



eCOMMONS

Loyola University Chicago
Loyola eCommons

Dissertations

Theses and Dissertations

1962

Social Perception and the Loyola Language Study

Bruce Clare Becker
Loyola University Chicago

Follow this and additional works at: https://ecommons.luc.edu/luc_diss

 Part of the [Psychology Commons](#)

Recommended Citation

Becker, Bruce Clare, "Social Perception and the Loyola Language Study" (1962). *Dissertations*. 637.
https://ecommons.luc.edu/luc_diss/637

This Dissertation is brought to you for free and open access by the Theses and Dissertations at Loyola eCommons. It has been accepted for inclusion in Dissertations by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.



This work is licensed under a [Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License](#).
Copyright © 1962 Bruce Clare Becker

SOCIAL PERCEPTION AND THE
LOYOLA LANGUAGE STUDY

by

Bruce Clare Becker

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Doctor of Philosophy

June

1962

LIFE

Bruce Clare Becker was born in Seattle, Washington on December 9, 1929.

He was graduated from Christian Brothers College Preparatory School, Memphis, Tennessee, in June, 1946. He was graduated from St. Ambrose College, Davenport, Iowa, in June, 1950, with a Bachelor of Arts degree, majoring in Philosophy. He was a member of Delta Epsilon Sigma, national honor fraternity.

After two years of graduate study in the School of Philosophy and the School of Theology at Catholic University, Washington, D.C., he enrolled at St. Louis University, St. Louis, Missouri, in the Graduate School of Psychology. He received his Master of Arts degree there, with a major in clinical psychology, in June, 1954.

In August, 1954, he was called to active duty as a clinical psychologist in the Medical Service Corps of the United States Naval Reserve. He was assigned to the Neuropsychiatric Unit at the U.S. Naval Training Center, Great Lakes, Illinois, where he served until his release from active duty in September, 1958.

In June, 1955, he began graduate study at Loyola University as a doctoral candidate in the Department of Psychology.

He has been a clinical psychologist on the Neuropsychiatric Service at the U.S. Naval Hospital, Great Lakes, since October, 1958.

ACKNOWLEDGEMENTS

The author wishes to express his gratitude to his advisor, the Reverend Vincent V. Herr, S.J. and to the other members of the faculty for their interest and aid in the preparation of this dissertation.

He is also indebted to Captain James B. Butler, MC USN, Commanding Officer, U.S. Naval Hospital, Great Lakes, Illinois, and to his successors, Rear Admiral C.G. Clegg, MC, USN, and Rear Admiral Frank P. Kreuz, Jr., MC, USN, for their permission to carry out the research there.

Valuable assistance in the administration of the tests was provided by LCDR Norma Coyle, NC, USN, and LCDR Esther Ramsey, NC, USN, both members of the teaching staff at U.S. Navy Hospital Corps School, Great Lakes.

Scoring of the tests and statistical computations were greatly facilitated with the assistance of the Electric Accounting Machine Department, U.S. Naval Hospital, Great Lakes, and the Test Evaluation Department, U.S. Naval Examining Center, Great Lakes.

The opinions expressed are those of the author and do not necessarily represent the policy of the Naval service.

TABLE OF CONTENTS

Chapter	Page
I. STATEMENT OF THE PROBLEM.	1
Background of the original hypothesis--General aims of the dissertation--Statement of the specific hypotheses to be tested--Description of secondary goals.	
II. REVIEW OF THE LITERATURE.	10
The Loyola Language Study--The Guilford-Zimmerman Temperament Study--Social Perception.	
III. DESIGN OF THE EXPERIMENT AND PROCEDURES	63
Subjects--Administration--Measures--Scores--Statistical Treatment.	
IV. PRESENTATION AND DISCUSSION OF RESULTS.	80
Presentation of crucial relationships in the form of correlations--Discussion of each basic hypothesis in detail--Integration of these findings--Presentation of other meaningful correlations--Interpretation of other correlations.	
V. SUMMARY AND CONCLUSIONS	106
Final conclusions based on all findings regarding each of the basic hypotheses--Suggestions for future research.	
BIBLIOGRAPHY	114
APPENDIX I. Loyola Language Study Form	120
APPENDIX II. Free Association Test Form	121
APPENDIX III. List of Most Common Free Associations.	122
APPENDIX IV. Guilford-Zimmerman Temperament Survey.	123
APPENDIX V. GZTS Answer Sheet.	124

APPENDIX VI.	Social Perception Study.	125
APPENDIX VII.	Social Perception Study Answer Sheet	126
APPENDIX VIII.	Majority Answers to GZTS Questions	127
APPENDIX IX.	Raw Scores and Ranks for Word Association Study. . . .	128
APPENDIX X.	Raw Scores and Ranks for Social Perception Study . . .	135

LIST OF TABLES

Table	Page
I. CORRELATIONS AMONG THE SIX BASIC SCORES	82
II. CORRELATIONS AMONG OTHER SCORES	105

LIST OF FIGURES

Figure	Page
1. SUGGESTED CLASSIFICATION OF ACCURACY SCORES WITHIN BRONFEN- BRENNER'S THEORETICAL FRAMEWORK.	93

CHAPTER I

STATEMENT OF THE PROBLEM

The Loyola Language Study is a modified form of the Kent-Rosanoff Word Association test in which subjects are asked to predict the most common free associations to each of eighty stimulus words. It has been the subject of a number of research projects during the past few years. Scoring norms have been developed, and its relationship to such variables as age, sex, education, intelligence, vocational choice, and psychiatric condition has been investigated. However, some more fundamental questions about this test remain unanswered, and at least in the form of published experiments, they remain unasked. No one has discovered what skill or quality is measured by the Loyola Language Study. If there is such a skill, we do not know how it is related to other personality and behavioral characteristics. We have only limited knowledge about the relationship between the Loyola Language Study and other tests.

The question which appears likely to contribute most to our understanding of the Loyola Language Study is the question of its relationship to the whole area of social perception, and particularly to what has been termed perception of the generalized other. This latter term was borrowed from G.H. Mead and used by Bronfenbrenner et al. (6) to include any collection of persons to which a perceiver attributes common characteristics.

Interest in this question of the relationship between the Loyola Language Study and social perception was stimulated by observing the striking similarity between the Loyola Language Study and the classical methods of measuring social

perception. Bronfenbrenner et al. point out that

sensitivity to the generalized other involves an awareness of the social norm or the typical response of a large class or group. Thus it is sensitivity to the generalized other that is being tapped when a judge is asked to predict such phenomena as community attitudes, the results of public opinion polls, or the "typical response" for some special class of people, say college students, on a series of items on a personality questionnaire. (6, p. 37)

On the Loyola Language Study the judge, or subject, is asked to predict the "typical response" of a large class of people to a series of items: the list of stimulus words. Since sensitivity to the generalized other has practically acquired an operational definition as the "accuracy score" on such a test of predictive ability, and since the classical method of testing for this skill is so similar to the method used in the Loyola Language Study, it is clearly logical to infer that the Loyola Language Study is in some sense a measure of sensitivity to the generalized other. If this is true, then the Loyola Language Study would take its place as a formal and standardized measure of this "skill," contributing to our understanding of it as a hypothetical construct, and sharing in the relatively large amount of interest and activity surrounding it.

Logical as the relationship may appear, it remains to be shown empirically that the Loyola Language Study does, or does not, measure sensitivity to the generalized other in the traditional sense. And this can only be done by administering it together with a classical measure of such sensitivity, and observing the similarities and differences between the two measures themselves, and between their relationships with other characteristics.

One major aim, then, of the present research will be to examine more closely the concept of social perception, particularly that type of group social perception called sensitivity to the generalized other, to investigate some theoretical formulations about this skill or quality, and then to see in what ways,

if any, the Loyola Language Study can be shown empirically to be related to that general concept.

A second major aim will be to examine more closely the Loyola Language Study itself, in the light of the relatively extensive methodological research about similar measures in the field of social perception. By doing this and also by studying the correlates of accuracy on the Loyola Language Study, we may find relationships which are meaningful in themselves and not dependent upon any direct relationships with the other measures of social perception.

In pursuing these aims we must formulate some specific hypotheses about the Loyola Language Study itself and about its relationship to various concepts in the field of social perception. Then we will subject the hypotheses to empirical tests which will allow us to accept or reject them on the basis of information we will gather.

The first and most obvious hypothesis which presents itself is this one:

Hypothesis I. The Loyola Language Study score is actually an accuracy score, measuring the accuracy with which an individual perceives the general public (the generalized other). It does this by measuring his ability to estimate what words are most frequently associated to those in the stimulus list. As such an accuracy score it should be positively correlated with other accuracy scores of this nature which have been designed to measure this same ability to perceive the general public (the generalized other).

This hypothesis will be tested by administering both the Loyola Language Study and a traditionally accepted measure of sensitivity to the generalized other to the same group of subjects and examining the correlation between the two measures. A positive correlation would strengthen our suspicion that the

4

Loyola Language Study does measure sensitivity to the generalized other, and so deserves a place in the field of social perception along with other such measures.

Failure to find such a correlation would be open to a number of possible interpretations, which can be explored later, after a review of the literature. It would suggest that the Loyola Language Study does not measure accuracy of social perception, or sensitivity to the generalized other, but we would want to speculate as to why it does not do so. Perhaps this sensitivity is not general enough to be measured in a variety of ways. Perhaps word-associations are not "perceivable" enough to allow for accurate estimates of how others would respond. Perhaps the Loyola Language Study measures something quite different and unrelated to this skill. The review of the literature will help us select the most meaningful interpretation of our findings.

Another obvious, but heretofore unanswered question about the test is this: To what extent are the Loyola Language Study scores related to the "typicality" of the subjects' own free associations, and to their tendency to give these free associations when asked to make their predictions of group responses? In other words, we might suspect that people who get high Loyola Language Study scores do so because they tend to give their own free associations as their estimates of group response, and their free associations happen to be typical of the associations of the group. To the extent that this is true, we can say that Loyola Language Study scores do not measure a skill or sensitivity to the generalized other, or at least the skill is not independent of these other tendencies. This can be put in the form of a testable hypotheses:

Hypothesis II. The Loyola Language Study score is influenced in a great

degree by the "typicality" of the subjects' own free associations and by their tendency to give these free associations as their prediction of the group response.

This hypothesis will be tested by administering both the Loyola Language Study and a free-association test using the same words, and observing the correlations between Loyola Language Study scores and these two measurable tendencies: 1) the tendency to give their own free associations as predictions and 2) the tendency to have "typical" free associations.

Significant positive correlations between Loyola Language Study scores and these two tendencies would substantiate our hypothesis and give some indication as to the degree of influence present.

Significant negative correlations would point to the existence of a genuine skill or ability to predict group response in this setting, a skill which is independent of the other two tendencies.

A third question which arises refers to the relationship between Loyola Language Study scores and the subjects' "typicality" in personality characteristics. In other words, within a "normal" group of subjects, do those with high Loyola Language Study scores tend to be more "normal" than those with low Loyola Language Study scores? To the degree this is true, the Loyola Language Study could be considered a measure of "normality." This, then, is our third hypothesis:

Hypothesis III. The Loyola Language Study score is influenced in great degree by the subjects' "typicality," or similarity to group norms in overall personality characteristics.

This hypothesis will be tested by administering both the Loyola Language

Study and a standard personality questionnaire to the same group of subjects, noting the correlation between Loyola Language Study scores and the degree of agreement with the group's answers to the questionnaire.

A significant positive correlation here would suggest that the Loyola Language Study is, in a sense, a measure of "normality," and is not a measure of a skill in social perception independent of "normality." Negative findings would show that something besides "normality" is responsible for higher Loyola Language Study scores, which might lead us to postulate the existence of a special skill or sensitivity.

In considering this question of "typicality" or real similarity to the group, we are led to wonder to what degree "typicality" in personality characteristics is related to "typicality" in free associations. Do those people who tend to follow the group norm in their answers to the personality questions also tend to follow the group norm in their free associations? Common sense would lead us to an affirmative answer. The free-association technique as a projective test developed under this implicit assumption. We have here an opportunity to test this hypothesis:

Hypothesis IV. The tendency to give free associations which are the same as those given most commonly by one's peer group is related to real similarity to the group in personality characteristics (as measured by questions on a standard personality questionnaire).

This hypothesis will be tested by administering a free-association test and a personality questionnaire to the same group of subjects, compiling group norms for both, and comparing real similarity on the free-association test with real similarity on the personality questionnaire, measuring both in terms of

the number of responses which are identical to the most common response of the group.

A positive correlation would be expected here. But failure to find a positive correlation would indicate that typical people (personality-wise) do not necessarily give typical responses on a free association test. This would make the task of predicting typical free-associations difficult to understand and assay. Such a finding could have a significant effect on the interpretation of other findings about the Loyola Language Study.

Past research with the Loyola Language Study has shown us that people tend, in various degrees, to give their own free associations when asked to predict the most common responses of the group. Similar tendencies have been studied in social perception research under the label "assumed similarity." In the case of the Loyola Language Study this label may be misleading since it implies a conscious or unconscious assumption on the part of the subject that he is similar to the group in that regard. When a subject gives his own free association as his prediction of the most common response of the group, he is not necessarily assuming that he is similar to the group. He may have misunderstood the directions, he may be careless or disinterested, or he may be unable to think of other associations. We do not know. This leads us to the formation of another testable hypothesis:

Hypothesis V. The tendency of a subject to give his own free associations when asked to predict the most common free association to a given word (e.g., on the Loyola Language Study) is related to the tendency to assume similarity to one's peers by predicting directly that a majority would agree with him in answering questions about themselves.

This hypothesis will be tested by computing an "assumed similarity" score for the Loyola Language Study by comparing free associations with predictions, and comparing this score with a traditional "assumed similarity" score, compiled by asking the subjects directly what percentage of their peers would agree with them in answering a number of questions about themselves.

A significant positive correlation here would help explain the tendency that has been noted in past research with the Loyola Language Study, for subjects to give their own free associations as predictions. It would suggest that they are indeed assuming similarity to their group. Failure to find such a correlation would suggest that some of the other factors are at work, such as carelessness, inattention, misunderstanding of the directions. (This interpretation presumes, of course, that the tendency to assume similarity is itself a general one.)

Although it does not relate directly to the Loyola Language Study, we are also interested in the ability to predict group answers to a personality questionnaire, and how this ability is related to both real similarity to the group and the tendency to assume similarity to the group on these same questions. We can formulate this hypothesis:

Hypothesis VI. The ability to predict how the majority of a group will answer questions on a personality questionnaire (which has been called sensitivity to the generalized other) is related to the subject's similarity to the group on these questions and to his tendency to assume he is similar in this respect, but it is related to a lesser degree than with the ability to predict word-associations.

This hypothesis will be tested by administering a standard personality

questionnaire to a group of subjects, and having them later estimate what percentage of their peers would answer the questions the same as they did. 9

Significant positive correlations between the ability to predict answers and both real similarity and assumed similarity to the group would substantiate our hypotheses and show that this ability, or sensitivity to the generalized other is not independent of these two factors. Failure to find such correlations would strengthen the evidence for the existence of such an independent skill.

We are also interested in the question of the relationship between Loyola Language Study scores and various dimensions of personality as they are measured on a standard personality questionnaire. And we will observe how they are related to measures of intelligence and school achievement. Rather than formulate any hypothesis in this area, we will look for correlations as they appear, report those which are significant, and try to make meaningful interpretations of them.

In summary, then, this thesis proposes to examine the entire field of group social perception with an eye toward possible relationships between it and the Loyola Language Study. Then it will set up empirical tests designed to reveal evidence of this relationship, if it exists. Finally, it will examine the Loyola Language Study itself in the light of our knowledge about similar tests. The final discussion of the results will center around the six basic hypotheses, but will take note of any other meaningful correlations which appear among the many relationships to be studied.

CHAPTER II

REVIEW OF THE LITERATURE

THE LOYOLA LANGUAGE STUDY

More than ten years have passed since Olof Johnson and Louis B. Snider conducted the original research project on the controlled-association test which has come to be known as the Loyola Language Study. Working at Boston State Hospital in 1950, they selected eighty words from the Kent-Rosanoff list, and gave them to the subjects with instructions to respond not with the first word that occurred to them, but with the word they believed most persons would associate with the stimulus word. As a measure of controlled association, it was expected to have some advantages over free-association tests, and aroused enough interest to become the subject of a number of research papers in the ensuing years. These papers can be divided roughly into three broad categories: (1) Normative studies, to study and determine the effects of such variables as geographic location, age, sex, education, and occupation upon the responses of "normal subjects," (2) Predictive studies, to see if the Loyola Language Study might be useful in predicting some other factor, such as college achievement, or would discriminate between "normal" and "abnormal" subjects, and (3) Comparison Studies, comparing the responses on this controlled-association test with free-association responses to the same stimulus words. Some of the studies, such as Johnson and Snider's work (51)

fall in more than one category. Their work established the first set of norms for normal subjects and also furnished results indicating that the measure could discriminate between "normals" and hospitalized schizophrenics.

To establish the norms, they selected a sample of four hundred men and four hundred women from approximately two thousand records of persons living in the Boston area. The samples were stratified according to age and education, maintaining the same proportion among the various groups as was found in the general population, using the 1950 census statistics for the Boston area. They used a twelve-celled distribution, with four equal divisions with respect to education and three equal divisions with respect to age.

The hospitalized psychotic patients were matched, person by person, with normals from the same area with regard to both age and education, because the possible effects of age and education were not known at the start. They were all inmates of a state hospital, diagnosed predominately as schizophrenic, with a small percentage of "manics" and a very small group of involutional patients.

The responses were scored according to a standard score method and it was found that seventy per cent of the hospitalized schizophrenic females fell below the tenth percentile of the normal sample, and with one exception, all the patients fell below the fifteenth percentile.

Another normative study was done by Stanek (56), who followed the same stratified-sampling procedure, selecting his four hundred men and women from the Chicago area (metropolitan), using the 1950 Chicago census figures.

Stanek treated each sex separately, and used a twelve-celled distribution, with three groups for age, four for education. He used a much simpler scoring

system than the standard-score system used by Johnson and Snider. He merely computed the square root of the percentage frequency of each response.

Stanek was able to show that age, sex, and education had a significant effect upon the character of responses given to the Loyola Language Study. More specifically, he found that age of both sexes bears an inverse relationship to test scores. That is, older persons of both sexes tend to give more unique responses, younger persons more common responses. This trend is slightly irregular, however. Sex showed a significant relationship since females tended to give more common responses, but Stanek suggests that this may be due to uncontrolled selection of cases. Education showed a direct relationship to Loyola Language Study scores; greater education leads to greater communality of response.

Stanek did not compare his results with those of the Boston sample, but he collected his data in such a way that comparison would be possible when both sets of raw data were scored by the same method. So, although he did not draw any conclusions about regional differences, he suggested that geographical factors might influence the test results.

In a further investigation of the influence of geographical factors, Guppy (32) selected a stratified sample of four hundred men and four hundred women from the Seattle metropolitan area, using the 1950 Seattle census data. Using the same type of standard score system, he derived norms which could be compared directly with norms from the Chicago study.

To do this, he selected from the Chicago sample a group of fifty-two men and fifty-two women, chosen in such a way as to be representative of the various age-education categories. He matched these booklets with those of

subjects from the same age-education categories in the Seattle sample. Of course, he was also able to compare all the responses in the Chicago sample with all the responses in the Seattle sample with respect to the raw frequency of specific responses. A chi-square test was made to determine if the frequency of the responses to each stimulus word given by the sample of Chicago subjects differed significantly from the frequency with which the same responses to the same stimulus word were given by a sample of Seattle subjects.

These two appraisals, using different approaches and different approaches and different statistical procedures, forced Guppy to two conclusions not in perfect agreement with one another:

1. Some of the stimulus words in the Loyola Language Study excited some responses given by stratified samples of men and women from Chicago and Seattle that differed in raw frequency of appearance. This difference was significant at or beyond the .01 level of confidence.

2. With but one exception, the comparison of mean Chicago and Seattle standard scores ... failed to show a significant difference

Thus it may be said that when the frequency of all responses to a stimulus word are taken into consideration in scoring, as is the case where standard scores are used, the standard scores computed for those responses, whether given by persons in Seattle or Chicago, are essentially the same. (32 pp. 63-64)

Another normative study designed to explore the possible influence of geographic location on test responses, and also to extend the norms to slightly younger age groups, was that of Smola (51). Using the standard-score method of scoring, he administered the test to five hundred senior boys from five private high schools in four large cities, in Ohio, Michigan and Illinois. There was as much difference between the two schools in Chicago as there was between the two schools most distant from each other. Since none of the

14

differences was significant, Smola concluded that geographic location has no significant systematic effect upon the test scores. This is in agreement with Guppy's later finding.

Smola also found a low positive correlation ($r = .11$) between Loyola Language Study scores and intelligence, using the Henman-Nelson test on one hundred subjects from one school. He found a slight negative correlation ($r = -.21$) between Loyola Language Study scores and scholastic achievement as indicated by grade-point average.

The question of the relationship between Loyola Language Study scores and intelligence and school achievement was also taken up by Stewart (58). He selected one hundred male and one hundred female freshman students from Loyola University, and administered the Loyola Language Study as part of the freshman guidance examinations. The booklets were scored using Stanek's geometric-progression scoring system. At the end of the academic year, the total hours and grade-points earned and the quantitative linguistic and total scores on the American Council on Education Psychological Test were obtained for the two hundred students.

No significant correlations were found between Loyola Language Study scores and ACE scores, linguistic, quantitative or total. As a further check, "discrepancy" scores were computed between linguistic and quantitative standard scores, and the experimental sample was split on the basis of high vs. low discrepancy score. But again no relationship was found with Loyola Language Study scores. It was concluded that the Loyola Language Study cannot be used to predict scholastic success during the freshman year of college. These negative findings were considered to be valuable nevertheless, since they indicate that IQ and scholastic achievement probably do not affect Loyola

Language Study scores and so will not be likely to vitiate results in future experiments.

Another factor found to have no significant effect upon Loyola Language Study scores is occupation. Dinello (18) found that while accountants tended to be slightly poorer at every age and educational level, the differences were all small enough that future samples probably need not be matched for occupation. In his study age was found to be negatively correlated and education positively correlated with Loyola Language Study scores.

The original question brought up by Johnson and Snider was taken up again by Del Vecchio (17), who set out to test the discriminatory power of the Loyola Language Study in schizophrenia. He selected samples of 108 normals and 108 hospitalized schizophrenics, matched as to sex, age, and education. He administered the Loyola Language Study and analyzed the results with the Chi-Square One-Sample test method, using the Wilcoxon Matched-Pairs Signed-Ranks technique to test for significant differences.

His results were generally positive. He found that the Loyola Language Study does discriminate between normal and schizophrenic populations, both male and female. He found less communality of response among males than among females in each population. He found that education does not affect the discriminatory power of the test, but age does. The discriminatory power increases with age in females, decreases with age in males.

Much of the research up to this time was summarized in an article by Herr (37). He discussed several systems of scoring which have been used, along with validity and reliability studies.

The original scoring method was the standard-score method, in which all

the responses to a given stimulus word were aligned on a descending scale, according to the amount of agreement among the normative group in choosing each response. Then the mean root frequency and the standard deviation for each stimulus-response distribution were calculated, and standard scores computed. Each booklet could then be given a single score, based on these standard scores.

Obviously, this method was costly in time and effort. One simpler method devised used double-root percentage-frequency values, which gave each response a value absolutely determined by its raw frequency, without taking into account the relationship between any given frequency and the other frequencies in the same distribution, or the varying top frequencies from one stimulus word to another. It was found that with these absolute root-frequency scales, the variances were proportional to the means, which would preclude the use of certain statistical procedures.

Finally, an even simpler scoring system was devised, the Herr-Rimoldi "median" system. Starting with the response of highest frequency, other responses (in descending frequency) were accumulated until 50% of the population of responses was included. Then, each response was scored 1 or 0, depending upon whether it was included or excluded from this group.

The correlations among these different scoring systems were high. Between standard scores and double-rooted scores it was .96. Between standard scores and median scores, it was .93. This substantiated earlier findings by Carter (10) and Sorenson and Carter(53) that insignificant differences result from different methods of scoring word-association tests. These findings led to the use of an even simpler scoring method in the present experiment.

Herr next summarizes the results of the above studies on the discriminatory power of the Loyola Language Study with schizophrenia. He points

out that the mean difference between normals and patients was significant beyond the .001 level of confidence. But there was considerable overlap on the extremes. An item analysis was then made, and at least 25 items were found to discriminate at the .01 level of confidence. Shortening the test to these 25 items raised its screening efficiency markedly.

The indices of screening efficiency for the shortened tests were computed by a method which consists in subtracting the proportion of normals incorrectly identified from the proportion of patients correctly identified. These indices of screening efficiency were found to be consistent and relatively high: for Chicago men, .64; for Chicago women, .70; for Boston men, .70; and for Boston women, .71. Other validity measures produced results which were significant also, leading Herr to conclude that 'the shortened test seems suitable for differentiating between various degrees of mental illness.' (37, p. 261)

Herr reports two estimates of reliability. By correlating the odd-numbered items with the even-numbered items for samples of 400 men and 400 women in groups of 100 each, a split-half reliability study was done. The estimates, corrected by the Spearman-Brown formula, ranged from .88 to .94 with a median at .92.

The test-retest reliability, with intervals from four to eight weeks, was not nearly so high. The correlation for the eighty items was .49, which rose to .55 when the number of items was reduced to those with top screening efficiency. Herr says, "the values for both (validity and reliability) presented in this study fall well within the suggested ranges for tests of this type." (37, p. 261)

Herr next discusses the relationships between the Loyola Language Study and age, education, intelligence. The studies he cites have already been discussed here. His summary paragraph provides a succinct resume of what had been found up to that time:

The Loyola Language Study distinguishes between schizophrenics and normals, using any of three systems of scoring, namely standard scores, doubled-root frequency scores, and median scores. The screening efficiency of the test is increased by using only high validity items scored by standard scores. Such scores also permit of parametric statistical operations. There is a tendency for older persons to make poorer scores, and for this effect to be counteracted by education. Intelligence, apart from age and education is not a significant factor. (37, p. 262)

We now come to the pair of research papers most relevant to the present experiment, namely those comparing free and controlled association techniques administered to the same subjects.

In the first of these, Trainor (64) administered the test to fifty male and fifty female subjects under both controlled and free conditions. His subjects were all adults, ranging in age from nineteen to fifty-eight years who had from thirteen to twenty years of formal education. One group took the free-association test first, the controlled-association test second. The other group took the tests in reverse order. Four to eight weeks elapsed between administrations.

By varying the order of presentation as he did, and using statistical tests, he was able to show that order of presentation was not a factor which had to be taken into account when analyzing the differences between free and controlled association. The two tests he used were these: A chi-square test of the number of persons receiving higher scores on the first administration, whether free or controlled, and the number of persons scoring higher on the

second administration, free or controlled, was not significant. Rank-order correlations were computed to determine whether the coefficients obtained were different between the first and second administrations regardless of method of administration. The differences between these correlations were not significant.

Having established that order of presentation has no significant effect here, he turned to the question of the differences between free and controlled-association instructions would produce greater communality of response.

