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A TECHNIQUE  
FOR THE MEASUREMENT OF  
REALISM IN SOCIAL SITUATIONS

by

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## ABSTRACT

A Technique for the Measurement of Realism in Social Situations.

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It is suggested that it might be useful to develop techniques which are specifically designed to examine the social aspects of experimental situations, in light of the increased emphasis and recognition given social phenomena in psychology in recent years. For this purpose the author attempts to modify level of aspiration techniques for use in sociometric situations. Concern is mainly with the concept of realism, which is operationally defined, on the basis of previous studies of the level of aspiration, as "that function of personality revealed by a technique designed to measure a subject's ability to designate accurately his expected performance in an activity in which he has had some experience and consequently some criterion on which to base his designation."

The attempt to measure this defined function in social situations was undertaken in the following way:

1. Asking each individual in a group to choose other individuals on the basis of a specified criterion.
2. Asking each individual to give the names of those individuals he expects to have chosen him.

The individual's realism is estimated in terms of the discrepancy between the obtained and expected choices on the basis of three factors which were logically determined: Factor A, discrepancy between number expected and obtained; Factor B, discrepancy between correct expected choices and obtained choices in terms of the actual names of the individuals involved; and Factor C, the discrepancy between the mean sociometric status of the individuals he expected to choose him, and the mean sociometric status of those

ABSTRACT (Cont.)

who did choose him.

The process of derivation of the total R score is summarized below:

- Factor A      -  $\frac{\text{expected} - \text{obtained}}{(N - 1)} \times 100$
- can be either + or -. Ignore this 'direction' until the expression of the R score.
  - converted to sigma score in terms of the distribution of A within the group, by formula:

$$\frac{A - M_a}{\text{Sigma}_a} = Z_a$$

- Factor B      -  $1 - \frac{\text{correct expected choices}}{\text{Obtained choices}} \times 100$
- convert to sigma score  $Z_b$

- Factor C      -  $(M_{\text{exp.}} - M_{\text{obt.}}) \times 100$
- can be either + or -. Ignore direction until R score.
  - convert to sigma  $Z_c$ .

R score is given by the formula:

$$\frac{W_a Z_a + W_b Z_b + W_c Z_c}{W_a + W_b + W_c}$$

Where  $W_a$ ,  $W_b$ , and  $W_c$  are the weights derived from the beta coefficients obtained from the inter-correlations of the factors.

Included in the expression of the final R score for an individual, are the directions in which he tends on Factors A and C.

This technique was applied to three groups at different age levels (7-8yrs., 21-31yrs., 59-86yrs.,) for the purpose of determining whether or not it was possible to obtain distributions of R scores for each of the groups; that is, whether the function measured could discriminate between individuals. This purpose was fulfilled. Certain general indications are presented, having to do with the patterning of the positive and negative directions on Factors A and C, various sociometric relationships, and a few others. There is also presented empirical evidence which is interpreted as a partial justification for the logical assumption that the technique is measuring a

ABSTRACT (Cont.)

realism function similar to that reported in aspiration studies.

Implications and suggestions for future research are discussed under these headings: "Technique," "Levels of Aspiration," and "Sociometry."

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A technique for the measurement of realism  
in social situations

I        INTRODUCTION

Robert B. MacLeod, in a recent article (53), has called social psychology the "new psychology" of today. This trend is exemplified by one of the more recent text-books in social psychology, in which the authors state that "as a basic science, social psychology does not differ in any fundamental way from psychology in general." (45, p. 7) This social emphasis does not stem from a belief in the fundamentally more fruitful nature of the traditional psychology, but from the recognition of the social origins of personality, and the recognition that any experimental situation, whether it have as its subject matter perceptions of colored paper or attitudes toward criminals, is a social situation since it involves two or more persons; or in the case of a scientist making observations upon himself, his subject matter can be considered to be social subject matter, his personality. While it might be argued that this is an assumption accepted by all experimenters, and consequently nothing particularly new, it is significant that the great majority of experimenters in the fields of motivation, perception, and learning, have ignored the commonly recognized social concomitants to the situations within which these phenomena are studied. It would therefore seem useful to develop and apply techniques which are specifically designed to reveal the social aspects of experimental situations, or at least, which take into account the social concomitants which we all recognize. It might be even more

useful to concern ourselves in part with the examination of behavior which is traditionally called social.

An experimental technique which has been called the "door by which the ego re-entered the cloisters of academic psychology" is that of the studies on levels of aspiration. (1, p.471) This technique has proven valuable in experimentation with the phenomena of motivation, learning, and perception. It would seem reasonable to suppose that if it were applied to behavior which is primarily social, then the scientist could obtain information having to do with the learning, perception, and motivation involved in these situations. Further, it might be argued that a technique with this purpose could give insight into the concomitant social aspects of situations which are not ordinarily considered as essentially social.

The problem undertaken in this thesis will be the conversion of the level of aspiration technique from one which is applicable to "individual" functions and tasks such as penny pitching, target shooting, and arithmetical computation, to one which is applicable to social functions and tasks: generally, to interaction among individuals. Following a brief review of the literature pertinent to aspiration phenomena, this problem will be more explicitly stated in terms of the possibilities revealed by this review.



## II HISTORICAL BACKGROUND

The level of aspiration concept, introduced by Dembo (10) in 1931, is concerned with goal levels and goal-directed behavior. The experimental results obtained by Dembo have been reconsidered and extended by many other workers, until at the present time there is a considerable body of data bearing on the problems of that goal-striving behavior which occurs within a specified range of difficulty. Further, there seem to be emerging experimental data bearing on the common factors which determine the level of aspiration phenomena with reference to other fields and problems of psychology.

In Figure 1 is presented a typical time sequence of events in a level of aspiration situation. (47: p.334)

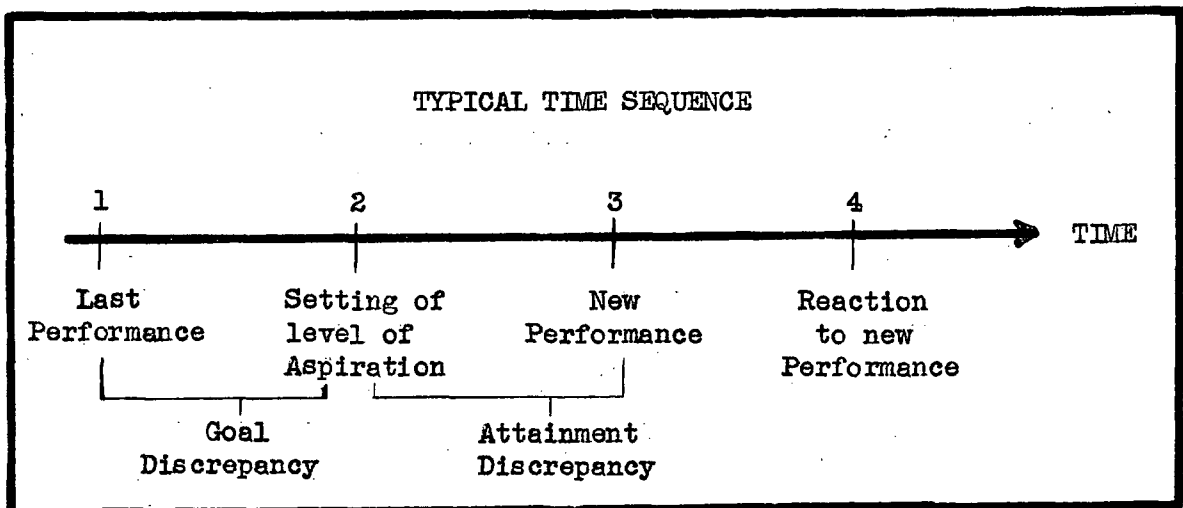


Figure 1.

For example, we may consider that at Point 1 an individual has repeated six digits, and at Point 2 expresses his goal for the next trial as nine, and at Point 3 repeats only five digits, so that at Point 4, his

reaction to new performance, he decides to try for only seven. Each point within the time sequence represents a situation that has characteristic problems. Two of these will be considered here: what determines a level of aspiration, and what are some individual differences apparent in the reactions to achieving or not achieving the level of aspiration?

#### A. The Level of Aspiration

It is apparent that each decision regarding a level of aspiration is determined by the subject's perception of his position on each reference scale which is relevant to his performance. It has been found, for example, that generally, the level of aspiration will be raised or lowered respectively as the performance reaches or does not reach the level of aspiration. (14). Frank (20) demonstrated that the level of aspiration is also affected by the sequence of tasks which are easy or hard: the height of the level of aspiration is usually higher when the "normal" task follows an easy task than it is when following a hard one.

Certain general cultural reference scales have been identified which are particularly significant in light of the competitive emphasis of the western culture. In an experiment with fifth grade children, Anderson and Brandt (3) found that there was a consistent trend in which those subjects who find themselves above the average of the group tend to have a slightly negative discrepancy score, those finding themselves close to the average of the group tend to have slightly positive discrepancy scores, while those finding themselves below the mean of the group tend to have a very large positive discrepancy score. Similar results were found by Hilgard, Sait and Magaret (39) who worked with college students. These experiments suggest the existence of a frame of reference in which an

individual places his performance on the scale formed by the performance of his group.

Chapman and Volkman (8) performed an experiment with college students for the purpose of demonstrating that knowledge of the performance of other groups which are more or less "prestigious" has an effect similar to that of knowledge about the subjects' own group. They demonstrated that this was the case: subjects tend to have positive aspiration scores when comparing themselves with less "prestigious" groups, and negative aspiration scores when comparing themselves with more "prestigious" groups. Gould and Lewis (32), and Festinger (14) substantiated this finding in other experiments, which suggests the conclusion that there is a reference scale with respect to other groups which are viewed in a evaluative way.

