reach .90 to be highly significant. Only one of these does so, the one for "points received" on the urban test. "Points received" also has the highest coefficient of the scores on the rural test. This score, then, is the most reliable of the seven correlated. The indices for "social acceptance" were not correlated because they were derived directly from the "points received" and, consequently, correlate perfectly with it.

Of the other scores, the "intrasex index" is the most reliable. The coefficients for the two tests were .82 and .862. Although these figures fall short of the desired "90," they are significant only to a slightly lesser degree.

The "prestige score" is hardly less reliable, yielding coefficients of .973 and .738.

The "extrastex index" is next in line with coefficients of .885 and .665. Certainly these figures do not indicate a high degree of reliability, but they do show that the score has
enough reliability to be considered in the interpretation of a person's social life in a group.

The "mutual friendship" score, "unrequited friendship" score, and the "points given" score do not show the reliability that the other scores show. They fall below the limit of good reliability figures. Still when the two factors are correlated to the extent of .487, the lowest coefficient given in the data, some consideration should be given to them. It may be that a refining of the method of deriving these scores will improve their reliability. Even should they not improve, that does not mean that they should be discarded as being worthless. If further study shows other correlations that are as good as these, then the scores would at least be good diagnostic tools. They could be used with certain reservations.

An inspection of the tests revealed that a correlation alone would be misleading and would not present a clear picture of the degree of identity between the two tests. It was evident that one group member could obtain the same score on both scales, and yet receive his points from different people. In order to better evaluate the data, it was necessary to make some sort of individual item comparison of the two scales. To accomplish this aim, a null hypothesis was assumed. It might be supposed that all of the votes given were given by pure chance, and that nothing but chance was operating when the people voted. If this were the case, the number of various votes, as well as the various combinations of votes, could be figured according to the
laws of probability. Then by comparing the obtained figures with the expected figures, it could be determined how often the obtained figures would be the same by pure chance. If the chances are very seldom, then the results are more reliable than if the chances are high. In fact, the less the chance, the more reliable the test becomes. It is usually taken that if the chances are one in a hundred or less, the test is highly reliable.

In other words, the null hypothesis is first assumed and then if it proves to be wrong, this means that chance is not operating. Thus the other factors that are involved are reliable.

A null hypothesis was assumed in this study. It would seem reasonable to suppose that more of the people of such a group would choose each other as friends than would reject each other. Also, it would seem, in the case of the urban test-retest, that out of thirty-four people, none of whom had been in the group less than seven months, most of them would be able to rate every other person according to the criteria set up by the scale. If this were the case, there would be fewer "don't know" votes than chance would allow. However, assuming that only chance was operating in this group of thirty-four people, one-fifth of the total number of votes should fall in each category, as there are five categories of votes. By counting the actual number of votes given in each category and applying the chi square statistical method, the null hypothesis was tested. Four degrees of freedom were used in all of the chi square calculations in this study. The figures which were obtained are given in Table 6.
TABLE 6
ANALYSIS OF CHANCE EXPECTANCY OF INDIVIDUAL VOTE IN URBAN AND RURAL TEST-RETESTS

<table>
<thead>
<tr>
<th>Vote Number</th>
<th>Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>$x^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>905</td>
<td>448.8</td>
<td>456.2</td>
<td>581.6</td>
<td>.01</td>
</tr>
<tr>
<td>2</td>
<td>721</td>
<td>448.8</td>
<td>272.2</td>
<td>206.2</td>
<td>.01</td>
</tr>
<tr>
<td>3</td>
<td>165</td>
<td>448.8</td>
<td>-283.8</td>
<td>224.4</td>
<td>.01</td>
</tr>
<tr>
<td>4</td>
<td>190</td>
<td>448.8</td>
<td>-258.9</td>
<td>186.5</td>
<td>.01</td>
</tr>
<tr>
<td>5</td>
<td>163</td>
<td>448.8</td>
<td>-286.8</td>
<td>229.0</td>
<td>.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vote Number</th>
<th>Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>$x^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>555</td>
<td>202</td>
<td>353</td>
<td>770.0</td>
<td>.01</td>
</tr>
<tr>
<td>2</td>
<td>294</td>
<td>202</td>
<td>92</td>
<td>52.3</td>
<td>.01</td>
</tr>
<tr>
<td>3</td>
<td>81</td>
<td>202</td>
<td>-121</td>
<td>90.5</td>
<td>.01</td>
</tr>
<tr>
<td>4</td>
<td>44</td>
<td>202</td>
<td>-158</td>
<td>156.0</td>
<td>.01</td>
</tr>
<tr>
<td>5</td>
<td>38</td>
<td>202</td>
<td>-164</td>
<td>166.0</td>
<td>.01</td>
</tr>
</tbody>
</table>

The "best friend" vote would be expected, by "arm chair" methods, to be more frequent and more reliable than the negative votes, and maybe more reliable than any other category. By chance, however, each category should yield the same number of votes. As Table 6 shows, vote one far outranks the chance expectancy. Vote two was given more than was expected by chance. The other three categories, votes three, four, and five, received less than chance expectancy. The reliability figure, "p," is
one-hundredth in all cases. This means that there were less than one in a hundred chances that the obtained data could be accounted for by chance alone. If chance is thus ruled out, the people answering the scale must have been influenced by their feelings, and answered accordingly. In other words, the scale is actually measuring interpersonal relationships.

To further determine the reliability of the various votes, the question may be asked: "Did the same people answer the same way on both tests, or how often did each person answer the same way?" Again a null hypothesis was assumed. That is, it was assumed that only chance was operating.

In this case, each person would have one chance in five of bestowing any one of his choices on another person on the first test. On the second test, the same would be true. Thus, each person would have 1/25 of a chance of bestowing the same vote on the same person on both tests. If this is the case, 1/25 of the total votes given on both tests combined should agree completely on the basis of chance alone. Using the figures obtained in this manner as the expected number, and checking this against the actual number given, the hypothesis was tested again by the chi square method.

The question, "Did the same people answer the same way both times?" is answered by Table 7. The "p" values all show the "one in a hundred chances" that indicate reliable data. "Acceptance" shows the largest chi square and may be considered the most reliable item on the table.
TABLE 7