Trainor first selected one column of words and computed Herr-Rimoldi median scores for this column in each booklet. No significant difference between free and controlled-association was found with this method, though the trend was in the expected direction. Trainor hypothesized that these negative findings were due to the relative crudeness of this scoring method, which does not distinguish varying degrees of difficulty among items which are known to vary widely in this regard.

He then applied a nonparametric statistical technique called the Wilcoxon Matched-Pairs Signed-Ranks Test to the data, to test for significance of difference in results of the total test. With this technique, which he felt was more valid, the difference between free and controlled association methods was significant at the .02 level of confidence.

A similar study was undertaken at the same time by Even (22) using 200 women from undergraduate colleges in the Chicago area. Even found a significant difference in favor of greater communality of controlled association over free association responses, as was expected. Because she used Stanek's scoring norms for both sets of data, and they had been derived with the controlled-association instructions, she felt these results might be

questioned. So she verified the results, using the standard error of proportion applied to raw frequency counts of only the top frequency responses.

Her findings were that significant differences between free and controlled association occurred; (1) for the total test scores of the entire population, (2) for the total test scores of each school, and (3) for separate column scores on the two sets of tests. Controlled association responses yielded a higher degree of communality of thought shown by differences in means and distributions of scores.

These two studies, as seen, support the conclusion that subjects in general tend toward significantly greater communality of response on the Loyola Language Study than on a free-association test using the same stimulus words. However, these studies did not investigate individual differences among subjects in this regard. They did not question whether subjects with high free-association scores also got high controlled-association scores, and vice versa. It is this further step, along with others, which is undertaken in the present research. So, although these last two studies form valuable background for the present research, they are not in any sense duplicated by it, nor are any of the other foregoing research papers so duplicated.

THE GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

The Guilford-Zimmerman Temperament Survey (GZTS) can be traced back as far as 1930, when Guilford suggested that Spearman's technique for testing general, group, and specific factors might apply to an analysis of personality traits (29). Here he was merely discussing the concepts of extraversion-

introversion, but three years later he published perhaps the first attempt to apply the new factor-analytic methods to a personality questionnaire in order to determine what common personality variables might be represented therein. Thurstone's method of factor analysis, which was then in its earliest stages of development, was adapted to the problem, and four factors were tentatively identified.

By 1936, Thurstone had greatly extended and developed his technique of factor analysis, and Guilford decided to re-examine his data, utilizing the improved techniques. As a result of these factorial studies over a period of several years, the Guilford-Martin Inventory of Factors STDOR was developed, and later, the Guilford-Martin Inventory of Factors GAMIN. It is not necessary to describe his ten factors in any great detail here, but their names give an indication of their nature: Social Introversion, Thinking Introversion, Depression, Cycloid, Rhathymia (carefree vs. serious), General Activity, Ascendancy, Masculinity, Inferiority Feelings, Nervousness.

Several factor-analytic studies are reported which have identified factors similar to those defined by Guilford. Lovell (44) factor-analyzed correlations found between the subtests of the STDOR and GAMIN and identified four "super factors" or "second-order" factors, which describe general habit systems: "drive-restraint," "emotionality," "realism," and "social adaptability." Thurstone (63) re-factored the correlations reported by Lovell. He interpreted his findings as indicating that not more than nine linearly independent factors are represented. Seven of these were given tentative interpretation and the following names: "Reflective," "Dominant," "Sociable," "Vigorous," "Emotional Stability," "Impulsiveness," and "Active."

The Guilford inventories STDCR and GAMIN have been used in a wide variety of practical situations, chiefly in counseling services and research activities. Steinberg and Wittmer (57) in a differential study of characteristics of normals and psychiatric patients, state that, "as a measure of personality type, the Guilford inventory STDCR was used (a) because it was carefully developed on the basis of factor analysis studies and (b) because of the definite value found in its use over a period of years both with psychotic patients and with employee personnel at the Elgin State Hospital." (57, p. 129) Thurstone (63) chose Guilford's schedules for a study of the dimensions of temperament because "they represent careful analytic work." Cattell (11) also praised Guilford's inventories: "...the work of Guilford is outstanding for its technical skill...and the thoroughness with which the research was carried forward from study to study...." (11, p. 38)

Guilford continued his research and eventually combined the STDCR, GAMIN, and another of his inventories, the Guilford-Martin Personnel Inventory into a single instrument, the Guilford-Zimmerman Temperament Survey (GZTS). As he explains in the manual:

There has been a growing tendency to administer the STDCR, GAMIN, and Personnel Inventory in combination, in order to obtain comprehensive pictures of individual personalities. The time required to administer and score these three inventories has called attention to the need for a single inventory which would provide similarly comprehensive coverage in a more economical manner. Inter-correlational studies of the 13 trait scores [included in the three instruments] have indicated that some practical consolidations and omissions could well be tolerated in the interests of economy. (30, p.1)

The new inventory yields ten factor scores, of which some represent exactly the same factors as were derived in the earlier inventories, and others are combinations of these. In the development of the final form, new item

analyses were made because a number of years had elapsed since the previous analyses had been completed. The items are generally reworded and the positions of the items are changed in the new inventory.

The form of statement of the items is unusual for inventories of this type. Items are stated affirmatively rather than in question form, using the second person pronoun.... The avoidance of the personal pronoun should do something to allay resistances and to increase the operation of the projective principle. The second person pronoun was preferred to the first-person pronoun because it was believed that the statement would seem thus less personal to the examinee.... It is a historical fact that the personality inventory grew out of the interview method. It is, in essence, a systematic, impersonal interview, which can be scored. (30, p. 4)

In the GZTS, the alternative responses to each item are "yes," "?," and "no." Guilford prefers these to "true and "false" for the reason that with the latter responses some examinees become too concerned with the actual truth of the statements. The specific use of the "?" alternative was determined by the results of an unpublished study which suggested that the use of this third alternative was advantageous. A subsequent study by Linden (42) found that forced-choice forms provided essentially the same results, however.

In most cases, optimal scores do not extend to the top of the scale, but are at some moderate position between the mean and the top.

Guilford is satisfied with the new form, claiming that "the internal or factorial validity of GZTS scores is fairly well-assured by the foundation of factor-analysis studies plus successive item analyses directed toward internal consistency and uniqueness. It is believed that what each score measures is fairly well-defined and that the score represents a confirmed dimension of personality and a dependable descriptive category." (30, p. 7) Tetrachoric intercorrelations of the ten GZTS trait scores computed with data obtained from 266 males students in a Southern California university are presented by

24

Guilford, with the comment: "In general, they are gratifyingly low, indicative of the prevailing uniqueness of the scores. Only two are uncomfortably high: those between S and A, two scores pertaining especially to social behavior, and between E and O, two scores pertaining to emotional behavior.... In either pair, however, each score accounts for less than half the variance of the other, so that there is considerable unique contribution made by each." (30, p. 6)

Jones (38), in an investigation which was part of a larger study to investigate factors contribution to "the authoritarian personality," administered the California F Scale and the GZTS to 628 Naval Aviation Cadets. He obtained correlations between the ten trait scales and the F scale. Among these, only those of E, O, F, and P are significant beyond the .01 level. The E and O scales suggest a heavy loading of items related to anxiety, the F and P scales reveal a common factor of hostility.

Leeds (40) used the GZTS in his study, which showed that teachers as a group differ from college seniors in showing more restraint and seriousness, greater emotional stability and objectivity, more friendliness and a more cooperative spirit in personal relations. College seniors, on the other hand, possess more drive and energy and show more social boldness.

Cottle and Lewis (13) used the GZTS along with the MMPI in a study of differences between counselors and a college student sample. On the GZTS, counselors scored significantly higher in adjustment than did the college student sample.

Murray (45) used the GZTS and the MMPI, along with the Strong Vocational Interest Blank, in a study of priests and seminarians, finding certain differences between college groups and clerical groups.

Gay (27) used the GZTS to confirm his hypothesis that active members of fraternities tend to select from the available candidates persons who are, with respect to certain personality traits, already much like themselves.

Hedberg and Baxter (36) tried to use the GZTS to discriminate successful life insurance salesmen. They found no significant differences between criterion groups in terms of an item analysis or mean scores on the subscales. But raw-score distributions revealed a useful difference, namely in heterogeneity on two of the scales.

Age was shown to be a factor on some scales by Bendig (4), who tested different age groups with the GZTS and found that the G, A, S, and M scales showed significant decrease with increasing age, while scores on the R and P scales increased with age.

Socioeconomic status was found to have a significant effect on some temperament traits in a study of high school seniors' responses on the GZTS, by Singer, Stefflee and Thompson (50).

Several studies sought to establish relationships between intelligence or school performance and GZTS scores. Webb and Goodling (72) used the GZTS along with the MMPI and several other tests in an effort to assemble a battery which would predict grades for theology students. Some multiple correlations of value were obtained, but nothing of direct interest regarding the GZTS. Witherspoon and Melberg (73) did find significant, though very low, correlations between grade-point averages of college freshmen and three of the GZTS scales, the purposive, personal relations, and masculinity scales. They yielded r 's of .13 or better, significant at the .05 level. Klugh and Bendig (39) found that "three of the Guilford-Zimmerman Temperament Survey Scales, Objectivity,

Friendliness, and Personal Relations apparently show a low, but statistically significant, positive relationship with intelligence as measured by the Ace test."

Two studies were found which dealt with construction of the test: The first, by Bendig (5) challenged the orthogonality of three of Guilford's first-order factors, defined by the GZTS O, F, and P scales. He found these factors to be oblique rather than orthogonal, and found that O and F showed some relationships to the second-order EI and EM factors defined by the Extraversion and Neuroticism scales of the Maudsley Personality Inventory. Barrows and Zuckerman (1) challenged the validity of the M scale. They found that it did not correlate with the M-F scales on the MMPI and the Strong Vocational Interest Blank, which did not correlate with one another. They conclude that M-F scales need further study and clarification.

Voas used the GZTS and the MMPI in three studies about test-taking behavior. In one (70) he found that most of the trait scales on the MMPI and GZTS were strongly affected by three types of bias: the tendency to use one category more than another, the tendency to give normative responses, and the tendency to give socially desirable responses. In a study of reading speed (68) he found a correlation of .72 between the times required to complete the GZTS and the MMPI. He also found some correlations between reading speed and some of the scales on both tests. He used the same two tests in a study of a procedure for reducing the effects of slanting questionnaire responses toward social acceptability (69). By allowing subjects to give socially acceptable responses immediately before or after self-descriptions, he reduced the bias in the latter.

Neither these studies nor any others found in the literature provide evidence of external validity convincing enough to justify the use of this test in counseling or in predicting the performance of individuals. One of the major uses of the test has been in personality research, particularly in master's and doctoral studies, and it is apparently widely regarded as acceptable for this purpose.

Reliabilities of the scale scores as reported by Guilford (30) range from .75 to .87. More detailed description of the ten traits represented by scale scores will be found in a later chapter.

SOCIAL PERCEPTION

In 1950, at his presidential address to the American Sociological Society, L. S. Cottrell reproached his fellow social psychologists for "ignoring almost completely...one of the most challenging as well as one of the most critical" problems confronting the behavioral scientist: the investigation of "empathic ability." This capacity to perceive what others are thinking and feeling impressed Cottrell as a very important form of social talent, vital for success in many areas of our existence. He suggested that his own work, with Dymond, might indicate a promising approach.

Actually, he was overstating the case a bit. The problem had not been completely ignored prior to then. Interest in this general area dates back much farther than that, and research of the very type he proposed can be found as early as 1941, when Travers published his work with college students (65). He presented his subjects with a set of propositions concerning broad social and political issues. He had each individual express his agreement or disagreement with every item, and then make an estimate of the percentage of

the group and of the general population which would agree or disagree with each of the propositions. Error scores were computed for each individual by subtracting his estimate on each question from the true percentage, and summing these differences for all the questions answered. Among his findings which have particular relevance to the present study are these: (1) The ability to judge group opinion had little relationship to intelligence ($r = -.04$) but was significantly correlated with measures of personality adjustment. (2) No relationship was found between an individual's participation in the activities of the group and his ability to judge group opinion. (3) Individuals tended to over-estimate the percentage of the group who thought as they did. (4) Those holding a minority opinion on a question tended to make a larger error in judging group opinion than did those holding a majority opinion.

Travers' study is criticized by Wood (74) because of the academic nature of the questions employed, the restricted range and high level of intelligence of his subjects (average IQ about 120), and their lack of social contact with one another outside of the classroom. These factors which make his group somewhat atypical must be taken into account when evaluating his findings.

Wood attempted to avoid these shortcomings in his own experiment (74) in which two groups of high school students completed an opinion questionnaire consisting of sixty-five statements relating to controversial topics within the school. Each student indicated his agreement or disagreement with a statement by encircling "yes" or "no", and in addition made an estimate of the percentage of his group which would respond "yes". An individual's error on a question equalled the difference between his estimate and the actual group

opinion. A measure of the ability to judge group opinion was derived for each individual by summation of his error scores on all of the questionnaire items. A sociometric analysis was made of the two groups by having every student select other students with whom he would desire to associate in various activities. Information on the students' age, sex, religious preference, nationality, extracurricular activities and intelligence scores was obtained from the students themselves or from the school records. The following facts and conclusions emerged: (1) Individuals tending to make accurate estimates of group opinion on one set of questions, or on one occasion, tended to have low error scores on another set of questions or at a later date. Thus a reliable ability to judge group opinion was manifested. (2) The measure of the ability to judge group opinion was significantly related to intelligence, as determined by a standard self-administering mental test. (3) Individuals receiving a large number of sociometric choices were significantly better judges of group opinion than students receiving few or no choices. (4) The judges consistently over-estimated the number of students thinking as they did. (5) Students holding the minority opinion were less accurate judges of group opinion on any question than students holding the majority opinion.

Wood was particularly impressed by the consistent overestimation of group opinion in the direction of the judge's personal opinion. This finding was noted in Travers' study also. He offers two hypotheses to explain this phenomenon and suggests further research to clarify the point. His hypotheses: (1) The overestimation is a function of projection--the judge thinks most people in the group would agree with him. (2) The overestimation is a

function of association with similar-thinking people--the judge bases his opinion of the entire group on the smaller clique to which he belongs.

In his next study, Travers investigated the ability of an individual to judge group knowledge (66). He asked his subjects, a group of college students, to estimate the percentage of their group that knew certain words or certain facts about contemporary history. Among his findings were these. Individual judgments of the knowledge of a group are unreliable. An individual's estimate of the knowledge of a group with respect to a certain fact is closely related to the individual's own knowledge or ignorance of the fact. It is possible to obtain a measure of an individual's general ability to judge the knowledge of the group. This measure of the ability to judge the knowledge of the group is not related significantly to a measure of intelligence, but it is related significantly to certain measures of the individual's personality adjustment.

Travers next became concerned with the question of whether this ability to judge group knowledge was a general ability which extended to larger groups less well known to the judge. Thus, in his next experiment (67) he asked a group of students to state the percentage of their student group that they believed knew the correct meaning of a number of words, then asked them to make a similar judgment about the word-knowledge of the adult population of the United States. He found that the ability to make the former set of judgments accurately was associated with the ability to make the latter set of judgments accurately.

Another study from this period before 1950 was found to be relevant, but it is of only passing interest. Wallen (71) had 281 girls in a small college

check three statements as to agreement or disagreement and make estimates of the percentage of girls within the school that would favor each statement. He found that individuals making large errors of estimation on one question were found to be reasonably accurate judges of group opinion on another. This is not surprising, considering the small number and the abstract nature of his statements. This study is not considered of any further interest for our purposes.

About the same time that Wood was doing his work, Dymond was completing her original preliminary investigation of the relationship between insight and empathy (19). She attempted to measure "empathy" with a rather crude measure derived from TAT stories. Perhaps the major value of this study lies in the fact that it drew attention to the importance of empathic ability in social relationships, and perhaps stimulated interest in empathy as a personality trait.

In 1949 Dymond published an account of her own doctoral dissertation (20) in which she made an exploratory study attempting to develop a test for the measurement of empathic ability. In her test, the subjects were asked to rate themselves on a five-point scale on each of six characteristics, such as self-confidence, superior-inferior, friendly-unfriendly, etc., then to rate another individual on the same six traits, then rate the other individual as he believes the other individual would rate himself, and finally to rate himself as he believes the other individual would rate him. The results of this experiment are not considered of any value for our purposes, but the study has historical interest since it was the pattern for many later studies.

During this same year, Dymond and Cottrell published their paper urging

further research in this area (14). In it they point out that "empathy" has been an important concept in modern psychiatry, getting particular emphasis from Sullivan. Then they discuss the above study briefly, and point out several implications of the findings: (1) It is possible to develop a quantitative index of relative empathic ability. (2) There are wide differences in people in this ability. (3) There is a significant relationship between empathic ability and insight into one's own behavior. (4) There are interesting and important differences in background and personality characteristics between those who score high and those who score low on the empathy test.

In her next article (21) Dymond investigates some of these personality characteristics, but again we are less interested in her results than in other features of her presentation. This time it is her discussion of "empathy" and its relationship to other concepts, such as sympathy, insight, identification and projection. Her experiment dealt with rating of peers on a personality scale, and comparing good raters with poor ones in several ways. She found the good raters to be warm, outgoing, optimistic, emotional people, and the poor ones rather rigid, introverted people. Even Dymond herself viewed this work as preliminary and inconclusive, and was more interested in stimulating others to develop her ideas.

In 1951 Notcutt and Silva published their study (48) in which 64 married couples were given a self-rating scale and were then asked to predict one another's self-ratings. They found that predictions were significantly superior to chance, that successes were greater on items where subjects rated their partners and themselves similarly. They took no notice whatsoever of

Dymond and Cottrell's work, nor did they appear to be concerned with the theoretical problems and implications of their study.

Since then, many studies have appeared, most of them following more or less closely the method adopted by Cottrell and Dymond. The logic behind this approach appears sound enough: By asking a "judge" to predict the responses of another person or group of persons on a questionnaire or rating scale, we are measuring the judge's "social perception" or his "empathy." But this has led to a sort of naive operationalism, as Cronbach points out (15), in which "empathy" or "social perception" is defined in terms of an accuracy score, which is the absolute difference between the actual and the predicted responses. The deficiencies and faults of this technique have not gone unnoticed, as we shall see. But the relative simplicity of the procedures and the face validity of the process have made this method so attractive that a considerable portion of the research has utilized it without giving much evidence of concern on the part of the authors regarding the theoretical or philosophical problems.

The results of the earlier research in this area are reported and reviewed in two major articles, one by Taft, the other by Bruner and Tagiuri. Taft (60) reviews some 81 articles in his survey. However, not all of these are relevant for our own purposes. We are interested in only one of his five categories, namely research in the prediction of behavior or life-history data. Specifically we are concerned with what he calls the "mass-empathy" test, in which the judge predicts the combined responses of a group of people.

He suggests that the "mass-empathy" test may measure a somewhat different skill than the "empathy" test, which deals with individuals. He quotes a study by Hall and Bell (33) as evidence of this, in which Kerr's "mass-empathy"

test and Dymond's "empathy" test were found to be uncorrelated for 87 subjects.

Taft proposes one explanation for this and some other apparently inconsistent findings about behavioral predictions. He suggests dividing the predictions into analytic and non-analytic judgments, placing the "mass-empathy" predictions in the former class because they require more conceptualization and less immediate intuition than do the predictions about individuals. He would probably classify the predictions made on the Loyola Language Study, by the way, as even more highly analytic, since they deal, not with feelings or emotional reactions, but with the process of free association to stimulus words.

Taft has other explanations for the apparently contradictory findings among the various studies of social perception. He says these may well be due to differences in specific factors, differences in the subjects used, the traits being judged, the methodology, the operational definitions, etc.

Despite all the contradictions, Taft concludes that a single general ability to judge others does exist and is justifiably regarded as a personality trait. The major difficulty measuring this trait, and thus finding correlates of it, lies in the widespread tendency for all subjects to assume similarity between their own reactions and those they are trying to predict. Thus it is often reported that the "best judge of others is the one who resembles others," a circular statement which tells us little or nothing about the ability to judge others as an identifiable skill.

From the research studies he included in his survey, Taft enumerates these findings. Found to be positively correlated with ability to judge personality characteristics of others: (1) age (in children), (2) high

intelligence and academic ability (with "analytic" judgments particularly), (3) specialization in the physical sciences, (4) esthetic and dramatic interests, (5) insight into one's status with respect to one's peers on specific traits, (6) good emotional adjustment and integration (with "analytic" tests only), (7) social skill (only with tests of ability to predict behavior). Found to be negatively correlated with ability to judge personality characteristics of others: the judge's social dependence, and his psychasthenia score on the MMPI. Found to be uncorrelated: age (in adults), sex, and training in psychology.

When Taft completed his own doctoral dissertation in 1950 (59), he foresaw many of the problems he found himself discussing in his review five years later. For his doctoral study of "the ability to make accurate social judgments", Taft chose as subjects forty advanced male graduate students at the University of California. After a week-end of living together, they were asked to make a number of judgments about each other, and each subject was scored on an index of ability to judge others accurately. Two tests were included in this index: (1) a test of the ability to predict how one's peers, as a group, would respond to thirty personality questionnaire items, (2) a test of the ability to rate accurately one's peers on six personality traits.

The scores on this index were correlated with other traits of the subjects, thus revealing, Taft says, the characteristics that go with ability to judge others accurately. The following characteristics were found to be related to the possession of this ability in his subjects: American urban origin, Jewish origin, previous working experience, being an officer in the Armed Services, attendance at a large college, having none or few older siblings, being a

student in the natural sciences rather than the social sciences, having an over-solicitous mother, high intelligence and academic ability, possessing an organized, socially passive, serious, unemotional and realistic personality, being task-oriented rather than socio-oriented, and being liberal but not extreme in political attitudes.

The following characteristics that are usually believed to be possessed by good judges of others were not found in this study: artistic ability, ability to play social roles, previous acquaintance with the persons being judged, sociability, femininity, and ability to judge self.

The overall impression obtained was that the good judges of others are extraceptive persons possessing a "hard-headed" judging attitude towards their peers, while the poor judges are intraceptive persons who view other people in terms of their relationship with themselves: they are socially dependent and are in the direction of being over-generous in rating their peers.

Taft's study is open to some of the same criticisms made earlier about Traver's work. His subjects are quite atypical, of high intelligence, and had only minimal contact with one another before the experiment. His conclusions are nevertheless interesting, and can be discussed along with other findings in similar studies. It is his methodology, however, in which we are most interested at present.

The procedure he used was the one first used extensively by Travers, requiring each subject to estimate the percentage of his fellow graduate students who would answer questionnaire items in a specified way. (As a separate exercise, the subjects were also asked to estimate what the responses of the general population of the U.S.A. would be to the same items.

For each subject, each set of predictions (prediction of assessment group and prediction of general population separately) was scored on three indices: (1) Discrepancy-a negative index of accuracy obtained by totaling the amount of error in each estimate, without regard to sign. (2) Projection-the algebraic sum of the errors. A positive score on projection indicates that the subject has erred by assuming that the opinions of others will be the same as his own to a greater extent than they really are. (3) Self-Insight-the number of items in which the subject correctly predicts whether the majority of his peers (or the general population) agree or disagree with his own opinion.

These scores are similar to, but not identical with, the scores for the Guilford-Zimmerman Temperament Survey in our present experiment. Our Social Perception Accuracy Score contains elements of Taft's Discrepancy Score as well as of his Self-Insight Score. It resembles the Discrepancy Score in that it, too, is a negative accuracy score obtained by totaling the amount of error in each estimate, without regard to sign. It resembles the Self-Insight score in that the subject is asked to estimate the percentage of his peers who would answer the question the same as he did. The reasoning behind this choice of method for the present experiment is that accuracy presupposes a degree of self-insight, and other research has shown that subjects giving a percentage estimate such as that required in Taft's Discrepancy score tend first to decide upon their own answer, then to estimate what percentage of the group would agree with that answer.

Taft's Projection score contains elements of both our Social Perception Assumed Similarity and Real Similarity Scores. Taft measured the degree of

"erroneous" projection, whereas we measure merely the subject's tendency to 38
assume that others will agree with him, without taking into account (in this
measure) whether or not this assumption is correct. How much others actually
do agree with him shows up in his Real Similarity Score.

Thus both sets of scores, Taft's and our own, provide similar bits of
information about the subjects, and many of his findings can be compared
closely with our own despite certain differences between subjects and ex-
perimental conditions.

Taft includes a lengthy discussion of the reliability of measures such
as his Estimate of Group Opinion. The discussion is relevant to our own
problems in this regard, and is worth including here. He refers first to an
early article by Cronbach who defines four different meanings for the term
reliability and points out that each implies a measuring process that will
render a different reliability index. We must decide first on non-statistical
grounds in which sense we will use the term reliability. Taft includes
that in a research project such as this, reliability refers to the degree
of accuracy with which the tests measure whatever they are supposed to
measure. But the concept of "accuracy" of measurement is a hypothetical one
since we cannot observe directly the "true" measure from which this accuracy
can be computed. So, Taft says, we infer the reliability of our measures,
using a combination of empirical evidence and logical argument. The empirical
evidence normally takes the form of a "coefficient of equivalence", computed
by the split-half method. But he dismisses this method as inapplicable here
because of the requirement that each half of the test make a parallel con-
tribution of general and group factors defined by the test. This requirement

is impossible to meet, he says, partly because in test ability to judge self and others, a considerable amount of the total variance is made up of interaction between the judge and the trait being judged. He sanctions the use of a test-retest procedure whenever this is feasible.

(Taft may have reached these conclusions after seeing the results of the two methods as applied to his test for Estimation of Group Opinion. Using the split-half method, he got insignificant correlations of .20 and .22, while with another group he used a test-retest method and got a correlation of .82. Nevertheless his point is probably well taken).

A final finding of Taft's should be discussed here because of its implications for our study. He reports that "predicting the answers to the MMPI items for the general population is apparently a different task from predicting those for one's peer group, since the correlation between the accuracy scores for these two predictions was only .31" (59 p. 119). He compares this with a correlation of .19 which he says was obtained by Travers in his similar study in 1949 (65). Taft is mistaken in his reference to Travers. Travers dealt with this problem in a later study (67) and found correlations as high as .47 and .44 between the ability to judge group-knowledge within a peer-group of college students and ability to judge group knowledge within the general population of the United States. He had asked his subjects to estimate the percentage of their peer group and the percentage of the general population who would know the meaning of a series of vocabulary words. Since the nature of the task differs somewhat, there is not necessarily a contradiction between Taft's and Travers findings.

In our study we are following Travers and assuming that predicting

answers for the peer group and for the general population is essentially the same sort of task. We justify this approach further by pointing out that our peer groups differ markedly from those of Taft, and, to a lesser degree, from those of Travers. Both of these studies used relatively small groups of highly atypical subjects, atypical in intelligence, occupation, background, and other factors. Also, the people in their peer groups had not known one another very long or very well. Our groups on the other hand, were larger and more typical in background and intelligence. Our subjects had lived together for more than ten weeks. Thus we are justified in assuming that we might have found even higher correlations than Travers did between estimations for the peer group and estimations for the general population. So we accept his conclusion that both types of estimate probably require one general ability and will not make a differentiation of this sort in our research design.