Another possible frame of reference within which individuals to some extent form their expressed levels of aspiration has been demonstrated by Hertzman and Festinger (37). Subjects were told the goal discrepancy scores of the group, rather than the actual obtained scores. It was found that over a series of trials the subjects' aspirations tended to change in a direction which led to conformity with the aspirations of the group. Concurrently, however, these investigators found that the subjects' main conscious set was toward the performance of the members of the group, even though they were not told of it. Thus, although there would appear to be a frame of reference identifiable with respect to group levels of aspiration, its determining effect on the levels of aspiration of the subjects is not so significant as the performance of the group.

Gould (30) has presented evidence which indicates that goal discrepancies are also related to, and therefore possibly partially

determined by, various factors in the socio-economic background of the subjects. Lower discrepancy scores were found for subjects with more favourable socio-economic backgrounds, while more difficult circumstances were related to higher discrepancy scores. This evidence is closely related to that presented by Sears (62) for his examination of the discrepancy scores obtained by children having records of past academic success, and those with failure: those who had a consistent pattern of failing in school tended to have higher goal discrepancy scores than did those who had been relatively successful, and there was wide variability within the failure group while the success group fairly consistently presented discrepancies within the small positive range.

Various authors have found that the nature of the task, and the specific question asked to elicit the level of aspiration, affect the expressed level. This will be discussed in more detail in Section III: The Problem.

In summary we may list the following determining factors, or frames of reference for decisions as to future performance:

1. Relation of new performance to level of aspiration.
2. Relation of the task being examined to other tasks in a sequence, in terms of relative difficulty.
3. Comparison of performance within group.
4. Comparison of performance with other groups with greater or less prestige value.
5. Comparison with levels of aspiration of other members of the group.
6. Socio-economic factors in the background of the subjects.
7. Nature of the task, and specific questions used to elicit expressions of levels of aspiration.

### B. Individual Differences

There are certain problems apparent in level of aspiration situations other than those considered in the foregoing section. While it is necessary that the investigator consider in what way certain variables affect the level of aspiration phenomena, it is equally important, for example, to consider the extent to which an individual's expressed aspirations maintain a consistent relationship to the group within which they are being considered. Recognizing this specific problem, Frank (20) investigated the consistency of the goal discrepancy scores on one task from one session to another (correlations of from  $+.57$  to  $+.75$ ), and on two different tasks in one session (correlations of from  $+.50$  to  $+.65$ ). Gould (29), in a similar experiment, obtained correlations which, while still indicative of a tendency toward consistency from one task and session to another, are lower than the results obtained by Frank. The discrepancy can be partially accounted for by the considerable difference between the sets of tasks used by Gould and Frank. Frank's were of a very similar nature to one another, while those used by Gould differed considerably in terms of the nature of the required performances. Gardner (24), obtained results which more nearly approach those of Frank (mean correlation of  $+.55$ ). The results of Heathers (36), serve to reconcile those obtained by earlier workers. His experiment consisted in varying the three factors which had been identified in previous experiments as the most probable determining variables. These were: the units in which the performance scores were presented to each subject, the curve of the arbitrarily constructed distribution in terms of which the subjects are presented with "performance scores", and the motivation of the subjects. His results generally support those of the

previous experimenters, indicating a high degree of consistency in the aspirations of the subjects under most of the varied conditions, but differentiating the extent of consistency on the basis of the three variables considered.

In an attempt to discover whether or not there were other significant patternings of the level of aspiration phenomena, Sears (62) performed an experiment with children, which suggested certain patterns of behavior in aspiration situations. There are four patterns presented by Sears: a low positive discrepancy score - realistic and flexible (these terms are defined on page 11); a low negative discrepancy score - less flexible with a protectively low action goal; a high positive discrepancy score - very low flexibility; a mixed pattern - responses are highly variable. Hilgard and Sait (38) in a modification of the usual aspiration studies asked subjects to estimate their past as well as their future performance. They concluded that goal strivings influence not only the subject's expressed aspirations, but also his perception of the past. These influences are not consistent from individual to individual, but there are indications that there is considerable consistency in each subject's tendency to distort his perceptions from task to task.

Generally, it might be concluded that most of the experiments performed for the purpose of demonstrating consistent trends in the way in which a subject views his performance in an aspiration situation, have shown that for any particular subject there is a generally consistent pattern, although it is doubtful that there are general patterns that can be identified as characterizing certain groups of subjects.

While several investigators, among them Frank (21), Gould and

Kaplan (31), Gardner (25), and Sears (63), have attempted to explain the variations in level of aspiration phenomena in terms of various personality characteristics or functions, the most recent formulation of an hypothesis capable of explaining certain apparent contradictions was made by Holt (41). In an experiment concerned with the solution of the problem of whether the level of aspiration was a motivational or defensive function, he arrives at the following hypothesis expressed in the form of three propositions:

- (1). When ego-involvement is minimal, levels of aspiration have little motivational significance, being primarily rational judgments. (Supported by Bayton (5), Frank (22) and McGehee (52)).
- (2). When ego-involvement is present, but at low intensities, levels of aspiration have little defensive meaning, but reflect to some extent the intensity of motivation. (Bayton (5) ).
- (3). When ego-involvement surpasses a certain limit, defensive considerations become paramount, and the level of aspiration becomes more complexly determined. (Holt (40) ).

This hypothesis, while apparently the most acceptable, cannot be considered to have been proven simply because diverse experimental results have been reconciled with it. However, lacking significant proof, it can be considered as complementing the knowledge already amassed regarding the nature and function of aspiration phenomena.

### III THE PROBLEM

#### A. Formulation of the Problem

It is apparent, even from this brief review, that aspiration studies have taken many and varied forms. Their concern has been with various phases of the time sequence described on page three. It would be desirable to formulate a technique which could account for all of the phases inherent in this sequence, but it would seem more practical to concern ourselves with the primary phase of this sequence, which is the goal discrepancy score. (See Figure 1, page three.) In matters of level of aspiration this discrepancy has been used to discriminate the more realistic individual from the less realistic individual.

This conception of realism is borne out by a number of findings. Festinger (14) found that subjects who were asked "what would you like to get next time?" had a significantly higher goal discrepancy score than did those who were asked "what score do you expect to get next time?" Irwin and Mintzer (42) corroborate these findings and make the suggestion that different attitudes, which may be interpreted as possessing different degrees of reality, are engendered by the two types of question: there is a wishful or unrealistic expression evoked by the former. Frank (21), Sears (62), Irwin and Mintzer (42) and Festinger (14) performed experiments which tend to support this suggestion in that they all found discrepancy scores which were lower in work than in play situations.

Sears (63) has made clinical studies of selected small groups of children, in which he found that those who obtained high goal discrepancy scores tended to be lacking in self-confidence and school achievement, and



were rather free in admission of their incompetence. Another group, those obtaining low goal discrepancy scores, were characterized by their high level of confidence, achievement, and comfort in their achievement. These findings are interpreted as substantiating the view that realism as shown by low discrepancy scores is greater for persons clinically designated as "realistic" than for those appearing "irrealistic."

Preston and Bayton (58), in an attempt to control more adequately the attitudes of their subjects, asked them to state three levels of aspiration: the least they expected to do, the most they expected to do, and what they actually thought they would do. The "least" estimate was found to be unrelated to either of the other two, but there was a high correlation between the actual and the maximum estimates. In addition, the actual estimate was always closer to the maximum than to the least estimate. This suggests that even a statement involving a supposedly objective (actual) estimate, will in the absence of external controlling factors tend in the upward rather than the downward direction.

On the basis of these experimental findings we may conclude with Lewin (47, p.345) that:

The realistic attitude will produce a small discrepancy score with a level of aspiration that is flexible and responsive to changes in performance. The unrealistic attitude will produce a large discrepancy score with (a) level of aspiration which is unresponsive to reality influence, and may represent a wishful attitude toward the attainment of the action or stated goal.

It can be suggested, then, that the following operational definition\* will be useful in the construction of a modification of level

\*1. "If a scientist experiments with a conceived function and varies its form, he relies upon an 'operational definition', which links this function to procedures of creating it or to procedures for testing its existence. The existence of the function is established by 'doing something with it' rather than simply 'looking at it'." (48, p.9)

of aspiration techniques insofar as it is consistent with experimental findings concerned with the concept.

Definition of Realism: Realism is that function of personality revealed by a technique designed to measure a subject's ability to designate accurately his expected performance in an activity in which he has had some experience and has consequently some criterion on which to base his designation.

The problem with which we will be concerned in this thesis may now be formulated in the following way: to develop a technique for the measurement of realism in social situations.

#### B. Analysis of the Problem

Our problem resolves itself into two areas: the first, to select an activity which will be essentially interpersonal in nature; the second, to obtain a technique which will be capable of describing the obtained activity in terms which are comparable to those used in other studies on levels of aspiration, that is, a technique from which we will be able to obtain "measures" of both the aspiration level and the achievement level, and consequently of realism as defined above.

The first area of the problem is comparatively simply solved. Any activity, the essence of which is interpersonal, will be an activity suitable to being studied by means of the technique, and capable of yielding results in terms of the stated problem. It is very likely, however, that the technique derived will be of restricted applicability,

and consequently will impose certain limitations on either the type of activity, or the setting within which it occurs, or both.

Let us consider, then, techniques for the assessment of interpersonal activities. These might be divided into two broad classifications: those concerned primarily with the extent and nature of interpersonal activities in which an individual is involved, and those concerned primarily with the extent and nature of interpersonal activities in which groups of individuals are involved. Those concerned with the assessment of individual activities, that is, clinical techniques, might well produce measures of the aspiration level of the individual with regard to interpersonal activity, but it is unlikely that they could be modified to yield measures of the achievement level. On the other hand, techniques concerned with the assessment of group interpersonal activities, sociometric techniques, are capable of yielding measures of achievement level, and conceivably, with some modification, of yielding measures of the aspiration level of each individual.

