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ANNUAL TECHNICAL REPORT NO. 3

ONR Contract N5 ori - 07646

Laboratory of Social Relations

Harvard University

March 19, 1954

I. INTRODUCTION

Two annual reports have preceded this document. The first one was a programmatic statement made early in the course of our operation. The second was a full report of work, some in progress, some near completion, some not yet begun.

We have, since our Second Report, completed a number of projects, while several more are nearing conclusion. Others, of equally long standing, continue to be refractory and are still in progress. Finally, we have begun some new exploratory studies to clarify points raised by previous work. Work for the coming year is planned with a view to bringing the project to a conclusion by July 1, 1955.

The focus of the work continues to be the inquiry of how people perceive and judge each other, especially in social settings. Three broadly defined forms of inquiry have been undertaken: (1) the study of how impressions of other persons are formed; (2) investigation of factors involved in perceiving or judging the interpersonal preferences

and feelings of others; and (3) the systematization of the literature on the perception of people.

Several investigators have been engaged in the work of the Project, some employed on a part-time, some on a full-time basis, and some working without compensation. These include

Dr. Jerome S. Bruner

Dr. Henry W. Riecken*

Dr. Renato Tagiuri

Dr. David Shapiro

Dr. Howard V. Perlmutter (Harvard University
and MIT)

Dr. Gardner Lindzey

Dr. Edward E. Jones (now at Duke University)

Dr. Duncan Luce (formerly of MIT, now at
Columbia)

Mr. Nathan Kogan

Mr. Josiah Macy, Jr. (MIT)

Miss Mary Roseborough

Mr. Robert E. Goodnow

Mr. David Clayman

We wish to thank for helpful and generous cooperation and assistance Dr. Frederick Mosteller of Harvard

*Dr. Riecken, one of the principal members of the Project in the past, is now at the University of Minnesota. Many of the studies reported in the following pages benefited from his aid during their planning.

University; Commander George Sotos and Lieutenant J. M. Johnson of the Bainbridge Naval Training Station, Maryland; Commanders Alto Clark and Daniel Harris of the CIC School, Boston Naval Training Station; and Messrs. E. B. Wilson and Robert J. Bergeman of the Office of Naval Research, Boston Branch.

The remainder of the Report summarizes completed work and work in progress and concludes with a description of plans for our final year of operation.

II. REVIEW OF THE LITERATURE ON PERCEPTION OF PEOPLE (Bruner and Tagiuri)

During the past year, a lengthy critical review of the literature on the perception of people has been completed and is to appear shortly as a chapter in the forthcoming Handbook of Social Psychology (3).^{*} The review covers the traditional area of the recognition of emotions, work on the accurate judgment of personality traits and classical errors in judgment, and work on the formation of impressions of another person. Several hundred titles are covered in the bibliography and the review serves as an occasion for reassessing older work in the light of modern interest in social or interpersonal perception.

^{*}Numbers in parentheses refer to the Project Bibliography at the end of the Report.

III. RELATIONAL ANALYSIS: A METHOD FOR STUDYING INTERPERSONAL PERCEPTION (Tagiuri and Bruner)

Work utilizing Relational Analysis techniques has continued intensively. Some of the features of this procedure have been previously described in several publications (6, 13, 14) and in several technical reports (2, 10, 15, 16) as well as in the First and Second Annual Reports.

Relational Analysis is a technique for studying the perception of feelings of preference. Let us describe the method in terms of a group of individuals in face-to-face contact. We ask each individual to indicate those members of the group with whom he would most like to associate in some kind of activity or, even more simply, to indicate those in the group he "likes most." We could, if we chose to, ask him to indicate those he liked least, those he felt most intellectually stimulated by or sexually aroused by or what-not. The criterion used is quite arbitrary and can vary with the special psychological concern of the investigator. But whatever the criterion used -- as is also the case in sociometry -- the answer obtained will have the property that it is "conscious" or capable of verbalization. We shall be clearer at the outset if we recognize that it will not be possible through the means proposed here to study unconscious or unverbalizable feelings.

The next step in the procedure consists of obtaining from each member of the group the names of those members who, in his opinion, like him best. If we have asked initially, "With whom would you most like to associate?", we now ask the members to indicate "Which members of the group do you think would most like to associate with you?" The second step in the procedure together with the first step makes it possible to determine the accuracy of individuals in recognizing those who like them, or feel stimulated by them, and so on. It also permits one to study the characteristic errors present in assessing how others feel toward one. Some of these systematic judgmental tendencies have been described and analyzed by Tagiuri, Blake, and Bruner (14, 16).