In the interval between 1950, when he wrote his dissertation, and 1955, when he published the survey article, Taft apparently shifted his own viewpoint somewhat. In the latter article, as we saw earlier, he concluded that the ability to judge others is a general one, extending over a variety of different tasks.

This view is shared, though with less confidence, by the authors of the other survey article, Bruner and Tagiuri:

There is evidence for both specificity and generality of accuracy [in social perception]...We are inclined to agree with G. W. Allport's claim that it would be more erroneous to "consider the ability entirely specific than to consider it entirely general". (8 p. 645)

These authors are just as guarded when they turn to the interpretation of this trait and its correlations with other variables:

Studies of "accuracy" of judging others have not progressed to a point at which firm substantive conclusions can be brought to bear

upon a theory of judgment. The criteria employed have too often been of a consensual kind: accuracy is mostly defined as agreement with others regarding a person's characteristics. Given systematic biases of judgment...these studies may be seriously confounded. Accuracy may mean simply that a particular judge shares the most common bias to be found among his fellow judges. Taken from the point of view of a theory of judgment, relatively few firm conclusions can be drawn. Tentatively, the most reasonable seem to be these:

- (a) Accuracy is aided by similarity between judge and judged....
 - (b) Accuracy depends upon having cues to work on....
 - (c) Certain systematic errors in judgment---halo effect, logical error, and the like---account for much of the error involved in judgment. Other sources of error are more dynamically explicable, notably in terms of the tendency to project.
 - (d) There are systematic relationships between various personality variables and judging ability....
 - (e) A global or intuitive approach seems to improve judgment....
- (8. p. 649)

These conclusions are based upon a thorough review of the various studies up to that time. The authors had divided their review into three areas of inquiry: (a) the judgment of emotions from facial and other forms of expression (b) the judgment of personality characteristics from various external signs, and (c) the formation of impressions of other personalities. They conclude that "work in all these areas was very much in its infancy, and that growth in each is to some extent hampered by serious problems of experimental method and design". (8. p. 649)

These authors criticize the "excess of empirical enthusiasm" and "deficit of theoretical surmise" in much of this research, but they encourage further work in this general area of social perception because of its importance for all social psychology.

Many of the studies included in their review are considered in more detail below, but these authors provide interesting summaries of the findings, up to that time, regarding the relationships between accuracy of judgment and various

other factors. Their summaries illustrate well the confusion and lack of definitive knowledge in this area. They found the evidence on the relationship between intelligence and accuracy to be somewhat ambiguous. If anything there may be a slight positive correlation between the two, they say. Although we continue to assume that experience helps in making accurate judgments, they found little evidence to prove or disprove this. They did find that emotional detachment was well documented as a characteristic of good judges. The relationship between social adjustment or social adroitness is apparently a complex one. Some studies have shown the introverted, withdrawn person to be the best judge, while others have found the sociometric "star" to be the best.

Many of these same questions have been taken up again in later studies, as we shall see. But the same methodological problems have persisted, and we shall find that their conclusions may be as valid today as they were then.

Some of the early research following Dymond and Cottrell was done by Bender and Hastorf, whose work is worth noting even though they are concerned with individual social sensitivity rather than group predictions. In their first study (2) they found that their subjects were poor at predicting responses of others on personality scales, that they were inconsistent, and that they sometimes clearly projected their own responses onto others.

This finding of projection aroused their concern and led to the publication of their next paper (34), the purpose of which was "to search out the psychological implications of this (deviation-measurement) technique for operationally defining empathic ability". (34. p. 574) In this excellent paper they report a new experiment in which their subjects first took the Allport-Vernon Scale of Values and then predicted the responses of a close

43

associate on the same test. Then, after deriving an "empathy" score by measuring the deviation between the predicted responses and actual responses of the associates, they measured the deviation between a subject's predictions and his own scores, and called this a "projection" score. Using the projection score, they corrected the "raw empathy" score and arrived at a "refined empathy" score. They realized at once that their method was imperfect, but they regarded it as an important step in the right direction. As they say, (34. p. 575) "without some correction for projection, attempts to measure empathy do not seem to make psychological sense". They suggest further study of the projection factor and its influence on empathy.

Following their own advice, they next published a study (3) in which each subject predicted responses of four associates rather than one. They then derived deviation scores for similarity, projection, raw empathy, and refined empathy. They found that the raw empathy score was correlated with similarity, while the refined empathy score was not. They also found a generalized tendency for some of the subjects to project consistently and for others to have empathic ability. Their findings confirmed their belief in the necessity to correct empathy scores for projection.

They remained convinced of the deficiencies of the raw empathy score, but by 1955 they had become disenchanted also with their own refined empathy score. As they report (35) their closer examination of response patterns in the above study showed that these latter act through the scoring system to influence to a large extent the refined empathy score. "A subject receives a high refined empathy score, not necessarily because of his empathic ability, but because of his pattern of response and the pattern of response of the associate he

chooses [to make his predictions about]." (35 p. 343) They express their growing conviction that some other measures of empathic ability must replace the deviation-scores technique.

Another pair of authors concerned about the Dymond method, and also aware of the influence of response patterns, were Lindgren and Robinson. In their study (43) they used a variation of Dymond's technique, and were impressed with their subjects' tendency to follow cultural norms in their predictions of how other individuals would respond. As a result, they say, until this tendency to follow norms can be measured separately, or at least accounted for in some way, "the use of the present revision [of Dymond's method] as a predictive measure of insight or empathy appears inadvisable". (43. p. 176) They realized that "conventional people get good scores on empathy tests because most of their partners (or referents) in the test are also conventional." (43. p. 176)

Cronbach was another critic of the studies on empathy, regarding them as largely wasted effort, partly because of their "myopic operationism", in which they correlate a deviation-type "empathy" score with some other measure of behavior. His paper (15) continues with a complex theoretical analysis, pointing out that these accuracy scores are actually the sum of four components, and failure to recognize this leads to confusion in interpretation. The four components: elevation, differential elevation, stereotype accuracy, and differential accuracy. Elevation is the average of judge's predictions over all items and all observers: it reflects his way of using the response scale. Differential elevation reflects how closely the judge's average prediction for a referent corresponds to the referent's central tendency

of response, all items pooled, and the judge's central tendency of response held constant. That is, it reports the judge's ability to judge deviations of the individual referrant's elevation from the average. Stereotype accuracy describes the judge's ability to predict the norm for all the referrants. It might be called accuracy of predicting the generalized other. Differential accuracy reflects the judge's ability to predict differences between referrants on any item. This component is averaged over items. This approach of Cronbach's is a more refined approach to the same question of response patterns and assumed similarity or projection and the influence of these factors on accuracy scores, which had previously been interpreted by others as pure measures of empathic ability.

In another article, with Gage (25), Cronbach tried to clarify the relationships among the three scores, Real Similarity, Assumed Similarity, and accuracy in social perception. They say,

Only two of these are independent relations. That is, when two of these relations are known, the third may be inferred.... What we regard our test as measuring therefore depends on how we choose to conceptualize the problem, as has been pointed out by Tagiuri, Blake, and Bruner. Empirical studies have reported relations between the scores.... But this may result merely from the linkage represented in the operations defining the scores, for when AS is constant and greater than RS, ACC and RS are correlated. Such a conclusion is a logical necessity, not a psychological finding regarding any superior insight on the part of the more typical Judge.... While the ACC score has a simple operational definition, it clearly does not correspond directly to any simple construct or trait. (25 p. 415)

Gage and Cronbach also criticize Hastorf and Bender's refined empathy score, and present a method for showing the influence of Assumed Similarity when dealing with predictions which range along a single continuum. Their method is based on the fact that all predictions of this sort can be classified

under these four headings: (1) Warranted Assumed Similarity, (2) Unwarranted Assumed Similarity, (3) Warranted Assumed Dissimilarity, and (4) Unwarranted Assumed Dissimilarity. Accuracy is made up of (1) plus (3). Real Similarity of (2) plus (4), and Assumed Similarity of (1) plus (2). They go on to explain that a positive correlation between Warranted Assumed Similarity/Real Similarity and Warranted Assumed Dissimilarity/Real Dissimilarity would show that some sort of skill is influencing the accuracy scores, and not just Assumed Similarity. A negative correlation between these values would show the influence of Assumed Similarity. Unfortunately, this method is not applicable to a test like the Loyola Language Study, where there is an unlimited number of possible responses which are not ranged along a single continuum.

The question of assumed similarity was also taken up by Fiedler in two studies during this period. He found, (24) as might have been expected, that people assume more similarity to individuals they like best, than to those they like least. In an earlier study, with Warrington and Blaisdell (23) he had found that they also perceive those they like best as more similar to their ideal self than those they like least. These are, of course, circular statements which add little to our knowledge about empathy. Two hypotheses which he expected to be supported were not supported by his results: (1) Subjects will actually be more similar to those they like in self-or ideal-self-descriptions. (2) Subjects liked by a group will perceive their fellow group members in a different manner from relatively disliked subjects.

Gronlund performed an experiment (28) somewhat related to this latter hypothesis. He first gave his subjects a sociometric questionnaire, then explained to them that a compilation of their choices would indicate the

relative acceptability of their peers, and asked them to predict this rank order. The subjects included themselves in the ranking. His results indicated a positive relationship between sociometric status and the ability to perceive the sociometric status of self and others, though the relationship is contaminated by other factors. The correlation coefficients between sociometric status and accuracy of sociometric perception ranged, for the most part, around .40, which is significant at the 5% level.

Gage and Exline (26), on the other hand, found no relationship between sociometric status and sociometric perception.

Another study of individual empathy and its relationship to projection was done by Spilka and Lewis (55). They took the concepts of "assimilative" and "disowning" projection described in detail by Cameron and Margaret (9) and gave them operational definitions in terms of a procedure similar to Dymond's. Their method was this. Their subjects first answered a personality questionnaire, then answered the same questionnaire as they thought it would be answered by a reference person well known to them. Finally, the reference person filled out the questionnaire himself. These are the operational definitions derived for the various concepts:

Empathy. The score derived was the number of items in which the referent's form actually agreed with the judge's record when the latter filled out the questionnaire as if he were the reference person.

Assimilative projection. The score was the number of items which the judge assigned to the referent and which the former also perceived in himself, but which were not assigned by the referent to himself.

Disowning projection. This was the number of items attributed to the referent, but not assigned by the judge to himself, and also not perceived in the referent in himself.

Error. This was the remaining possibility for relating the judge's and referent's protocols which did not fall within the scope of the above

definitions. (55. p. 1)

The validity of this method was inferred from the nature of the inter-relations among the different measures. In their next paper, Lewis and Spilka (41) attempted to relate the measures to a meaningful external criterion, namely sociometric choice status. Their subjects were 54 high school boys who served as judges, while their teachers served as referents. They all filled out the Interpersonal Check List, which has 126 items of the yes-no type. Sociometric choices among the boys were also obtained, and those of high and low sociometric status were compared in relation to their scores on empathy, assimilative and disowning projection, and error. Their summary: "Though there is some inconsistency in the findings, evidence is present to suggest that choice status relates positively to empathy, negatively to assimilative and disowning projection, and is independent of the error measure obtained". (41. p. 5) In other words, those who are sociometric favorites in their group tend to be more accurate in their perception of others, and less prone to projection of any sort.

Cline (12) investigated the personality correlates of the ability to perceive others by having his subjects view sound movies of stress interviews and then make judgments about the interviewees. He found that the most significant correlates of judging-ability to be: (a) absence of ethnocentric and authoritarian attitudes, (b) superior intellectual ability, (c) lower scores on the MMPI scales for Hypochondriasis, Dissimulation, Paranoia, Schizophrenia Psychopathic Deviate, Prejudice and the F (Validation Scale, and (d) high scores on the MMPI Social Status and Intellectual Efficiency scales.

Spanner (54) utilized Cline's sound movies of stress interviews in an

experiment designed to reveal more about the relationships between empathy and similarity between judge and referent, between empathy and judge's self-acceptance (used as a criterion of emotional health), and between empathy and judge's emotional health as evaluated by others. Empathy is defined here in terms of the judge's ability to predict personality characteristics of others, by predicting their responses on an adjective check-list. The subjects, 100 military officers, also described themselves on the same instrument. Thus measures were obtained for accuracy of prediction and similarity of judge and referent. Measures were also obtained for emotional health in terms of self-acceptance and rating by others. His results (54, p. 215): "Contrary to expectations, accuracy was found to be unrelated to similarity of judge and social object, to self-acceptance, and to the rated soundness of the judge. Accuracy scores were related, however, to a combination of similarity and self-acceptance variables."

A post hoc explanation was given for this last finding, using Cameron and Margaret's (9) concepts of disowning and assimilative projection. Similarity and self-acceptance in Spanner's study interacted in this way: A self-accepting judge tends to be accurate only with regard to similar referents, while a self-rejecting judge tends to be accurate only with dissimilar referents. The first assumes "I am a nice person, so are others," and is right when others are similar to him. The second assumes "I am not a nice person, but others are not like me," so is right when others are dissimilar to him.

Norman (46) was also interested in interrelationships such as these. He utilized peer-ratings in conjunction with his measures of social perception

and derived the following indices: (1) Net Acceptance, computed as total sociometric choices minus sociometric rejections by others in the group, (2) Self-Other Identity, comparing rating of self with rating of others (comparable to the more common Assumed Similarity Score), (3) two Insight scores, referring to the subject's knowledge of himself, and (4) two Reality scores, which are measures of his accuracy in rating other people. He found a positive correlation between self-insight and sociometric acceptance, and between self-insight and accuracy of perception of others.

In a later study with Ainsworth (47) he verified these two hypotheses: (1) That projection would be negatively related to both reality and empathy, but that the latter two variables would be positively related to each other, (2) That reality and empathy would correlate more closely with adjustment than would projection. In this study they used the Guilford-Zimmerman Inventory of Factors GMIN, having each subject answer the questions for himself first, then make judgments about the most common responses of other normal people. Consistent intra- and inter-test correlations in the direction predicted supported the first hypothesis. The second was supported by correlations giving a hierarchy of relation to adjustment from greatest to least of empathy, reality, and projection.

In 1957 a symposium was held at Harvard University to which were invited some twenty-five people who had published research on social perception, including that already discussed in this review. By bringing together the authors of these independent research studies, this Harvard-Officer of Naval Research Symposium on Person Perception would hopefully encourage interchange of results and ideas, and perhaps lead to the development of a more unified and meaningful approach.

The papers presented at this symposium were published in 1958 (62) and represent a cross-section of the experimental work in this area, as well as some cogent theoretical formulations. Only a few of these articles, however, concern themselves with the type of experiment presented in this dissertation, and these present criticism of the approach, from both theoretical and methodological viewpoints. Their ideas may help in the interpretation and explanation of our results.

Bronfenbrenner's contribution to this volume (7) examines, in the light of theory and method, some recent attempts to employ measures of interpersonal perception for the study of identification. We are concerned less with the study of identification itself than with Bronfenbrenner's evaluation of the measures of interpersonal perception used. He begins with an overview:

For an American psychologist, nothing is so attractive as an operation definition. And when such a definition can be combined with an "objective" procedure yielding a numerical score, the temptation to gather data is virtually irresistible. Nowhere is this tendency more clearly evidenced than in the field of interpersonal perception, where the ready availability and adaptability of questionnaire methods for measuring correspondence and discrepancy in social perceptions have resulted in the wide, if not always wise, application of these techniques to a variety of problems. A case in point is the use of social perception measures for the study of identification, where the similarity between a self-description and, say, a description of one's father, is taken as a measure of identification with the father. (7, p. 110)

These measures, typically employed in empirical studies of identification, represent special instances of two more general indices widely used in studies of interpersonal perception (including our own), namely assumed and real similarity. Bronfenbrenner next points out the circularity involved when measures of real and assumed similarity are correlated with measures of personality adjustment. He explains that

it is a well established fact that people tend to describe themselves

favorably on questionnaires or rating scales.... Moreover, most people, when asked to estimate the typical response of others, predict a favorable self-picture. Accordingly, ...the person who does not assume similarity is typically one who predicts that most people will rate themselves favorably but nevertheless rates himself unfavorably.... Moreover, being in fact atypical in his self-picture, he also has a low real similarity score.... Thus, the striking correlations frequently reported between measures of real and assumed similarity on the one hand and measures of social and psychological maladjustment on the other reflect little more than the simple fact that maladjusted persons are deviants from the norm and describe themselves accordingly. (7, pp. 112, 113)

Having called attention to one of the major problems involved in many uses of real and assumed similarity measures, he goes on to discuss the concept of identification itself, and then proposes an alternative index of correspondence, employing a modified correlational technique which measures the parallelism in profile between two sets of ratings. The measure is so constructed as to minimize the influence of extraneous response sets such as "expressiveness" or favorability which act as confounding variables in conventional measures of real or assumed similarity. Thus he proposes that measures of real and assumed similarity be discarded for purposes of studying identification, because of the distortions and artifacts induced, largely by the tendency toward favorability and the tendency to follow norms, which have already been discussed in more detail earlier in this review. His objections do not necessarily apply to the use of these measures in a study like our own. In fact, he was at the time he wrote this, engaged in a similar study of his own which employed these measures.

The next measure to undergo critical attack in this volume is the accuracy score itself. Tagiuri reports a study (61) in which his subjects named their own sociometric preferences within their peer groups, then named those in the group who would choose them as sociometric favorites. A parallel set of

50

questions was asked about dislikes. He does not discuss the exact method of calculating his accuracy scores here, but we can see that, while they are quite different from those used in the present experiment, they possess some similarities which make Tagiuri's comments worth considering:

In present-day studies of person perception the issue of accuracy is often the focus of interest. Unfortunately, accuracy in the sense used here is a problem fraught with pitfalls, as Cronbach shows in this volume and in other writings. Consequently, the results of these studies have been inconsistent and difficult to interpret. For a number of reasons, attempts at studying correlates of accuracy have, with very few exceptions, produced negligible correlations and yielded little insight into processes. First there is not single satisfactory criterion against which to match the judgments. The criteria used---objective behavior, self-ratings, by the object person, ratings by experts, consensual ratings by peers---do not always agree and have very different psychological implications. Second, the disparity of tasks and abilities subsumed under the various operations called measures of accuracy have been glossed over. It is also probably that different judgmental skills may be involved in different situations. In addition, most accuracy scores contain some seven different and not necessarily correlated components. There is, furthermore, the extreme dependence of results upon judgmental sets and upon the distributions of the variable that are to be judged. Finally, most of the studies are inconclusive because of the lack of representativeness in the design employed. In sum, investigations yield data that are difficult to interpret and impossible to compare. (61, p. 324)

Is he advocating abandoning the study of social perception, then? No, he only suggests a shifting of our attention.

It is the process, rather than its achievement, that one must investigate if a broad understanding of the phenomenon is to be reached. This point cannot be stressed sufficiently. It is also important to realize that the difficulties encountered in quantitative studies of accuracy cannot be eliminated by resorting to qualitative approaches. Such phenomena as real and assumed similarity, stereotype and differential accuracy, favorability sets, and artifactual relationships, to mention but a few, apply to any kind of inquiry into person perception. (61, p. 324)

Though Tagiuri has successfully described many of the difficulties involved with the accuracy score, he does not provide an alternative to it. Instead, as we see, he urges researchers to concentrate on the processes,

51
which are, if anything, even more complex. His own study as reported in this volume will be disappointing to anyone seeking "results" in the form of tables of correlations between social perception scores and various personality and behavioral factors. Instead, he presents findings and observations about the processes of perceiving social relationships. And he observes that, even with a simple design such as he has chosen, the volume of observations and the variety of points of view are extremely large. He could not hope to exhaust them in this paper, nor does he attempt to do so. His study might stimulate others to look at their data in a similar fashion.

A strikingly similar approach is taken by Cronbach in the final paper of the volume (16). Cronbach begins with another critical appraisal of the present status of research in social perception:

Contemporary social psychology is properly preoccupied with interpersonal relations, interpersonal communication, and perception of others. In the recent epidemic enthusiasm for empirical explorations of these processes, the literature has broken out with a rash of results which are interesting, statistically significant, and exasperatingly inconsistent. All this work may or may not have turned up facts which will ultimately be a basis for theory but the results defy integration now. (16, p. 353)

Cronbach goes on to attack more specifically the "distance" score widely used as a measure of social perception. Having pointed out flaws and suggested analyzing it into components in his earlier papers, now he proposes eliminating it entirely.

One of the difficulties with the distance score as used in measuring "sensitivity to the generalized other" is that it is a global score, says Cronbach.

By global scores we mean those which compress many aspects of personality into a single index. The chief difficulty with the global index is that unless there is a clear rationale for the

manner in which traits are comined, significant within-trait effects obscure each other. (16, p.355)

As a result, different scores representing the same construct are found to have negligible correlations, and findings in general are left in a highly ambiguous form, when a more penetrating analysis might have produced meaningful results.

Cronbach enumerates two specific consequences of using a global index:

1. Observed effects are interpreted as general, without sufficient evidence. An effect may be due to one or two prominent dimensions and not represent any overall real or assumed similarity, for example.
2. Significant relations are overlooked. Different aspects of the global composite may cancel themselves out and lead to acceptance of a null hypothesis when a true relationship actually exists:

Again, the student who looks for a simple ready-made solution to these problems will be disappointed with Cronbach's paper. He suggests, however, a more analytic approach, and gives some examples of this approach as applied to sets of data from other experiments. He analyzed responses to a questionnaire item-by-item and found differences between "favorable" and "non-favorable" items as regards assumption of similarity, for example.

Cronbach concludes by saying he:

might appear to imply that the research to this point has been unmitigated folly, but that is an unduly severe judgment. Studies employing global indices have performed a valuable exploratory function; analytic methods might have impeded this exploration at an earlier stage. By adopting enthusiastically a methodology which we question today, investigators established enough teasingly promising relationships to justify a much more intensive study of social perception. Studying interpersonal perception still seems a most hopeful line of attack on social relationships. It would be foolhardy to state what has been shown by studies to date, but non-chance relations of some sort have been found in the majority of

studies. If these results are inconsistent from study to study, so much greater the reason for a determined effort to find out which ones are dependable and what they mean, by replication and by intensive analysis. (16, p. 373)

The critical tenor of the articles cited from this volume reflects the culmination of several years' self-examination on the part of social psychologists, many of whom agree they should refine their methods and develop new ones where they can. That this is no easy task can be inferred from the absence of any report on an extensive "breakthrough," in this volume or in later literature. In the next study to be reported, (6) Bronfenbrenner, et al., take note of the shortcomings of the methods, but go ahead to use them, urging caution in the interpretation of their findings.

A major contribution toward the measurement of skill in social perception was made by Bronfenbrenner, Harding, and Gallwey (6). Having taken into account all the research described thus far, their goals were these:

1. The formulation of a conceptual framework for the analysis of skills in social perception.
2. The development of methods for measuring skill in interpersonal sensitivity and sensitivity to the generalized other, which are (a) operationally independent, and (b) uninfluenced by the degree of similarity between the judge and the person or group being judged; or lacking this, accompanied by an estimate of the degree to which the measure reflects--over and above such similarity--bona fide recognition of properties of the "other."
3. Investigation of the general hypothesis that interpersonal sensitivity and sensitivity to the generalized other represent different abilities or skills (i.e., their intercorrelation is low).
4. Investigation of the general hypothesis that persons scoring high on interpersonal sensitivity will exhibit different personality and behavioral characteristics from those scoring high on sensitivity to the generalized other.
5. Analysis of the personal biases affecting judgment of others and the conditions under which such biases may lead to accurate prediction.

6. A re-evaluation, in the light of 1 to 5 above, of the problem of measuring skills in social perception, with recommendations of strategy for future research. (6, p. 41)

The authors were not consistently successful in achieving each of these goals, as we shall see.

1. Their success in formulating a conceptual framework for the analysis of skills in social perception cannot be measured in objective terms. Instead, the framework itself can be presented briefly, with the personal opinion that it is meaningful, logical, and capable of translation into operational constructs, thus usable in psychological research. They divide social sensitivity into several hypothetical skills, according to the social object to be judged and the type of judgment to be made. As regards social object, they hypothesize these skills: (1) sensitivity to the generalized other, which involved an awareness of the typical response of a large class or group, (2) sensitivity to group differences, and (3) sensitivity to individual differences. Predicting the responses of a small face-to-face group would require both (1) and (2). Predicting the responses of a particular individual would require (1), (2), and (3). As regards the type of judgment to be made, they distinguish the following (1) Non-personal sensitivity, by which we make prediction which have no personal reference. (The Loyola Language Study would fit into this classification.) (2) First-person sensitivity, by which we predict others' reactions to ourselves. (Predicting one's own sociometric status, for example.) (3) Second-person sensitivity, by which we predict others' reactions to themselves. (Predicting others' responses on a personality questionnaire.) (4) Third-person sensitivity, by which we predict another's reaction to a third person, or the group reaction to someone outside

the group. (Predicting the popularity of our President in South America, for⁵⁶ example.) The authors suggest that each of the various combinations of social object and type of judgment may represent a separate skill in social perception. If this is true, we should not look for a general trait of social sensitivity. Nor should we be surprised at finding a lack of correlation between various measures of social perception. They may be measuring skills which are quite different among themselves.

Another part of their conceptual framework involved the process of prediction itself. They point out that accuracy of prediction is a function of at least four factors: (1) direct observation by the judge of the objective properties of the person or group being judged (the social object). (2) Previous knowledge not based on personal observation. (3) The feelings of the judge toward the social object. (4) The judge's own attitudes or perceptions with respect to the content and the referent being evaluated.

When information is available from either (1) or (2), accuracy of prediction will be influenced in large measure by the accuracy of this information. To the extent that previous information is lacking, accuracy becomes a function of (3) and (4). More specifically:

The more favorable the judge's orientation towards the person or group being judged, the more likely he is to predict that the attitudes or perceptions of this person or group toward a particular content will be similar to his own; that is, the more the judge likes the other, the more likely he is to assume similarity. (6, p. 93)

The authors take no notice here of the circularity of this last statement. Instead, they go on to discuss in detail the interactions among the judge, the social object, and the content of the judgments, and how these affect the results of a test of social perception. These are essentially the same interactions discussed by Hastorf, Bender and Weintraub (35), and by Gage and

Cronbach (25), but presented here in a somewhat different form and integrated⁵⁹ into their own conceptual framework:

(a) If the judge and judged have similar views about the same content, and if the former is favorably disposed to the latter, the judge is likely to assume similarity and be correct.

[Compare Gage and Cronbach's Warranted Assumed Similarity.]

(b) If the views are similar but the judge is unfavorably disposed, he is likely to assume dissimilarity and be incorrect.

[Unwarranted Assumed Dissimilarity.]

(c) If the views are dissimilar and the judge is favorably disposed toward the person or group being estimated, the outcome is determinate only if the predictions are made in terms of a polar scale, i.e., one which varies along a single continuum. Under such circumstances the predictor will assume dissimilarity and turn out to be correct.