Sociometric data are composed of numerical equivalents of the choices expressed by members of a group for other members of that group. There appears to be only one limitation that this technique imposes on groups to which it is applied, and that is, that the groups must be composed of more than two individuals. However, there are limitations imposed on the meaningfulness of the results of a sociometric study. One very important one is that there is no indication of quality or type or relationship expressed by an individual who says that he would choose another particular individual. All that can be observed in the group administration of this technique is the actual choice, and consequently each choice is treated as if it were equivalent to every other choice, and is allotted the value of one. With these limitations in mind, the kind of modification

required to meet the needs of a study concerned with levels of aspiration will be discussed.

According to our definition of realism, we require a technique which will permit a subject to designate his performance in an activity with which he has some experience. This technique fills the requirements of the definition in the following three ways:

1. Since the measured activity, or achievement, is in terms of interpersonal relations, it can be assumed that all individuals have had some experience in the activity.

2. It can be seen that there is some similarity between asking an individual to designate his performance at the present time in examining interpersonal activities by means of sociometric techniques, and asking an individual to designate his future performance in a specific activity such as target shooting, since the designation in the first case can be considered to be an expectation rather than an actual awareness. It is assumed for purposes of the problem with which we are concerned, that it is justifiable to call the former designation a "level of aspiration", and consequently justifiable to consider the discrepancy between this designation and what is found to be the individual's achievement level a measure of his "realism" in social situations.

3. The designation, in order to be described as accurate or inaccurate, should be in terms which are the same as those of the obtained achievement level. This can be very simply accomplished by having each subject name the individuals that he thinks will put his name as one of the ones that they have chosen.

In summary, then, our technique will consist of the following:

1. asking each individual to choose a certain number of other individuals on the basis of some specified criterion, and from the data so obtained deriving for each subject a sociometric status or achievement level;
2. asking each individual to designate the names of the individuals he thinks have chosen him, and from these data deriving an aspiration level;
3. computing the discrepancy between each individual's achievement level and aspiration level, this discrepancy being considered a measure of the accuracy with which he designates his performance in this activity, or, by definition, his realism.

## IV . PRESENTATION OF THE TECHNIQUE

In Section III we have presented in essence the technique to be used to measure realism. Here we will outline, step by step, the specific questions asked to reveal the achievement and aspiration phenomena, as well as the proposed method of treating the data so obtained.

A. Obtaining the data:

1. Sociometric data: Customarily, workers using sociometric techniques attempt to formulate a number of questions, each having to do with a specific activity, which, taken together, are considered to be representative of the types of activities in which the individuals of a specific group are most likely to have equal opportunities to participate. Each subject is then asked to select a certain number of individuals in response to the criterion questions. For example, there might be three questions to each of which the child is asked to reply with three names.  
(6, p.46)

1. With what children would you like to work best?
2. With what children would you like to play best?
3. What children would you like to have sit near you?

The number of choices each child receives is then considered to be an indication of his sociometric status in the group.

This type of question, and means of obtaining a sociometric status, have several limitations. First of all, the statuses obtained are literally "sociometric statuses" in that they are only functions of the questions asked. This in itself might not be a limitation, but since the questions asked refer to specific activities, we can conclude that the statuses obtained refer to these specific activities.

In the interpretation of sociometric results it is frequently assumed that the statuses are representative of "social" statuses and inferences are then made as to the extent and capacity for interpersonal interaction of each individual, with no specific reference to the activities presented in the questions. If it is the purpose of the investigator to obtain "social" statuses in the broad sense, then it would seem reasonable to ask questions, or even a question, which he considers to be evocative of responses with broader social reference.

There is at least, a need for experimentation using the two types of questions to determine which is the more fruitful in obtaining generalized social statuses, if that is the purpose of a particular sociometric application. It is suggested, then, that since our concern is not with any specific activity, but ostensibly with social interaction generally, a question such as the following would be useful in the general formulation of this technique:

"Whom would you most like to be with most of the time?"

The number of persons each individual is asked to name is determined in each case by the size of the group, and the extent to which social interaction is present in the group.

2. Aspiration data: A number of questions have been asked by investigators in the past in eliciting the expression of the subject's aspiration level. Gould (29), Festinger (14) and Frank (22) have investigated and compared the attitudes adopted in answering questions as to the aspiration level such as: "What will you do next time?"; "What do you think you will do?"; "What score do you expect to get?" On the basis of their findings it appears that the questions involving "think you will

do" and "expect to do" educe the most realistic aspirations.

It would seem desirable, since it is our purpose to measure realism, defined as "ability to designate accurately", to ask a question which is most likely to engender a realistic attitude. Consequently, the following question is suggested as of the type which would accomplish this purpose:

"Who do you think chooses you?"

It is usually desirable to point out to the subjects, prior to asking this question, the basis and number of the choices each individual in the group is making.

#### B. Tabulating the Data

One form for tabulating results can be adopted with slight modification from sociometry, and is illustrated in Table I.

TABLE I

Individuals are identified by the numbers at the head of each row and column. All choices made by one individual are recorded in the row opposite his number, and similarly, all the choices of individuals that he thinks will choose him are recorded in the same row. Choices are signified by unit symbols, and expected choices by zero symbols. Thus, an individual's social status raw score, or achievement raw score, will be the sum of the unit symbols in the column below his number; his aspiration raw score will be the sum of the zero symbols in the row opposite his number. This modification involves only the addition of data obtained in addition to the



TABLE I

Sample Tabulation Chart  
of Sociometric Choices  
and Expected Choices

Subject	1	2	3	4	5	6	7	8	Expected Choices (No.)
Row X	5	4	4	2	5	1	2	1	
1		1	0	0	1	1	0		4
2	1	0		0	0	1	0	0	7
3	1	0	1				1		1
4		1	0		1	0		1	2
5	1	0	1		1				1
6	1	0	0	0	1			1	3
7		1	0	1	1	0			2
8	0	1	1	0	0	1			4
Social Status Raw Score	4	6	2	4	3	2	1	2	

standard sociometric data, and therefore we may quote directly from Bronfenbrenner (6, p.28) with regard to the advantages of this form of tabulation:

Since all data are recorded exactly as obtained the chart presents a complete summary of the test results, obviates the necessity of referring to the original questionnaires, and permits detailed analysis of all choices and choice patterns.

### C. Analysis of Data into Constituent Parts

Consider, now, what we have obtained. We have for each individual much more than simple numerical equivalents of the number of choices he receives and expects to receive. We have the actual names of the individuals who choose him as well as the actual names of the individuals he expects will choose him, and for each name involved in these expressed interactions we have an index of social status. It is possible then, to break down each individual's designation of his performance in this social activity: we may consider the accuracy with which the individual designates (a) the number of individuals who choose him, (b) the names of the individuals who choose him, and (c) the social statuses of the individuals who choose him.

It is immediately apparent that an individual who can designate the correct number of individuals choosing him is more realistic than one who cannot; and that, of two individuals, both having designated the correct number, the one who designates the correct names is more realistic; and again, of two individuals, both of whom have designated the wrong names, the one who designates names of individuals with indices of social status more nearly approximating the social statuses of those who choose him, is more realistic. In the next section we shall speak of these three factors of

number, names, and social status indices, as factors A, B, and C, respectively.

#### D. Treatment of Data

1. Factor A: The discrepancy between the expected number of choices an individual expresses and the actual number he obtains can be most simply expressed by the formula:

$$\text{expected} - \text{obtained}$$

This discrepancy can vary from 0 to  $(N - 1)$ . Since  $N$ , the number of individuals in a group, varies from group to group, it would seem more useful to express the obtained discrepancy of a particular individual as a fraction of the total possible discrepancy. That is;

$$\frac{\text{expected} - \text{obtained}}{(N - 1)}$$

But it is usually more convenient to work with whole numbers, rather than with fractions, and we can very simply obtain whole numbers by multiplying the fraction by 100. Then the formula for the expression of an individual's discrepancy score on Factor A becomes:

$$\frac{\text{expected} - \text{obtained}}{(N - 1)} \times 100 \quad (1)$$

This expression has some limitations. It might be argued, for example, that an individual in a group of 31 who thinks that 20 will choose him while 15 actually do choose him, and obtains a score of

$$\frac{20 - 15}{(31 - 1)} \times 100 = 16.67$$

is more realistic than an individual who thinks that 6 will choose him while only one does, and obtains the same score. While this might be the case in activities which are less directly interpersonal in nature, it is not

necessarily the case here, and consequently we shall accept this score as adequately expressing the discrepancy, with reservations as to the interpretation put on any one score in comparison to other scores. Another limitation is that the expression can yield either positive or negative scores, depending on whether the individual has expected too many or too few choices. The quantity of his score is an expression of his irrationalism, while the sign is an expression of the direction in which he tends to be irrationalistic. It will be seen later that it is difficult to incorporate these obtained directions into the total realism score. For the moment, let us consider that each individual obtains the following: (a) a number, which can be between 0 and 100, and which is an expression of the degree to which he tends to be irrationalistic in designating the number of individuals that will choose him; and (b) either a positive or a negative sign, which is an expression of a direction in which he tends to be irrationalistic in this function.

2. Factor B: The discrepancy between the names of the individuals who choose an individual and the names he expects will choose him can be expressed, again, most simply by the formula:

obtained choices - correct expected choices.