CHANGE EXPECTANCY OF THE AGREEMENT BETWEEN VARIOUS
VOTES ON URBAN AND RURAL TEST-RETESTS

<table>
<thead>
<tr>
<th>Vote Number</th>
<th>Urban Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>$\chi^2$</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>328</td>
<td>44.9</td>
<td>283.1</td>
<td>1859.0</td>
<td>.01</td>
</tr>
<tr>
<td>2</td>
<td>233</td>
<td>44.9</td>
<td>188.1</td>
<td>821.0</td>
<td>.01</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>44.9</td>
<td>-27.9</td>
<td>19.0</td>
<td>.01</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>44.9</td>
<td>-24.9</td>
<td>14.4</td>
<td>.01</td>
</tr>
<tr>
<td>5</td>
<td>24</td>
<td>44.9</td>
<td>-19.9</td>
<td>10.1</td>
<td>.01</td>
</tr>
<tr>
<td>Acceptance</td>
<td>730</td>
<td>134.6</td>
<td>595.4</td>
<td>2993.0</td>
<td>.01</td>
</tr>
<tr>
<td>Rejection</td>
<td>69</td>
<td>134.6</td>
<td>-65.6</td>
<td>36.3</td>
<td>.01</td>
</tr>
<tr>
<td>Tot. Agree.</td>
<td>79^a</td>
<td>224.5</td>
<td>574.5</td>
<td>1846.0</td>
<td>.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vote Number</th>
<th>Rural Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>$\chi^2$</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>204</td>
<td>20.25</td>
<td>183.75</td>
<td>1736.00</td>
<td>.01</td>
</tr>
<tr>
<td>2</td>
<td>75</td>
<td>20.25</td>
<td>54.75</td>
<td>154.00</td>
<td>.01</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>20.25</td>
<td>-3.75</td>
<td>.72</td>
<td>.95</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>20.25</td>
<td>-14.75</td>
<td>11.17</td>
<td>.02</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>20.25</td>
<td>-14.75</td>
<td>11.17</td>
<td>.02</td>
</tr>
<tr>
<td>Acceptance</td>
<td>401</td>
<td>60.75</td>
<td>340.25</td>
<td>2187.00</td>
<td>.01</td>
</tr>
<tr>
<td>Rejection</td>
<td>19</td>
<td>60.75</td>
<td>-51.75</td>
<td>49.23</td>
<td>.01</td>
</tr>
<tr>
<td>Tot. Agree.</td>
<td>437</td>
<td>101.20</td>
<td>326.80</td>
<td>1319.00</td>
<td>.01</td>
</tr>
</tbody>
</table>

Vote one is the most highly reliable of the votes, followed in order by votes two, three, four, and five.
Having determined the chance factor involved in the number of answers that were the same, attention was turned to the score combinations that are indicated by the colors on the scattergrams. To find the chance value, one must look into the manner by which these combinations are determined.

The "very mutual" combination is the result of two people giving each other the vote one, or "best friend" vote. The chance is one in five for a person to give another any one of the five different votes. Thus, for two people to give each other the same vote, the chance is $1/5 \times 1/5$, which is $1/25$. That is the chance for one test only. When also considering the retest, the chance is $1/25 \times 1/25$, which is $1/625$. Thus the chance for two people to bestow the vote one on each other on both tests would be $1/625$ of the total number of votes given on the two tests. This same chance factor applies to the "very unreciprocated" combination. By counting the actual number of times that vote one was given by two people to each other both times the scale was given, the null hypothesis was set up. The data were then subjected to the chi square method of testing the hypothesis.

The "moderately mutual" relationship is obtained when one person gives another a two vote and receives a one vote; gives a one vote and receives a two vote; or gives a two vote and receives a two vote.

The "Moderately unreciprocated" relationship is obtained when one person gives another a four vote and receives a one
vote; gives a two vote and receives a four vote; or gives a two vote and receives a five vote.

The "mutually rejected" relationship is obtained when one person gives another a four vote and receives a four vote; gives a five vote and receives a five vote; or gives a four vote and receives a five vote.

In each of these three cases, there are three times as many chances to obtain the relationship involved than there are in the "very mutual" or "very unreciprocated" relationships. Thus the chance factor for these three relationships is \( \frac{3}{635} \) of the total number of votes cast. These interpersonal combinations are given in Table 8.

<table>
<thead>
<tr>
<th>TABLE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHANCE EXPECTANCY OF INTERPERSONAL COMBINATIONS</td>
</tr>
<tr>
<td>ON URBAN AND RURAL TEST-RETESTS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>( x^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very mutual</td>
<td>110</td>
<td>3.6</td>
<td>106.4</td>
<td>3150.00</td>
<td>.01</td>
</tr>
<tr>
<td>Mod. mutual</td>
<td>320</td>
<td>5.6</td>
<td>296.4</td>
<td>15727.00</td>
<td>.01</td>
</tr>
<tr>
<td>Very unrecip.</td>
<td>6</td>
<td>3.6</td>
<td>2.4</td>
<td>1.6</td>
<td>.80</td>
</tr>
<tr>
<td>Mod. unrecip.</td>
<td>56</td>
<td>5.6</td>
<td>50.4</td>
<td>455.00</td>
<td>.01</td>
</tr>
<tr>
<td>Mut. rejected</td>
<td>6</td>
<td>3.6</td>
<td>4</td>
<td>.03</td>
<td>.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>( x^2 )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very mutual</td>
<td>60</td>
<td>1.60</td>
<td>58.4</td>
<td>4892.0</td>
<td>.01</td>
</tr>
<tr>
<td>Mod. mutual</td>
<td>122</td>
<td>4.85</td>
<td>117.2</td>
<td>2864.0</td>
<td>.01</td>
</tr>
<tr>
<td>Very unrecip.</td>
<td>0</td>
<td>1.60</td>
<td>-1.6</td>
<td>1.6</td>
<td>.90</td>
</tr>
<tr>
<td>Mod. unrecip.</td>
<td>12</td>
<td>4.85</td>
<td>-7.2</td>
<td>10.6</td>
<td>.03</td>
</tr>
<tr>
<td>Mut. rejected</td>
<td>0</td>
<td>4.85</td>
<td>-4.85</td>
<td>4.9</td>
<td>.30</td>
</tr>
</tbody>
</table>
By making individual counts of the "moderately mutual," "moderately unreciprocated," and "mutually rejected" relationships on both tests, three new null hypotheses were set up. The chi square method was applied to each relationship. The results of the three relationships were given in Table 8.

The pair combinations show reliability as indicated in Table 8. The "very mutual" and "moderately mutual" consistently show high chi square values and low "p" values. However, the "mutually rejected" and both the "unreciprocated" combinations vary between the two groups. The chi squares and "p" values do not indicate the high degrees of reliability that have so far been seen. This indicates that these are the more unstable combinations. This is encouraging data for those who wish to improve the total social picture of a group. If these undesirable combinations are less stable, then a planned program would tend to progressively improve a group.

The mean and the standard deviation for the number of points received were figured. They are given in Table 9.

| TABLE 9 |
| MEANS AND STANDARD DEVIATIONS FOR POINTS RECEIVED ON URBAN AND RURAL TEST-RETESTS |

<table>
<thead>
<tr>
<th>Test</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban test I</td>
<td>41.2</td>
<td>28.25</td>
</tr>
<tr>
<td>Urban test II</td>
<td>42.5</td>
<td>30.22</td>
</tr>
<tr>
<td>Rural test I</td>
<td>45.20</td>
<td>12.8</td>
</tr>
<tr>
<td>Rural test II</td>
<td>37.35</td>
<td>16.6</td>
</tr>
</tbody>
</table>
On both groups the means remained close to each other. The standard deviations both increased on the retests. This probably indicates that the people tested became more critical during the time interval. They were given something to think about; their attention was focused on something that they had been accepting before. The increase in critical attitude caused the extremes to move further from the mean. A person who rated high moved higher, and likewise a person who rated low moved lower. Inspection of the scattergrams will show several marked instances of this process.