Warranted Assumed Dissimilarity. (25, P. 93)

Thus, while their conceptual framework is not entirely original, it performs the service of organizing the contributions of earlier researchers into a useful and meaningful outline.

2. In their second goal, the development of a "pure" measure of social sensitivity, uncontaminated by similarity, real or assumed, between judge and object, they were no more successful than those who had tried before them. They tried various statistical maneuvers, for partialing out similarity, for calculating "level," "spread," "profile accuracy," etc., but found their "pure" measure to have as many faults as any other measure. They conclude with a qualified endorsement of the conventional accuracy score as the best of an inferior lot.

In summary, we have a certain measure of success to weigh against a certain measure of failure. For unsuccessful in our attempt to develop a satisfactory "pure" measure of ability in sensitivity to the generalized other, we have been able to demonstrate that in our experiment the conventional accuracy score was predominantly a function of genuine skill in social perception. Although factors associated with the judge's characteristic pattern of response (level and spread) and with his similarity to the group

affected the accuracy score, these influences are always overshadowed by the component attributable to recognition of objective properties of the external social world. In the light of these facts and in the absence of a satisfactory "pure" measure, the accuracy score must remain our best choice for assessing ability to recognize the generalized other. Clearly, it is preferable to such other indices as the simple or partial correlation coefficient or the "adjusted" score, on grounds both of reliability and of ease in computation. Some caution must still be exercised in its use as an ability measure, of course, in view of its susceptibility to extraneous influences. (6, p. 92)

3. Their results supported the hypotheses that interpersonal sensitivity and sensitivity to the generalized other do represent different abilities or skills. The correlation between measures of the two skills was essentially zero.

4. Behavior correlates of the two variables were also quite different, strengthening the evidence for the existence of two different skills rather than a single generalized ability.

5. The analysis of personal biases and how these can lead to accurate prediction was discussed in the section on their conceptual framework above.

6. Their suggestions for future research include utilizing social situations rather than questionnaires as the context for research operations, and securing data on the spontaneous observations and behavior of subjects.

In the next chapter we shall discuss the design of the experiment and the procedures used. Before doing so we should acknowledge the limitations of this design as they have been pointed out by Cronbach (15, 16), Gage and Cronbach, (25), Hastorf and Bender (34), Hastorf, Bender, and Weintraub (35), Tagiuri (61), and Bronfenbrenner (6, 7). Such sharp criticism might have tempted us to abandon the design altogether in favor of a better one, if a better one had been presented. But in the absence of a proven alternative method we have decided to go ahead, keeping in mind the artifacts and

extraneous influences on the correlations we will compute, and using extreme caution in our interpretations. This same practical conclusion had been reached by Bronfenbrenner, et al. (6), who after their unsuccessful attempt to develop a "pure" measure of social sensitivity by partialing out similarity, eventually returned to the conventional methods and the conventional accuracy score as an acceptable approximation to a "pure" measure. They were not unaware of its shortcomings, but they justified continued use of it, using these lines of reasoning based on their own experimental results. First, they pointed out that:

As expected, the correlations between Real Similarity, on the one hand, and Total and Profile Accuracy on the other, are positive and significant (.21 and .35 respectively). The coefficients are sufficiently low, however, to suggest that the accuracy scores are substantially independent of the judges' own self-ratings and hence reflect the operation of genuine sensitivity to group response. (6. p. 88)

Next, they found a "sharp" drop in the average level of their score for Real Similarity (.66) compared to that for Profile Accuracy (.80). This is taken as another bit of evidence that sensitivity or skill influences the accuracy score along with similarity to the group.

They also found such evidence in the strikingly high correlation (.87) between Assumed Similarity and Real Similarity. Although his subjects did assume similarity, as was expected, they did not do so uncritically. The typical person knew he was typical, and the eccentric person knew he was eccentric.

Finally, when they had developed their index of Differential Profile Accuracy by partialing out the judge's similarity to the group, they found that, besides being relatively high itself (.65), it also correlated substantially with Profile Accuracy and Total Accuracy ($r = .69$ and $.62$

respectively). This led them to conclude that "virtually any type of accuracy score--including the conventional score--is likely to reflect in substantial degree the operation of a genuine ability in social perception". (6. p. 91)

There are other reasons for our retention of the conventional methodology. One of our major hypotheses is that the Loyola Language Study score is essentially an accuracy score of the same sort as the Conventional accuracy scores in social perception studies. We wanted to test this hypothesis by utilizing methods similar to those used in these same social perception studies. (We will also investigate the possibility that some of the criticisms of the conventional accuracy scores should be applied to the Loyola Language Study accuracy score).

Also, we felt that this was not the place to attempt to develop a superior methodology, a formidable task at which several very competent investigators have failed in recent years. At best, this would constitute a research project in itself.

We will keep in mind that most of the criticism falls upon those who make unwarranted interpretations of the correlations because they are unaware of the artifacts involved. Our awareness of these will prevent such a mistake. We can follow the suggestions of some of the critics who urge the direction of attention toward processes and interactions, substituting discussion of inter-relationships for blind interpretation of the correlations.

Finally, not all our conclusions need depend upon the correlations criticized. Our hypotheses differ from those in many of the studies criticized because of our focus on the Loyola Language Study.

CHAPTER III

DESIGN OF THE EXPERIMENT AND PROCEDURES

Subjects

The subjects in this experiment were 137 enlisted men enrolled in the U.S. Navy Hospital Corps School, Great Lakes, Illinois. They were being trained in a 14-week course preparing them for duty as Hospital Corpsmen at Naval Hospitals, shipboard dispensaries, and other medical installations. They ranged in age from 17 to 30, with a mean age of 19 years. The standard deviation of this highly skewed distribution is 2.11. The modal age of 18 is probably more representative. Their mean IQ, as estimated from their Navy Classification Scores, was 107, with a standard deviation of 13.9 IQ points. Their educational level ranged from eighth grade through three years of college, with a mean grade level of 11.5 years, and standard deviation of 1.13 years. Of course, 12 years was the modal grade level. They had all completed at least two months in the Navy before being assigned to the Hospital Corps School.

The School is organized into companies of 25-40 members, who follow the same schedule in the same classrooms for the entire fourteen weeks. Four companies were chosen to participate in this experiment. Every effort was made to include all the men in the companies, but a small number were unable, for various reasons, to complete all the assignments, and had to be eliminated.

Administration

T The testing was completed for each company in two sessions, each about

two hours in duration, spaced one week apart. Each session included one version of the word-association test, as will be described below, and the corresponding version of the Guilford-Zimmerman Temperament Survey. For example, the first two companies (and part of the fourth) took the Free Association Study and the GZTS at the first session, and the Loyola Language Study and GZTS Prediction Study one week later. The third company (and the remainder of the fourth) took the same sets of tests, but in reverse order, with the LLS and GZTS Prediction Study at the first session. The two groups were approximately equal in size (70 vs. 67 members). The purpose of this arrangement, of course, was to cancel out any effect of the order of presentation. Such an effect would probably not have been serious. Trainor (63) had shown that order of presentation is not a factor which has to be taken into account when analyzing the differences between free and controlled association.

All the sessions were held from 2:00 to 4:00 P.M. on weekdays in Hospital Corps School classrooms, with the students seated at individual desks. This time was made available by their instructors, and all students were expected to participate in the experiment. Assurances were given at each session that the results of all the tests would be held confidential, and would not be available to anyone. However, if any individual wanted to discuss his own performance, this opportunity would be granted at his request. It was felt that this would help motivate the subjects to answer honestly and to put forth more effort toward making accurate judgments. It was also a token reward for their efforts.

Measures

1. The Free Association Study. This test consists of eighty stimulus words (originally chosen at random from the Kent-Rosanoff Association Test

for use in the Loyola Language Study) presented in a folder with the following instructions:

When the people see or hear a word, they often think of another word. If you say the word stem, many people would think of flower. This study wants to find out what word you think of when you see each of the words on the next two pages. Please write next to each of the words the one word you think of when you see the word in the list.

2. The Loyola Language Study. The same eighty stimulus words as used above were presented in the standard ILS folder with its instructions:

When people see or hear a word, they often think of another word. If you say the word stem, most people would think of flower. Some, but not the greatest number, might think of pipe, grass, stop, and so forth. This study wants to find out what word you think the greatest number of people would be most likely to think of when they see or hear each of the words on the next two pages. Please write next to each of the words the one word which you think the greatest number of people would be most likely to think of when they see or hear the word in the list. Take as much time as you need to think about the word which seems to you to "go along" with each printed word. Then choose the one word which you think the greatest number of people would be most likely to think of when they see or hear the given word. Write the one word which you choose beside the printed word. Do not skip any word. Remember, you are not asked to write down just any word that comes to your mind. You should write down the one word which you think the greatest number of people would be most likely to think of.

3. The Guilford-Zimmerman Temperament Survey. The design of this experiment would have permitted the use of any set of questions which could be answered by the subjects, who would then be asked to predict the responses of the group as a whole to the same questions. It was decided to use questions from a nonprojective personality inventory for several reasons: (1) The questions would have high interest value. People enjoy answering questions about themselves. (2) The questions would have no "correct" answer in the usual sense. They would not be a measure of intelligence or achievement as such. (3) The questions would have "face validity" in the sense that the subjects would see that they were taking a standardized test through which

they might learn more about themselves. (4) Such a test provides scores on various personality traits, which, to the degree they are valid, provide additional information about the subjects themselves. (5) Tests of this sort have been used extensively in past studies on social perception, and one of the aims of this experiment is to compare the Loyola Language Study with these past studies.

For these reasons, the questions on a non-projective personality inventory were deemed clearly superior to any other set of questions which might have been assembled for this purpose. The problems of which personality inventory to select was not so easily solved. All the available inventories were considered carefully. Among those considered and rejected for various reasons were these: The Empathy Test, the California Psychological Inventory, the California Tests of Personality, the Edwards Personal Preference Schedule, the Gordon Personal Inventory, the Minnesota Multiphasic Personality Inventory, and the Sixteen Personal Factor Questionnaire.

The attributes sought in an inventory were these: (1) It should be designed to measure "normal" people, and not psychiatric patients. (2) It should not be excessively long. (3) It should be carefully and scientifically designed, according to accepted standards of test design. (4) It should have found acceptance as a research tool, as evidenced by its repeated use in other studies of this general type. (5) It should yield scores which show some promise of being meaningful in relation to performance on the Loyola Language Study. (6) Its validity and reliability must compare favorably with those of other inventories of the same type.

Without discussing in detail the rejection of each of the other tests, we can point out that the Guilford-Zimmerman Temperament Survey meets all

these requirements better than any other inventory that could be found. Some may surpass it in one or another aspect, but none was found to meet all the requirements as well as the Guilford-Zimmerman Temperament Survey.

The test consists of 300 questions selected from three earlier inventories yielding ten trait scores identified by factor-analytic procedures: General activity, Restraint, Ascendancy, Sociability, Emotional stability, Objectivity, Friendliness, Thoughtfulness, Personal relations, and Masculinity. The questions were administered to the subjects, using the standard instructions with one important change. The instructions were read aloud to the subjects:

In this booklet you will find a number of statements. Read each statement carefully. If the statement is true, or if you agree with it, mark answer "yes" on your answer sheet. If the statement is more false than true, or if you disagree with it, mark "no". If you cannot decide between "yes" and "no" you may mark answer "?". BUT AVOID DOING THIS IF POSSIBLE.

At this point the change was introduced. The subjects were instructed that no "?" answers would be accepted. They were forced to make a choice between "yes" and "no". Linden (42) has shown that no serious violence is done to the results of the test by making this change. The instructions continued:

Be sure to answer every item. There are no "right" or "wrong" answers in the usual sense of a high score being necessarily the best. The purpose of this survey will be served best if you describe yourself and state your opinions as accurately as possible. You may notice that many items are similar. Actually, no two items are exactly alike. Notice that the numbering of items on the answer sheet follows across the rows rather than down the columns. You may turn the page and begin with the items now unless the examiner tells you to wait.

Standard IBM answer sheets were used.

4. The GZTS Prediction Study. This is the measure in which the subjects

were asked to predict the response of the group as a whole to the same questions asked on the GZTS itself. This is a task comparable to the Loyola Language Study, in which subjects are asked to predict the most common response to the eighty stimulus words.

Originally, it was planned to follow the same procedure, to ask the subjects to predict the more common response on each of the 300 GZTS questions. But the survey of the literature showed that other studies of this type followed a somewhat different procedure. It had been discovered that subjects tend to ask themselves first, "How would I respond?" then they estimate to what extent people in general would agree with their own response. Thus we find, in studies by Travers (65), Wallen (71), Wood (74), and Taft (60) that the subjects are asked first to respond to each question, then immediately afterward to estimate the percentage of the referent group who would answer the same as they did. This procedure, though much more difficult and time-consuming to score, was felt to have several advantages over the original method. It gives us the opportunity to observe to what extent their own answers vary from one administration to another. It provides more sensitive accuracy measures.

Since this is a relatively difficult task, it was felt that 300 questions were too many to include in this measure. Attention and motivation would be very difficult to maintain over such a lengthy task. The tendency to guess wildly would be increased. General accuracy and the validity of the measure would suffer if all the questions were used. So it was decided to use only 100 of the 300 GZTS questions for the GZTS Prediction Study.

Several requirements governed the selection of the 100 questions to be

used. (1) The ten scales should be equally represented in the shorter form, as they are in the standard form, with ten questions chosen from each scale. (2) The ten questions chosen should discriminate high and low scores on each scale as well as the entire 30 questions discriminate them. (3) The 100 items selected should have as wide a range of preference as the entire test has, without a preponderance of questions at any single preference level. For example, if a large number of questions were answered "yes" by 95% of the subjects, then anyone with a response set to answer in this way would have a spurious advantage. (4) To facilitate comparison with the original form, it was desirable to use the same type answer sheets. (5) If these sheets were used, it was also desirable to follow some regular order, rather than ask the subjects to skip erratically from one question to another in no observable pattern.

Fulfilling the latter requirements first, every third row on the answer sheet was selected, giving, of course, a total of 100 questions. This facilitated administration and scoring of the tests, and avoided confusion and complication for the subjects, since their answer sheets were clearly marked in this manner. Then the 100 questions thus selected were submitted to tests and were seen to meet the former requirements satisfactorily.

Since it was impossible to tell in advance how our own subjects would answer the questions, the figures for discrimination and preference values had to be taken from an earlier study in which the GZTS had been shortened. Linden (42) used subjects about the same age as our own, and found a mean discrimination value for the entire test of .4942. The 100 questions selected for our Prediction Study have a mean discrimination value of .4827. He found

a mean preference value for the entire test of .5795, with a mean deviation of .1462. The mean preference value for our 100 questions was .5885, with a mean deviation of .1558. Thus, in terms of these variables which might affect our results, the 100 questions selected for the Prediction Study are comparable to the 300 questions on the entire test. There is a tendency for the answers on all the questions to be split rather evenly between "yes" and "no."

The 100 questions selected for this study were mimeographed and placed in a four-page booklet, with the following instructions on the first page:

In this study you are given 100 questions to answer "yes" or "no". (Although there is a space on the answer sheet to mark (?), this space is not to be used. You must choose either "yes" or "no".

After you have marked your answer sheet "yes" or "no", write beside your answer the percentage of male HCS students you think would answer the same as you did. For example, a question might read: "You have very few headaches". Suppose you answer "yes". Then estimate what percentage of your fellow male HCS students would also answer "yes". If you think all of them would, write 100%. If you think none of them would, write 0%. If you think they would split somewhere in between, write some percentage between 0% and 100%. If you answer "no" to a question, then estimate what percentage would also answer "no". Always write the percentage you estimate would answer the same as you did. However, you must not use 50% for your estimate. If you think it would be an even split, choose some percentage near the middle, but do not choose exactly 50%.

You will notice that the questions are not in strict numerical order. They are in groups of five, skipping ten between groups. This means that on the answer sheet you go across the first line, then skip two lines to the arrow, go across that line, then skip two more lines, etc. This will not be as hard as it sounds, because the answer sheets are marked in this manner for your convenience.

Remember, you must not use the (?) space in the answer sheet. Answer "yes" or "no", whichever is more correct for you. And for your estimate of what percentage of male HCS students would answer the same as you did, you may use any percentage between 0% and 100%, except for exactly 50%.

Standard IBM answer sheets were used for this test also, with an arrow placed beside each line where the answers to the 100 questions belonged.

After each answer a percent sign was placed, to remind the subjects and to save them the trouble of writing that symbol each time.

Thus, a total of four tests were administered to each subject:

1. The Free Association Test.
2. The Loyola Language Study.
3. The Guilford-Zimmerman Temperament Survey.
4. The Guilford-Zimmerman Temperament Survey Prediction Test.

On the basis of this group's responses to the "self-report" forms of these tests (#1 and #3), two sets of group norms were assembled to make a total of six measures.

5. The Word-Association Group Norms. These were assembled by tabulating all the free-associations of this group to all the words on the Loyola Language Study. When these tabulations had been completed, the single word given most frequently by the group became the norm. Deriving separate norms for our own group was deemed desirable because it avoided many problems which might have arisen in comparing our group with norm groups in other studies. The selection of this particular method of tabulation is discussed below.

6. The Guilford-Zimmerman Temperament Survey Group Norms. These consist merely in the percentage of "yes" and "no" answers given for each GZTS question by our group of subjects.

Relationships found between various combinations of these six measures will provide us with the scores we are seeking.

A. The Word-Association Assumed Similarity Score. This score is a measure of the relationship between (1) and (2), between a subject's free associations and his predicted association (on the ILS). It was determined by counting how many times the subject gave the same word both as his own free

association and as the word association he estimated to be most common among his peers. The name "Assumed Similarity", which is the standard name for this type measure, might seem to imply a conscious or unconscious assumption of similarity to the group on the part of the subject. But obviously this is not necessarily a valid implication, since there are other possible explanations of a high "assumed similarity" score. For example, lack of interest, failure to understand the directions, failure to maintain the proper set, inability to concentrate, lack of motivation, all might cause a subject to give the same answer both times, and thus get a high "assumed similarity" score. Nevertheless, this score is usually taken as a measure of a subject's tendency to project his answers upon the group as a whole, or to assume that his answer is the same as that of the majority of people.

To arrive at this score, the subject's Free Association answers were placed side by side with his Loyola Language Study answers, and all identical pairs were counted, using a Veeder-Root mechanical counter. In order to be counted as identical, the two words had to be the same in every way. Different forms of the same word, such as present and past tense, singular and plural number, were not counted as identical. Minor differences in spelling were disregarded, however, if the words were otherwise identical. The possible range for these scores was, of course, 0-80. They actually ranged between 4 and 54.

B. The Word-Association Real Similarity Score. This score is a measure of the real similarity between (1) and (3), between each subject's free associations and the most common free associations of his fellow students. Before this could be measured, of course, all the free associations had to be

tabulated. It was decided to do this and derive norms for this group rather than use frequency tabulations from other studies. This avoided the problems that might arise from comparing this group with others which might differ in crucial aspects.

Once the tabulations were made, there were, of course, various possible ways of comparing each individual's free associations with the master lists to arrive at a real-similarity score. Several scoring systems have been described by Herr (37). These include the standard-score method, the geometric progression method, and the median method. However, since all that was desired here was scores which could be compared with one another by ranking, these relatively complex systems were rejected in favor of one which merely required comparing each free-association given by each subject with the one most common free-association for the group as revealed by the tabulations. Even with this simplified method, 21, 920 word-comparisons were necessary to derive this and the following score, and it was felt that the greater accuracy which could be achieved with a simpler method would compensate for any sacrifice in refinement which might have resulted from a more complex scoring system. The scores will not be compared with those in any other study, but only ranked among themselves, and there is no reason to consider the rank resulting from this method as any less valid than the rank obtained using a more complex method. A pilot study using 25 subjects from this group showed that this method correlates .86 with the median method.

Of course, for some stimulus words, there was no overwhelming preference for any one free association, but there was always one word which was preferred over the others more often. Each subject was given a score

indicating the number of times his own free association was identical to this most common association in the group. These scores had a possible range, then, between 0 and 80. They actually ranged between 3 and 43.

C. The Loyola Language Study Score. Relating (2) and (3), this is a measure of the accuracy with which each subject is able to predict the most common word associations of his peers. It was determined by simply counting his predictive successes, that is, counting how often his prediction was identical with the word actually found to be the most common free association of his peers. These scores, too, had a possible range of 0-80. The actual range was 11-44.

D. The Guilford-Zimmerman Assumed Similarity Score.

This is one of the standard measures of the degree to which a subject assumes that his own answer will be the same as the answers of the others in his peer group. Although they have the same name, this score is not necessarily comparable to the Word-Association Assumed Similarity Score, as will be seen from the way it was derived. To obtain this measure, each subject was asked directly, after each question, "What percentage of your fellow HCS students do you estimate answered this question the same as you answered it?" Each time his estimate exceeded 50%, that is, each time he estimated that the majority of his peers answered as he did, he was given one credit. The credits were then simply summed to determine his GZ Assumed Similarity Score. The possible range of these scores was 0-100, the actual range 15-100.

A much more detailed, and possibly more accurate method of arriving at this score would be to give each subject credit for the actual percentage of people agreeing with him on each question. But, again, the subjects were

ranked on the basis of these scores, and the more complex procedure would not necessarily result in a more valid ranking of the subjects. The method selected is the one used by Taft (59) in computing his "self-insight" score, and is regarded as satisfactory for our purposes.

E. The Guilford-Zimmerman Real Similarity Score.

This score measures the relationship between (4) and (16) above. At the completion of all the testing, the 137 GZ IBM answer sheets were scored at the Naval Examining Center, Great Lakes. At the same time the various scale scores were being recorded, the scoring machines also recorded the number of "yes" and "no" answers given for each question. With this information, the papers were all scored again to determine how often each subject gave the same answer as the majority (over 50%) of his peers gave. The possible range here was 0-300, the actual range 131-232.

F. The Guilford-Zimmerman Accuracy Score (GZ-ACC).

This score measures the relationships between (5) and (6) above. On the GZTS Prediction Study, each subject was asked to answer 100 GZ questions and to write beside his answer the percentage of his fellow students he estimated would answer the same as he did. The actual number of answers having been recorded above, it was a simple matter to determine exactly what percentage actually answered the same as each subject answered each question. The predicted percentage was subtracted from the actual percentage for each question, and each subject was given a score which was the mean difference between his own estimates and the actual percentages. These mean differences ranged from 10.87 to 44.01.

G. Trait Scores on the Guilford-Zimmerman Temperament Survey.

Obviously, any set of questions about personality and behavior would have been suitable for deriving scores for Assumed Similarity, Real Similarity, and Accuracy as above. One of the main reasons for selecting the 300 questions on the Guilford-Zimmerman Temperament Survey was the potential usefulness of the ten trait scores. These were carefully identified by factor-analysis procedures which fairly well assure their internal or factorial validity. The question of their practical validity is discussed in the review of the literature. The ten traits do represent fairly well-defined dimensions of personality, though there are a few relatively high intercorrelations, indicating some overlap among similar traits. The fact that this group of subjects was forced to answer either "yes" or "no" and not permitted any "?" answers, might be expected to influence the trait scores. Since the "?" answers are ordinarily given a weight of zero, they influence a trait score in a negative direction. So the forced-choice method might have a tendency to raise all the trait scores somewhat. In his study with forced-choice forms, Linden (42) did not find this result. But even if this were true in our experiment, the trait scores obtained were then ranked for purposes of comparison and any distortion would not influence the ranking substantially. Our mean trait scores were not, as a matter of fact, consistently above the norms as reported in the manual

The ten scores are deemed to measure the following traits:

1. (G) General Activity. Energy, as opposed to inactivity-slowness.

A high score indicates strong drive, energy, activity.

2. (R) Restraint. Seriousness, as opposed to impulsiveness. Optimal scores here fall somewhat below maximum, which show over-restraint. The

happy-go-lucky carefree individual gets a low score.

3. (A) Ascendance. Social boldness as opposed to submissiveness. High scorers tend to show leadership habits, enjoy speaking in public, and persuading others.

4. (S) Sociability. Social interest, as opposed to shyness-seclusiveness. The high and low scores indicate the contrast between the person who is at ease with others, enjoys their company, and readily establishes intimate rapport and the withdrawn person who is hard to get to know.

5. (E) Emotional stability. A high score indicates optimism and cheerfulness as well as stability, and a very low score is a sign of poor mental health, depression, neurotic tendencies.

6. (O) Objectivity. High scorers here are less sensitive and self-involved. Low scorers are touchy, hypersensitive.

7. (F) Friendliness. This is opposed to hostility in one form or another. A high score may reflect an urge to please, a desire to be liked, or even pacifist tendencies.

8. (T) Thoughtfulness. High scores indicate introversion, reflectiveness as opposed to the thoughtlessness and lack of tact found in many extraverts.

9. (P) Personal relations. High scores here indicate a general ability to get along with others, tolerance, non-critical attitudes toward others.

10. (M) Masculinity. A high score indicates that the person behaves in ways characteristic of men. He is interested in masculine activities, not interested in clothes and styles, hardboiled, not easily disgusted. These are the ten traits identified by Guilford's factor-analytic procedures.

H. Other scores. Besides all the above scores, certain other variables

were thought to have interest because of their possible relationship to social perception or the Loyola Language Study. Such other factors as intelligence (as measured by the Navy General Classification Test) and final grades in the Hospital Corps School were recorded and the subjects ranked with respect to these variables.

Statistical Treatment

The next step, after all these scores were obtained, was to find a way to compare them with one another in a meaningful way, to obtain the correlations needed for rejection or nonrejection of the hypotheses. The usual measure of correlation, of course, is the Pearson product-moment correlation coefficient r. But this statistic requires scores which represent measurement in at least an equal-interval scale. And if we wish to test the significance of an observed value of r, we must not only meet the measurement requirement, but we must also assume that the scores are from a bivariate normal population.

Since the scores in this study do not clearly meet the first criterion, it was decided to use a nonparametric correlation coefficient. The two measures which would be applicable here are the Spearman rank correlation coefficient rho and the Kendall rank correlation coefficient tau. Both are suitable for use with variables which can be measured on an ordinal scale. They are equally powerful in rejecting null hypotheses, having 91 per cent power-efficiency when compared with Pearson's r.

The Spearman coefficient was developed earlier, is perhaps better known, and is somewhat easier to compute. It was chosen over Kendall's tau, not for any strong positive reason, but because the Kendall coefficient had no advantage strong enough to outweigh the above assets.

Since the range of many of the scores was considerably below 137, the number of subjects, it was obvious at the outset that there would be a large number of ties. Ties have a negligible effect on the value of rho, but even this effect can be corrected with the use of special statistical procedures, which were adopted here.¹

All the rho values were then tested for significance, using the standard tables for Student's t.²

The ranking of the various scores, once they had been assembled and recorded, was done by the Machine Accounting Office, U.S. Naval Hospital, Great Lakes, using standard IBM equipment. IBM data cards were already on file for each subject, with basic background information already punched in. New cards were set up for the above scores, which were then placed in rank-order by an IBM sorter. Ties were noted automatically, and the usual procedure followed: The tied scores were given the average of the ranks they would have received if there were no ties. The ranked scores were then re-sorted into subject number order so that the comparisons could be made, and the sums of squares for the Spearman formula were computed using an IBM Automatic Calculator. The raw scores and ranks are found in Appendix IX and Appendix X.