It is reasonable to discard all the incorrect names in the computation in the score on this factor, since these selections are considered in Factors A and C. Here again, the resultant score can vary from 0 to  $(N - 1)$ . This expression is of very limited value in discriminating the accuracy of designating names of individuals, since an individual who was able to name fifteen out of eighteen individuals who chose him would obtain the same score as one who was only able to name one out of four individuals

who chose him. Consequently the following formula is suggested as having more discriminating value:

$$\frac{\text{correct expected choices}}{\text{obtained choices}}$$

*What about  
incorrect expected or  
obt. ch. ?*

In order to obtain scores which will be easily manipulated the formula is modified as follows: so that 0 will be the score obtained by the most realistic individual measured on this factor, the expression is subtracted from 1, and the fractional resultant eliminated by multiplying it by 100. The formula for the expression of an individual's discrepancy score on Factor B becomes:

$$1 - \frac{\text{correct expected choices}}{\text{obtained choices}} \times 100 \quad (2)$$

3. Factor C: Social status indices are expressed, in accordance with the technique of Bronfenbrenner (6.), in terms of probability of chance occurrence. For each individual, then, we have an index which is somewhere within the range between 0 and 1. Since we have already expressed the discrepancy between actual numbers (Factor A), and that between actual names (Factor B), then we must express here the discrepancy between social status indices. We require a representative social status index for the expected choices and for the obtained choices. The arithmetical mean is generally considered to be the most representative function of two or more numbers, and since social status indices are expressed in numbers between 0 and 1, then the formula for an individual's discrepancy score on Factor C becomes:

$$(M_{\text{exp.}} - M_{\text{obt.}}) \times 100$$

$M_{\text{exp.}}$  = the mean value of the social status indices of the individuals he expected to choose him.

$M_{\text{obt.}}$  = the mean value of the social status indices of the individuals who chose him.

Here again, as in Factor A, this expression can yield either positive or negative scores, depending on whether the individual has expected to be chosen by individuals with social status indices higher or lower, respect-

ively, than the indices of those who did choose him.

As in Factor A, it is difficult to incorporate directions into the total realism score. Therefore, let us consider that each individual obtains a number between 0 and 100, which is an expression of the degree to which he tends to be unrealistic in terms of social status indices in designating individuals who will choose him, and a direction, either positive or negative, which is an expression of the direction in which he tends to be unrealistic in this factor.

4. The Realism Score: For each individual we have three scores. Each of these scores lies somewhere between 0 and 100, but, as we have seen, this is for convenience in manipulation only. All that we can say of these scores is that a score of 0 on any one of the factors indicates the maximum realism measurable on that factor, and as the scores become progressively higher they indicate progressively less realism, or more irrationalism. It is possible, however, in any group, to convert these scores into standard scores, so that scores obtained are comparable from one factor to another in terms of relative standing in the group. These standard scores have two particular advantages: they save an extra computation in arriving at the weights to be given to each of the three factors, and they are readily understood by anyone with even a very limited acquaintance with statistical concepts and techniques, (66, pp. 40 ff.). Thus standard scores on the A factor will be given by the formula:

$$Z_a = \frac{A - M_a}{\text{Sigma}_a} \quad (4)$$

And in the same way we can obtain  $Z_b$  and  $Z_c$ . Standard scores of this sort have one other important advantage: they can be averaged so that we have

a representative single score which has taken into account the three scores of the factors. However, simply to average the three standard scores that any individual obtains in each of the three factors is to ignore what might be an important consideration: what are the relative weights that each factor should receive in order that its contribution to the resulting composite score is appropriate to the relative independence of this factor from the remaining two factors? A statistical technique has been derived which permits the allocation of weights to each of the factors in terms of the relative independence of each factor in discriminating between members of the specific group with which we are concerned. (See appendix for derivation of formulae for the three Weights) In consideration of this, the formula for R, the realism score, where  $W_a$ ,  $W_b$ , and  $W_c$ , and  $Z_a$ ,  $Z_b$ , and  $Z_c$ , are the weights and standard scores of three factors, A, B, and C respectively, becomes: (67, p.15)

$$\frac{W_a Z_a + W_b Z_b + W_c Z_c}{W_a + W_b + W_c} \quad (5)$$

5. Meaning of the R Scores: The derived R scores may be interpreted in the same way as any other standard score. That is, we can say, for a particular R score, that it represents a position on the distribution of R scores for the particular group within which it has been obtained. Whereas before the most realistic individual received a score of 0, now he obtains the lowest R score, or, since these scores are in positive and negative numbers, the largest negative score. Similarly, the largest positive score is obtained by the least realistic person in the group.

It will be recalled that factors A and C produced both positive and negative scores, and that their directions are not considered in the

calculation of the R score. If an attempt had been made to consider them in this calculation two chief difficulties would have been introduced. The first is that the zero point, which is the lowest raw score, would have become a point somewhere between the two extremes of irrationalism: it would have remained at zero in the raw score form, but would, because of the nature of standard scores, become an indeterminate point in the standard score distribution, except by reference back to the raw scores of each individual in the group. The second difficulty is that since there are two factors capable of taking on either positive or negative signs, it is conceivable that in averaging the standard scores, if the two were indicative of irrationalism in opposite directions, the unrealistic indications of these scores would cancel one another out.

For these reasons it seemed advisable to leave the directions of irrationalism until the final R score was obtained, and to include these with the expression of the score. Therefore, each score will consist of:

(a). a numerical expression of the position of that score in relation to the distribution of the scores of the group, or the weighed R score,

(b). a positive or negative sign indicative of the direction in which the individual tends to be unrealistic in the expression of the number of individuals he thinks will choose him,

(c). a positive or negative sign indicative of the direction in which the individual tends to be unrealistic in the expression of the names of individuals with social status indices different from those of the individuals who actually choose him.



## V DEMONSTRATIVE STUDIES

To provide illustration, the above technique has been applied to three groups. No attempt has been made to interpret the results obtained, or to compare them with other functions which might be considered to be correlated to the function measured by the technique. The purpose of these applications is to show that it is possible to obtain distributions of R scores within various groups. That is, it is a function in which individuals are measurably different. It has been applied to three groups at different age levels, whose bonds are entirely different, and who operate at different levels of integration. Description of the groups is limited since it is assumed that for purposes of demonstration, a knowledge of the age range, male to female ratio, and group bonds is adequate.

### A. Group I: Age Range 22-31

1. Constitution of group: this group is composed of nine individuals - three women and six men - whose ages fall within the specified range. It is a group whose members are joined by common academic interests and vocational goals.

2. Obtaining the data: The following questionnaire was submitted to each member, with the request that he answer the questions in private and return it to the investigator:

This is a preliminary trial of a variation of a sociometric technique. It involves the regular type, sociometric question - "who would you like...", as well as a "reversed question" - "who would like you...". The purpose of the addition of the reversed question is to determine in some way the "reality" with which individuals view their own interpersonal relationships. As yet no method has been devised to evaluate the "reality". This is our present

purpose. Even though the results will mean little they will be confidential.

The individuals who are members of this group are listed here:

Please answer the following question, restricting your choices to individuals on the above list.

Question: With whom would you most prefer to waste an hour in the coffee shop? Place them in order of preference.

- 1.....
- 2.....

There are eight individuals other than yourself in this group, each of whom has made only two preferences. With this in mind answer the following question.

Question: Who of these eight people do you think has chosen you with whom to waste an hour in the coffee shop?

3. Tabulating the data: This has been done in accordance with the form presented above.

4. Treating the data: This has been done in accordance with the technique presented above. The results are presented in Table II.

TABLE II

5. Discussion: Since we have obtained realism scores for each individual in this group we may conclude that the technique should be applicable at this age range and to groups whose bond is of a similar nature. Our method for arriving at R scores seemingly produces the expected results: individuals who are most realistic or whose expressed expected choices are equivalent to their actual obtained choices, obtain

TABLE IIResults of Group IA. Calculations

## 1. Sociometric indices: (6)

$$p = \frac{d}{N-1} = \frac{2}{8} = .25$$

$$q = 1 - .25 = .75$$

$$m = np = 8 \times .25 = 2.00$$

$$\sigma = \sqrt{npq} = \sqrt{8 \times .25 \times .75} = 1.23$$

$$a_3 = \frac{q-p}{\sigma} = \frac{.75 - .25}{1.23} = .4065$$

No. of Choices	Upper Limit	Raw Score Deviations	Social Status Equivalent	Probability of Chance
S	L	L-M	$\frac{L-M}{\sigma}$	P <sub>s</sub>
0	.5	-1.5	-1.22	.102380
1	1.5	- .5	- .41	.361452
2	2.5	+ .5	+ .41	.679245
3	3.5	+1.5	+1.22	.884609
4	4.5	+2.5	+2.03	.969326
5	5.5	+3.5	+2.85	.993834

TABLE II (Cont.)2. Raw & Z Scores on Factors A, B, & C.