Validity

In this study, the method used to determine validity is a comparison of an anecdotal record with a test given at the end of the taking of the record. The record itself was taken on a fifth grade group at North Texas Demonstration School during the three months prior to the giving of the test. The records were taken during the whole class day, with observations of the group during all of its classes. In this manner all sorts of activities that are normally engaged in by all of the class members were observed. Although every day of the week was used at one time or another, Tuesdays and Thursdays were used exclusively for the purpose of taking this record. It was felt that in this manner a more complete record could be taken. As the purpose in taking the record was to compare it with the test to be given to the group, only those anecdotes
that seemed to indicate some sort of interpersonal relationship between any of the class members were recorded. Even though the complete record is given in the appendix, examples of the notes will be given in the body of the thesis. These are given as examples of the ratings given by the judges. On these illustrations all of the judges\(^2\) agreed on the rating given:

A. Strong positive

15. \underline{3} and \underline{10} had their arms around each other.

48. \underline{16} said that he and \underline{14} played in a gravel pit yesterday after school. \underline{16} said he went to see \underline{14}. \underline{16} said, "We sure had a lot of fun."

B. Moderately positive

28. \underline{9} and \underline{10} are using the same eraser.

40. \underline{19} and \underline{11} are talking.

C. Uncertain

1. \underline{5} is using \underline{19}'s book with him. Greer told them to.

308. \underline{8} told \underline{16} to go back and sit down. \underline{8} explained to \underline{16} that he was not supposed to be up.

D. One party antagonistic

258. \underline{12} and \underline{14} were working on a map. \underline{28} came up to look and \underline{12} made \underline{28} leave.

233. \underline{12} asked \underline{26}, \underline{11}, and \underline{25} to "shut up."

\(^2\)The judges were: M. E. Bonney, Mary Grimes, Tom Land, Earl Kooker, Otto Flocke, and Jack Caves; teacher and graduate students from the sociometry class.
3. Both parties antagonistic

284. 25 and 16 are in a fist fight.

285. 16, 20, and 14 had a fight over the ball.

Each of the individual ratings of the six judges was tabulated and compared as a group. Those notes upon which four or more of the judges agreed were given the rating that the majority had given. When three of the judges gave one rating and the other three gave another, the "weaker" rating was used in the final judgment; that is, in case three of the judges had rated a note as "A" and three had rated the same note as "B," the note was finally rated as "B." This was done in order that as many of the notes could be used as possible. The more general rating was given in order that all of the validity possible might be kept. Some notes were eliminated completely because there was not enough agreement among the judges to allow the note to be considered as being valid.

When the ratings of the judges had been tabulated, the color method of transferring the ratings to a scattergram was planned. The "A" rating was given the color red; the "B" rating was given the color blue; the "C" rating was omitted as not valid; the "D" rating was given the color orange; and the "E" rating was given the color green. Some persons had no notes at all taken on them. Some pairs of persons had as many as twelve notes taken on them. In some cases there were both positive and negative notes on the same pair. For this reason an arbitrary rating system for the tabulation was set up.
If all of the tallies were red, then the relationship was considered red. If all of the tallies were red and blue, the relationship was considered red. If all of the tallies were blue, the number of tallies was considered. Pairs with five or more blue tallies then were considered a red relationship. One to four blue tallies indicated a blue relationship. These ratings provide for the positive feeling involved in the record.

Because many of the tallies were mixed as to positive and negative feeling, some method of canceling had to be used. Due to the vast majority of positive notes over negative notes, the negative tallies were weighted. One orange tally was given a negative value equal to the positive value of one red tally or two blue tallies. One green tally was given a negative value equal to the positive value of two red tallies or four blue tallies. In this way few of the pairs were completely canceled, and yet some value could be given to a mixed relationship.

In order that the record could be compared with the "How I Feel Toward Others" scale, this test was administered to the same group on which the record was taken. This was done on the last day that notes for the record were taken. The results of this record are presented in Figure 5, and of the test in Figure 6. To separate the two figures would decrease the effectiveness of the data. Individual answers on the test must be compared with the observed behavior of the various pairs as presented in the record scattergram, in order to fully appreciate the method used in this portion of the study.
Fig. 5--Scattergram of anecdotal record on a fifth grade group.
Fig. 6--Sociometric scattergram of test given to a fifth grade group.
By comparing the colors of the scattergram for the record with the sociometric scattergram for the test which was given at the end of the record, it was determined how much alike they were. Having reduced the record to comparable terms, the chi square method was again used in a null hypothesis. Assuming that only chance was operating, the chance for a pair of persons to rate each other on the test, both in the same category, is still 1/25. The chance that the pair would receive any one of the color combinations, which represent a friendship relation, from the record is 1/5. Thus, the chance that the pair would rate each other in the same way and receive the corresponding rating from the anecdotal record would be 1/5 multiplied by 1/25, which would be 1/125. An actual count of the number of times this happened completes the hypothesis. The data are given in Table 10.

**TABLE 10**

**COMPARATIVE PROBABILITY DATA ON ANECDOTAL RECORD AND SOCIOMETRIC TEST**

<table>
<thead>
<tr>
<th></th>
<th>Number Obtained</th>
<th>Number Expected</th>
<th>Difference</th>
<th>$x^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tot. population</td>
<td>178</td>
<td>4</td>
<td>174.00</td>
<td>7629.3</td>
<td>.01</td>
</tr>
<tr>
<td>Record pop.</td>
<td>178</td>
<td>2.8</td>
<td>175.20</td>
<td>11051.9</td>
<td>.01</td>
</tr>
<tr>
<td>Girls</td>
<td>28</td>
<td>.72</td>
<td>27.28</td>
<td>1041.72</td>
<td>.01</td>
</tr>
<tr>
<td>Boys</td>
<td>78</td>
<td>2.44</td>
<td>75.56</td>
<td>2358.75</td>
<td>.01</td>
</tr>
</tbody>
</table>

Looking at the figures for "total population," in Table 10, it is seen that the chi square figure is extremely large. The
difference is positive, and the "p" or probability figure, is highly reliable. These data eliminate the factor of chance. The two scattergrams are alike, not because of chance, but because the test is measuring how the children feel about each other, as indicated by how they act. In simpler terms, if they say that they like or dislike each other and then behave as they have responded on the test, more than chance would allow, then the test is valid. Such is the case here.

Upon examining the data further, it was seen that even larger, more significant results would be obtained by use of only those cases upon which some record information was available; in this way, 160 pairs were removed from the total population. The remainder is herein referred to as the record population. The null hypothesis was assumed again and the chi square method was applied to test it. The results were given along with the data for the total population in Table 10. The record populations show a larger chi square and a very reliable "p" value. It is also positive. Had a more complete record been taken, these figures indicate that a higher validity would have been obtained for the total population.

In order to present a more complete picture, the boys and girls were separated and treated as individual populations. The chance factor remains the same. The same method was used on these two groups, and the results were presented in Table 10.

An effort was made to compare the two types of data on a different basis. The test data contains grades; no grades were
attempted on the record data. The nearest type of grade on the test data that could also be developed on the record data was the "mutual friendship" score. To do this, each blue relationship was scored one point, and each red relationship was scored three points. A summation of these points was made for each person and the resulting scores were correlated with the "mutual friendship" scores from the test data. The coefficient of correlation was $r = .28 \pm .14$. This coefficient is not significant. The standard error is also large enough to rule it out as a reliable figure.