¹The following formula was used:
$$\rho = \frac{\sum x^2 + \sum y^2 - \sum d^2}{2\sqrt{\sum x^2 \sum y^2}}$$

$$T = \frac{t^3 - t}{12}$$

$$\text{where } \sum x^2 = \frac{N^3 - N}{12} - \sum T_x$$

$$\text{and } \sum y^2 = \frac{N^3 - N}{12} - \sum T_y$$

²The formula for computing t:
$$t = \rho \sqrt{\frac{N-2}{1-\rho^2}}$$

CHAPTER IV

PRESENTATION AND DISCUSSION OF THE RESULTS

It will be recalled that each subject in our experiment was administered four tests:

1. The Free Association Test (using Loyola Language Study words).
2. The Loyola Language Study.
3. The Guilford-Zimmerman Temperament Survey.
4. The Guilford-Zimmerman Temperament Survey Prediction Study.

On the basis of the group's responses to the "original" forms of these tests, (#1 and #3), two sets of group norms were assembled:

5. Loyola Language Study Group Norms.
6. Guilford-Zimmerman Temperament Survey Group Norms.

Various combinations of these measures will give us the scores which can then be combined to provide empirical tests of our six basic hypotheses:

- A. The Word-Association Assumed Similarity Score, relating (1) and (2).
- B. The Word-Association Real Similarity Score, relating (1) and (5).
- C. The Loyola Language Study Score, relating (2) and (5).
- D. The Social Perception Assumed Similarity score, relating (3) and (4).
- E. The Social Perception Real Similarity score, relating (3) and (6).
- F. The Social Perception Accuracy Score, relating (4) and (6).

In the earlier account of the derivation of the scores, it was explained that the Social Perception Assumed Similarity Score (D) does not directly

relate (3) and (4). A different method was adopted, at considerable expense of time and energy, in the hope that more useful information would be provided.

It is in the relationships between various combinations of these measures that we will find the results which will allow us to accept or reject our basic hypotheses. These relationships can be visualized in Table I., where the Spearman rank-difference correlations are shown for each pair of measures. The t tests for significance show that correlations of .167 and above are significant at the .05 level of confidence, while correlations of .218 and above are significant at the .01 level of confidence.

First we will look at our basic hypotheses in the light of the correlations in Table I.

Hypothesis I. The Loyola Language Study score is actually an accuracy score, measuring the accuracy with which an individual perceives the general public (the generalized other). It does this by measuring his ability to estimate what words are most frequently associated to those in the stimulus list. As such an accuracy score it should be positively correlated with other accuracy scores of this nature which have been designed to measure this same ability to perceive the general public (the generalized other).

Table I shows that the correlation between the Loyola Language Study score and the Social Perception Accuracy score is .02, showing essentially no relationship whatsoever. This suggests that the Loyola Language Study score is not a measure of sensitivity to the generalized other, that the Loyola Language Study does not measure social perception, or at least not the type of social perception measured in the traditional way. We will

TABLE I
CORRELATIONS AMONG THE SIX BASIC SCORES

	B. Word Association "Real Similarity"	C. LLS Score	D. Social Perception Assumed Similarity	E. Social Perception Real Similarity	F. Social Perception Accuracy
A. Word Association "Assumed Similarity"	.65	.48	.08	.04	.08
B. Word Association "Real Similarity"		.50	-.01	-.15	.11
C. LLS Score			.06	.19	-.02
D. Social Perception Assumed Similarity				.15	.19
E. Social Perception Real Similarity					.10

want to discuss this finding, since it does not support our hypothesis, but first we will go on to the other hypotheses.

Hypothesis II. The Loyola Language Study score is influenced in great degree by the "typicality" of the subjects' own free associations and by their tendency to give these free associations as their predictions of the group response.

Two correlations are directly involved here: the correlation between the Loyola Language Study score and the Word-Association Real Similarity Score, and the correlation between the Loyola Language Study score and the Word-Association Assumed Similarity score. These two correlations are seen in Table I to be .50 and .48 respectively, indicating a significant and relatively high correlation. These findings substantiate our hypothesis and indicate that a considerable portion of the Loyola Language Study score is accounted for by these two tendencies. This does not necessarily mean that no skill is operating at all here. The fact that the correlations are not perfect shows that the influence of these factors is not overwhelming. In fact, the even higher correlation (.65) between real similarity and assumed similarity shows that these people who are really similar to the group tend to "assume similarity" more than those who are not really similar. So they are warranted in their assumption (if it really is an assumption on their part). Thus we can say that to a considerable degree the Loyola Language Study measures real similarity to the group in word-association, but there is probably some skill operating here, since the ability to score high involves more than just being similar to the group.

Hypothesis III. The Loyola Language Study score is influenced in great

degree by the subjects' "typicality" or real similarity to group norms in overall personality characteristics.

The correlation involved here is the one between the Loyola Language Study score and the Social Perception Real Similarity score. This correlation is .19 which is significant at the .05 level, but is not very high. We could say our hypothesis is supported except that the influence of a person's "typicality" in personality characteristics is not large in a group of "normal" subjects. Previous studies, and extrapolation of our results here, tell us that this factor of real similarity to the group has an increasing influence as the dispersion along this continuum increases. The most "atypical" people, hospitalized schizophrenics, score much lower than normals. It is interesting to find that even within our normal group, this relationship remained significant.

So we can say that to a limited degree the Loyola Language Study is a measure of "normality" or typicality in personality characteristics. But a large portion of the Loyola Language Study score remains unaccounted for in these terms.

Hypothesis IV. The tendency to give free associations which are the same as those given most commonly by one's peer group is related to real similarity to the group in personality characteristics (as measured by questions on a standard personality questionnaire).

Here we are looking for the correlation between the two types of real similarity: real similarity to the group in word-associations, and real similarity to the group in personality characteristics. Common sense tells us to expect a significant positive correlation, and this expectation is strengthened by the fact that the Loyola Language Study score was found to be significantly

correlated with both. However, in Table 1 we find a correlation of $-.15$, which is not significant, though it approaches significance in a negative direction. This finding is most surprising, and difficult to account for. Apparently the Loyola Language Study score depends to a great degree on real similarity of word associations, and to a much smaller degree (in this population, at least) on real similarity of personality characteristics. For these two types of real similarity to be found not significantly related is possible, but surprising. We would place the blame for this finding on the restricted range of our subjects along the personality continuum. From our common sense and from what is known of free-association tests, we can hypothesize that this trend would be reversed in a group with wider variations in personality characteristics.

Hypothesis V. The tendency of a subject to give his own free associations when asked to predict the most common free association to a given word (e.g., on the Loyola Language Study) is related to the tendency to assume similarity to one's peers by predicting directly that a majority would agree with him in answering questions about themselves.

The correlation between these two tendencies, which are both labelled "assumed similarity," is $.08$, showing essentially no relationship between them. How we will interpret this negative finding depends upon our own assumptions. We recall that what we have called the Word-Association Assumed Similarity score does not necessarily imply any conscious or unconscious assumption of similarity on the part of the subject, as does the Social Perception Assumed Similarity score. The Word Association score bears this name only because it is in effect an "assumed similarity" measure and follows the traditional

methodology for such measures as found in social perception literature. We can consider our empirical test here as a test of whether or not this Word-Association Assumed Similarity score does represent such an assumption on the part of the subjects. The fact that it is not correlated with the other measure of assumed similarity can be taken as evidence that it is not. We could infer, then, that the tendency to give one's own free associations on the Loyola Language Study results from such other factors as carelessness, perhaps lack of interest or misunderstanding of the directions, combined with the fact that a certain proportion of each man's free associations are the most common, making it easy for him to give them often. Of course other interpretations of this finding are possible. We might infer that the tendency to assume similarity is not a general one and would not be expected to appear to the same degree with regard to word associations as it does with regard to questions about one's personality.

Hypothesis VI. The ability to predict how the majority of a group will answer questions on a personality questionnaire (which ability has been labelled sensitivity to the generalized other) is related to the subject's similarity to the group on these questions and to his tendency to assume he is similar to the group in this respect. But they are so related to a lesser degree than with the ability to predict word associations.

In testing this hypothesis we are asking if the strong relationships we found between real similarity, assumed similarity, and accuracy on the word-association test are also to be found between these measures on the social perception study using the personality questionnaire. (We remember that the methods used to derive these measures are somewhat different also.) The

correlations between accuracy of social perception and real similarity and between accuracy of social perception and assumed similarity are .10 and .19 respectively. The latter is significant at the .05 level, the former is not significant at all. Both are so low that we would infer that there is little or no relationship shown in our experiment between these two tendencies and accuracy of social perception. This leads to the further inference that those people who were accurate in their perception of how others would answer the personality questionnaire were displaying a skill in social perception which is relatively independent of their own real similarity to the group, and to a lesser degree independent of their tendency to assume similarity to the group. In the language of the social psychologists they were utilizing their sensitivity to the generalized other.

We next turn to an attempt to integrate these findings and interpret them in the light of past research. One general aim of this dissertation was to see what relationship, if any, exists between the Loyola Language Study and the ability to predict group response as it has been studied under the label sensitivity to the generalized other. We originally hypothesized that the Loyola Language Study was just another measure of this general ability to predict group response, but our findings would not support this hypothesis. We are now prepared to ask why this is so.

We note that three elements are involved in the hypothesis: (1) measurement, (2) a general ability to predict, and (3) group response. Our failure to find the expected correlation must be attributed to one or more of these elements.

First we will consider (3), the responses themselves. In the Loyola

Language Study, the subjects are asked to predict the most common free association to a number of stimulus words. In the social perception study the subjects are asked to predict how many people would answer a number of questions about themselves in a certain way. Certainly both of these are, in a broad sense, group responses to stimuli, but there are several differences between them, which may help to explain our findings.

First of all, they can be considered as differing in their degree of "observability", and some of our findings can be cited as indirect evidence of this. From a logical standpoint we can say that a person's free associations are not very observable. How can a subject come to know what responses would be given as free associations? On what will he base his predictions as to the most common of these? Bronfenbrenner et al. (6) have pointed out four possible bases for prediction of others' responses: (1) Direct observation by the judge of previous responses, (2) Previous knowledge not based upon personal observation, (3) the feelings of the judge toward the social object, that is, the person or persons making the responses, and (4) the judge's own attitudes or perceptions with respect to the content and the referent being evaluated. (By content they mean the response itself, by referent they mean whatever or whomever the response refers to. Some responses have no referent.)

In the case of the Loyola Language Study we can all but rule out factors (1) and (2). Direct observation and previous knowledge about others' free associations are not readily available to the judge. Factor (3), the feelings of the judge toward the group, may enter in to a degree, affecting, for example, his tendency to assume similarity to the group, but the influence

is probably minimal. This leaves factor (4) as probably the primary factor influencing the predictions on the Loyola Language Study. And since no referent is involved, we would say that the subject's prediction of the most common free-association must be influenced to a very great degree by his own attitudes and perceptions regarding the content of the prediction, the free-association itself. In other words, lacking previous knowledge, from observation and other sources, and in the absence of strong feelings toward the group being judged, the subject bases his prediction largely on his own free association to the stimulus word. This logical inference was expressed earlier as Hypothesis II, and was supported by our empirical findings.

What about our "social perception" study? Is the same thing true regarding those predictions? I think we would be inclined to answer that, if it is, it is true to a much lesser degree than with the Loyola Language Study. Factor (1) is involved, since some of the questions in the personality questionnaire relate to behavior, which is open to direct observation. The remainder of the questions relate to feelings and attitudes, which are often expressed in behavior, and so are indirectly observable, involving factor (2). Of course factor (3), the feelings of the judge toward the group, is also involved. And factor (4), his own attitudes toward the content of the prediction is no doubt influential.

The difference between the Loyola Language Study and the social perception study, we could say, is in the degree of "observability" of what is being predicted. Word-associations are much less "observable", than personality characteristics, forcing the judges on the Loyola Language Study to rely more on factors (3) and (4). Bronfenbrenner et al. (6) point out that to the extent previous information is lacking from (1) and (2), accuracy becomes a function

of (3) and (4). It is true that (3) and (4) have a lesser influence in the "social perception" study, this should be reflected in reduced influences of Assumed Similarity and Real Similarity scores on the accuracy score (Hypothesis VI), which is precisely what we found.

This difference between the responses being predicted on the two tests may have affected the ability to predict them, and influenced our findings of no relationship. Taft's (1950) discussion suggests another way of looking at the responses, which would provide an alternative explanation. He divides all predication about others into analytic and non-analytic judgments. He places all "mass-empathy" judgments (judgments about group response as opposed to individual response) in the former class, because they require less immediate intuition and more conceptualization. Now even though both of our tests are "mass-empathy" tests, and their predictions presumably would be labelled by Taft as analytic judgments, there is some justification for considering word-association judgments more analytic than personality judgments. The fact that they are more abstract and obscure forces the judge to conceptualize, to try to find reasons for picking one word rather than another. On the personality test there is more opportunity for intuitive judgments. Perhaps this can be cited as a difference between the two tests sufficient to account for our negative results. However, if this classification of the tests is valid, it would lead to the inference that ability to predict word-associations is dependent upon the ability to reason and conceptualize, making Loyola Language Study scores more dependent on intelligence than "social-perception scores," which was not found to be true in our study. The correlations between the Loyola Language Study scores and Navy GCT and GCT/ARI scores, both widely accepted measures of intelligence are $-.17$ and $-.05$ respectively, the former significant at the $.05$

level. The social perception accuracy scores correlate .09 and .17 with the Navy GCT and GCT/ARI scores, the latter being significant at the .05 level. Although all these correlations are very low, they can be interpreted as not substantiating the inference that Loyola Language Study scores are more dependent upon the exercise of reason than are our social perceptions scores. So we would probably not be justified in adapting Taft's conceptual framework to explain our negative results.

Continuing our focus on differences between the responses themselves, the objects of our judges' predictions, we call attention to our finding with regard to Hypothesis IV and its possible implications. We found that real similarity to the group in free association responses was not significantly related to real similarity to the group in personality-questionnaire responses. If we accept this finding at face value, we would conclude that there are "typical" responses to the free-association words, and there are "typical" responses to the personality questions, but they are not necessarily given by the same people. People who are "typical", personality-wise, do not necessarily have "typical" free associations. If this is true, then predicting one type of response may be a different task from predicting the other, calling for two types of predictive ability which are not necessarily correlated with one another.

We have discussed several ways of conceptualizing the differences between the group responses the judges are asked to predict on our two different tests. However we choose to explain them, the differences can account in large measure for our failure to find agreement between the tests.

We turn now to element (2) in the whole process, the "general ability to predict group response" which we are attempting to measure on both tests. We

have good reason to presume such an ability exists, but there is by no means unanimous agreement among social psychologists on this point. We recall that the two major survey articles which reviewed the earlier literature on the subject, concluded that the ability is more likely to be general than specific. But Bronfenbrenner et al. (6) hypothesized just the opposite, that the ability was specific, that there are many types of "social sensitivity," and they are not necessarily related. In their study, for example, sensitivity to the generalized other showed little correlation with sensitivity to individual differences. Even Taft (59) originally held, as we saw, that the so-called "mass-empathy" tests measure a different skill from the "empathy" tests, and cites a study by Hall and Bell (33) to support this contention.

Bronfenbrenner, et al. (6) postulate the existence of as many as twelve different varieties of social sensitivity, classified according to the social object and referent of the predictions. This refined classification can best be illustrated by reproducing their chart (see Figure 1 p. 93) and fitting our measures into their theoretical scheme. Note that the more specific predictions require more abilities. Predicting the response of an individual, for example, requires (1) sensitivity to the generalized other, plus (2) sensitivity to group differences, plus (3) sensitivity to individual differences.

In their conceptual scheme our two measures would both be considered measures of sensitivity to the generalized other, but measures of different forms of this sensitivity. The Loyola Language Study score would be considered a measure of non-personal sensitivity, because it asks the judges to predict word associations, which have no personal reference. The social perception study would be considered a measure of second-person sensitivity, since it asks the judges to predict responses which refers to the group making them.

Social Object (with presumed requisite abilities)	Referent			
	Non-Personal Sensitivity	First-Person Sensitivity	Second-Person Sensitivity	Third-Person Sensitivity
Generalized Other (1) <u>Sensitivity to the Generalized Other.</u>	LLS Score (Word-Association Accuracy)		Social Perception Accuracy	
Face-to-Face Group (1) <u>Sensitivity to the Generalized Other</u> Plus (2) <u>Sensitivity to Group Differences</u>				
Particular Other (1) <u>Sensitivity to the Generalized Other</u> Plus (2) <u>Sensitivity to Group Differences</u> Plus (3) <u>Sensitivity to Individual Differences</u>				

Fig. 1. Suggested classification of accuracy scores within Bronfenbrenner's theoretical framework.

(First-person sensitivity would be measured by questions which refer back to the judge, third-person sensitivity by questions which refer to a third person or persons, someone who is neither the judge nor a member of the group giving the responses.) Our failure to find correlations, then, might be attributed to the fact that what has been called sensitivity to the generalized other does not exist as a general ability. It is merely a name which refers to several specific abilities not necessarily possessed to the same degree by any one person. In other words, perhaps the lack of correlation should have been expected because of the nature of the ability (or abilities) being measured in each case.

What about element (1), the measure themselves? Would refinements or changes in the methodology of either one or both of the measures be likely to produce a positive correlation? We can look into this possibility.

Our method of deriving Loyola Language study norms deserves some discussion. We did not follow exactly any of the scoring methods which had been used in the earlier research reported in the literature. We choose to take only the single most common association as the norm word, rather than using the median method or other methods described in the review of the literature. We felt justified in this decision because Herr (37) had found that variations in scoring method did not have a significant effect on the Loyola Language Study scores themselves. And our subjects ultimately received ranks rather than absolute scores. No comparison was made with any other groups. To test Herr's contention, we performed an experiment using both scoring methods (our method and the median method) on a group of 25 subjects. The correlation between the two scoring methods was .86. The norms used in scoring were derived from our

own subject population, thus avoiding any problems of comparability of our group with a norm group. An informal check revealed, however, that norms from earlier studies could have been used with confidence, because the words were identical in most cases. So it is not likely that a different method of scoring the Loyola Language Study itself would have affected our findings.

The Real Similarity and "Assumed Similarity" scores were derived in a very straightforward and clear manner, leaving little to criticize in the method of derivation. What these scores mean is, however, open to considerable discussion. It is obvious that the high correlations are, to a degree, "built-in." For one thing, the three measures, real similarity, assumed similarity, and accuracy (the Loyola Language Study score itself) are not independent. Any two of them will determine the third. A man who is really similar to the group and who assumes he is similar to the group is bound to be accurate. We do not know for sure that he is exercising any skill or ability to predict others' responses. Perhaps the combination of his other two tendencies accidentally gives him a high accuracy score. Or perhaps possession of the skill happens to be correlated with real similarity to the group, making it necessary for him to "assume similarity" to be accurate. High correlations among these three scores do not provide us with their own interpretation. But we can speculate about them on the basis of other findings. Our finding with regard to Hypothesis V led us to conclude that our Word-Association "Assumed Similarity" score did not measure any conscious or unconscious tendency to assume similarity. We felt that a high "assumed similarity" score was probably due largely to carelessness, inattention, or misunderstanding of the directions. This conclusion was based on our finding that Word-Association "Assumed Similarity" scores were not correlated with a standard measure of assumed

similarity. We can cite here another small bit of evidence in support of this contention. One of the few significant correlations between our six basic measures and the factorially-derived scale scores on the Guilford-Zimmerman Temperament Survey is a correlation of $-.29$ (significant beyond the $.01$ level) between our Word-Association "Assumed Similarity" score and the GZTS Restraint-Seriousness score. This score is described in the manual as measuring the subject's serious-mindedness, his capacity for persistent effort, deliberate action, and self-control. Low scorers are described as happy-go-lucky, care-free, impulsive individuals, not suited to positions of responsibility. These are the people who tended to get high Word-Association "Assumed Similarity" scores, and we submit that it is probably not because of a real tendency to assume similarity.

The Word Association Real Similarity score pretty clearly measures the degree to which a subject's free associations are similar to those of his peer group. But what does this mean? We saw that real similarity to the group in this respect is not related to real similarity in personality characteristics, at least not in our group. Turning to its relationships with the factorially-derived scale scores and other measures, we find an interesting pattern of correlations. It has low negative correlations with Restraint-Seriousness, Thoughtfulness-Reflectiveness, GCT, and CGT/ARI ($-.17$, $-.20$, $-.20$ and $-.20$, respectively.) All these are significant at the $.05$ level. And it has a significant positive correlation ($.19$) with Emotional Stability. This pattern suggests that it was the rather carefree, impulsive, unreflective, and not-as-bright, but steady individual who tended to give free associations which were similar to those of the group. Of course these correlations are all low, and we should beware of over-interpreting them.

So we are faced with a problem of interpretation in the case of all three word association measures, and this problem will be discussed further. But the methods used in deriving the measures are probably legitimate, and there would be no advantage to altering those.

So much for the three measures involving word associations. We turn next to the three measures involving social perception. It is in this area that great controversies about methodology have raged, and no methodology we could have selected would be immune to serious criticism. We have tried, in general, to select methods which have been used extensively, to enhance the "comparability" of our results with those of other studies. We also hoped thus to avoid the problems inherent in using a relatively new method which is untried. The fact that the methods most used were perhaps the ones most criticized was an unfortunate, but as far as we could see, unavoidable circumstance. We will try here to lessen the impact of the methodological shortcomings by calling attention to them and keeping them in mind when we interpret our findings.

First of all we will consider the social perception accuracy score, which was compared to the Loyola Language Study score in our first basic hypothesis. There are a number of possible methods of measuring the subjects' ability to predict how the group would answer the series of personality questions. Perhaps the simplest would have been to ask the subjects to predict the majority answer to each question, just as we asked them to predict the majority response to each free association word. This would have been more easily scored and more easily compared to the word-association study. We chose instead a more refined method, one much harder to score and interpret, because we thought it had a number of advantages. The first advantage, we thought, would be in refinement of the accuracy measurement itself. By asking the subjects, not just

whether the majority would answer "yes" or "no", but what percentage would answer in a given way, and comparing this estimate each time with the actual percentage, we would have a better measure of their ability to predict. This method has been used many times before in this type of social perception study.

The score thus derived is called a "difference" score, because it measures the difference between the predicted percentage and the actual percentage. The "difference" score is found in studies by Travers (65), Taft (59), Cottrell and Dymond (14), and others. Cottrell and Dymond were among the first to recognize and try to correct for the influence of "projection" or "identification" or what we are calling "assumed similarity" between a subject's own responses and his predictions of the group responses. Others followed them in attempts to refine the "difference" score, by partial correlation methods, etc. But the refinements introduced artifacts of their own and were judged to be little better than the original difference score. Probably the best refinement is Gage and Cronbach's (25), which unfortunately is not applicable to our method.

This has all been discussed in the review of the literature. Suffice it to say here that the "difference" score as a measure of accuracy of social perception is recognized as being influenced by the tendency to assume similarity, whatever we choose to call it. But so is every other accuracy score that has been introduced to replace it. And we have chosen to follow Bronfenbrenner et al. (6), who returned to the conventional score, concluding that "virtually any type of accuracy score—including the conventional one—is likely to reflect in substantial degree the operation of a genuine ability in social perception." (6, p. 91) Incidentally, as we shall see later, the contaminating

correlations which form the basis of the criticism are not nearly so high in our study, a finding for which we have no ready explanation.

Although it is not likely that a different method of measuring accuracy would affect our final results, there might be some advantages to having the subjects estimate the majority answer itself rather than what percentage would answer that way. One advantage would be in simplicity of scoring. A second advantage would lie in more direct comparability with Loyola Language Study scores. A third would be in the opportunity to utilize Gage and Cronbach's correction for assumed similarity. The sacrifice in refinement of measurement, which refinement might be spurious anyway, would probably be outweighed by the advantages.

Some other problems were encountered in the use of our method. To get the predicted percentages, it will be remembered, we had the subjects repeat their answers to 100 of the Guilford-Zimmerman Temperament Survey questions, and make their percentage estimates at this time. There was a one-week interval between the two administrations of these 100 questions. We found that as many as 49, and an average of 25 of the 100 answers were changed by each subject from one administration to the next. Our immediate surmise was that the subjects had changed their answers to agree with the majority answer or with what they thought was the majority answer. But perusal of a number of the answer sheets showed this was not true. The subjects did not show an overwhelming tendency to change in any one direction, either towards or away from the majority answer or their estimate of it. This led us to do a correlation study with the entire population to see with what, if anything, this tendency to change answers was correlated. Our new hypothesis was that since the changes did not

follow a predictable pattern they were probably due largely to carelessness, inattention, and failure to approach the task seriously. This hypothesis was supported by a finding of significant negative correlations between the tendency to change answers and the trait scores for Restraint-Seriousness and Thoughtfulness-Reflectiveness on the Guilford-Zimmerman Temperament Survey ($r = -.23$ and $-.38$, both significant beyond the .01 level). The tendency to change answers was also negatively correlated with intelligence as measured by the GCT/ARI score ($-.18$), with the Ascendence-Social Boldness score ($-.19$), and with the Masculinity score ($-.27$). This pattern of scores gives us a picture of the subject whose answers were unstable as a happy-go-lucky, unreflective, dependent, and less intelligent person. The correlation between the tendency to change answers and the Social Perception Assumed Similarity score is $-.23$, significant beyond the .01 level. This is taken as further evidence that the changes were not made as part of a conscious or unconscious effort to bring their own answers in line with the majority answers. The highest of all the correlations was a negative correlation between the tendency to change answers and our Social Perception Real Similarity score ($-.54$). This is interpreted as a sign that atypical people tended to change their answers more often than the more typical ones did. None of the remaining correlations was significant.

Finding so many changed answers raised the question, of course, as to which of the contradictory answers to accept as the subjects' true self-description. We chose to accept the answer given under the standard administration procedures, where no prediction was asked. Sometimes this was the first administration, sometimes the second. Use of a different methodology in computing the Social Perception Accuracy Score could have avoided these

problems.

The Social Perception Assumed Similarity score consisted merely of a count of the percentage estimates which exceeded 50%. In other words, whenever a subjected estimated that more than half his peers agreed with his answers he was scored for "assuming similarity." This is a standard method of calculating this score. Now it might be argued, however, that an estimate of 51% agreement is not a very strong assumption of similarity. So another ranking was done, taking 75% as the cut-off point, and scoring for assumed similarity only when the subject's estimate was this high or higher. This did not change the results appreciably and it introduced other problems, so the original method was retained. The argument that an estimation of 51% agreement is a weak assumption of similarity could be countered by saying that scoring an estimate of 74% as assuming dissimilarity is just as misleading. Of course there are other possible methods of scoring which might avoid both these problems, but we felt justified in utilizing the standard method.