Subject	Factor A		Factor B		Factor C	
	Raw	Z	Raw	A	Raw	Z
1	(+)25	+1.54	100	+1.13	(+)44.8	+2.01
2	0	-.77	0	-1.21	0	-.69
3	(+)25	+1.54	66.7	+.36	(-)11.0	+.03
4	0	-.77	100	+1.13	(-)33.9	+1.35
5	0	-.77	33.3	-.45	0	-.69
6	(-)12.5	+.38	33.3	-.45	(+)10	-.09
7	0	-.77	0	-1.21	0	-.69
8	0	-.77	33.3	-.45	(-)18	-.58
9	(-)12.5	-.77	100	+1.13	(-)1.5	-.60

3. Derivation of Weights: <sup>See</sup> (Appendix B)

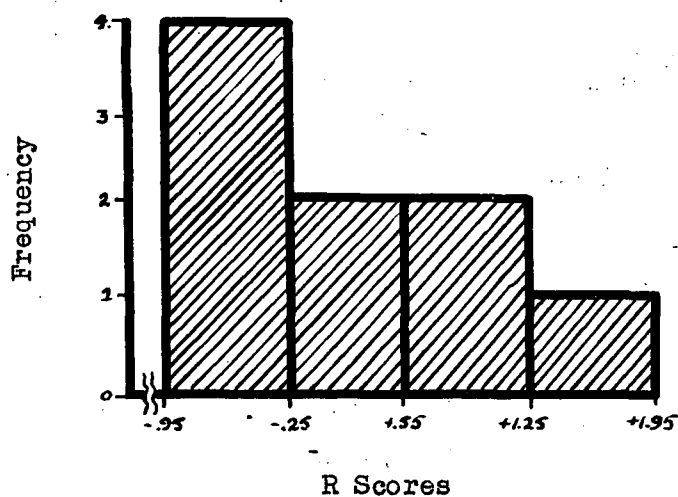
Where  $r_{ab} = .48$ ,  $r_{ac} = .39$  and  $r_{bc} = .62$  :

	A	B	C
	.7558	.1857	.0585
	.1348	.4293	.4359
	<u>.0372</u>	<u>.3487</u>	<u>.6141</u>
Z's	.9278	.9637	1.1085
$W_a = \frac{.9278}{3}$		$W_b = \frac{.9637}{3}$	$W_c = \frac{1.1085}{3}$
$W_a = \underline{\underline{.3093}}$		$W_b = \underline{\underline{.3212}}$	$W_c = \underline{\underline{.3695}}$

TABLE II (Cont.)

## B. R Scores and Directions:

Subject	R Score	Directions	
		Factor A	Factor C
1	+ 1.58	+	+
2	- .88	0	0
3	+ .60	+	-
4	+ .62	0	-
5	- .64	0	0
6	- .06	-	+
7	- .88	0	0
8	- .60	0	-
9	- .10	-	-

TABLE II (Cont.)(c) Histogram of Distribution  
of R Scores: Group I(d) Scattergram of R Scores  
and Social Status Indices: Group I

		Social Status Indices				
		.95	.25	.95	.65	.85
R Scores	-.95		1		2	1
	-.25		1		1	
	+.55		2			
	+.125					
	+.95	1				

the largest negative score (individuals 2 and 7); individuals who are least realistic obtain the largest positive score (individual 1); those with intermediary R scores appear to have exhibited intermediary irrationalism with respect to the choices they expected to receive\*.

B. Group II: Age Range 59-86

1. Constitution of group: This group is composed of 118 individuals, all men, whose ages fall within the specified range. These individuals are residents of a veterans' home, and are admitted because they require institutional care, although not constant medical attention. Some association with the other members of the group is inevitable, but beyond this, each individual is able to determine the extent of his participation in interpersonal activities.

2. Obtaining the data: All the individuals in the group were interviewed over a period of six weeks. While it was found impossible to maintain a standard interview, each individual was asked the same questions. In many cases it was necessary for the investigator to reassure and encourage the men, but only two refused to participate in this study.

The first eleven men were asked the following questions:

I would like you to give me five names  
of men that you would most like to be  
with most of the time,

and then

I would like you to give me all of the names  
of the men that you think would give your  
name as one of the five they choose.

\* The questionnaire used in this study was devised and administered in strict accordance with usual sociometric procedures. After the administration, the investigator discussed with the members of this group the efficacy of asking them to make choices in terms of a specific activity, for purposes of obtaining an indication of the general "social" status of the members of a group. It was concluded that a more generalized "social" question would be most likely to produce a more generalized "social" status.

However, despite repeated explanation and encouragement it was found impossible to obtain an answer to this second request. The most they would give was the number of men they thought would choose them, without specifying any names. Consequently, the investigator rephrased the second request, and asked the remaining men:

I would like you to give me the number  
that you think would give your name as  
one of the five they choose.

3. Tabulating data: The data were tabulated in accordance with the form presented above, except that there are no zero symbols entered in the rows opposite each man's number, so that the tabulation sheet yields only raw social status scores. The number of men that each man thought would choose him was placed at the bottom of the column below his number, so that an additional row of data was obtained which are the raw score aspiration indices.

4. Treating data: The data were treated in accordance with the technique presented for obtaining scores on Factor A. Thus, in this group,  $R$  is equal to  $Z_a$ .

### TABLE III

5. Discussion: The  $R$  scores obtained in this group have an obviously different meaning from those obtained in the first study, or outlined in the development of the technique. They represent the accuracy with which an individual can designate the number of men he thinks will choose him: his numerical estimate of his raw social status score. This estimate can be given with very little consideration: it is very easy to



TABLE IIIRESULTS OF GROUP IIA. Calculations

1. Sociometric indices: (6)

$$P = .0427 \quad q = .9573$$

$$m = 4.9959 \quad \sigma = 2.1862$$

$$a_3 = .4184$$

<u>No. of Choices</u>	<u>Probability of Chance</u>	<u>No. of Choices</u>	<u>Probability of Chance</u>
S	Ps.	S	Ps.
0	.008890	7	.872354
1	.040646	8	.935819
2	.120541	9	.970415
3	.259135	10	.987893
4	.433828	11	.995321
5	.615256	12	.998272
6	.766261	13	.999413

B. R Scores & Directions (R = Z<sub>a</sub>)

<u>Subject</u>	<u>Standard Score on Factor A</u> <u>Z<sub>a</sub></u>	<u>Subject</u>	<u>Standard Score on Factor A</u> <u>Z<sub>a</sub></u>
1	- .28560	26	- .28560
2	- .39984	27	+ .08568
3	+5.04084	28	- .52836
4	- .15708	29	- .52836
5	- .39984	30	- .52836
6	+2.87028	31	+ .57120
7	+2.62752	32	- .39984
8	- .64260	33	- .64260
9	- .39984	34	- .28560
10	+1.65648	35	+ .08568
11	- .39984	36	+ .44268
12	- .04284	37	- .39984
13	- .39984	38	- .39984
14	+ .44268	39	- .52836
15	- .52836	40	- .39984
16	- .64260	41	- .64260
17	- .39984	42	- .52836
18	- .52836	43	+ .08568
19	- .52836	44	- .28560
20	+ .08568	45	- .64260
21	+ .08568	46	+ .68544
22	+1.29948	47	- .52836
23	+1.17096	48	- .52836
24	+ .44268	49	X (did not respond to Question 2)
25	+ .08568		

TABLE III (Cont.)B. R Scores & Directions (R =  $Z_a$ )

Subject	Standard Score on Factor A $Z_a$	Subject	Standard Score on Factor A $Z_a$
50	- .52836	95	- .15708
51	- .15708	96	- .39984
52	+ .08568	97	+ .57120
53	- .28560	98	X (did not respond)
54	- .28560	99	- .39984
55	- .52836	100	- .15708
56	- .04284	101	- .64260
57	- .15708	102	- .52836
58	- .64260	103	- .39984
59	- .39984	104	- .39984
60	- .64260	105	X (did not respond)
61	- .39984	106	- .28560
62	+ .08568	107	- .39984
63	+ .32844	108	+1.65648
64	+ .44268	109	- .04284
65	- .15708	110	X (did not respond)
66	- .39984	111	- .64260
67	+ .32844	112	- .52836
68	- .39984	113	- .52836
69	- .52836	114	- .39984
70	- .64260	115	- .04284
71	- .52836	116	X (did not respond)
72	+ .08568	117	- .52836
73	+ .08568	118	- .04284
74	- .39984		
75	+1.41372		
76	- .52836		
77	- .64260		
78	- .28560		
79	- .64260		
80	- .15708		
81	- .52836		
82	- .52836		
83	+ .32844		
84	- .52836		
85	+ .19992		
86	+ .32844		
87	- .28560		
88	- .52836		
89	+4.55532		
90	- .52836		
91	+ .32844		
92	+ .44268		
93	- X (did not respond)		
94	- .52836		

(c) Histogram of Distribution of R Scores: Group III:

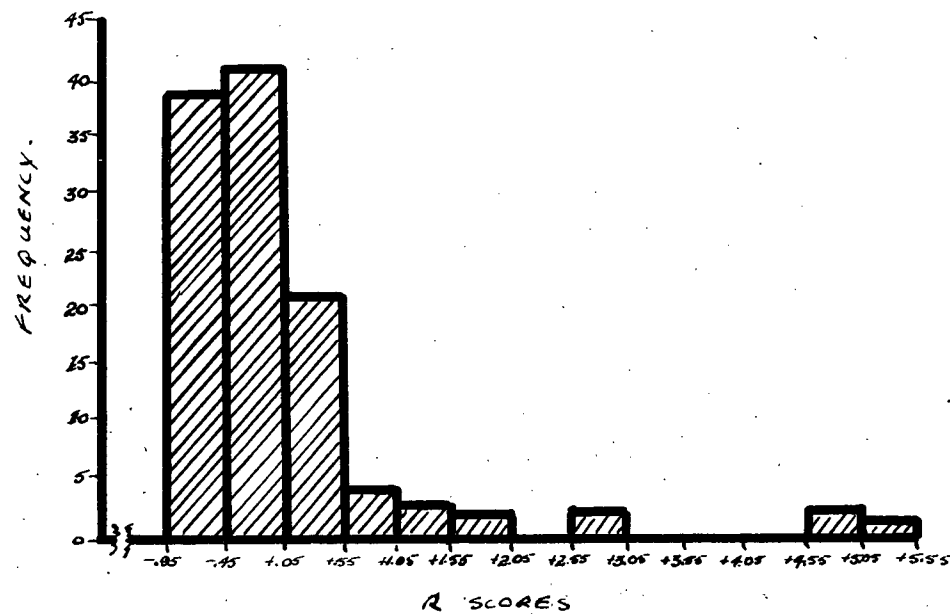


TABLE III (Cont.)