There are two possible explanations for this low figure. In the first place, the method of deriving the two scores correlated was not exactly the same. There may be enough fault with the methods of deriving the scores to cause the low figure.

Another reason that is possible, and maybe more probable, is that the test is designed to measure covert behavior, while the record is obviously a record of overt behavior. These two do not always agree. People say one thing and do another. They feel one way, but because of the demands of society, they act in a different way. This could easily account for the low figure. Those people who tolerate someone whom they dislike would appear on the record as actually liking the other person. Society says, "Love thy neighbor," which influences these young people to be tolerant of their group members, at least in some cases.
CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The evidence, presented here as correlations, has indicated that the sociometric scale, "How I Feel Toward Others," is a reliable measure of the individual friendship relationships of white children of the elementary school level. The correlations showed that some of the scale scores were more reliable than others, the rank from high to low being "points received," "intrasex index," "prestige" score, "extrasex index," "mutual friendship" score, "unrequited friendship" score, "points given." These last three scores show lower coefficients. A revision of the method of derivation might later show an increase in the coefficients. In case later studies happen to show other coefficients as high or higher than these, the significance of the lower coefficients will increase.

The chance expectancy data showed that the scale was reliable, in that chance was not a factor in the choosing. If chance were not a factor, then the questions of the scale must be reliable. There were two cases where chance was not ruled out by the methods used here. Both of these cases were found in Table 8. The "very unreciprocated" combination and the "mutual rejection" combination showed low chi square
figures and high probability figures. At least these figures do not show that chance was not in operation for these two combinations.

The evidence given here has shown the scale to be valid, in that the chance factor was not operating. The anecdotal record was reliably more like the results from the scale than chance would allow.

Although chance was not a factor in the validity of the scale, the correlation between the anecdotal record and the scale results was low. One explanation for this low figure would be that the scale is intended to measure covert behavior, while the record is taken from overt behavior. These two types of behavior are not in direct agreement. That is, society rules out antagonistic behavior and accepts and encourages a tolerant attitude. For this reason, some of the people might appear to accept others, while really feeling indifferent or antagonistic toward them. A more carefully controlled anecdotal record might show a higher correlation than did the one presented here.

Another possible explanation for the low correlation figure can be found in the method used in obtaining the scores taken from the anecdotal record and correlated with the "mutual friendship" scores from the scale results. The fact that the record was not complete, did not contain notes on every pair, is enough to cause a low correlation. It is not known that the "mutual friendship" score from the record would be directly comparable with the same score from the scale.
It is recommended that further study be made on this problem. The recognized weaknesses of this study might be used to an advantage in any future research of this kind.
APPENDIX
Fifth Grade Anecdotal Record

January 8, 1948

1. 5 is using 19's book with him. Greer told them to.

2. 26 and 12 are studying together.

3. 20 threw salt in 14's eye at play period.

4. 14 hit 13 with the ball after 13 made a score.

5. At the work period 9 and 5 cleaned the cabinet together.

6. 20 is helping 14 with his board.

7. 22 is helping 23 with an airplane.

8. 12 is also helping 14 now.

9. The boys left the work table in a mess. While Greer was telling them to clean it up, 5 was doing it for them.

10. 26 and 23 had their arms around each other's shoulders.

11. 11 ran into 4 and 4 hit 11.

12. 18 is trying to fix 12's desk top. 25 broke it. 12 did not want 25 to sit on 12's desk. 22 said he would let 25 sit with him.

13. 26 got 12 to turn around and listen.
14. 12 helped 14 to adjust his belt.

15. 3 and 10 had their arms around each other.

16. 6 and 4 had their arms around each other.

17. 25 and 16 played ping pong at lunch. Both came to the teacher separately and told her how much fun they had.

18. 11 was told by the teacher to put the music books away. 16 began to help put them away, too. 11 told 16 to let the books alone.

19. 19 borrowed a pencil from 11.

20. 16 deliberately bumped into 27 and then called him a "dumb cluck."

21. 20 and 22 went to mail a letter for the observer.

22. 21 teased 23 with a pencil.

23. 14 is teasing 7 by holding her hair. 7 told 14 to "quit it." 7 did not appear to be angry, though.

24. 25 and 11 wanted to see 14's button. 14 would not let them.

25. 17 and 6 are in conversation.

26. 2 started to get some paper. 2 had been passing it out. 14 ran and got it first. 2 whirled around and sat down, frowning.
27. 13 swiped 9's pencils. 9 did not see 13 and 13 put them back.

28. 8 and 10 are using the same eraser.

29. 13 has been stalking around the room. 20 noticed 13 and began to follow 13.

30. 26 said, "Aw, sit down 20."

31. 20 walked up to 16 and whispered to 16. 20 left the room. 16 waited a moment and followed. They came in separately a little later.

32. 25 and 21 are arguing.

33. 16 and 26 are talking. 16 is smiling.

34. 25 and 7 are talking and smiling.

35. 25 put a scrap of paper on 6's hair.

36. 15 and 17 laughed at 25.

37. 4 got a ruler from 23.

38. 16 and 20 wanted to go to the office together. Greer would not let them.

39. 3 borrowed 2's pencil and returned it.

40. 19 and 11 are talking.
41. 23 and 4 are talking and smiling.

42. 10 and 4 are working together.

43. 18 and 26 are talking with their heads together.

44. 26 said to 18, "17 had forty-seven states and could not think of Texas." They laughed.

45. 9 praised 16 for good patrol work. 16 was not in the room.

46. 16 was not satisfied with the way 5 graded his paper. 16 took it to 6. While they were arguing, the teacher took over.

47. 25 and 22 walked over to the historical building together.

February 19, 1948

48. 16 said that he and 14 played in a gravel pit yesterday after school. 16 said he went to see 14. He said, "We sure had a lot of fun."

49. 25 was playing with 11. He would grab 11's belt in back and hold up so that 11 could walk funny.

50. 25 asked a question and called on 13 to answer it.

51. 5 asked a question and called on 27 to answer it.

52. 16 asked a question and called on 14 to answer it.

53. 14 asked a question and called on 16 to answer it.
54. Greer asked, "Who's talking?" 25 said, "14."

55. 16 and 23 are using 23's spelling book together.

56. 6 and 17 are talking.

57. Several came out of the building together at play period:

58. 11 and 16.

59. 14 and 12.

60. 13 ran into 21.

61. 14 hit 21 as he went out.


63. 14 was passing out the scissors. 27 and 12 tried to help.
   14 pushed them away and would not let them help him.

64. 21 hit 24 on the neck with a spit wad.

65. 22 is sitting by 25 in art to work with him.

66. 14 was asking, "What do you do?" very loudly. 4 and 10 gave him disapproving looks.

67. 26 told 14 to "shut up."

68. 14 bumped 11. 11 hit him back.

69. 7 is helping 25 sweep. 7 is holding the dust pan for 25.

70. 14 said that 20 helped fix his patrol belt.
71. 22 had no valentines to give. 15 found out about it and gave 22 five of his.

72. 26, 18, and 17 also talked to 22. Then 22 gave the valentines to the four boys and the teacher.