The Social Perception Real Similarity score consisted of a count of how many of the subject's self-description responses agreed with the answer given by more than 50% of his peers. The same argument was considered here, that 51% is not a very clear majority. So another ranking was made, using 75% as the cut-off point. But this created more problems than it solved, and the original standard method was again retained. The major problems with the 75% method centered around the fact that a 75% majority occurred on only 62 of the 300 questions. So the Real Similarity score would be based upon only one-fifth of the total test, the one-fifth on which the group showed the least variation. Thus the range of Real Similarity scores was necessarily quite restricted.

Also, the questions were not representative of the entire test. And since these 62 questions did not necessarily include any of the questions on which a subject's Assumed Similarity score was based, some very strange and confusing relationships appeared. So, even with its faults, the standard practice of using 50% as a cut-off point is clearly preferable here.

What about the correlations between these scores and the other scores in our experiment? We have already noted that the correlations between accuracy and real similarity, accuracy and assumed similarity, and between real and assumed similarity are all very low—much lower than the corresponding correlations on the word-associations study. We can probably attribute this fact in some measure to the differences in methodology, but it is not possible to know the degree of this influence. On the word-association study, high "assumed similarity" scores could result from carelessness and other factors as well as from a tendency to assume similarity. This is not as true on the social perception study. The method of measurement assures a better chance of validly measuring a conscious or unconscious tendency to assume similarity. Improving the measurement in this way may have tended to reduce the correlations with real similarity and accuracy. But we must look for more fundamental explanations of these lower correlations. One interpretation is that the accuracy score is measuring a skill which is relatively independent of the tendency to assume similarity. This finding is different from those of comparable studies reported in the literature, all of which have reported higher correlations ~~between~~ accuracy and real and assumed similarity. This, in fact, has resulted in the criticism based on the circularity of the statement that "typical people tend to be more accurate in their predictions," which tells us

nothing about the skill itself. Why our own correlations are lower than those found by others is not readily apparent.

In seeking more knowledge about the skill itself, we found a few significant correlations with some of the other measures in our experiment. The highest of these correlations is between accuracy of social perception and the Ascendancy scale score of the Guilford-Zimmerman Temperament Survey ($r = .59$). This score is described in the manual as a measure of social boldness, the quality possessed by good leaders, people who enjoy persuading others, public speaking, etc. There is a lower, but significant (at the .05 level) correlation between accuracy of social perception and intelligence as measured by the GCT/ARI ($r = .17$). None of the other correlations with social perception is significant. This pattern of correlations agrees basically with what has been reported in the literature, although others have found more relationships with measures of sociability, emotional stability, and the like.

Another significant correlation of interest to us is between our measure of assumed similarity in personality characteristics and the Personal Relations scale score on the Guilford-Zimmerman Temperament Survey ($r = .20$). This score is described as a measure of the ability to get along with others as a result of showing greater tolerance and a less critical attitude toward others. This fits our concept of the qualities which lead subjects to assume similarity.

The Social Perception Real Similarity score shows the following significant positive correlations with scale scores on the Guilford-Zimmerman Temperament Survey: with General Activity: .37, with Restraint-Seriousness, .22, with Ascendancy, .46, with Emotional Stability, .47, with Thoughtfulness, .55, with Personal Relations-Cooperativeness, .19, with Masculinity, .33. A

significant negative correlation was found with Friendliness ($r = -.27$).

This over-all pattern of correlations, all but one of which are significant beyond the .01 level, gives a general picture of the group itself, since similarity to the group is correlated with those personality characteristics.

Table II, page 105, presents the significant correlations found between our six basic measures and the other parameters obtained.

TABLE II
CORRELATIONS AMONG OTHER SCORES

	Word- Association Assumed Similarity	Word- Associa- tion Real Similarity	LLS Scores	Social Perception Assumed Similarity	Social Percep. Real Simil.	Social Percep. Accuracy
General Activity					.37	
Restraint-Seriousness	-.29	-.17			.22	
Ascendance					.45	.59
Sociability			.24		.47	
Emotional Stability		.19				
Objectivity						
Friendliness					-.27	
Thoughtfulness		-.21			.55	
Personal Relations				.20	.19	
Masculinity					.33	
GCT		-.20	-.17			
Tendency to change from one admini stration to another					.54	

CHAPTER V

SUMMARY AND CONCLUSIONS

The Loyola Language Study is a modified form of the Kent-Rosanoff Word Association test in which subjects are asked to predict the most common free-associations to each of eighty stimulus words. Considerable research about the Loyola Language Study has left unanswered some fundamental questions about it, such as what skill or quality is measured by it, what personality and behavioral characteristics are related to it, etc. The most promising path to a theoretical understanding of the Loyola Language Study appears, on logical grounds, to lie in the direction of the field of social perception, where considerable research has already investigated the ability to predict group response to various situations. This ability has acquired a label: sensitivity to the generalized other, and an operational definition: the ability to predict the typical response of a given group of subjects to a series of questions.

The fact that this operational definition so closely describes the Loyola Language Study has led to the present investigation. Its purpose is to see in what ways, if any, the Loyola Language Study can be shown empirically to be related to this concept, thereby providing an answer to the most fundamental question about the Loyola Language Study: what does it measure? A second purpose is to look more closely at the Loyola Language Study in the light of what is known about similar measures from the research in social perception. This portion is not directly dependent upon the empirical relationships found in the

first portion.

In pursuit of these aims we set up six basic hypotheses to be tested empirically:

Hypothesis I. The Loyola Language Study score is actually an accuracy score, measuring the accuracy with which an individual perceives the general public (the generalized other). It does this by measuring his ability to estimate what words are most frequently associated to those in the stimulus list.

This hypothesis was not supported by our findings, since no correlation was found between the Loyola Language Study and a standard measure of sensitivity to the generalized other ($r = -.02$). We have already reviewed a number of possible interpretations of this finding, and we are now prepared to draw some conclusions. We still regard the original basic hypothesis as logically and theoretically valid. The Loyola Language Study is in theory a measure of social perception. Its failure to correlate with other measures must be attributed to shortcomings in our experiment, shortcomings in the methodology of the test itself, and to the fact that the ability to perceive others is probably not a general trait, at least not general enough to extend to such diverse areas.

If we were repeating our own experiment we would want to find a less homogeneous population, with greater dispersion in factors which tend to influence these scores. We would probably also change the administration of the social perception study to conform as closely as possible to the Loyola Language Study method, for purposes of closer comparison.

Our study has served to point up what is considered a major shortcoming in the methodology of the Loyola Language Study itself. In asking subjects to estimate the most common free-association of others, the Loyola Language Study

encourages subjects to put down their own free-associations, and has no way of knowing to what extent they have done so. In this sense, it not only shares the common fault of measures of social perception, it makes this fault worse by ignoring it and subtly fostering it. As we have seen, the task given the subjects is an extremely difficult one, largely because of the lack of opportunity to observe what they are being asked to predict. Given no aids or guidelines, the subjects are forced to fall back on their own free-associations. In fact, the less ability and motivation each subject has to understand and carry out the instructions, the more he will tend to do this. As a result, the responses given on the Loyola Language Study are an admixture of free-associations and predictions, occurring in different proportions with each subject. Under these conditions, it is not surprising to find the responses correlated more with the subjects' own free associations than with, any, other measures of social perception.

The tendency for a subject to give his own free-associations could perhaps be minimized, and the Loyola Language Study improved as a test of social perception (if this be considered desirable), by any of several changes in methodology. A multiple-choice form would have the advantage of providing the subject with some guides. He could then be asked to select the most common response or to estimate the percentage of agreement on each of several responses, or to list them in descending order of popularity. The basic problem of "observability" would remain, of course, and subjects would still be influenced by their own free-associations, but these guides would tend to direct their thinking towards the more common responses and would reinforce the correct response set. Another, revision, combining the Loyola Language Study with a free-association test, would have the advantage of quantifying each subject's tendency

to use his own free associations. Heretofore this tendency has gone unmeasured and sometimes, it appears, unrecognized.

(It may be argued by some that the Loyola Language Study was never intended to be a measure of social perception and that we have been engaged in the toppling of straw men. To this we would reply that the family resemblance is unmistakable, whatever the intention of the authors of the test, and that the relationship merits further exploration.)

So, in summary regarding our basic hypothesis, we must admit that the empirical results of our experiment have failed to support it. However, our deepening understanding of the Loyola Language Study in the light of social perception research leads us to look for reasons for this failure outside the nature of the test itself, because we are even more convinced that the Loyola Language Study belongs in that category. Its assets and liabilities are best understood in that theoretical framework, and the most meaningful refinements and improvements are likely to result from research in that area.

Hypothesis II. The Loyola Language Study score is influenced in great degree by the "typicality" of the subjects' own free-associations and by their tendency to give these free-associations as their predictions of the group response. This was strongly confirmed by our findings of high positive correlations between the Loyola Language Study score and our "assumed similarity" and real similarity scores ($r = .48$ and $.50$ respectively). From this we conclude that as a measure of the ability to predict group response, the Loyola Language Study is badly contaminated by these tendencies, as much if not more so than other similar measures. It might almost as well be regarded as a measure of real similarity itself (as it probably has been, traditionally).

Hypothesis III. The Loyola Language Study score is influenced in great

degree by the subjects' "typicality" or real similarity to group norms in over-all personality characteristics. Our findings show the Loyola Language Study to be influenced, but in relatively small measure by this "typicality" ($r = .19$). We would conclude that the Loyola Language Study can be properly regarded as a measure of "normality" where there is a wide enough dispersion along that continuum, but that its limitations make it a relatively poor choice among measures of this type. There are more sensitive measures and there are measures which provide more and more meaningful information than the Loyola Language Study used for this purpose.

Hypothesis IV. The tendency to give free associations which are the same as those given most commonly by one's peer group is related to real similarity to the group in personality characteristics (as measured by questions on a standard personality questionnaire). Finding a negative correlation here ($r = -.15$), even though it is not significant, was a particularly surprising one in that it not only failed to suggest the hypothesis, it suggests that a negative relationship exists. Unless we blame this finding on defects in the sample, or in the methodology of the experiment itself, we are forced to conclude that these two types of similarity are at best, unrelated, which would tend to bafld even further the meaning of Loyola Language Study scores. If this is a true measure of the relationship, or the lack of one, then those who regard the Loyola Language Study scores as measures of "normality" are on shaky ground, at best. We would hope to find this relationship reversed in a larger and more diverse sample, but we can only accept it as it stands here and conclude that we are even more puzzled about the meaning of Loyola Language Study scores.

Hypothesis V. The tendency of a subject to give his own free-association

to a given word (e.g., on the Loyola Language Study) is related to the tendency to assume similarity to one's peers by predicting directly that a majority would agree with him in answering questions about themselves. The finding of no relationship here ($r = .08$) is not a surprising one in the light of what we have already seen above. We choose to conclude from this that the Word Association "Assumed Similarity" Score is not necessarily a measure of the tendency of a subject literally to assume that others are answering the same as he does. We have noted that a relatively large number of free associations are given as predictions, but we attribute this to carelessness, lack of interest, inability to make any better prediction, etc.

Hypothesis VI. The ability to predict how a majority of people will answer questions on a personality questionnaire (which ability has been labelled sensitivity to the generalized other) is related to the subject's similarity to the group on these questions and to his tendency to assume he is similar to the group in this respect. But they are related to a lesser degree than with the ability to predict word associations. Our findings of no correlation between accuracy and similarity ($r = .10$) and a low but significant correlation between accuracy and assumed similarity ($r = .19$) leads us to conclude that our measure of sensitivity to the generalized other is less contaminated by these relationships than is the Loyola Language Study. As a measure of this sensitivity, then, it is closer to the ideal. It also gives some support to the conclusion that the sensitivity itself is more independent of such factors as real similarity than whatever is being measured by Loyola Language Study scores.

Having found essentially negative results regarding our basic hypothesis of a close relationships between the Loyola Language Study and measures of sensitivity to the generalized other, we sought reasons for the failure in

various places, including our research design, the measures used, the hypothetical constructs involved, relationships with other measures included in the experiment and the basic idea itself. We concluded that our failure to find positive correlations should not be taken simply as evidence of no relationship, and that all the other findings serve to point up problems, in theory as well in measurement of whatever factors are involved. If we have failed in our goal of determining once and for all what is measured by the Loyola Language Study, we have certainly succeeded in pointing out many important aspects of this study heretofore not discussed.

What about suggestions for future research? We have already suggested some methodological changes and changes in research design which might make a more meaningful study similar to this one. But in addition, several other topics present themselves:

1. Our measure of social perception was based upon the personality questionnaire rather than on behavior itself. We asked the subjects to predict how others would answer questions about themselves, instead of asking them how others would behave. And we used these answers, rather than behavior itself, as a criterion of their predictive success. Perhaps a study using behavior itself would provide more meaningful results.

2. We have measured only linear trends. Is it not possible that there are non-linear relationships among some of these factors? Perhaps, for example, the most typical and the most atypical people would both show good sensitivity to others.

3. To find out more about predicting free-associations of others, we might ask for individual predictions. For example, a subject might be asked to predict the free-associations of his best-known friend, or his best-liked and

leasted-liked acquaintances. This might give us more insight into the process of "assumed similarity" with the Loyola Language Study.

BIBLIOGRAPHY

1. Barrows, G.A. and Zuckerman, M. Construct validity of three masculinity-femininity tests. J. consult. Psychol., 1960, 24, 441-445.
2. Bender, I.E. and Hastorf, A.H. A perception of persons: forecasting another person's responses on three personality scales. J. abnorm. soc. Psychol., 1950, 45, 556-561.
3. _____. On measuring generalized empathic ability (social sensitivity). J. abnorm. soc. Psychol., 1953, 48, 503-506.
4. Bendig, A.W. Age differences in the interscale factor structure of the Guilford-Zimmerman Temperament Survey. J. consult. Psychol., 1960, 24, 134-138.
5. _____. The relationship of scales of extraversion-introversion and emotionality to Guilford's O, F, and P scales. J. psychol. Stud., 1959, 11, 49-51.
6. Bronfenbrenner, U., Harding, J., and Gallwey, Mary. The measurement of skill in social perception. In McClelland, D.C., Baldwin, A.L., Bronfenbrenner, U. and Strodbeck, F.L. (Eds.) Talent and Society, Princeton, N.J., D. van Nostrand Company, 1958, 29-111.
7. Bronfenbrenner, U. The study of identification through interpersonal perception. In Tagiuri, R. and Petrullo, L. (Eds.) Person Perception and Interpersonal Behavior, Stanford, Calif., Stanford University Press, 1958, pp. 110-130.
8. Bruner, J.S. and Tagiuri, R. The perception of people. In Lindsey, G. (Ed.) Handbook of Social Psychology, Vol. 2, Cambridge, Mass. Addison-Wesley, 1954, 634-654.
9. Cameron, N. and Magaret, Ann. Behavior Pathology, Boston, Houghton Mifflin, 1951.
10. Carter, H.D. A preliminary study of free association techniques:
I. Twin similarities and the technique of measurement. J. Psychol. 1938, 6, 201-215.

11. Cattell, R.B. The main personality factors in questionnaires, self-estimate material. J. soc. Psychol. 1950, 31, 3-38.
12. Cline, V.B., Ability to judge personality assessed with a stress interview and sound-film technique. J. abnorm. soc. Psychol. 1955, 50, 183-187.
13. Cottle, W.C. and Lewis, W.W. Jr. Personality characteristics of counselors. II. Male counselor responses to the MMPI and the GZTS. J. counsel. Psychol., 1954, 1, 27-30.
14. Cottrell, L.S., Jr. and Dymond, Rosalind F. The empathic response: a neglected field for research. Psychiatry, 1949, 12, 355-359.
15. Cronbach, L.J. Processes affecting scores on "understanding of others" and "assumed similarity". Psychol. Bull., 1955, 52, 177-193.
16. _____. Proposals leading to analytic treatment of social perception scores. In Itaguri, R. and Petrullo, L. (Eds.) Person Perception and Interpersonal Behavior. Stanford, Calif., Stanford University Press. 1958, pp. 353-379.
17. Del Vecchio, A.J. The discriminatory power of the Loyola Language Study in schizophrenia. Unpublished doctoral dissertation. Loyola University, Chicago, 1958.
18. Dinello, F.A. An investigation of the influence of occupations on the Loyola Language Study. Unpublished master's thesis. Loyola University, Chicago, 1958.
19. Dymond, Rosalind F. A preliminary investigation of the relationship of insight and empathy. J. Consult. Psychol., 1948, 12, 228-233.
20. _____. A scale for the measurement of empathic ability. J. consult Psychol., 1949, 13, 127-133.
21. _____. Personality and empathy. J. consult. Psychol., 1950, 14, 343-350.
22. Even, Frances L. A study of differences between free and controlled association at the college level. Unpublished master's thesis, Loyola University, Chicago, 1958.
23. Fiedler, F.E., Warrington, W.G., and Blaisdell, F.J. Unconscious attitudes as correlates of sociometric choice in a social group. J. abnorm. soc. Psychol., 1952, 47, 790-796.
24. Fiedler, F.E. Assumed Similarity measures as predictors of team effectiveness. J. abnorm. soc. Psychol., 1954, 49, 381-388.

25. Gage, N.L. and Cronbach, L.J. Conceptual and methodological problems in interpersonal perception. Psychol. Rev., 1955, 62, 411-422.
26. Gage, N.L. and Exline, R.V. Social perception and effectiveness in discussion groups. Human Relations, 1953, 6, 381-396.
27. Gay, J.D. A comparison of certain aspects of personality of college fraternity and nonfraternity men. Proc. W. Va. Acad. Sci., 1957, 29, 87-90.
28. Gronlund, N.E. Sociometric status and sociometric perception. Sociometry, 1955, 18, 122-128.
29. Guilford, J.P. and Braly, K.W. Extraversion and introversion. Psychol. Bull., 1930, 27, 96-107.
30. Guilford, J.P., et al. Manual for the Guilford-Zimmerman Temperament Survey. Beverly Hills, Calif., Sheridan Supply Co. 1948.
31. _____. The Guilford-Zimmerman Temperament Survey. J. consult. Psychol., 1950, 14, 162.
32. Guppy, W.A. A re-standardisation of the Loyola Language Study on a far western population. Unpublished doctoral dissertation. Loyola University, Chicago, 1959.
33. Hall, H.E. and Bell, G.B. The relationship between two tests of empathy: Dymond's and Kerr's. Amer. Psychologist, 1953, 8, 361-362.
34. Hastorf, A.H. and Bender, I.E. A caution respecting the measurement of empathic ability. J. abnorm. soc. Psychol., 1952, 47, 574-576.
35. Hastorf, A.H., Bender, I.E. and Weintraub, D.J. The influence of response patterns on the "Refined Empathy Score." J. abnorm. soc. Psychol., 1955, 51, 341-343.
36. Hedberg, R. and Baxter, B. A second look at personality test validation. Personnel Psychol., 1957, 10, 157-160.
37. Herr, V.V. The Loyola Language Study. J. clin. Psychol., 1957, 13, 258-262.
38. Jones, M.B. Aspects of the Autonomous Personality: IV. Traits from the Guilford-Zimmerman Temperament Survey. U.S. Naval School of Aviation Medicine Research Report, 1954, Project No. NMD01058.25.16.
39. Klugh, H.S. and Bendig, A.W. The Guilford-Zimmerman Temperament Survey and intelligence. Psychol. Newsltr., NYU, 1959, 10, 96-97.

40. Leeds, C.N. Teacher attitudes and temperament as a measure of teacher-pupil rapport. J. appl. Psychol., 1956, 40, 333-337.
41. Lewis, N.M. and Spilka, B. Sociometric choice status, empathy, assimilative and disowning projection. Psychol. Record, 1960, 10, pp. 10-21.
42. Linden, James D. The development and comparative analysis of two forced-choice forms of the Guilford-Zimmerman Temperament Survey. Unpublished doctoral dissertation, Purdue University, 1958.
43. Lindgren, H.C. and Robinson, J. An evaluation of Dymond's test of insight and empathy. J. consult. Psychol., 1953, 17, 172-176.
44. Lovell, C. A study of factor structure of thirteen personality variables. Educ. psychol. Measmt., 1945, 5, 335-350.
45. Murray, John B. Personality study of priests and seminarians. Homil. pastoral Rev., 1958, 49, 443-447.
46. Norman, R.D., The inter-relationships among acceptance, rejection, self-other identity, insight into self, and realistic perception of others. J. soc. Psychol., 1953, 37, 205-235.
47. Norman, R.D. and Ainsworth, Patricia. The relationships among projection, empathy, reality and adjustment, operationally defined. J. consult. Psychol., 1954, 1, 53-58.
48. Notcutt, B. and Silva, A.L.M. Knowledge of other people. J. abnorm. soc. Psychol., 1951, 46, 30-37.
49. Siegel, S. Nonparametric Statistics for the Behavioral Sciences. New York, McGraw-Hill, 1956.
50. Singer, S.L., Stefflee, B. and Thompson, F.W. Temperament scores and sociometric status. J. counsel. Psychol., 1958, 5, 281-284.
51. Smola, G.F. Norms for high school seniors in the Loyola Language Study. Unpublished master's thesis, Loyola University, Chicago, 1956.
52. Snider, L.B. Loyola Language Study. Unpublished report, Loyola University, Chicago, 1954.
53. Sorenson, M.I. and Carter, H.D. Twin resemblances in community of free association responses. J. Psychol., 1940, 9, 237-246.
54. Spanner, Marvin. Attribution of traits and emotional health as factors associated with the prediction of personality characteristics of others. J. consult. Psychol., 1961, 25, 210-215.

55. Spilka, B. and Lewis, M.N. Empathy, assimilative projection, disowning projection, and error. Psychol. Record, 1959, 9, 99-102.
56. Stanek, R. An investigation of the influence of age, sex and education on responses to a semi-controlled association test. Unpublished doctoral dissertation. Loyola University, Chicago, 1956.
57. Steinberg, D.L. and Wittmer, M.P. Etiologic factors in the adjustment of men in the Armed Forces. Journal of War Medicine, 1943, 4, 129-139.
58. Stewart, V.P. The Loyola Language Study and college achievement. Unpublished master's thesis. Loyola University, Chicago, 1956.
59. Taft, R. Some correlates of the ability to make accurate social judgments. Unpublished doctoral dissertation. U. of Calif. 1950.
60. _____. The ability to judge people. Psychol. Bull., 1955, 52, 1-21.
61. Tagiuri, R. Social preference and its perception. In Tagiuri, R. and Petrullo, L. (Eds.) Person Perception and Interpersonal Behavior. Stanford, Calif., Stanford University Press, 1958.
62. Tagiuri, R. and Petrullo, L. (Eds.) Person Perception and Interpersonal Behavior. Stanford, Calif., Stanford University Press, 1958.
63. Thurstone, L.L. The dimensions of temperament. Psychometrika, 1951, 16, 11-20.
64. Trainor, J.J. A comparison of free and controlled association on the Loyola Language Study. Unpublished Master's thesis. Loyola University, Chicago, 1957.
65. Travers, R.M.W. A study in judging the opinions of groups. Arch. Psychol., 1941, 266, 1-73.
66. _____. A study of the ability to judge group knowledge. Amer. J. Psychol., 1943, 56, 54-65.
67. _____. The general ability to judge group knowledge. Amer. J. Psychol., 1943, 56, 95-99.
68. Voas, R.B. Correlates of reading speed and the time required to complete personality inventories. USN Sch. Aviat. Med. Res. Rep., 1956 No. NM001 108 100 Rep. No. 16, 11 7 p.
69. _____. A procedure for reducing the effects of slanting questionnaire responses towards social acceptability. Educ. psychol. Measmt. 18, 337, -345.

70. Voas, R.B. Relationships among three types of response sets. USN Sch. Aviat. Med. Prog. Rep., 1958, Pjou. No NM 16 01 11, Sub. 1, No. 15, iii 31 p.
71. Wallen, R. Individual's estimates of group opinion. J. soc. Psychol. 1943, 17, 269-274.
72. Webb, S.C. and Goodling, R.A. Test validity in a Methodist theology school. Educ. psychol. Measmt., 1958, 18, 859-866.
73. Witherspoon, M.P. and Melberg, M.E. Relationship between grade-point averages and sectional scores of the Guilford-Zimmerman Temperament Survey. Educ. psychol. Measmt., 1959, 19, 673-674.
74. Wood, H.G. An analysis of social sensitivity. Unpublished doctoral dissertation. Yale University, 1948.

APPENDIX I

LOYOLA LANGUAGE STUDY FORM

REVISED

LOYOLA LANGUAGE STUDY

Instructions

WHEN PEOPLE see or hear a word, they often think of another word. If you say the word *stem*, most people would think of *flower*. Some, but not the greatest number, might think of *pipe*, *grass*, *stop*, and so forth.

This study wants to find out what word you think the *greatest number of people* would be most likely to think of when they see or hear each of the words on the next two pages.

Please write next to each of the words the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear the word in the list. Take as much time as you need to think about the word which seems to you to "go along" with each printed word. Then choose the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear the given word. Write the *one word* which you choose beside the printed word. Do not skip any word.

Remember, you are not asked to write down just any word that comes to your mind. You should write down the *one word* which you think the *greatest number of people* would be most likely to think of.

Important: please fill out the information blank on page 4.

Copyright 1954, by LOYOLA UNIVERSITY, CHICAGO

Beside each of the words printed below write the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear that word.

soldier	sour
hungry	king
butterfly	deep
long	sleep
head	black
anger	hammer
afraid	table
fruit	thirsty
dark	quiet
red	hard
loud	blue
bath	sweet
eating	stomach
joy	working
rough	comfort
heavy	soft
high	short
white	beautiful
command	cold

whiskey	whistle
yellow	carpet
window	needle
scissors	hand
foot	thief
doctor	dream
wish	trouble
house	religion
justice	street
river	health
sickness	ocean
mountain	bed
stove	child
girl	tobacco
salt	woman
man	cabbage
cheese	citizen
baby	earth
moon	lion
spider	butter
bread	music

APPENDIX II

FREE ASSOCIATION TEST FORM

NAME _____

BILLET NUMBER _____

LLS FREE ASSOCIATION STUDY

Instructions

When people see or hear a word, they often think of another word. If you say the word stem, many people would think of flower. This study wants to find out what word you think of when you see each of the words on the next two pages. Please write next to each of the words the one word you think of when you see the word in the list. Do not skip any words.

Beside each of the words printed below, write
the one word you think of when you see that word.

soldier	sour
hungry	king
butterfly	deep
long	sleep
head	black
anger	hammer
afraid	table
fruit	thirsty
dark	quiet
red	hard
loud	blue
bath	sweet
eating	stomach
joy	working
rough	comfort
heavy	soft
high	short
white	beautiful
command	cold

whiskey	whistle
yellow	carpet
window	needle
scissors	hand
foot	thief
doctor	dream
wish	trouble
house	religion
justice	street
river	health
sickness	ocean
mountain	bed
stove	child
girl	tobacco
salt	woman
man	cabbage
cheese	citizen
baby	earth
moon	lion
spider	butter
broad	music

APPENDIX III

MOST COMMON FREE ASSOCIATIONS GIVEN IN THIS STUDY

NAME _____

BILLET NUMBER _____

LIS FREE ASSOCIATION STUDY

Instructions

When people see or hear a word, they often think of another word. If you say the word stem, many people would think of flower. This study wants to find out what word you think of when you see each of the words on the next two pages. Please write next to each of the words the one word you think of when you see the word in the list. Do not skip any words.