(d) Scattergram of R Scores  
and Social Status Indices - Group II

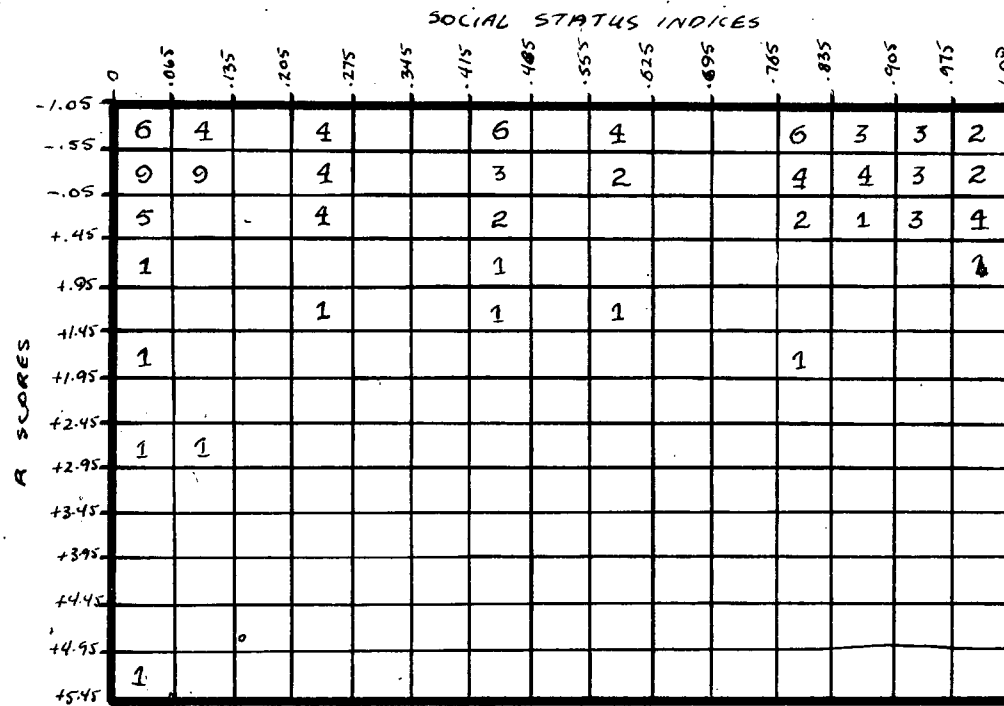


TABLE III (Cont.)

"think" that fifteen men will choose you, but a great deal more difficult to name those fifteen men. It seems reasonable to infer that in most cases both the estimates and the discrepancy between estimates and obtained choices will be greater where only a numerical expression is requested. Since the R scores here are expressed as standard scores, this limitation is to some extent taken into consideration. Even when the technique is used with this limiting modification, it is capable of producing results which are meaningful in terms of the stated definition of realism. The largest negative standard scores are indicative of the greatest degree of realism, while the largest positive standard scores are indicative of the greatest degree of irrationalism.

It is conceivable that, under appropriate conditions, a skilled interviewer could obtain the expected choices in terms of actual names, even from the most reticent or apprehensive individual. Here, the interviews had to be carried out in the rooms of the individuals, within hearing of some of the other occupants of the rooms. In some cases all the men in a room participated actively in each interview carried out in that room. Under better conditions, and with more interviewing skill and experience, it was felt that most of the men could have been persuaded to respond more adequately to the request for the names of the individuals they thought would choose them. If this is the case, there is no need to conclude that the rather significant, or direct social meaning of the questions will detract from the feasibility of carrying out experiments using this technique.

C. Group III: Age Range 7-8

1. Constitution of the group: This group is composed of 25 children - 14 boys and 11 girls - whose ages fall within the specified range. They are members of a grade II class in a small primary school. The bonds that tie the members of this group can be considered to be similar to those that are operative in any schoolroom situation. They must work at least in proximity to one another, and their play activities in the school situation are restricted to other members of their particular group.

2. Obtaining the data: The data were obtained in strict accordance with the technique presented above. That is, the investigator, after a few brief introductory remarks as to the nature of the investigation, presented the two questions to the members of the class. It was thought that group administration would produce results adequate for the purposes of a demonstrative study, although it is generally considered that individual administration is more valid in sociometric techniques. The two questions were:

I would like you to give me four names of children in this class that you would most like to be with most of the time.

Now I would like you to give me all of the names of the children that you think would put your name as one of the four they have chosen.

3. Tabulating the data: Since the data were obtained in exactly the way that is presented in Section V, it was possible to adhere strictly to the form presented for the tabulation of data.

4. Treating the data: This has been done in accordance with

the technique presented above.

#### TABLE IV

5. Discussion: Here again, it is apparent that the technique distributes the R scores in terms of the relative accuracy with which the individuals designate those that they think will choose them. Since this is the sort of group that is most convenient and productive for sociometric analysis, it seems reasonable to suppose that it will also be the sort of group to which this technique will have the most frequent application. It is therefore significant to note that the children appeared to be co-operative and conscientious in answering the questions asked.

#### D. General Discussion

Certain general indications are apparent in a comparative examination of the data obtained for the three groups. Particular note should be taken, however, of the obvious limitations imposed on any interpretation or generalizations made from these suggestions since the groups are highly selected, and in the case of Group I, at least, the numbers involved are so small as to make any statistics almost meaningless in terms of parametric interpretation, even though the numerical manipulations involved are quite meaningful and legitimate for purposes of obtaining and comparing distributions of scores within the group.

(a). The distributions of R scores for the three groups suggest that there might be a positive correlation between realism in social situations and age. Tables IIc, IIIc and IVc will illustrate this point. The distribution of scores for school children is slightly positively skewed, and the distribution for the oldest group is considerably

TABLE IVRESULTS OF GROUP IIIA. Calculations:

## 1. Sociometric Indices.

$$P = .1667$$

$$q = .8333$$

$$m = 4.001$$

$$\sigma = 1.822$$

$$a_3 = \underline{\underline{.6666}}$$

<u>No. of Choices</u> <u>S</u>	<u>Probability of Chance</u> <u>Ps</u>
0	.005185
1	.059329
2	.213328
3	.431817
4	.647301
5	.807025
6	.904936
7	.957064
8	.981959
9	.992865
10	.997320
11	.999037
12	.999660
13	.999886
14	.999963



TABLE IV (Cont.)

## 2. Raw and Z Scores on Factor A, B, and C.

Subject	Factor A		Factor B		Factor C	
	Raw	Z	Raw	Z	Raw	Z
1	-16.67	.61	66.67	-.01	+18.23	-.51
2	-41.67	3.00	71.43	.17	+32.99	.08
3	+16.67	.61	0.00	-2.51	+16.46	-.58
4	+4.17	-.59	100.00	1.24	+80.70	1.97
5	-12.50	.21	50.00	-.64	-23.52	-1.15
6	-29.17	1.81	63.64	-.12	-2.72	-1.12
7	+8.33	-.19	100.00	1.24	+90.30	2.36
8	0	-.99	66.67	-.01	-17.74	-.53
9	-4.17	-.59	50.00	-.64	+13.53	-.69
10	0	-.99	66.67	-.01	+54.91	.95
11	+20.83	1.01	0.00	-2.51	-15.93	-.60
12	+20.83	1.01	66.67	-.01	+11.89	-.76
13	-12.50	.21	66.67	-.01	+19.57	-.45
14	-4.17	-.59	66.67	-.01	+17.40	-.54
15	0	-.99	100.00	1.24	0.00	-1.23
16	-16.67	.61	80.00	.49	+56.27	1.00
17	-4.17	-.59	95.00	.30	+42.64	.46
18	+4.17	-.59	100.00	1.24	+8.72	-.88
19	-4.17	-.59	100.00	1.24	-80.70	1.97
20	-12.50	-.99	30.00	-.64	+18.76	-.49
21	-16.67	.61	37.14	-.37	-27.88	-.12
22	-10.00	-.99	100.00	1.24	+47.31	.65
23	-12.50	.21	60.00	-.26	-20.78	-.41
24	0	-.99	50.00	-.04	+28.41	-.10
25	+8.33	-.19	66.67	-.01	+27.44	-.14

TABLE IV (Cont.)3. Derivation of Weights (<sup>See</sup> Appendix B)

Where  $r_{ab} = -.29$   $r_{ac} = -.19$  and  $r_{bc} = +.46$

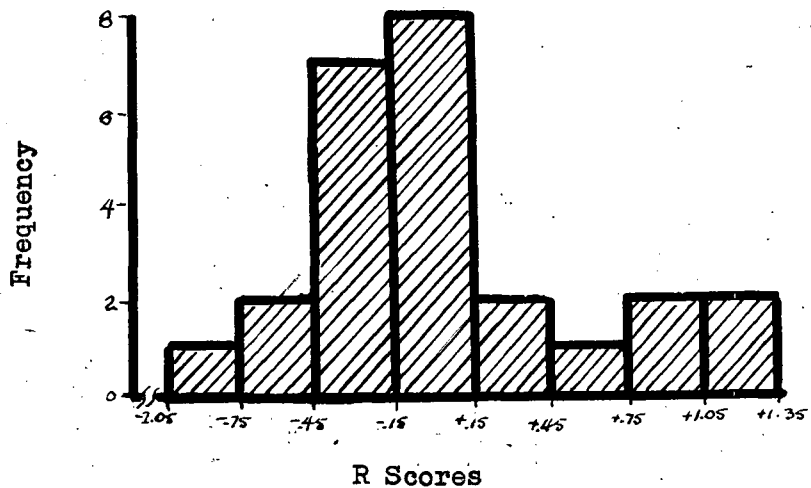
then  $W_a = .3368$   $W_b = .3360$   $W_c = .3272$

B. R Scores and Directions

<u>Subject</u>	<u>R Score</u>	<u>Directions</u>	
		<u>Factor A</u>	<u>Factor B</u>
1	+.04	-	-
2	+1.09	-	+
3	-.83	+	+
4	+1.86	+	+
5	-.52	-	-
6	+.20	-	-
7	+1.12	+	+
8	-.51	0	-
9	-.64	-	+
10	-.03	0	+
11	-.70	+	-
12	+.90	+	+
13	-.08	-	+
14	-.38	-	+
15	-.32	0	0
16	+.70	-	+
17	+.05	-	+
18	-.07	+	+
19	+.86	-	-
20	-.71	0	+
21	+.04	-	-
22	+.30	0	+
23	-.15	-	-
24	-.58	0	+
25	-.11	+	+

TABLE IV (Cont.)