73. 25 and 26 had their arms around each other's shoulders while going to get a drink.

74. 14 used 25's comb to comb his hair.

75. 6 was singing, "He's too fat for me" about 25.

February 22, 1948

76. Many pairs of people were working together, of their own choice. They were:

77. 22-----15.

78. 17-----11.

79. 26-----18.

80. 14-----12.

81. 3-----8.

82. 25-----27.

83. 20-----13.

84. 9-----5.
85. 7------10.
86. 16------21.
87. 2------4.
88. 23------24.
89. 15 said that he wanted to work with 3 but could not.
90. 14 is doing all the work and 12 is watching.
91. 8 pulled 4's desk back into place for her.
92. 14 pushed 22 out of the circle.
93. 25 knocked the ball out of 16's hands as he was throwing it.
94. 18 and 24 are sitting out of the game for a while.
95. 25 was trying to get 22 not to cry. 22 said, "They won't throw me the ball. I never get to be the captain. They don't want me to play." 25 said, "I will get the ball and give it to you next time." 25 took 22 to the restroom and washed his face and came back with him.
96. 20 spent last weekend at 14's house.
97. 20 was helping 14 with his art. 14 left. 20 said, "14 is a nice guy. Everyone says he is bad but he is not."
98. 12 let five boys use the stapler: 26, 14, 13, 24, and 20.
99. 19 and 22 played caroms at noon.

100. 10, 3, 11, 24, and 21 are all talking in a group at noon.

101. 11 told the teacher that he was square dancing with 4 and that 17 took her away from him. 11 said, "She doesn't like me anyway."

102. 15 danced with 9 at noon.

103. 5 was talking to the class. 28 said to the teacher, "6 is talking and we can't hear."

104. 7 and 10 studied together all period.

February 26, 1948

105. 8 borrowed 2's pencil and gave it right back.

106. 28 offered 5 his pencil. She smiled and said she didn't need it.

107. 12 is leaning over to talk to 13.

108. 17 is leaning up to talk to 18.

109. 27 is studying with 25.

110. 19 is punching 14 from behind.

111. 21 and 1 are talking the lesson over. She asked him a question.
112. 19, 14, and 12 are in conversation.

113. 9 asked 23 a question.

114. 11 and 25 went to play period with their arms around each other.

115. Voluntary play groups were at tables inside:

116. 14--12.

117. 21--23--13--two sixth graders.

118. 19--11--24--one sixth grader.

119. 22--25.

120. 20--16.

121. 15--17--18--27.

122. 10 and 15 kept 14 from getting by. They put their legs in his way.

123. 4 danced with 23 and 9 with 15 at noon.

124. There was a committee choice.

22 came to the teacher to get help. 22 was crying.

22 said, "No one wants to work with me." 25, 14, and 12 came over and tried to comfort him. They all said, "I put your name on my list, 22."
125. Someone said, "4 is a slow reader." 24 said, "No, she's reading a long story."

126. 14 and 12 said that they want to be on a committee alone because other people will boss them. Both said that 22 would be all right on the committee with them, though.

127. Just before school 11 and 19 were discussing something.

128. 23 returned a magazine to 20.

129. 27 gave the teacher the right answer in math and 6 looked back at him and nodded, "Yes," and smiled.

130. 18, 1, and 25 all volunteered to help 22 with fractions. This was before the teacher asked for someone to help him.

131. 20, smiling, is talking with 13.

132. 22 loaned 11 a pencil.

133. 14 and 3 are laughing and talking while at their seats.

134. 5 and 28 are in earnest conversation.

135. 9 and 23 are working math together.

136. 12 touched 18 and then made funny faces.

137. 14 and 15 are talking. 14 showed 15 something on 15's paper.
138. 14 and 27 were collecting papers. When they met, 27 gave 14 the papers that he had and then he sat down.

139. When 10 sat down after her report she and 24 were talking and smiling.

140. 11 and 17 were teasing 6 by punching her.

141. 23 and 24 were standing, talking, together and smiling.

142. 19 and 25 talked. 19 told 25 how to spell a word.

143. 23 and 24 walked off to Physical Education together with their arms around each other's shoulders.

144. 3 and 8 were walking and holding hands.

145. 12, 14, 20, and 16 went to the playground with their arms around each other's shoulders— all four of them.

146. Back in the room:
   23 and 16 were laughing and visiting.

147. 4 and 28 are laughing and talking.

148. 18 is being teased by 6.

149. 9, 5, and 4 are visiting.

150. 13 and 26 are smiling and talking.

151. 4 and 5 are in close conversation.
152. 17 was chasing 6. 6 was calling 17, "Cutie."

153. 5 and 9 laughed at them.

March 4, 1948

154. 6 is talking to 17 and 16.

155. 21 and 25 were pushing and grabbing at each other's hands.

156. 5 was whispering to 9, across 28. 4 was in on the conversation.

157. 9 got information about the lesson from 4.

158. 23 and 16 were talking and laughing.

159. 28 made a little joke about the lesson. 5 turned and smiled at him.

160. 25 gave 21 a sheet of paper.

161. 20 and 23 were laughing and talking at the pencil sharpener.

162. 23 and 9 were laughing and talking.

163. 26 and 3 were talking. She is telling him something about the lesson.

164. 23 is looking for a pencil in his desk to lend to 5.

165. 6 is talking to 11.
166. 17 and 18 are talking. 1 is listening.

167. 21 asked 10, "Are you supposed to reduce then?" She nodded, "Yes."

168. When the teacher corrected 25, 6 laughed affectedly.

169. 24 asked 10 what problems to work. 10 showed 24 in the book.

170. 18 and 26 are in the corner comparing answers.

171. 20 and 15 are at the table comparing answers.

172. 4 and 10 are comparing answers.

173. 5 and 8 are comparing answers.

174. 7 and 1 are comparing answers.

175. 11 and 24 are comparing answers.

176. 23 and 12 are comparing answers.

177. 3 and 2 are comparing answers.

178. 21 and 28 are comparing answers.

179. 2 and 10 are comparing answers.

180. 6 and 16 are comparing answers and disagreeing and fussing.

181. 15 is interfering and 16 told him to, "shut up."
4 asked to have the observer check her paper. She had no one to check with.

9 and 5 went to get a drink with their arms around each other.

4 and 2 went out with their arms around each other.

7 and 10 are holding hands as they go out.

6 was holding arms with 2. 2 tried to get loose and 6 hung on.

15 and 18 are playing together.

21 tickled 7. She whirled around, frowned, and said, "Don't."

16 suggested that 24, 9, and himself give their reports together because they are all on "Louisiana."

16 and 20 were fighting and pushing over a place in the circle. This and the following happened at play period.

25 and 14 were pushing over a place, too.

18 threw a ball at 11.

25 and 22 are sitting out of the game together.

16, 20, and 14 had a fight over the ball.

15 got the ball and gave it to 13.
196. 22 had his arm on 14's shoulder.

197. 16 had the ball. 26 whispered to him.

198. At noon:
    1 was rubbing 10's hair.

199. 10 was talking with 24.

200. 14 and 24 were talking at 24's seat.

201. 14 said that he danced with 10.

202. 21 was laughing and talking to 10, 16, 23, and 24. 21 was talking. The others were listening.