Beside each of the words printed below, write the one word you think of when you see that word.

soldier	army	sour	sweet
hungry	food	king	queen
butterfly	insect	deep	water
long	short	sleep	rest
head	face	black	white
anger	mad	hammer	nail
afraid	scared	table	chair
fruit	apple	thirsty	water
dark	night	quiet	noise
red	color	hard	soft
loud	noise	blue	sky
bath	water	sweet	sour
eating	food	stomach	food
joy	happy	working	labor
rough	tough	comfort	relax
heavy	light	soft	hard
high	low	short	long
white	black	beautiful	girl
command	order	cold	hot

whiskey	drink	whistle	noise
yellow	color	carpet	rug
window	glass	needle	thread
scissors	cut	hand	arm
foot	shoe	thief	crook
doctor	nurse	dream	wish
wish	dream	trouble	police
house	home	religion	God
justice	law	street	road
river	water	health	good
sickness	ill	ocean	water
mountain	hill	bed	sleep
stove	heat	child	baby
girl	boy	tobacco	smoke
salt	pepper	woman	man
man	woman	cabbage	food
cheese	food	citizen	person
baby	small	earth	dirt
moon	night	lion	animal
spider	web	butter	bread
bread	butter	music	sound

APPENDIX IV

GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY

The Guilford-Zimmerman Temperament Survey

DO NOT WRITE IN THIS BOOKLET

INSTRUCTIONS: In this booklet you will find a number of statements. Read each statement carefully. If the statement seems to be true, or if you agree with it, mark answer "Yes" on your answer sheet. If the statement is more false than true, or if you disagree with it, mark "No." If you cannot decide between "Yes" and "No," you may mark answer "?" BUT AVOID DOING THIS IF POSSIBLE.

Be sure to answer every item.

There are no "right" or "wrong" answers in the usual sense of a high score being necessarily the best. The purpose of this Survey will be served best if you describe yourself and state your opinions as accurately as possible.

You may notice that many items are similar. Actually, no two items are exactly alike.

Notice that the numbering of items on the answer sheet follows across the rows rather than down the columns.

You may turn the page and begin with the items now unless the examiner tells you to wait.

2. You would rather plan an activity than take part in it.....	2
3. You have more than once taken the lead in organizing a project or a group of some kind.....	3
4. You like to entertain guests.....	4
5. Your interests change quickly from one thing to another.....	5
6. When you eat a meal with others, you are usually one of the last to finish.....	6
7. You believe in the idea that we should "eat, drink, and be merry, for tomorrow we die"	7
8. When you find that something you have bought is defective, you hesitate to demand an exchange or a refund	8
9. You find it easy to make new acquaintances.....	9
10. You are sometimes bubbling over with energy and sometimes very sluggish.....	10
11. You are happiest when you get involved in some project that calls for rapid action.....	11
12. Other people think of you as being very serious minded.....	12
13. In being thrown by chance with a stranger, you wait for him to introduce himself.....	13
14. You like to take part in many social activities.....	14
15. You sometimes feel "just miserable" for no good reason at all.....	15
16. You are often so much "on the go" that sooner or later you may wear yourself out.....	16
17. You like parties you attend to be lively.....	17
18. If you hold an opinion that is radically different from that expressed by a lecturer, you are likely to tell him about it either during or after the lecture.....	18
19. It is difficult for you to chat about things in general with people.....	19
20. You give little thought to your failures after they are past.....	20
21. You often wonder where others get all the excess energy they seem to have.....	21
22. You are inclined to stop to think things over before you act.....	22
23. You avoid arguing over a price with a clerk or salesman.....	23
24. You would dislike very much to work alone in some isolated place.....	24
25. You often find it difficult to go to sleep at night because you keep thinking of what happened during the day	25
26. You find yourself hurrying to get places even when there is plenty of time.....	26
27. You like work that requires considerable attention to details.....	27
28. You are satisfied to let some one else take the lead in group activities.....	28
29. You enjoy getting acquainted with people.....	29
30. It takes a lot to get you emotionally stirred up or excited.....	30
31. You work more slowly and deliberately than most people of your sex and age.....	31
32. You are a carefree individual.....	32
33. When a person does not play fair you hesitate to say anything about it to him.....	33
34. It bothers you to have people watch you at your work.....	34
35. You have usually been optimistic about your future.....	35
36. You like to have plenty of time to stop and rest.....	36
37. You take life very seriously.....	37
38. You enjoy applying for a job in person.....	38
39. You would like to be a host or hostess for parties at a club.....	39
40. You often feel grouchy.....	40
41. You are the kind of person who is "on the go" all the time.....	41
42. You often crave excitement	42
43. The thought of making a speech frightens you.....	43
44. You find it easy to start conversation with strangers.....	44
45. You often feel guilty without a very good reason for it.....	45
46. People think you are a very energetic person.....	46

47. You sometimes make quick decisions that you later wish you hadn't made.....	47
48. You find it difficult to ask people for money or other donations, even for a cause in which you are interested.....	48
49. You are so naturally friendly that people immediately feel at ease with you.....	49
50. You daydream a great deal.....	50
51. You are quick in your actions.....	51
52. You have a habit of starting things and then losing interest in them.....	52
53. When you were a child, many of your playmates naturally expected you to be the leader.....	53
54. You sometimes avoid social contacts for fear of doing or saying the wrong thing.....	54
55. You have frequent ups and downs in mood, sometimes with and sometimes without apparent cause..	55
56. You always seem to have plenty of vigor and vitality.....	56
57. It is difficult for you to understand people who get very concerned about things.....	57
58. When a clerk in a store waits on others who should come after you, you call his attention to the fact..	58
59. You would be very unhappy if you were prevented from making numerous social contacts.....	59
60. There are times when your future looks very dark.....	60
61. You sometimes wish that people would slow down a bit and give you a chance to catch up.....	61
62. Many of your friends think you take your work too seriously.....	62
63. You hesitate to walk into a meeting when you know that everyone's eyes will be upon you.....	63
64. You limit your friendships mostly to members of your own sex.....	64
65. You almost always feel well and strong.....	65
66. You seem to lack the drive necessary to get as much done as other people do.....	66
67. You make decisions on the spur of the moment.....	67
68. You are rather good at bluffing when you find yourself in difficulty.....	68
69. After being introduced to someone, you just cannot think of things to say to make good conversation	69
70. You feel lonesome even when with other people.....	70
71. You are able to work for unusually long hours without feeling tired.....	71
72. You often act on the first thought that comes into your head.....	72
73. At the scene of an accident, you take an active part in helping out.....	73
74. You have difficulty in making new friends.....	74
75. Your mood often changes from happiness to sadness, or vice versa, without your knowing why.....	75
76. You talk more slowly than most people.....	76
77. You like to play practical jokes upon others.....	77
78. You take the lead in putting life into a dull party.....	78
79. You would like to belong to as many clubs and social organizations as possible.....	79
80. There are times when your mind seems to work very slowly and other times when it works very rapidly	80
81. You like to do things slowly and deliberately.....	81
82. You are a happy-go-lucky individual.....	82
83. When you are served stale or inferior food in a restaurant, you say nothing about it.....	83
84. You would rather apply for a job by writing a letter than by going through with a personal interview..	84
85. You are often in low spirits.....	85
86. You are inclined to rush from one activity to another without pausing enough for rest.....	86
87. You are so concerned about the future that you do not get as much fun out of the present as you might	87
88. When you are attracted to a person whom you have not met, you make an active attempt to get acquainted even though it may be quite difficult.....	88
89. You are inclined to limit your acquaintances to a select few.....	89
90. You seldom give your past mistakes a second thought.....	90

91. You are less energetic than many people you know.....	92
92. You often stop to analyze your thoughts and feelings.....	92
93. You speak out in meetings to oppose those who you feel sure are wrong.....	93
94. You are so shy it bothers you.....	94
95. You are sometimes bothered by having a useless thought come into your mind over and over.....	95
96. You get things done in a hurry.....	96
97. It is difficult for you to understand how some people can be so unconcerned about the future.....	97
98. You like to sell things (that is, to act as a salesman).....	98
99. You are often the "life of the party".....	99
100. You find daydreaming very enjoyable.....	100
101. At work or at play other people find it hard to keep up with the pace you set.....	101
102. You can listen to a lecture without feeling restless.....	102
103. You would rather work for a good boss than for yourself.....	103
104. You can express yourself more easily in speech than in writing.....	104
105. You keep in fairly uniform spirits.....	105
106. You dislike to be hurried in your work.....	106
107. You sometimes find yourself "crossing bridges before you come to them".....	107
108. You find it somewhat difficult to say "no" to a salesman who tries to sell you something you do not really want.....	108
109. There are only a few friends with whom you can relax and have a good time.....	109
110. You usually keep cheerful in spite of trouble.....	110
111. People sometimes tell you to "slow down" or "take it easy".....	111
112. You are one of those who drink or smoke more than they know they should.....	112
113. When you think you recognize someone you see in a public place, you ask him whether you have met him before.....	113
114. You prefer to work alone.....	114
115. Disappointments affect you so little that you seldom think about them twice.....	115
116. You are slow and deliberate in movement.....	116
117. You like wild enthusiasm, sometimes to a point bordering on rowdyism, at a football or baseball game.....	117
118. You feel self-conscious in the presence of important people.....	118
119. People think of you as being a very social type of person.....	119
120. You have often lost sleep over your worries.....	120
121. You can turn out a large amount of work in a short time.....	121
122. You keep at a task until it is done, even after nearly everyone else has given up.....	122
123. You can think of a good excuse when you need one.....	123
124. Other people say that it is difficult to get to know you well.....	124
125. Your daydreams are often about things that can never come true.....	125
126. You often run upstairs taking two steps at a time.....	126
127. You seldom let your responsibilities interfere with your having a good time.....	127
128. You would like to take on important responsibilities such as organizing a new business.....	128
129. You have hesitated to make or to accept "dates" because of shyness.....	129
130. Your mood is very easily influenced by people around you.....	130
131. Others are often amazed by the amount of work you turn out.....	131
132. You generally feel as though you haven't a care in the world.....	132
133. You find it difficult to get rid of a salesman to whom you do not care to listen or give your time.....	133
134. You are a listener rather than a talker in social conversations.....	134
135. You almost always feel that life is very much worth living.....	135

137.	You usually say what you feel like saying at the moment.....	137
138.	You like to speak in public.....	138
139.	You like to be with people.....	139
140.	You generally keep cool and think clearly in exciting situations.....	140
141.	Other people regard you as a lively individual.....	141
142.	When you get angry, if you let yourself go you feel better.....	142
143.	You seek to avoid all trouble with other people.....	143
144.	People seem to enjoy being with you.....	144
145.	You sometimes feel listless and tired for no good reason.....	145
146.	It is hard to understand why many people are so slow and get so little done.....	146
147.	You are fond of betting on horse races and games, whether you can afford it or not.....	147
148.	If someone you know has been spreading untrue and bad stories about you, you see him as soon as possible and have a talk about it.....	148
149.	Shyness keeps you from being as popular as you should be.....	149
150.	You are generally free from worry about possible misfortunes.....	150
151.	You nearly always receive all the credit that is coming to you for things you do.....	151
152.	You would like to tell certain people a thing or two.....	152
153.	You would rather spend an evening reading at home than to attend a large party.....	153
154.	You would change a lot of things about human nature if you could have your way about it.....	154
155.	You would like to go hunting with a rifle for wild game.....	155
156.	In group activities you get your full share of everything.....	156
157.	In most cases it is important to get what you want even if you have to fight to get it.....	157
158.	You often try to analyze the motives of others.....	158
159.	Most public office holders generally put public interests ahead of their own.....	159
160.	The sight of blood frightens you.....	160
161.	People talk about you behind your back.....	161
162.	Money is important mostly because it gives its owner power.....	162
163.	It is easy for you to act naturally wherever you are.....	163
164.	Most people are stupid.....	164
165.	You feel deeply sorry for a bird with a broken wing.....	165
166.	Other people often blame you for things you didn't do.....	166
167.	You hate to lose in a contest.....	167
168.	You like a job that requires attention to many details.....	168
169.	Most people fulfill their duties even when not being watched.....	169
170.	You can look at snakes without shuddering.....	170
171.	You often become bored when the subject of conversation shifts away from your own experience, hobbies, or interests.....	171
172.	You hate to lose an argument even when the issue is not very important.....	172
173.	You are usually too busy to spend time in reflective thought.....	173
174.	Most people know what to do without being told.....	174
175.	When a parent, teacher, or boss scolds you, you feel like weeping.....	175
176.	You are touchy about some things.....	176
177.	You know someone whom you would particularly like to see "put in his (or her) place".....	177
178.	You are more interested in athletics than in intellectual things.....	178
179.	Most people are paid as well as they should be for what they contribute to society.....	179
180.	The idea of finding a bug or a worm crawling on you makes you shudder.....	180
181.	You often feel that one of the main characters in a movie or a play is like you.....	181
182.	You hesitate to tell people to mind their own business.....	182

184.	In most places the traffic laws are in great need of improvement.....	184
185.	You would rather study mathematics and science than literature and music.....	185
186.	You get into scrapes which you did not seek to stir up.....	186
187.	You resent having friends or members of your family give you orders.....	187
188.	You are philosophically inclined, that is, inclined to philosophize about things.....	188
189.	Most people keep to the "straight and narrow path" only because of the fear of being caught.....	189
190.	You especially dislike to get your hands dirty or greasy.....	190
191.	You are inclined to think about yourself much of the time.....	191
192.	You have frequently felt like telling "nosey" people to mind their own business.....	192
193.	You are frequently "lost in thought".....	193
194.	Far too many people try to take as much as they can and give as little as possible back to society....	194
195.	You like to read true stories about love and romance.....	195
196.	You get over a humiliating experience very quickly.....	196
197.	In group undertakings you almost always feel that your own plans are best.....	197
198.	You like to discuss the more serious questions of life with your friends.....	198
199.	Most people today try to do an honest day's work for a day's pay.....	199
200.	You pay little attention to styles in clothing.....	200
201.	Almost everything that happens seems to have some relationship to you.....	201
202.	When people become bossy or domineering, you want to do the opposite of everything they tell you to do.....	202
203.	You often would like to know the underlying reasons behind the actions of other people.	203
204.	There are far too many useless laws which hamper an individual's personal freedom.....	204
205.	You would rather be a forest ranger than a dress designer.....	205
206.	Certain people deliberately say or do things to annoy you.....	206
207.	Some people become so rude that you feel the urge to "sit on them" or to "tell them off"....	207
208.	You sometimes have a peculiar feeling that you are not your old self.....	208
209.	Most people who get ahead today do so because they have "pull".....	209
210.	The sound of foul language disgusts you.....	210
211.	There are many kinds of work that you would not think of doing because they are not good enough for you.....	211
212.	You get into fights or arguments in defense of your friends or members of your family.....	212
213.	You enjoy thinking out complicated problems.....	213
214.	Most people learn quickly to avoid making the same mistake twice.....	214
215.	You are only mildly disturbed when you see or hear of animals being treated cruelly.....	215
216.	People offend you without knowing it because you hide your feelings from them.....	216
217.	You get a lot of satisfaction from making other people do as you want them to....	217
218.	You often take time out just to meditate about things.....	218
219.	You have received about all the rewards in life that you deserve.....	219
220.	You would rather be an interior decorator than an architectural engineer.....	220
221.	You have felt that certain persons are secretly trying to get the better of you.....	221
222.	You are likely to talk back to a policeman or other person in authority over you if you feel like it....	222
223.	You find it very interesting to watch people to see what they will do.....	223
224.	The number of "two-faced" individuals you have known is actually very small.....	224
225.	You feel very badly if someone does not approve of what you are wearing.....	225
226.	You very often seek the advice of other people.....	226
227.	When someone is not playing fair, you like to see him beaten at his own game.....	227
228.	You are constantly alert to ways of improving yourself.....	228
229.	Most groups of people behave like a bunch of sheep, that is, they blindly follow a leader.....	229

231.	It is difficult to hurt your feelings.....	231
232.	Anyone trying to take away any of your lawful rights will have a real fight on his hands with you personally.....	232
233.	You are inclined to steer clear of complicated problems that call for thinking.....	233
234.	In general, people higher up tend to assume their share of the dirty work, not leaving it for others to do.....	234
235.	The sight of ragged or soiled fingernails is repulsive to you.....	235
236.	There have been times when you have been bothered by the idea that someone is reading your thoughts	236
237.	It pays to "turn the other cheek" rather than to start a fight.....	237
238.	You try to sense what people are thinking about as they talk to you.....	238
239.	You have had your share of good luck.....	239
240.	You feel deeply sorry for a mistreated horse.....	240
241.	You have been seriously slighted more than once.....	241
242.	When you resent the actions of anyone, you promptly tell him so.....	242
243.	After a critical moment is over, you usually think of something you should have done but didn't do.....	243
244.	If you want a thing done right, you must do it yourself.....	244
245.	You can handle a loaded gun without feeling at all jittery.....	245
246.	Other people too often take the credit for things you yourself have done.....	246
247.	You know or have known someone personally whom you would like to see behind prison bars	247
248.	You are much concerned over the morals of your generation.....	248
249.	Large business corporations are a good thing.....	249
250.	You cry rather easily.....	250
251.	When things go wrong, it upsets you very little.....	251
252.	You see to it that people do not take advantage of you.....	252
253.	You are inclined to ponder over your past.....	253
254.	Some people pay more attention to your comings and goings than they should....	254
255.	The sight of large bugs and spiders gives you a "creepy" feeling.....	255
256.	You often feel that a speaker is talking about you personally.....	256
257.	You are unhappy unless things in an organization go pretty much as you want them to	257
258.	You enjoy analyzing your own thoughts and feelings.....	258
259.	Most people use politeness to cover up what is really "cut-throat" competition.....	259
260.	You would rather be a building contractor than a nurse.....	260
261.	You have days in which it seems that everything goes wrong.....	261
262.	You feel the urge to stir up some excitement when things become dull.....	262
263.	You would rather put plans into action than to spend time working them out.....	263
264.	The educational system in this country is all right in most ways.....	264
265.	You feel sorry for a fish that is caught on a hook.....	265
266.	You often unburden your troubles to others.....	266
267.	You would like to have enough money or power in order to impress people who think they are better than you are.....	267
268.	You frequently find yourself in a meditative state.....	268
269.	People today have just about as many chances for success as in your parents' day.....	269
270.	You feel strongly against kissing a friend of your own sex and age.....	270
271.	You are too sensitive for your own good.....	271
272.	You have often found it necessary to fight for what you believe to be right.....	272
273.	You often watch others to see what effects your words or actions have upon them.....	273

275.	You are willing to take a chance alone in a situation where the outcome is doubtful.....	275
276.	People have criticized you unjustly to others.....	276
277.	The opinions of most people are worthless.....	277
278.	You are inclined to be introspective, that is, to analyze yourself.....	278
279.	Almost anyone, even though poor, can get a square deal in courts of law.....	279
280.	You would rather be a miner than a florist.....	280
281.	It is difficult for you to become interested in the problems of others when you have so many of your own.....	281
282.	It bothers you to have other people tell you what you should do.....	282
283.	You often wonder about why human life exists and what its future is.....	283
284.	Some people deliberately make things hard for you.....	284
285.	Odors of perspiration disgust you.....	285
286.	Criticism disturbs you very little.....	286
287.	It bothers you to see someone else bungling a job that you know perfectly well how to manage ...	287
288.	You are inclined to live in the present, leaving the past and the future out of your thoughts.....	288
289.	Most people will tell a lie now and then in order to get ahead.....	289
290.	The sight of an unshaven man disgusts you.....	290
291.	When you lose something you often begin to suspect someone of either having taken it or having misplaced it.....	291
292.	There are some people whose actions seem continually to irritate you.....	292
293.	You like to have time to be alone with your thoughts.....	293
294.	There are entirely too many employees who deserve higher pay than their bosses.....	294
295.	You like love scenes in a movie or play.....	295
296.	There are times when it seems that everyone is against you.....	296
297.	If anyone steps ahead of you in line, he is likely to hear from you about it.....	297
298.	You often wonder why people behave as they do.....	298
299.	Nearly all people try to do the right thing when given a chance.....	299
300.	When you become emotional you come to the point of tears.....	300

BE SURE YOU HAVE ANSWERED EVERY ITEM

APPENDIX V

GUILFORD-ZIMMERMAN TEMPERAMENT SURVEY ANSWER SHEET

Part K = _____ Part S_c = _____
 Part P_a = _____ Part S_i = _____

302	332	362	392	422	452	482	512	542	
303	333	363	393	423	453	483	513	543	
304	334	364	394	424	454	484	514	544	
305	335	365	395	425	455	485	515	545	
306	336	366	396	426	456	486	516	546	
307	337	367	397	427	457	487	517	547	
308	338	368	398	428	458	488	518	548	
309	339	369	399	429	459	489	519	549	
310	340	370	400	430	460	490	520	550	
311	341	371	401	431	461	491	521	551	
312	342	372	402	432	462	492	522	552	
313	343	373	403	433	463	493	523	553	
314	344	374	404	434	464	494	524	554	
315	345	375	405	435	465	495	525	555	
BE SURE YOUR MARKS ARE HEAVY AND BLACK. ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.									
316	346	376	406	436	466	496	526	556	
317	347	377	407	437	467	497	527	557	
318	348	378	408	438	468	498	528	558	
319	349	379	409	439	469	499	529	559	
320	350	380	410	440	470	500	530	560	
321	351	381	411	441	471	501	531	561	
322	352	382	412	442	472	502	532	562	
323	353	383	413	443	473	503	533	563	
324	354	384	414	444	474	504	534	564	
325	355	385	415	445	475	505	535	565	
326	356	386	416	446	476	506	536	566	
327	357	387	417	447	477	507	537		
328	358	388	418	448	478	508	538		
329	359	389	419	449	479	509	539		
330	360	390	420	450	480	510	540		

APPENDIX VI

SOCIAL PERCEPTION STUDY

Instructions

DATE _____

In this study you are given 100 questions to answer Yes or No. (Although there is a space on the answer sheet to mark (?), this space is not to be used. You must choose either Yes or No.)

After you have marked your answer sheet Yes or No, write beside your answer the percentage of male HCS students you think would answer the same as you did. For example, a question might read: "You have very few headaches." Suppose you answer "Yes". Then estimate what percentage of your fellow male HCS students would also answer Yes. If you think all of them would, write 100%. If you think none of them would, write 0%. If you think they would split somewhere in between, write some percentage between 0% and 100%. If you answer No to a question, then estimate what percentage would also answer No. Always write the percentage you estimate would answer the question the same as you did. However, you must not use 50% for your estimate. If you think it is an even split, choose some percentage near the middle, but do not choose exactly 50%.

You will notice that the questions are not in strict numerical order. They are in groups of five, skipping ten between groups. This means that on the answer sheet you go across the first line, then skip two lines to the arrow, go across that line, then skip two more lines, etc. This will not be as hard as it sounds, because the answer sheets are marked in this manner for your convenience.

Remember, you must not use the (?) in the answer sheet. Answer Yes or No, whichever is more correct for you. And for your estimate of what percentage of male HCS students would answer the same as you did, you may use any percentage between 0% and 100%, except for exactly 50%.

(Your responses will never be shown to anyone connected in any way with HCS.)

2. You would rather plan an activity than take part in it.
3. You have more than once taken the lead in organizing a project or a group of some kind.
4. You like to entertain guests.
5. Your interests change quickly from one thing to another.
16. You are often so much "on the go" that sooner or later you may wear yourself out.
17. You like parties you attend to be lively.
18. If you hold an opinion that is radically different from that expressed by a lecturer, you are likely to tell him about it either during or after the lecture.
19. It is difficult for you to chat about things in general with people.
20. You give little thought to your failures after they are past.
31. You work more slowly and deliberately than most people of your sex and age.
32. You are a carefree individual.
33. When a person does not play fair you hesitate to say anything about it to him.
34. It bothers you to have people watch you at your work.
35. You have usually been optimistic about your future.
46. People think you are a very energetic person.
47. You sometimes make quick decisions that you later wish you hadn't made.
48. You find it difficult to ask for money or other donations, even for a cause in which you are interested.
49. You are so naturally friendly that people immediately feel at ease with you.
50. You daydream a great deal.
61. You sometimes wish that people would slow down a bit and give you a chance to catch up.
62. Many of your friends think you take your work too seriously.
63. You hesitate to walk into a meeting when you know that everyone's eyes will be upon you.
64. You limit your friendships mostly to members of your own sex.
65. You almost always feel well and strong.
76. You talk more slowly than most people.
77. You like to play practical jokes upon others.
78. You take the lead in putting life into a dull party.
79. You would like to belong to as many clubs and social organizations as possible.
80. There are times when your mind seems to work very slowly and other times when it works very rapidly.
91. You are often very busy.
92. You are often very busy.
93. You are often very busy.
94. You are often very busy.
95. You are often very busy.
96. You are often very busy.
97. You are often very busy.
98. You are often very busy.
99. You are often very busy.

94. You are so shy it bothers you.
95. You are sometimes bothered by having a useless thought come into your mind over and over.
106. You dislike to be hurried in your work.
107. You sometimes find yourself "crossing bridges before you come to them".
108. You find it somewhat difficult to say "no" to a salesman who tries to sell you something you do not really want.
109. There are only a few friends with whom you can relax and have a good time.
110. You usually keep cheerful in spite of trouble.
121. You can turn out a large amount of work in a short time.
122. You keep at a task until it is done, even after nearly everyone else has given up.
123. You can think of a good excuse when you need one.
124. Other people say that it is difficult to get to know you well.
125. Your daydreams are often about things that can never come true.
136. It irritates you to have to wait at a crossing for a long freight train to pass.
137. You usually say what you feel like saying at the moment.
138. You like to speak in public.
139. You like to be with people.
140. You generally keep cool and think clearly in exciting situations.
156. In group activities you get your full share of everything.
157. In most cases it is important to get what you want even if you have to fight to get it.
158. You often try to analyze the motives of others.
159. Most public office holders generally put public interests ahead of their own.
160. The sight of blood frightens you.
171. You often become bored when the subject of conversation shifts away from your own experience, hobbies, or interests.
172. You hate to lose an argument even when the issue is not very important.
173. You are usually too busy to spend time in reflective thought.
174. Most people know what to do without being told.
175. When a parent, teacher, or boss scolds you, you feel like weeping.
186. You get into scrapes which you did not seek to stir up.
187. You resent having friends or members of your family give you orders.
188. You are philosophically inclined, that is, inclined to philosophize about things.
189. Most people keep to the straight and narrow path only because of the fear of being caught.
190. You especially dislike to get your hands dirty or greasy.