(c) Histogram of Distribution  
of R Scores: Group III



(d) Scattergram of R Scores and Social Status Indices: Group III

[illegible]

positively skewed. While this comparison between groups is made on the basis of scores which have reference to the specific group within which they have been obtained, the implications of the suggested relationship are worth considering. If there is a developmental continuum of realism from childhood, through adolescence and maturity, to old age, it might be suggested that an individual's perception of his social position in a group may progress through increasing degrees of accuracy, even after the decline of some other functions.

(b). There appears to be little relationship between an individual's social status and realism. Consider Tables (2d), (3d), and (4d). Even though a slight correlation would be expected between the distributions of these scores, since the choices received by an individual (the basis of the social status index) are involved in some way with the scores on each of the three factors, the scattergrams suggest very slight correlations between the two distributions. The only exception is Group I, in which N is too small to make any correlation obtained almost meaningless in terms of generalized conclusions regarding such a relationship. It is interesting to note that in the older group (II) the most unrealistic individuals are at the same time among those with the lowest social status scores, although the most realistic individuals are distributed throughout the range of social status indices. However, this does not appear to be the case in the group of school children, where the two most unrealistic individuals are at opposite extremes in the distribution of social statuses.

(c). In both cases where the three factors were used, Factor A appeared to be the most independent. Further, the sequence of progression from most independent to the least independent was the same in both groups:

Factor A (the number), Factor C (social statuses), then Factor B (names). (The obtained coefficients of separate determination for themselves (given by Formula 3, Appendix b) are: Group I: Factor A .7558, Factor C .6141, Factor B .4293; Group III: Factor A .9372, Factor C .7894, Factor B .7558). Although no explanation can be given on the basis of the present studies, wider application of the technique may clarify this sequence, possibly in terms of a common frame of reference for this function from one group to another.

(d) To supplement the information available in the scattergrams of the total R scores and social status indices, three four-fold contingency tables were constructed, in which the relationship between realistic and unrealistic scores (defined by an approximate median) and high and low social status indices (defined by an approximate median), on each of the three factors, were examined by means of the chi square technique. (54, pp 192-202).

#### TABLE V

The only relationship which appears to be significantly different from that expected by chance, is that between realism and social status on Factor A: (less than one chance in one hundred). It can be seen, from an examination of this contingency table, that the relationship is in a direction which indicates that, in this group, individuals with low social status tend to be more unrealistic with respect to the number of individuals <sup>who</sup> will choose them, than those with higher social status. This seems to be the situation that one would reasonably expect, since the more choices

TABLE V

Contingency Tables of Factors A, B, and C  
with Social Status: Group III

FACTOR A:

		Realism		
		IRREAL	REAL	
Social Status	+	9	2	11
	-	3	11	14
		12	13	25

$$\chi^2 = 8.93$$

$$P = < .01$$

FACTOR B:

		Realism		
		IRREAL	REAL	
Social Status	+	4	7	11
	-	8	6	14
		12	13	25

$$\chi^2 = .41$$

$$P = < .70$$

FACTOR C:

		Realism		
		IRREAL	REAL	
Social Status	+	6	5	11
	-	7	7	14
		12	13	25

$$\chi^2 = .016$$

$$P = .90$$

an individual receives, the more the error is reduced than he can possibly make.

(e) Since the directions involved in scores in Factors A and C have been ignored, except for their inclusion in the expression of the total R score, it might be suggestive to examine how they relate to the realism function and social status indices. The terms expansive and recessive will be used to designate the positive and negative directions, respectively, in each of the factors (refer to Table VI).

#### TABLE VI

There is apparently no consistent tendency for individuals in this group to make designations in one direction or the other (VIa). That is, individuals who are expansive on Factor C are equally distributed over the expansive and recessive directions on Factor A. However, since there is only one individual who is expansive on Factor A and recessive on Factor C, the tendency to consistency in this way might be suggested: it would seem quite tenable that individuals who tend to expect more choices than they receive, will expect then from individuals who hold a sociometrically superior position in the group. (See Table VII, page 53).

The chi square coefficient for the relationship exhibited in Table VIb is quite significant. (less than one chance in one thousand that this occurred by chance). The suggestion implicit in this relationship is that individuals with a low social status tend to expect fewer choices than they receive, while individuals with high social status tend to expect more choices than they receive. This might mean that in the matter of placing

TABLE VI

(a) Contingency table of Expansive (+) and Recessive (-) on Factors A and C.

		Factor A			
		-	+		
Factor C	+	6	6	$\chi^2$	= 2.42
	-	6	1	P	= .10

(b) Contingency Table of Expansive (+) and Recessive (-) on Factor A and High (+) and Low (-) Social Status Indices

		Factor A			
		-	+		
S.S.	+	0	10	$\chi^2$	= 14.79
	-	12	3	P	= .001

(c) Contingency Table of Expansive (+) and Recessive (-) on Factor C and High (+) and Low (-) Social Status Indices

		Factor C			
		-	+		
	+	3	7	$\chi^2$	= 2.08
	-	9	6	P	= .20

(d) Contingency Table of Directions, Expansive (+) and Recessive (-), on Factor A and Greater or Lesser Degrees of Realism on Factor A

		Realism			
		-	+		
Direction	+	4	8	$\chi^2$	= 1.99
	-	8	5	P	= .20

(e) Contingency Table of Directions, Expansive (+) and Recessive (-), on Factor C and Greater or Lesser Degrees of Realism on Factor C

		Realism			
		-	+		
Direction	+	9	3	$\chi^2$	= 6.74
	-	3	10	P	= .01



themselves numerically in a social group, individuals tend ~~away from~~ the mean.

The relationship suggested in Table VIc is not very significant statistically. However, by inspection, one might be tempted to interpret this table as supporting the inference made on the basis of Table VIb: individuals tend toward the mean in designating their own position in a group.

The relationship represented in Table VIe is statistically significant (less than one chance in one hundred of occurring by chance), and suggests that individuals who tend to be realistic on this factor, that is, expect to be chosen by individuals whose social statuses approximate those of the individuals who do choose them, tend to have discrepancies in the negative direction, that is, expect to be chosen by individuals whose lower social statuses than those who do choose them. While the relationship represented in Table VI d is not as significant, the opposite effect seems to be at work. The realistic are slightly more expansive than the unrealistic. It might be inferred from these indications that Factor A is a measure which produces results similar to those expected on the basis of previous aspiration studies. The realistic individuals tend to have low positive discrepancy scores, slightly expansive, while the unrealistic have "protectively low action goals," or are recessive. (See Page 8). This inferred similarity would provide partial empirical justification for the assumption that the technique developed in this thesis is a level of aspiration technique.

(f) In an attempt to answer the question, "do the unrealistic expected choices (not considered in Factor B) tend to go to higher or lower sociometric groups?" Table VII was constructed. The subjects were

divided into approximate quartiles on the basis of their social status indices. It appears that there is a consistent tendency for these choices to go to sociometric groups (quartiles) above the group of the subject making the designation. Sixty percent of the subjects tend to go to groups above their own and twenty-eight percent do not give any incorrect expected choices. The other twelve percent are within the upper two quartiles; eight percent in the fourth quartile could not expect individuals in a higher group to choose them. We might conclude on the basis of this table that there is a reasonably consistent tendency for individuals making incorrect expected choices to select individuals with superior sociometric positions.

TABLE VII

TABLE VII

Quartile Position of Incorrect  
Expected Choices in Relation to  
the Quartile Position of the  
Subject making the Designation

Quartiles of Social Status  
Distribution

		Relation of Incorrect Expected Choices			No Incorrect Choices
		<u>Below</u>	<u>Above</u>	<u>Same</u>	
(High)	Q 4	1	0	1	4
	Q 3		1	1	2
	Q 2		6		
(Low)	Q 1		8		1
TOTALS		1	15	2	7

## VI CONCLUSIONS

### A. The Technique

The technique has been shown to be applicable to three age groups including individuals with ages from seven to eighty-six years. While the members of the groups were restricted to individuals who fell within the restricted bounds of the age ranges for these groups, it would seem a valid induction that the technique will be applicable to any age group within these limits. We might therefore conclude that the technique will be useful in describing the realism function numerically, and even more useful where extending modifications are made. It appears to this writer that such modifications will have to develop out of empirical studies designed to delimit more accurately the nature of this phenomenon. Some of the more immediate needs are listed here:

1. Application of this technique to many and varied groups for the purpose of determining the extent to which the weights applied to each factor vary from group to group, with the objective of determining a general weight which can be applied to each factor. It would appear from an examination of the weights obtained for each of the factors in Groups I and III (Group I, .3093, .3212, and .3559; Group III .3368, .3360, and .3272) that the weighting technique had little significance in the determination of the R scores for the individuals in those groups since the weights are nearly equivalent in both cases. It might be that there is no problem of weighting, since the weights are usually nearly equivalent. This will be amenable to investigation in any application of the technique. The solution of this problem will greatly facilitate the use of the technique by eliminating a considerable amount of statistical manipulation

required to obtain scores for the individual members of the group.