203. In class:
    18 and 21 were whispering.

204. 18 and 7 were smiling and talking.

205. 28 asked a question of 4 and she answered.

206. 21 is showing his booklet to 18, 25, and 7.

207. 22 would not let 14 help him with a report.

208. 3 told the teacher that 14 was the best boy dancer in the room.

209. 9 told the teacher that she, 3, and 10 figured that 6 and 1 got to be leaders so seldom that they elected 1 as chairman and 6 as secretary.
210. 18, 24, and 10 have their heads together talking.

211. 21 and 19 came in together talking.

212. 16 was singing "loo" and 7 told him to, "Shut up."

March 8, 1948

213. 24 and 23 are discussing something seriously.

214. 11 is leaning over 27's desk to talk to him. It appears to be a confidential conversation.

215. 9 is talking over her shoulder to 23.

216. 2 and 8 are talking.

217. 4 and 28 are talking. 4 asked 28, "What page?" He told her.

218. 21 leaned over and said something to 10. She laughed.

219. 14 is tormenting 3. She turned a shoulder to him.

220. 20 took the wastebasket to 2 so that she could put some paper in it.

221. 11 was at 19's desk talking to him.

222. 14 is getting some help on his paper from 26.

223. 3 is talking to 26.

224. 26 is talking to 13.
225. 4 and 23 are laughing together.

March 11, 1949

226. 16 said that he is going to 23's house after school to get a picture of him.

227. 16 has a picture of 23 in his billfold. He also has one of 9.

228. 12 and 26 are talking—supposed to be reading.

229. 25 is laughing and talking to 15. 15 is not talking or laughing.

230. As 11 walked by he caught 10's long curls and lifted them. She made a face. He stopped and said something to her. They looked at her book.

231. 26 is looking at 12's book with him.

232. 25 is laughing at 26.

233. 11 asked 26, 12, and 25 to "Shut up."

234. 16, who has also been making noise said, "Shut up."

235. 14 came in from the library, slammed his book down and went to 12's desk. 14 talked and scuffled with 12.

236. 14 and 12 are still talking about a picture.

237. 14 and 26 are discussing a picture. 12 joined them.
238. 16 is leaning over 22's desk and is talking to him.

239. 25 tried to get 11 to come to the corner with him.
11 would not quit reading.

240. 14 got a picture from 3. She is chasing him to get it back.

241. 28 accused 25 of getting a tack from "Miss Greer's desk."

242. 11, 2, and 3 are looking at 3's book.

243. 2, 11, and 17 are discussing pictures.

244. 8 would not give 11 her picture when he asked her for one.

245. 17 asked 25 for a picture; when he asked him for one, he did not have one left.

246. 11 is trying to talk 2 out of a picture of 1.

247. 3 shook her head, "No," and 2 did not give 11 the picture.

248. 23 has been in the corner reading. 14 disturbed him.
23 told 14 to get away or he would get mad.

249. 23 and 28 both told the teacher that 14 and 25 had been bothering them.

250. 2 and 3 are whispering and smiling.

251. 15 and 14 came back from the library together.
252. 14 began a conversation with 26 as soon as he came in.

253. 2 and 3 are still whispering and giggling.

254. 11 leaned over to talk to 2.

255. 10 and 2 are holding hands and talking.

256. 1 is behind 10 and is not getting any attention.

257. 26 punched 1 in the back. She made a face like she was disgusted.

258. 12 and 14 were working on a map. 28 came up to look and 12 made him leave.

259. 12 bothered 14 and 14 kneed him. 12 left.

260. 26 and 23 are working at the map. 26 is writing and 23 is watching and helping locate states.

261. 25 states, "I'll let 20 do half the sawing."

March 16, 1946

262. 17 and 11 are whispering.

263. 8 and 1 were visiting during a free period.

264. 26 grabbed 25's arm and spun him around as he went by. They laughed.

265. 12 grabbed at 16. 16 said, "You missed." They laughed.
266. 21 was making noise. 3 said, "Hush."

267. 23 and 20 are laughing and playing a game with their hands.

268. 26 and 12 are looking at 12's book.

269. 14 is admiring 15's boots, verbally.

270. 19 is also praising them.

271. 3 and 2 are visiting and talking.

272. 14 said something to 3.

273. 17 and 21 sat together for a few minutes.

274. 14 grabbed at 3's book, touched his shoe to her foot and hit at her foot. She is looking at a book. He is leaning over to look at it, too.

275. 14 is leaning over to talk to 26.

276. 27 asked to see 17's pocket book. 17 showed it to him.

277. In physical education:
   26 and 18 have their arms around each other's shoulders.

278. 13 and 12 are sitting together.

279. 15 and 24 are sitting together.

280. 21 and 19 are sitting together.
281. 20 and 16 are sitting together. There are plenty of empty seats.

282. 19 shoved 16 down. 16 chased 19 and threw him down.

283. 22 and 20 are playing alone on a stack of lumber.

284. 26 and 16 are in a fist fight.

285. Back in class:
    21 was sticking a pencil in front of 7's face. She frowned and pushed it away.

286. 5 asked 28 what answer he got for a problem.

287. 21 is still tormenting 7. She told him to stop.

288. 3 said something to 2 and smiled. 2 showed 3 something on her paper.

289. 19 and 14 are talking.

290. 1 and 7 are talking.

291. 9 is yelling to the teacher. 16 said, "Aw, shut up."
    9 said, "I don't have to."

292. 3 and 2 are talking.

293. 21 leaned over and asked 16, "What?" They talked and laughed.

294. 1 and 17 were talking. She asked him something and he told her.
295. 9 and 10 are talking and smiling. 7 was in the conversation, too.

296. 21 asked 7 something. She looked back and said, "No," disgustedly.

297. 17 and 18 are talking.

298. 5 said something to 28.

299. 3 and 2 are talking.

300. 26 and 12 are discussing the problem.

301. 12 said, "All right, 25, I'll throw it right back to you."

302. 3 and 14 are talking.

303. 4 came to 5 to ask her a question.

304. 11 and 25 are in a confidential talk.

305. 16 and 4 are talking during a free period.

306. 16 and 14 are discussing something during a free period.

307. 20 borrowed my comb.

308. 8 told 16 to go back and sit down. She explained to him that he was not supposed to be up.
309. The fifth grade is going to the fourth grade play. At the play:
    15 and 17 are laughing.

310. 10, 2, and 3 are sitting together drinking cokes. They are visiting and laughing.

311. 4 and 7 are talking and laughing.

312. 5 and 15 are talking and smiling.

313. 5 and 8 are visiting.

314. 26 and 13 are talking.

315. 17, 18, 24, and 26 have formed a group and are talking.

316. 15 and 21 are talking.

317. 20 and 14 are talking.

318. 14, 16, and 20 have formed a group and are visiting.

319. 23 and 26 are talking.

320. 13 and 24 are talking.

321. 25 is lying in 15's lap.

322. 23 is clapping. 26 put one hand between 23's two so that 23 clapped for them both.

March 23

323. 26 and 23 are talking. 28 is leaning on 23's desk.
324. 21 is trying to get 10 to let him see inside her desk.
    She is arguing and laughing and will not let him see.