Thus far we have considered only the manner in which people perceive feelings directed toward themselves. One may readily go beyond it and investigate the perception of feelings existing between others by asking each member of the group to put himself in the shoes of each other member in turn and to attempt to guess whom that other member chooses as his favorite associates. This additional information puts us in a position to study the extent to which each member is accurate or in what manner distorted in his perception of the choices made by others. Not only do we

know whether a given person is accurate in recognizing how others feel toward him but also whether he is accurate in perceiving how others feel toward each other.

A final step is now possible. Again we ask each member of the group to put himself in the shoes of his fellow members, this time requesting that he indicate by whom each other person feels chosen. By this means we are enabled to estimate accuracy and distortion in a person's ability to sense who people feel liked by or rejected by.

To recapitulate briefly, the following four kinds of information are obtained from each member of a face-to-face group:

1. Whom they choose.
2. By whom they feel chosen.
3. Whom they think others choose.
4. By whom they think others feel chosen.

The four kinds of data thus obtained provide the opportunity for assessing the accuracy or distortion of interpersonal perception. That is, one may check whether a subject S_1 is "correct" in perceiving that another subject S_j chooses him by referring to S_j 's actual choices. Similarly, we may check whether S_1 is correct in stating whom other members of the group choose by checking on actual choices made. And

finally, it is possible to check whether S_1 is correct in thinking that S_j feels chosen by certain members of the group by consulting directly what S_j says in answer to the question, "By whom do you feel chosen?"

From the four kinds of data obtained through the use of the four questions set forth in the previous paragraph, it is possible to derive several other variables relevant to the study of perception of feelings in the interpersonal situation (1, 2, 16).

Various features of Relational Analysis are discussed below. Some are technical in nature, having to do with the mathematical properties of the technique. Others are substantive and relate to problems we have attacked by means of the method.

A. A statistical model for Relational Analysis (Luce, Macy, and Tagiuri)

A technical report with the above title has been completed and was filed with the ONR in 1953 (10). The problem attacked in this paper is that for certain purposes the data of Relational Analysis must be compared to some level of chance expectancy. Such a model of chance expectancy has many arbitrary features and we selected those that would fit best our conception of chance operation of a group of robots in

the process of choosing each other, and guessing each other's choices.

Since this work is available in detail, and will appear in print in the future, we shall not take up space again here. What we want to note, however, is that the mathematical solution of this problem has permitted us to emerge from a virtual quantitative stalemate that could be relieved only by a tedious and impractical Monte Carlo approach, involving the construction of random models "by hand."

Not only has this solution permitted us accurately and quickly to compute suitable values against which to evaluate our empirical data, but it has also helped us to understand better the important relationship between the values obtained and the size of the group tested, the number of choices, guesses, rejections, etc. made by the members.

Apart from its usefulness as a baseline chance model, it is capable of being modified by introducing certain empirical conditional probabilities so that it may serve as a predictive model for reproducing actual data. By using it as a predictive model we have been able to locate some of the critical

parameters affecting the distribution of Relational Analysis data.

B. Applications of the baseline model (Tagiuri, Bruner, and Kogan)

The model referred to in the previous section was developed to cope with the complex case in which each subject is permitted to make as many choices and guesses as he wishes. It can be applied, of course, to the special and frequent case in which the subjects are given a fixed number of choices and guesses to make. The application of the model to this case is discussed in detail in a progress report already submitted to the ONR -- "Estimating the chance expectancies of diadic relationships within a group" (15) -- and is available upon request. The summary is reproduced here.

"In this paper we discuss the use of a mathematical model for computing the chance frequency and variance of the forms of diadic relationships obtained with Relational Analysis procedures. Relational Analysis defines the diadic relationship existing between pairs of group members in terms of their choices, rejections, and perceptions of choice and rejection. The number of possible combinations of

choice, rejection, perception of choice, and perception of rejection is 45, and 10 when using only choice and perception of choice.

"Evaluation and interpretation of observed diadic frequencies in any group require knowledge of what the chance expectancy would be if the members of the group operated as robots. The mathematical model discussed in the report by Luce, Macy, and Tagiuri (10) provides this necessary baseline.

"Formulae for computing the expected frequency and variance of any diad type are given for the case in which choices, rejections, and their perceptions are all fixed by the experimenter at the same value, d :

"In this case, the expected frequency of any diad with a given number of bonds is a function of the ratio $d/N-1$ where N is the number of members in the group. This property of the expected frequency of diads permits the construction of a nomograph (Fig. 1) with which the frequencies can be quickly calculated without resorting to formulae. A copy of the nomograph suitable for exact work will be sent on request."