2. Possible utilization of the mean social status raw score and the mean aspiration raw score in describing the relative realism of groups, or some other measure common to both groups, for the purpose of converting the R scores of the individual members of the groups into terms which are capable of comparison from one group to another. This might even be in terms of some individual measuring devices (performance on other tasks designed to measure realism in specific activities) which might be described as "linking correlates".

3. Incorporation of the positive and negative directions into the final expression of an individual's realism, so that comparison with other functions can be accomplished more readily, and in terms of more rigidly defined criteria.

4. Definition of units by which this function is measured, rather than the expression of an individual's realism in terms of his relative position along the distribution of the realism scores of other members of the same group.

#### B. Implications

1. For research concerning levels of aspiration: The first logical step in the incorporation of this technique used in level of aspiration studies would appear to be an empirical examination of the relationships between the phenomena measured here and the phenomena measured by other techniques. This could be accomplished by correlational analysis of the scores of a number of groups on this technique, and on usual level of aspiration techniques such as target shooting. Once this has been done it would seem feasible to examine aspiration phenomena as manifested in

situations with more direct social meaning, in much the same way as they are examined in less meaningful situations. It is apparent that the similarity between the application of this technique and the application of level of aspiration techniques is a very limited one. There is no time sequence through which we measure the function of realism in social situations. It is, however, conceivable that in the evolution of a group of, say, school children, an experiment could be carried out making use of the various parts of the time sequence involved in most level of aspiration studies. That is, a sociometric test could be administered to a group at year one ( last performance ) and the results, or at least, some results could be communicated to the members of the group; on the basis of this knowledge regarding their position in the group, the members could make an estimate of their performance in the specific social function under consideration at the next administration, say at year two (level of aspiration); a second administration of a sociometric technique could be effected at year two, (new performance), and the members of the group asked to make another estimate of their performance in this function at year three (reaction to new performance). This procedure would, then, be in effect a duplicate of the procedures generally used in level of aspiration studies. Any number of experimental studies could be designed, following the experiments on level of aspiration phenomena which are briefly reviewed in Section II: Historical Background.

If the incorporation of this technique into the techniques used in aspiration studies is possible, it might be concluded that it will be of value for future research in the same direction as that of aspiration studies generally. To quote from Lewin (47, pp376-377.)

1. One can try to understand more fully the general laws of the level of aspiration. The analysis is far enough along at present to encourage an attempt to determine quantitatively the values on the various scales of reference. Such an attempt would give insight, for instance, into the factors which determine our probability judgement about our future, and would be of considerable value for the general theory of cognitive processes and perception. It would permit a quantitative approach to such divergent questions as a theory of choice and compromise; the effect of past experience and group belonging on certain aspects of cultural values, e.g., their distribution, interdependence and rigidity; the factors determining the ability to "take it"; and the problems of development and regression in regard to complying to rules.

2. It is possible to use level of aspiration techniques as an instrument to compare different cultures and to characterize their systems of values in a quantitative way. Similarly, these techniques may become progressively more useful for measuring individual differences of value systems and of other major characteristics of the normal and abnormal personality.

2. For sociometric application: It has been pointed out that there is a considerable amount of information left unconsidered both in the application of this technique and in the application of sociometric techniques generally.

For example considering in Table 1, the row of data immediately below the row containing the numbers of the individuals comprising the group (Row X). What is the specific meaning of the numerical values tabulated here? A consideration of how they were obtained will perhaps make their meaning a little clearer. The number of zero symbols, which represent expected choices, are summed for each column, and this total is entered at the head of the column under each individual's number. That is, they represent the number of individuals who expect that a particular

individual will choose them: they are representative of relationships subsidiary to the primary relationships recorded as preference choices.

Additional information about the interpersonal relationships involved in the structure and functioning of a particular group is available in far more complex "infinite regresses" than those treated by Seeley (64). Rather than being able to make the comparatively simple statement that "A's popularity is a function of the popularity of those who chose him; and their popularity is a function of those who choose them, and so ad infinitum," we are required to say that A's popularity is a function of those who chose him, and those he thought would choose him, and those who thought he would choose them; while the popularity of all of these individuals is similarly a function of a complex of choices and expected choices, and so ad infinitum. There is a spiral regression of choices and expected choices within the group, which starting with one individual extends through all of the members of the group and back again to the individual in question to continue infinitely. The problem becomes considerably more difficult. However, we have obtained the information required to arrive at the popularity of each individual in these terms (however adequately they represent this function), and therefore, the data which are pertinent to the description of the interpersonal position of that individual in a group. Whether this description can be more adequately presented numerically or diagrammatically remains to be demonstrated. This information would seem to be invaluable in "tracing internal structure of social groups and delicate behavioral balances existing between populations." (9, p.7).



One necessary step in the experimentation process is the construction of a tool for examination of the phenomena being considered. This thesis is based on a conception of that step as it is related to studies in levels of aspiration. However, the fact that this is a necessary phase in experimentation does not imply the necessary value of an attempt to fulfill it: the foregoing has simply seemed, from a limited viewpoint, to be an informative means of making a tentative investigation in this area.

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Following item 12., insert:

13. Ezekiel, Mordecai, Methods of correlation analysis. New York, John Wiley and Sons, 1947.

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|--|----|
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Appendix B: Derivation of the Formulae for W

In a problem involving three variables, the separate determination of  $X_1$  by  $X_2$  can be shown to be equal to (13, p. 500)

$$\beta_{12.3} r_{12} \quad (1)$$

This value is a measure in decimal fraction terms (since  $\beta_{12.3}$  is the partial regression coefficient of the variable  $X_1$  expressed in terms of standard or Sigma scores) of the contribution of the measured function  $X_2$  to the variance of the measured function  $X_1$ . Similarly the separate determination of  $X_1$  by  $X_3$  is equal to

$$\beta_{13.2} r_{13} \quad (2)$$

which is a measure in decimal fraction terms of the contribution of the measured function  $X_3$  to the variance of the measured function  $X_1$ . What remains, the variance of  $X_1$  which is determined by neither  $X_2$  nor  $X_3$ , can be expressed by the formula

$$1 - (\beta_{13.2} r_{13} + \beta_{12.3} r_{12}) \quad (3)$$

By substitution of the appropriate subscripts denoting the three variables equations can be derived which express the separate determination of  $X_2$  by  $X_1$  (4), of  $X_2$  by  $X_3$  (5), and of  $X_2$  by  $X_2$  (6):

$$\beta_{21.3} r_{21} \quad (4)$$

$$\beta_{23.1} r_{23} \quad (5)$$

$$1 - (\beta_{21.3} r_{21} + \beta_{23.1} r_{23}) \quad (6)$$

and of  $X_3$  by  $X_1$  (7),  $X_3$  by  $X_2$  (8), and of  $X_3$  by  $X_3$  (9):

$$\beta_{31.2} r_{31} \quad (7)$$

$$\beta_{32.1} r_{32} \quad (8)$$

$$1 - (\beta_{31.2} r_{31} + \beta_{32.1} r_{32}) \quad (9)$$

Appendix B: (Cont'd.)

If we have a problem requiring the determination of the relative weights which should be given to each of three factors in the expression of a score which is a composite of the scores obtained on each of the three factors, it may be solved in the following way:

When the formulae (3), (4), and (7) express the separate determination of factors 1, 2, and 3, respectively, by factor 1, then the formula for the separate determination of a composite of the three factors by factor 1 is given by the formula

$$\frac{(3) + (4) + (7)}{3}$$

(dividing by three to maintain the fractional expression). The value obtained by the application of this formula to a numerical example could be interpreted as the proportion of the composite measure which is determined by the measure Factor 1, exclusive of the effects of factors 2 and 3. Or, in terms of the stated problem, the weight that should be given to the standard scores obtained on factor 1, in the computation of standard scores which are composites of standard scores on factors 1, 2, and 3.

Then if

$$W_1 = \frac{(3) + (4) + (7)}{3}$$

similarly

$$W_2 = \frac{(1) + (6) + (8)}{3}$$

and

$$W_3 = \frac{(2) + (5) + (9)}{3}$$

Appendix B: (Cont'd.)

Substituting for the beta coefficients, the expression of these in terms of coefficients of correlation:

(Where (54, p. 148)

$$r_{12.3} = \frac{r_{12} - r_{13}r_{23}}{1 - r_{23}^2}$$

and

$$R_{1(23)}^2 = \beta_{12.3} r_{12} + \beta_{13.2} r_{13}$$

the formulae become:

$$W_1 = \frac{(1 - R_{1(23)}^2) + \left( \frac{r_{21} - r_{23}r_{13}}{1 - r_{13}^2} \times r_{21} \right) + \left( \frac{r_{31} - r_{23}r_{12}}{1 - r_{12}^2} \times r_{31} \right)}{3}$$

$$W_2 = \frac{(1 - R_{2(13)}^2) + \left( \frac{r_{12} - r_{13}r_{23}}{1 - r_{23}^2} \times r_{12} \right) + \left( \frac{r_{32} - r_{31}r_{21}}{1 - r_{21}^2} \times r_{32} \right)}{3}$$

$$W_3 = \frac{(1 - R_{3(12)}^2) + \left( \frac{r_{13} - r_{12}r_{32}}{1 - r_{32}^2} \times r_{13} \right) + \left( \frac{r_{23} - r_{21}r_{31}}{1 - r_{31}^2} \times r_{23} \right)}{3}$$