325. 17 and 11 are talking.

326. 5 and 4 are talking.

327. 23 and 9 are kicking each other's feet and laughing.

328. 2 and 3 are talking.

329. 25 was groaning over some work. 7 said to him, "Well, we have to know if we are right.

330. 17 and 18 are whispering.

331. 24 and 10 are talking and smiling.

332. 21 said something to 10. She smiled and said, "Shhhhhh."

333. 21 is talking to 10 and she is smiling.

334. 9 and 16 are fussing over the score.

335. 28 said something and 20 smiled.

336. 17 and 14 are leaning into the aisle and whispering.

337. 16 and 6 are giggling over something 6 said.

338. 19 said something to 6 and she hit him a thump on the back.

339. 18 and 17 are talking.
340. 16 criticized 4's scoring. She defended her method. He said, "Aw, shut up."

341. 21 was talking to 1. She patted him a playful tap on the face. He laughed.

342. 17, 18, and 6 are giggling over something.

343. 19 and 14 are talking and laughing.

344. 23 and 20 are playing "hands" on 23's desk.

345. 18 worked a hard problem. As he came back to his desk, 26 gave him a pat on the hip.

346. 16 said something to 9 and she smiled.

347. 18 and 17 have rubber bands on their heads. 9 is watching them and smiling.

348. 2 is laughing at and with 18.

349. 2, 26, and 3 have a little joke and are laughing together.

350. 23 and 9 are talking and smiling.

351. 26, 18, and 17 are laughing together.

352. 5 said something to 28. They both looked at the clock and smiled.

353. 5 and 23 are talking and smiling.

354. 3 and 26 are talking.
355. 5 and 22 are talking and smiling.
356. 23 is looking in his desk for something for 11.
357. 13 and 20 are talking.
358. 13 and 20 are talking and laughing and playing.
359. 8 asked 9, "Say, what page?" 9 told her.
360. 21 got the answer from 10 and showed 7.
361. 26 and 3 are discussing the problem.
362. 25 hit 21's arm. 21 said, "Cut it out."
363. 5 and 4 are talking.
364. 19 and 4 are talking.
365. 20 and 23 are talking and smiling.
366. 10 and 8 are talking.
367. 23 said to 20, "Shut up."
368. 17 looked at 18's paper.
369. 4 and 2 are talking.
370. 16 and 2 are laughing and talking.
371. 26 and 13 are talking.
372. 4 and 5, 23 and 28 are laughing and talking. 28 asked 5
a question. She showed him on paper.

373. 10 asked 24 a question. He answered her.

374. The teacher said, "Get a drink." The following happened:
2 and 3 left with arms around their waists.

375. 5 and 9 left with arms around their waists.

376. 19 and 20 are talking.

377. 3, 24, 2, and 10 are talking.

378. 28 is chasing 4. They are laughing.

379. 3 is chasing 21. They are laughing.

380. In class:
9 passed a note to 8.

381. 18 and 17 are talking.

382. 20 and 23 are talking.

383. 5 and 4 are visiting.

384. Activity period:
15 and 18 are talking and smiling.

385. 8 is visiting at 28's desk.

386. 8 is showing something to 13.

387. 23 is playing with 2.
388. 20 handed something to 5.

389. 16 and 10 are talking and smiling.

390. 12 and 2 are arguing.

391. 16 had a paper that belonged to 25. 25 got angry and hit 16.

392. 19 got the paper and 25 hit him.

March 25, 1948

393. In class:

   3 and 10 are talking and smiling.

394. 3 is fixing 10's hair.

395. 19 and 18 are talking.

396. 25 and 21 are working together on reports.

397. 21, 14, and 12 are talking to 7.

398. Free period:

   18 and 15 have their arms on each other's shoulders.

399. 18 and 17 are talking.

400. 7 and 1 are playing "hands."

401. 8 and 5 are talking, arms around waists.
402. 26, 18, and 17 are talking.

403. 6 was putting her hands on 10. 10 pushed her away.

404. 4 and 5 are talking and smiling.

405. 4 and 9 are smiling at each other.

406. 27, 11, 21, and 25 are all sitting at the back of the room together.

407. 13 and 23 are talking and smiling.

408. 24 and 4 are talking and smiling.

409. 13 and 20 are talking.

March 30, 1943

410. 17 and 18 are talking.

411. 12 and 16 are talking. 12 told 16 to go back to his own seat when 16 moved up to him.

412. 17 and 11 are talking.

413. 24 and 17 are talking.

414. 18 and 17 are talking.

415. 14 and 12 are talking.

416. 11 and 6 are talking.
417. 7 and 1 are talking.
418. 18 and 12 are talking.
419. 20 and 23 are talking.
420. 14 and 19 are talking.
421. 20 and 23 are talking.
422. 17 scooted his desk up beside 18's.
423. 1 and 25 are talking and smiling.
424. 20 and 23 are talking.
425. 18 and 3 are talking and smiling.
426. 27 and 11 are talking.
427. 12 and 14 are going for a drink together.
428. 15 and 18 are going for a drink together.
429. 7 and 10 are talking.
430. 5 and 6 are playing together.
431. 27 and 25 are arguing and frowning.
432. 25 and 21 are playing.
433. 14 and 13 are talking.
434. 14 and 3 are talking and smiling.
435. 23 and 5 are talking and smiling.
436. 5 and 4 are talking and smiling.
437. 13 and 20 are talking and smiling.
438. 5, 25, and 4 are talking and smiling.
439. 8 and 16 are talking and smiling.
440. 10 and 21 are talking. 10 gave 21 some paper.
441. 3 and 13 are talking.
442. 3 and 7 are talking. 3 asked 7 a question
443. 12 and 18 are talking.
444. 28 and 4 are talking and smiling.
445. 20 and 23 are talking and smiling.
446. 20 and 13 are talking.
447. 20 and 23 are talking and smiling.
448. 18 and 17 are talking.
449. 18 and 12 are talking.
450. 5, 28, and 4 are talking.
451. Physical education period:
    12 and 14 went off together.
18, 15, 17, and 19 stand talking together.

12 pulled 14's chair around for him.

12 chose 13, 23, 27, and 14 in that order.

11 chose 15, 25, and 21 in that order.

17 chose 18, 23, 28, 19, and 22 in that order.

12 and 13 are sitting in the same seat. There are plenty of empty seats.

25 and 11 are talking.

17 and 19 are in the same seat.

At noon in the room:

21 and 23 are scuffling and playing.

16 is teasing 7 about liking 14. 7 is beating on 16.

1 helped 7 out a little.

28 and 16 are wrestling.

16 and 4 are arguing.

24, 17, and 3 are talking.

In class:

18 and 4 are talking and smiling.
467. 10 and 8 are talking.
468. 8 and 11 are talking.
469. 4 and 23 are talking.
470. 5 and 4 are talking.
471. 28 and 5 are talking.
472. 14 and 19 are talking.
473. 28 and 4 are talking.
474. 17 and 18 are talking.
475. 15 and 21 are talking.
476. 16 and 12 are talking.
477. 10 and 3 are talking.
478. 21 and 13 are talking and smiling.
479. 24 and 5 are talking and smiling.
480. 14 and 19 are talking.
481. 14 and 3 are talking and smiling.
482. 25 and 7 are talking and smiling.
483. 3 held 10's papers for her while 10 got a book.
484. 17 is punching 6 with his finger. 6 turned around and they talked for a minute.
485. 10 and 3 are talking and smiling.