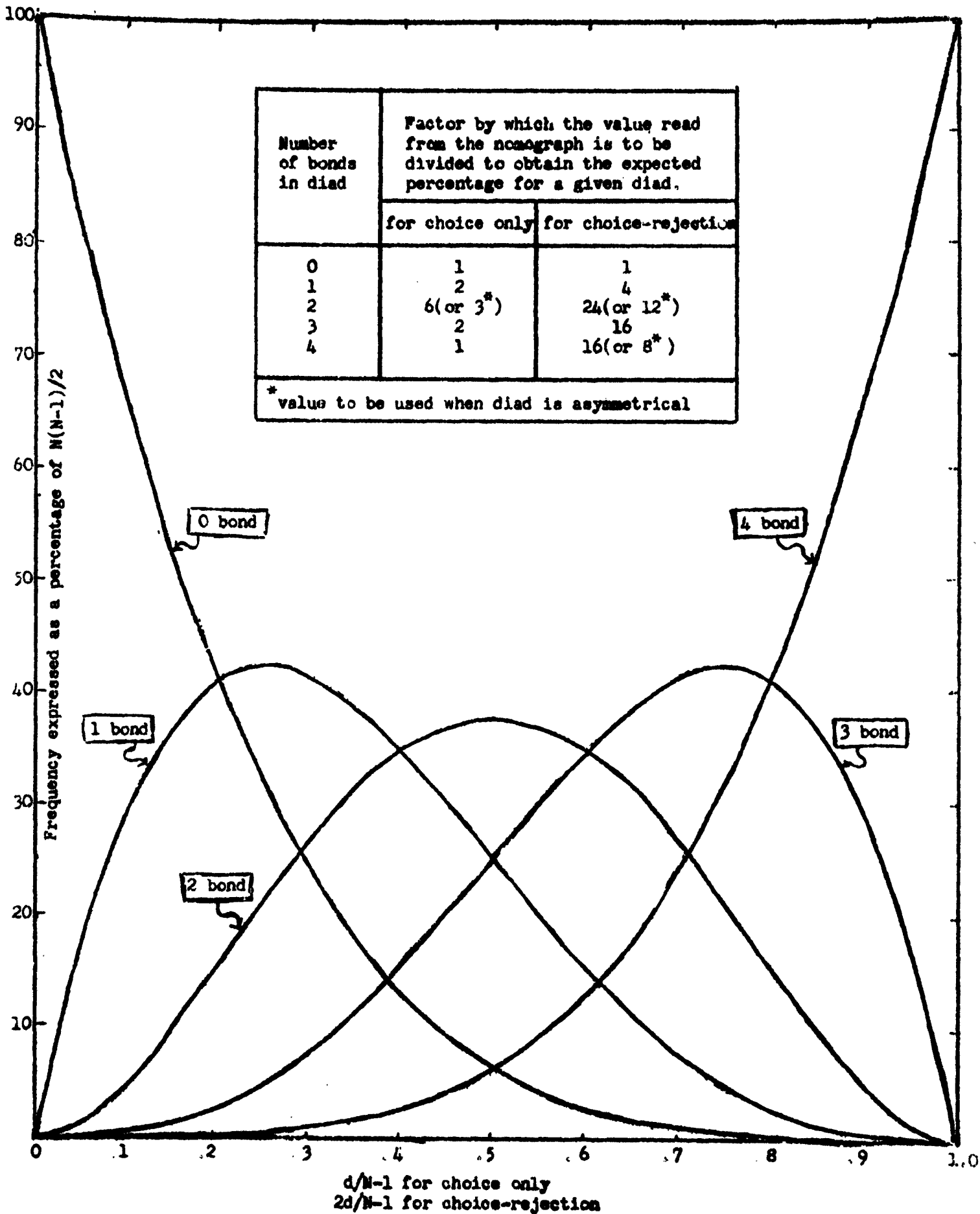


Figure 1. A NOMOGRAPH FOR OBTAINING THE CHANCE EXPECTANCIES OF DIADS (WITH FIXED d)

Work with Relational Analysis methods has progressed along substantive lines. In last year's Report we gave an idea of the variety of measurement dimensions that are made accessible by means of this method. While we have been much concerned with the formal properties of the method, we have also investigated its empirical possibilities. Being concerned, as we are, with the problem of interpersonal perception, we naturally focussed upon those aspects of the procedure that would illuminate this area. The following discussion of the variables centers around perceptual phenomena such as accuracy in perceiving feelings and the "transparency" of the interpersonal feelings of members of a group.