- of everything they tell you to do.
203. You often would like to know the underlying reasons behind the actions of other people.
204. There are far too many useless laws which hamper an individual's personal freedom.
205. You would rather be a forest ranger than a dress designer.
216. People offend you without knowing it because you hide your feelings from them.
217. You get a lot of satisfaction from making other people do as you want them to.
218. You often take time out just to meditate about things.
219. You have received about all the rewards in life that you deserve.
220. You would rather be an interior decorator than an architectural engineer.
231. It is difficult to hurt your feelings.
232. Anyone trying to take away any of your lawful rights will have a real fight on his hands.
233. You are inclined to steer clear of complicated problems that call for thinking.
234. In general, people higher up tend to assume their share of the dirty work, not leaving it for others to do.
235. The sight of ragged or soiled fingernails is repulsive to your
246. Other people too often take the credit for things you yourself have done.
247. You know or have known someone personally whom you would like to see behind prison bars.
248. You are much concerned over the morals of your generation.
249. Large business corporations are a good thing.
250. You cry rather easily.
261. You have days in which it seems that everything goes wrong.
262. You feel the urge to stir up some excitement when things become dull.
263. You would rather put plans into action than to spend time working them out.
264. The educational system in this country is all right in most ways.
265. You feel sorry for a fish that is caught on a hook.
276. People have criticized you unjustly to others.
277. The opinions of most people are worthless.
278. You are inclined to be introspective, that is to analyze yourself.
279. Almost anyone, even though poor, can get a square deal in courts of law.
280. You would rather be a miner than a florist.
291. When you lose something you often begin to suspect someone of either having taken it or having misplaced it.
292. There are some people whose actions seem continually to irritate you.
293. You like to have time to be alone with your thoughts.
294. There are entirely too many employees who deserve higher pay than their
295. You like love scenes in a movie or play. bosses.

APPENDIX VII

SOCIAL PERCEPTION STUDY ANSWER SHEET

G-Z SURVEY OF OPINIONS OR G-Z TEMP. SURVEY

NAME _____ AGE _____ SEX _____

YOUR GROUP

DATE

→

→

→

→

→

→

→

→

→

→

6 Yes ? No
11 Yes ? No
16 Yes ? No
21 Yes ? No
26 Yes ? No
31 Yes ? No
36 Yes ? No
41 Yes ? No
46 Yes ? No
51 Yes ? No
56 Yes ? No
61 Yes ? No
66 Yes ? No
71 Yes ? No

76 Yes ? No
81 Yes ? No
86 Yes ? No
91 Yes ? No
96 Yes ? No
101 Yes ? No
106 Yes ? No
111 Yes ? No
116 Yes ? No
121 Yes ? No
126 Yes ? No
131 Yes ? No
136 Yes ? No
141 Yes ? No

7 Yes ? No
12 Yes ? No
17 Yes ? No
22 Yes ? No
27 Yes ? No
32 Yes ? No
37 Yes ? No
42 Yes ? No
47 Yes ? No
52 Yes ? No
57 Yes ? No
62 Yes ? No
67 Yes ? No
72 Yes ? No

77 Yes ? No
82 Yes ? No
87 Yes ? No
92 Yes ? No
97 Yes ? No
102 Yes ? No
107 Yes ? No
112 Yes ? No
117 Yes ? No
122 Yes ? No
127 Yes ? No
132 Yes ? No
137 Yes ? No
142 Yes ? No

8 Yes ? No
13 Yes ? No
18 Yes ? No
23 Yes ? No
28 Yes ? No
33 Yes ? No
38 Yes ? No
43 Yes ? No
48 Yes ? No
53 Yes ? No
58 Yes ? No
63 Yes ? No
68 Yes ? No
73 Yes ? No

78 Yes ? No
83 Yes ? No
88 Yes ? No
93 Yes ? No
98 Yes ? No
103 Yes ? No
108 Yes ? No
113 Yes ? No
118 Yes ? No
123 Yes ? No
128 Yes ? No
133 Yes ? No
138 Yes ? No
143 Yes ? No

9 Yes ? No
14 Yes ? No
19 Yes ? No
24 Yes ? No
29 Yes ? No
34 Yes ? No
39 Yes ? No
44 Yes ? No
49 Yes ? No
54 Yes ? No
59 Yes ? No
64 Yes ? No
69 Yes ? No
74 Yes ? No

79 Yes ? No
84 Yes ? No
89 Yes ? No
94 Yes ? No
99 Yes ? No
104 Yes ? No
109 Yes ? No
114 Yes ? No
119 Yes ? No
124 Yes ? No
129 Yes ? No
134 Yes ? No
139 Yes ? No
144 Yes ? No

10 Yes ? No
15 Yes ? No
20 Yes ? No
25 Yes ? No
30 Yes ? No
35 Yes ? No
40 Yes ? No
45 Yes ? No
50 Yes ? No
55 Yes ? No
60 Yes ? No
65 Yes ? No
70 Yes ? No
75 Yes ? No

80 Yes ? No
85 Yes ? No
90 Yes ? No
95 Yes ? No
100 Yes ? No
105 Yes ? No
110 Yes ? No
115 Yes ? No
120 Yes ? No
125 Yes ? No
130 Yes ? No
135 Yes ? No
140 Yes ? No
145 Yes ? No

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

156	Yes ? No	%157	Yes ? No	%158	Yes ? No	%159	Yes ? No	%160	Yes ? No
161	Yes ? No	162	Yes ? No	163	Yes ? No	164	Yes ? No	165	Yes ? No
166	Yes ? No	167	Yes ? No	168	Yes ? No	169	Yes ? No	170	Yes ? No
171	Yes ? No	%172	Yes ? No	%173	Yes ? No	%174	Yes ? No	%175	Yes ? No
176	Yes ? No	177	Yes ? No	178	Yes ? No	179	Yes ? No	180	Yes ? No
181	Yes ? No	182	Yes ? No	183	Yes ? No	184	Yes ? No	185	Yes ? No
186	Yes ? No	%187	Yes ? No	%188	Yes ? No	%189	Yes ? No	%190	Yes ? No
191	Yes ? No	192	Yes ? No	193	Yes ? No	194	Yes ? No	195	Yes ? No
196	Yes ? No	197	Yes ? No	198	Yes ? No	199	Yes ? No	200	Yes ? No
201	Yes ? No	%202	Yes ? No	%203	Yes ? No	%204	Yes ? No	%205	Yes ? No
206	Yes ? No	207	Yes ? No	208	Yes ? No	209	Yes ? No	210	Yes ? No
211	Yes ? No	212	Yes ? No	213	Yes ? No	214	Yes ? No	215	Yes ? No
216	Yes ? No	%217	Yes ? No	%218	Yes ? No	%219	Yes ? No	%220	Yes ? No
221	Yes ? No	222	Yes ? No	223	Yes ? No	224	Yes ? No	225	Yes ? No

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

226	Yes ? No	227	Yes ? No	228	Yes ? No	229	Yes ? No	230	Yes ? No
231	Yes ? No	%232	Yes ? No	%233	Yes ? No	%234	Yes ? No	%235	Yes ? No
236	Yes ? No	237	Yes ? No	238	Yes ? No	239	Yes ? No	240	Yes ? No
241	Yes ? No	242	Yes ? No	243	Yes ? No	244	Yes ? No	245	Yes ? No
246	Yes ? No	%247	Yes ? No	%248	Yes ? No	%249	Yes ? No	%250	Yes ? No
251	Yes ? No	252	Yes ? No	253	Yes ? No	254	Yes ? No	255	Yes ? No
256	Yes ? No	257	Yes ? No	258	Yes ? No	259	Yes ? No	260	Yes ? No
261	Yes ? No	%262	Yes ? No	%263	Yes ? No	%264	Yes ? No	%265	Yes ? No
266	Yes ? No	267	Yes ? No	268	Yes ? No	269	Yes ? No	270	Yes ? No
271	Yes ? No	272	Yes ? No	273	Yes ? No	274	Yes ? No	275	Yes ? No
276	Yes ? No	%277	Yes ? No	%278	Yes ? No	%279	Yes ? No	%280	Yes ? No
281	Yes ? No	282	Yes ? No	283	Yes ? No	284	Yes ? No	285	Yes ? No
286	Yes ? No	287	Yes ? No	288	Yes ? No	289	Yes ? No	290	Yes ? No
291	Yes ? No	%292	Yes ? No	%293	Yes ? No	%294	Yes ? No	%295	Yes ? No

APPENDIX VIII

MAJORITY ANSWERS TO GZTS QUESTIONS AS GIVEN
BY SUBJECTS IN THIS STUDY

G-Z SURVEY OF OPINIONS OR G-Z TEMP. SURVEY

AGE SEX

MIDDLE

FIRST

YOUR GROUP

NAME

DATE

E

S

A

R

G

6 Yes ? No
11 Yes ? No
16 Yes ? No
21 Yes ? No
26 Yes ? No
31 Yes ? No
36 Yes ? No
41 Yes ? No
46 Yes ? No
51 Yes ? No
56 Yes ? No
61 Yes ? No
66 Yes ? No
71 Yes ? No

7 Yes ? No
12 Yes ? No
17 Yes ? No
22 Yes ? No
27 Yes ? No
32 Yes ? No
37 Yes ? No
42 Yes ? No
47 Yes ? No
52 Yes ? No
57 Yes ? No
62 Yes ? No
67 Yes ? No
72 Yes ? No

8 Yes ? No
13 Yes ? No
18 Yes ? No
23 Yes ? No
28 Yes ? No
33 Yes ? No
38 Yes ? No
43 Yes ? No
48 Yes ? No
53 Yes ? No
58 Yes ? No
63 Yes ? No
68 Yes ? No
73 Yes ? No

9 Yes ? No
14 Yes ? No
19 Yes ? No
24 Yes ? No
29 Yes ? No
34 Yes ? No
39 Yes ? No
44 Yes ? No
49 Yes ? No
54 Yes ? No
59 Yes ? No
64 Yes ? No
69 Yes ? No
74 Yes ? No

10 Yes ? No
15 Yes ? No
20 Yes ? No
25 Yes ? No
30 Yes ? No
35 Yes ? No
40 Yes ? No
45 Yes ? No
50 Yes ? No
55 Yes ? No
60 Yes ? No
65 Yes ? No
70 Yes ? No
75 Yes ? No

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

76 Yes ? No
81 Yes ? No
86 Yes ? No
91 Yes ? No
96 Yes ? No
101 Yes ? No
106 Yes ? No
111 Yes ? No
116 Yes ? No
121 Yes ? No
126 Yes ? No
131 Yes ? No
136 Yes ? No
141 Yes ? No

77 Yes ? No
82 Yes ? No
87 Yes ? No
92 Yes ? No
97 Yes ? No
102 Yes ? No
107 Yes ? No
112 Yes ? No
117 Yes ? No
122 Yes ? No
127 Yes ? No
132 Yes ? No
137 Yes ? No
142 Yes ? No

78 Yes ? No
83 Yes ? No
88 Yes ? No
93 Yes ? No
98 Yes ? No
103 Yes ? No
108 Yes ? No
113 Yes ? No
118 Yes ? No
123 Yes ? No
128 Yes ? No
133 Yes ? No
138 Yes ? No
143 Yes ? No

79 Yes ? No
84 Yes ? No
89 Yes ? No
94 Yes ? No
99 Yes ? No
104 Yes ? No
109 Yes ? No
114 Yes ? No
119 Yes ? No
124 Yes ? No
129 Yes ? No
134 Yes ? No
139 Yes ? No
144 Yes ? No

80 Yes ? No
85 Yes ? No
90 Yes ? No
95 Yes ? No
100 Yes ? No
105 Yes ? No
110 Yes ? No
115 Yes ? No
120 Yes ? No
125 Yes ? No
130 Yes ? No
135 Yes ? No
140 Yes ? No
145 Yes ? No
150 Yes ? No

G-7 SURVEY OF OPINIONS OR G-Z TEMP. SURVEY

156 Yes ? No
161 Yes ? No
166 Yes ? No
171 Yes ? No
176 Yes ? No
181 Yes ? No
186 Yes ? No
191 Yes ? No
196 Yes ? No
201 Yes ? No
206 Yes ? No
211 Yes ? No
216 Yes ? No
221 Yes ? No

157 Yes ? No
162 Yes ? No
167 Yes ? No
172 Yes ? No
177 Yes ? No
182 Yes ? No
187 Yes ? No
192 Yes ? No
197 Yes ? No
202 Yes ? No
207 Yes ? No
212 Yes ? No
217 Yes ? No
222 Yes ? No

158 Yes ? No
163 Yes ? No
168 Yes ? No
173 Yes ? No
178 Yes ? No
183 Yes ? No
188 Yes ? No
193 Yes ? No
198 Yes ? No
203 Yes ? No
208 Yes ? No
213 Yes ? No
218 Yes ? No
223 Yes ? No

159 Yes ? No
164 Yes ? No
169 Yes ? No
174 Yes ? No
179 Yes ? No
184 Yes ? No
189 Yes ? No
194 Yes ? No
199 Yes ? No
204 Yes ? No
209 Yes ? No
214 Yes ? No
219 Yes ? No
224 Yes ? No

160 Yes ? No
165 Yes ? No
170 Yes ? No
175 Yes ? No
180 Yes ? No
185 Yes ? No
190 Yes ? No
195 Yes ? No
200 Yes ? No
205 Yes ? No
210 Yes ? No
215 Yes ? No
220 Yes ? No
225 Yes ? No

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

226 Yes ? No
231 Yes ? No
236 Yes ? No
241 Yes ? No
246 Yes ? No
251 Yes ? No
256 Yes ? No
261 Yes ? No
266 Yes ? No
271 Yes ? No
276 Yes ? No
281 Yes ? No
286 Yes ? No
291 Yes ? No

227 Yes ? No
232 Yes ? No
237 Yes ? No
242 Yes ? No
247 Yes ? No
252 Yes ? No
257 Yes ? No
262 Yes ? No
267 Yes ? No
272 Yes ? No
277 Yes ? No
282 Yes ? No
287 Yes ? No
292 Yes ? No

228 Yes ? No
233 Yes ? No
238 Yes ? No
243 Yes ? No
248 Yes ? No
253 Yes ? No
258 Yes ? No
263 Yes ? No
268 Yes ? No
273 Yes ? No
278 Yes ? No
283 Yes ? No
288 Yes ? No
293 Yes ? No

229 Yes ? No
234 Yes ? No
239 Yes ? No
244 Yes ? No
249 Yes ? No
254 Yes ? No
259 Yes ? No
264 Yes ? No
269 Yes ? No
274 Yes ? No
279 Yes ? No
284 Yes ? No
289 Yes ? No
294 Yes ? No

230 Yes ? No
235 Yes ? No
240 Yes ? No
245 Yes ? No
250 Yes ? No
255 Yes ? No
260 Yes ? No
265 Yes ? No
270 Yes ? No
275 Yes ? No
280 Yes ? No
285 Yes ? No
290 Yes ? No
295 Yes ? No

APPENDIX IX

RAW SCORES AND RANKS FOR WORD-ASSOCIATION STUDY

- Column 1 Word-Association Assumed Similarity Score
- Column 2 Word-Association Assumed Similarity Rank
- Column 3 Word-Association Real Similarity Score
- Column 4 Word-Association Real Similarity Rank
- Column 5 Loyola Language Study Score
- Column 6 Loyola Language Study Rank

(The ranks should be understood as having a decimal between the last two digits.)

CODE	1	2	3	4	5	6	129
001	14	1305	18	1125	15	1255	
002	15	1290	16	1195	35	140	
003	40	270	25	685	30	390	
004	26	1000	22	880	22	895	
005	36	500	19	1100	26	610	
006	24	1075	15	1230	13	1315	
007	42	170	24	785	24	745	
008	33	680	26	565	22	895	
009	35	575	16	1195	23	805	
010	28	920	20	1035	28	490	
011	32	735	16	1195	16	1220	
012	24	1075	13	1265	31	330	
013	16	1280	12	1295	29	445	
014	22	1155	20	1035	19	1105	
015	20	1210	13	1265	15	1255	
016	32	735	22	880	14	1280	
017	21	1185	25	685	30	390	
018	43	130	31	300	24	745	
019	37	435	31	300	34	190	
020	31	770	30	360	28	490	
021	32	735	31	300	29	445	
022	26	1000	19	1100	37	75	
023	17	1270	17	1155	21	985	
024	38	380	26	565	35	140	
025	30	810	15	1230	26	610	

CODE	1	2	3	4	5	6
026	25	1 030	28	460	31	330
027	18	1 250	25	685	22	895
028	22	1 155	23	820	22	895
029	18	1 250	16	1 195	20	1 050
030	12	1 325	8	1 340	22	895
031	29	865	22	880	21	985
032	28	920	20	1 035	31	330
033	20	1 210	28	460	13	1 315
034	37	435	33	195	27	540
035	33	680	20	1 035	17	1 180
036	41	220	24	785	23	805
037	11	1 345	3	1 370	17	1 180
038	25	1 030	26	565	36	1 00
039	18	1 250	13	1 265	16	1 220
040	19	1 230	9	1 330	12	1 355
041	40	270	43	15	35	140
042	24	1 075	34	135	17	1 180
043	27	965	22	880	16	1 220
044	41	220	35	95	34	190
045	41	220	25	685	32	270
046	11	1 345	5	1 360	18	1 145
047	36	500	26	565	34	190
048	41	220	34	135	34	190
049	36	500	17	1 155	21	985
050	30	810	22	880	31	330

CODE	1	2	3	4	5	6	131
051	30	810	21	955	17	1180	
052	24	1075	17	1155	12	1355	
053	33	680	31	300	40	30	
054	27	965	20	1035	22	895	
055	22	1155	13	1265	21	985	
056	35	575	28	460	25	685	
057	54	10	39	50	31	330	
058	38	380	42	35	33	230	
059	43	130	25	685	22	895	
060	35	575	25	685	21	985	
061	36	500	35	95	30	390	
062	20	1210	15	1230	23	805	
063	23	1120	30	360	23	805	
064	24	1075	26	565	25	685	
065	36	500	25	685	36	100	
066	29	865	20	1035	19	1105	
067	40	270	25	685	25	685	
068	9	1360	10	1315	18	1145	
069	29	865	30	360	27	540	
070	39	320	20	1035	25	685	
071	42	170	28	460	21	985	
072	51	20	34	135	29	445	
073	40	270	27	515	31	330	
074	33	680	23	820	20	1050	
075	47	65	37	65	25	685	

CODE	1	2	3	4	5	6	132
076	22	1155	17	1155	27	540	
077	30	810	28	460	30	390	
078	49	45	30	360	32	270	
079	27	965	31	300	17	1180	
080	14	1305	19	1100	11	1370	
081	37	435	20	1035	29	445	
082	28	920	23	820	22	895	
083	24	1075	18	1125	19	1105	
084	45	95	24	785	26	610	
085	31	770	25	685	22	895	
086	38	380	22	880	21	985	
087	28	920	29	405	19	1105	
088	35	575	21	955	20	1050	
089	38	380	22	880	27	540	
090	37	435	37	65	29	445	
091	47	65	32	255	26	610	
092	38	380	33	195	36	100	
093	44	110	34	135	39	45	
094	36	500	22	880	25	685	
095	39	320	25	685	19	1105	
096	27	965	21	955	31	330	
097	29	865	21	955	13	1315	
098	34	625	26	565	24	745	
099	21	1185	25	685	15	1255	
100	33	680	24	785	20	1050	

101	39	320	30	360	20	1050
102	42	170	30	360	27	540
103	36	500	26	565	26	610
104	49	45	26	565	27	540
105	23	1120	20	1035	19	1105
106	35	575	28	460	38	60
107	43	130	33	195	39	45
108	36	500	25	685	35	140
109	35	575	35	95	44	10
110	40	270	33	195	33	230
111	42	170	25	685	30	390
112	29	865	21	955	32	270
113	31	770	27	515	27	540
114	36	500	29	405	23	805
115	25	1030	22	880	13	1315
116	50	30	43	15	42	20
117	34	625	28	460	29	445
118	45	95	25	685	25	685
119	41	220	30	360	26	610
120	46	80	42	35	34	190
121	38	380	33	195	33	230
122	28	920	20	1035	24	745
123	26	1000	33	195	23	805
124	33	680	32	255	25	685
125	42	170	33	195	37	75

CODE

1

2

3

4

5

6

134

126 39 320 32 255 35 140

127 23 1120 12 1295 13 1315

128 4 1370 10 1315 28 490

129 12 1325 7 1350 23 805

130 34 625 28 460 23 805

131 32 735 25 685 26 610

132 29 865 21 955 15 1255

133 38 380 33 195 32 270

134 30 810 25 685 21 985

135 34 625 35 95 32 270

136 39 320 28 460 22 895

137 33 680 32 255 13 1315

APPENDIX X

RAW SCORES AND RANKS FOR SOCIAL PERCEPTION STUDY

Column 1 Social Perception Assumed Similarity Score

Column 2 Social Perception Assumed Similarity Rank

Column 3 Social Perception Real Similarity Score

Column 4 Social Perception Real Similarity Rank

Column 5 Social Perception Accuracy Score

Column 6 Social Perception Accuracy Rank

(The ranks should be understood as having a decimal between the last two digits.)

(The Social Perception Accuracy Score is a "difference" score, hence the Social Perception Accuracy Rank as shown here is actually an Inaccuracy Rank, and was reversed for the computation of the correlations.

CODE	1	2	3	4	5	6	136
001	35	1335	194	760	2998	190	
002	93	250	212	260	2993	200	
003	69	935	197	700	2566	580	
004	94	230	228	30	1820	1270	
005	81	595	232	10	2192	980	
006	54	1180	218	180	2747	420	
007	45	1270	211	290	3460	70	
008	98	130	175	1185	2261	890	
009	75	805	221	115	2121	1070	
010	92	260	202	605	2630	520	
011	95	195	163	1280	2154	1030	
012	75	805	214	245	1980	1190	
013	56	1160	219	165	3110	130	
014	79	680	201	630	2251	910	
015	61	1085	223	90	2769	400	
016	89	390	203	585	2738	440	
017	80	645	226	60	2590	540	
018	84	440	210	335	2178	1000	
019	100	40	209	370	2358	800	
020	65	1010	223	90	2584	550	
021	98	130	208	410	3353	80	
022	25	1360	193	795	2879	315	
023	27	1350	196	725	3549	50	
024	77	740	204	560	2892	300	
025	77	740	192	830	2435	690	

CODE	1	2	3	4	5	6	137
026	68	960	161	1295	1854	1240	
027	49	1250	208	410	2647	490	
028	39	1310	199	675	2644	510	
029	67	975	215	215	2334	830	
030	81	595	203	585	2948	280	
031	95	195	184	1005	2962	255	
032	95	195	208	410	2986	220	
033	65	1010	139	1360	2267	880	
034	62	1050	217	190	2547	600	
035	35	1335	193	795	3959	30	
036	83	470	180	1085	3308	90	
037	78	705	168	1240	2416	730	
038	91	295	221	115	2101	1080	
039	90	350	193	795	3214	120	
040	85	425	188	900	2512	630	
041	83	470	187	935	2152	1045	
042	79	680	181	1055	2026	1150	
043	100	40	215	215	2363	790	
044	44	1280	202	605	3076	160	
045	90	350	188	900	2381	760	
046	98	130	210	335	2330	840	
047	51	1220	199	675	2563	590	
048	69	935	200	655	1713	1310	
049	81	595	194	760	2470	640	
050	77	740	208	410	2949	270	

CODE	1	2	3	4	5	6	138
051	40	1295	165	1270	2860	330	
052	74	835	187	935	2236	940	
053	40	1295	179	1115	2831	350	
054	70	895	211	290	4144	20	
055	82	530	173	1205	1940	1200	
056	38	1320	156	1320	2303	860	
057	53	1200	211	290	2200	970	
058	81	595	207	455	2579	560	
059	48	1260	219	165	2879	315	
060	91	295	205	530	1902	1220	
061	91	295	161	1295	2255	900	
062	91	295	228	30	2073	1100	
063	66	990	210	335	2409	740	
064	99	90	184	1005	2539	620	
065	100	40	208	410	2810	370	
066	69	935	209	370	2723	460	
067	50	1240	188	900	2208	950	
068	54	1180	170	1220	2651	470	
069	82	530	169	1230	2342	820	
070	89	390	206	495	1897	1230	
071	90	350	183	1025	2380	770	
072	98	130	204	560	2576	570	
073	72	860	211	290	2002	1170	
074	15	1370	180	1085	4401	10	
075	58	1135	224	70	2745	430	

CODE	1	2	3	4	5	6	139
076	94	230	220	140	2242	920	
077	74	835	209	370	2435	690	
078	82	530	193	795	3047	170	
079	82	530	167	1255	1460	1350	
080	76	775	190	860	2465	650	
081	91	295	205	530	1669	1320	
082	70	895	153	1340	1832	1260	
083	100	40	198	690	2962	255	
084	81	595	206	495	2645	500	
085	59	1110	192	830	2775	390	
086	77	740	205	530	2372	780	
087	54	1180	155	1330	2796	380	
088	82	530	185	990	2933	290	
089	94	230	207	455	2000	1180	
090	100	40	183	1025	2977	240	
091	89	390	190	860	2733	450	
092	51	1220	186	970	3090	150	
093	58	1135	196	725	2435	690	
094	51	1220	173	1205	2848	340	
095	80	645	211	290	2166	1020	
096	100	40	204	560	2183	990	
097	77	740	178	1130	2077	1090	
098	75	805	214	245	2045	1120	
099	69	935	186	970	1087	1370	
100	63	1030	200	655	2395	750	

CODE	1	2	3	4	5	6	140
101	96	170	228	30	1742	1300	
102	61	1085	196	725	2056	1110	
103	65	1010	194	760	2426	710	
104	90	350	206	495	2283	870	
105	62	1050	131	1370	3249	110	
106	82	530	175	1185	2541	610	
107	61	1085	180	1085	3492	60	
108	83	470	196	725	2418	720	
109	95	195	187	935	2983	230	
110	85	425	207	455	1579	1340	
111	61	1085	187	935	2173	1010	
112	83	470	210	335	2025	1160	
113	90	350	206	495	2436	670	
114	70	895	179	1115	2201	960	
115	80	645	151	1350	3000	180	
116	79	680	189	880	2152	1045	
117	91	295	182	1040	2753	410	
118	100	40	207	455	1582	1330	
119	78	705	180	1085	2829	360	
120	97	160	227	50	2617	530	
121	81	595	220	140	2237	930	
122	80	645	223	90	1392	1360	
123	99	90	176	1165	3588	40	
124	86	410	215	215	1928	1210	
125	76	775	192	830	2027	1140	

CODE	1	2	3	4	5	6	111
126	58	1135	181	1055	3105	140	
127	99	90	190	860	2649	480	
128	70	895	201	630	3267	100	
129	73	850	220	140	1849	1250	
130	58	1135	159	1310	2150	1060	
131	83	470	215	215	2988	210	
132	67	975	167	1255	2031	1130	
133	71	870	177	1145	2348	810	
134	98	130	177	1145	2457	660	
135	75	805	186	970	1814	1280	
136	62	1050	176	1165	2304	850	
137	82	530	201	630	1795	1290	

APPROVAL SHEET

The dissertation submitted by Bruce Clare Becker has been read and approved by five members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the dissertation is now given final approval with reference to content, form, and mechanical accuracy.

The dissertation is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

May 23, 1962
Date

Vincent V. Herr-19
Signature of Adviser