486. 19 and 6 are talking.

487. 21 and 23 are talking and smiling.

488. 14 and 3 are talking.

489. 11 pitched a pencil sharpener to 25.

490. 23 and 13 are talking.

491. 7 and 1 are whispering.

492. 23 and 21 are talking and smiling.

493. 18 and 17 are talking and smiling.

494. 14 and 19 are talking.

495. 3 and 10 are talking.

496. 21 and 20 are talking.

497. 28 and 5 are talking.

498. 6, 18, and 17 are talking.

499. 3 and 10 are talking.

500. 21 and 24 are talking.

501. 20 and 23 are talking.

502. 21 and 12 are arguing.
503. 17 gave a note to 6.

504. 3 gave a paper to 14.

505. 21 and 20 are talking.

506. 23 and 20 are talking.

507. 13 and 23 are talking.

508. 28 and 13 are talking.

509. 23 and 16 are talking.

510. 5 is looking at something on 20's paper.

511. 18 and 25 are looking at a paper.

512. 3 and 10 are working together.

513. 12 and 14 are arguing and pushing. 14 made 16 leave.

514. Activity period: April 1, 1948
      12 and 20 are talking and smiling.

515. 3 and 2 are talking and smiling.

516. 11 and 6 are talking.

517. 17 and 6 are talking.

518. 11 and 14 are talking.

519. 5 and 4 are talking.
520. 14 and 19 are talking.

521. When going out to practice singing, 15 and 18 have their arms around each other's shoulders.

522. Work period:
   4, 9, and 5 are working together.

523. 10 and 7 are talking.

524. 26 and 13 are talking.

525. 25 and 27 are working together.

526. 1 and 21 are talking.

527. 26 and 3 are talking and laughing.

528. 18 and 3 are talking and laughing.

529. 3 and 24 are talking.

530. 15 and 10 are looking at a notebook together.

531. 22 and 19 are talking and working.

532. 28 and 11 are talking.

533. 2 told 11 to "get away" when he was watching her work.

534. 22 is showing 26 his notebook.

535. 20 and 2 are talking.
336. 3 and 2 are talking.

337. 16 and 12 are talking.

338. 12 and 23 are talking.

339. 26 and 23 are talking.

340. 26 and 7 are talking.

341. 26 and 23 have their arms around each other's shoulders.

342. 26 and 18 are talking.

343. 28, 14, and 16 are watching 9, 5, and 4.

344. 16 and 10 are talking and laughing.

345. 16 and 1 are looking through a magazine and talking and laughing.

346. 26 and 3 are talking and laughing.

347. 14, 16, and 25 are looking at 25's work. They are talking.

348. 14 and 3 are talking and playing.

349. 14 and 23 are looking at 23's work.

350. 10 and 3 are playing "touch last."

351. 10 and 3 are talking and smiling.

352. 21 and 23 are looking at 21's work.
553. 10 and 24 are talking and smiling.

554. 3 and 2 are talking and smiling.

555. 5 and 28 are talking and smiling.

556. 3 and 26 are talking and smiling.

557. 28 and 5 are talking.

558. In the afternoon:
The teacher says that 26 is playing hooky with sixth graders.

559. 21 and 23 are talking and laughing.

560. 2 and 23 are talking. 2 asked 23 a question.

561. 5 called 1 over to talk with her.

562. 1 and 28 are talking.

563. 4 and 21 are talking.

564. 2 and 3 are talking and smiling.

565. 1 and 15 are talking.

566. 28 and 23 are talking.

567. 16 and 10 are talking.

568. 18 and 8 are talking.
569. 18 and 19 are talking.

570. 28 and 2 are talking.

571. 6 and 22 are talking.

572. 23, 28, and 21 are talking.

573. 14, 23, 21, and 24 are talking.

574. 25 and 11 are in the corner working.

575. 13, 18, and 19 are talking.

576. 10 and 6 came in together.

577. 16 said, "Come on, 20," 16 and 20 left together, then.

578. 1, 8, 6, and 10 stand talking.

579. 15, 18, and 17 came in together.

580. 16 and 9 are talking.

581. Activity period:
    The teacher went out and brought 26 back.

582. 26, 13, 16, 23, and 28 are in a group talking.

583. 10 and 14 are talking. 10 asked 14 for scotch tape,
    14 looked for it for her.

584. 28 and 16 are talking.
585. 26 and 13 are talking.

586. 14 and 12 are working together today.

587. 3 and 9 are talking and smiling.

588. 3 and 9 are talking and smiling.

589. 7 and 11 are talking.
HOW I FEEL TOWARD OTHERS

DIRECTIONS: On another sheet of paper you have the names of all the persons in your group. You are asked to place a number to the left of each of these names. Each number you give to a name should be one of the numbers of the following paragraphs. Put a 6 to the left of your name.

1. My best friends. How can we tell our best friends from just ordinary friends? Below you will find listed some things that are generally true of our best friends.

A. We want our best friends in our gang or our club.
B. We tell our best friends some of our secrets and troubles.
C. We have a good time with our best friends in games.
D. We help out our best friends in any way we can without any thought of being paid back.

Keeping the above points in mind, you are now asked to turn to your list and put a 1 to the left of the names of all those persons whom you consider to be your best friends.

2. My other friends. Besides our best friends all of us have other friends whom we accept and like fairly well.

A. Whenever we meet these other friends we talk with them about things that have happened at school or in our town, but we don't talk about our secrets or our troubles.
B. We can play and work at school with these other friends and get along with them all right.
C. We would invite these other friends to a party if we were going to invite a large number of guests.

Keeping these points in mind, put a 2 to the left of the names of those persons on your list whom you regard as your other friends.

3. Persons I don't know. There may be some persons in your group whom you don't know well enough to know whether you like them or not. It may be that you have not been with them enough to tell anything about them.

Put a 3 to the left of the names of those persons on your list whom you do not know.

4. Persons who are not my friends. All of us know some persons quite well, but we do not consider them to be our friends. We do not hold anything against them, but we just don't care to be around them much.
A. We do not stop to talk with these people unless it is necessary to be polite.

B. We do not mind them being in a large group with us, but we do not have fun with them and we would rather not sit by them in school.

Put a 4 to the left of the names of those persons on your list whom you know well but do not consider to be among your friends.

5. Persons I would not want to have as friends as long as they are like they are now.

Nearly all of us find that there are at least a few people with whom we cannot get along well at all. It may be that these persons are regarded as good friends by others, but we can't get along with them. We rub each other the wrong way. As long as these persons are like they are, we shall avoid playing and working with them as much as possible.

Put a 5 to the left of the names of those persons on your list whom you would not want to have as a friend as long as they are like they are now.
BIBLIOGRAPHY
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Books


Articles

Bonney, H. E., "The Consistency of Sociometric Scores and Their Relationship to Teacher Judgments of Social Success and to Personality Self Ratings," Sociometry, VI, No. 4 (November, 1943), 409-424.