Most of the findings reported below are based on at least four groups varying in size from eight to twenty-two members.

C. Studies of accuracy in perception of feelings (Tagiuri and Bruner)

Four "forms" of accuracy can be distinguished in Relational Analysis data (4, 16). Briefly, the first one, which we call self-referent accuracy, refers to how well the individual is able to sense whether others in the group choose him or not. Self-referent intuitiveness is a second form of accuracy. It is the

ability to identify who feels chosen by you. These two forms of accuracy have in common the fact that we inquire about whether the perceiver knows how he himself stands with other members of the group. The other two forms of accuracy are concerned with how well members evaluate how other group members feel about each other. The accuracy of individuals in perceiving the choices made by others -- choices that do not involve the perceiver directly -- we call interpersonal accuracy. Finally, interpersonal intuitiveness, the fourth form of accuracy, is the ability of an individual to identify whom other members feel chosen by.

Each of these measures may be computed either in terms of specific identification or volumetric estimate. In the former case we determine whether an individual's perceptions of other members' choices and guesses are correct with respect to people named. In the latter, we ask simply whether the perceiver is correct in specifying the number of choices and guesses, without regard to specific people named.

With respect to knowing the feelings held by other members toward them (self-referent accuracy), subjects seem to exceed chance levels (14). Not only do they operate well above chance in knowing who

chooses them, but they are, in addition, much better than chance in knowing the specific choices of each of the other members (interpersonal accuracy). However, as might be suspected, self-referent and interpersonal accuracy are not necessarily found with equal strength in the same person, for these two skills are correlated only slightly (16).

While the general level of these two forms of accuracy of social perception is statistically well above chance, not all perceptions are accurate, and it is of interest to inquire into the circumstances leading to error (2, 16).

In the great majority of cases, feeling and perception of feeling are congruent. This is to say, if S_1 feels chosen by S_j , in all likelihood S_1 has chosen S_j . Thus, we find that choosing a person is very often related to feeling chosen by him. Since this expected reciprocation exceeds the level of actual reciprocation, it can be seen that given this tendency some people are sure to commit errors of perception if they do not happen to be in a relationship where the feelings are mutual. While this is one of the types and sources of errors we find, at the same time, however, if mutual feelings are present, accuracy of perception is

almost insured because of this tendency to have feeling and perception correspond. Since, when groups are large enough and well acquainted, individuals pair up so that mutuality of feelings is quite frequent, the effects produced by this strong tendency is not a source of frequent errors, but, rather, it insures accuracy. In fact, one might argue that the tendency to like and feel liked, or dislike and feel disliked, is the result of a life long experience with relationships ripening into mutuality of feelings. The tendency to "see" reciprocation in excess of its actual incidence causes, naturally enough, errors in the sense that positive choices made by unchosen persons are very seldom perceived.

It is natural to ask next whether some process analogous to congruency error might not also be responsible for errors in perceiving how others feel toward each other. The data indicate that subjects conceive of choices made by other members as being reciprocated, again more often than reciprocations exist in fact in the group. Consequently, here too, this tendency can be a source of error. The over-evaluation of reciprocity, however, does not interfere as much with interpersonal accuracy as with

self-referent accuracy.

Another source of error in interpersonal perception is that subjects tend to perceive the people they themselves choose as chosen by others as well. That is, they overestimate the popularity of the members they choose.

Another potential source of error is that people tend to think that their expressions of feelings are more apparent than they actually are. That is to say, when an individual chooses another person, this individual will with unjustifiably high probability think that the other person knows how he feels toward him.

A paper on the measurement of accuracy in interpersonal perception is in preparation (4). The above paragraphs should serve to give an idea of the material being covered.

D. Comparison between the perception of choice and the perception of rejection (Tagiuri and Clayman)

We have found that a person knows less accurately who rejects him than who chooses him (14). Will this discrepancy in performance appear also when the judgment involves whom others reject and feel rejected by? We have secured a set of data on six summer camp groups of adolescents ranging in age from about thirteen to sixteen years. Three of the groups are boys, the other

three girls. Analysis of these data is in progress and should supply a first answer to the question of interpersonal accuracy posed above as well as providing information on sex differences in respect to perception of positive and negative feelings. We will also be enabled to check whether the various judgmental phenomena reported above also hold for perception of rejection.

E. Transparency of members' choices (Tagiuri and Kogan)

Relational Analysis data permit ordering the members of a group in terms of the accuracy with which others can tell whom they choose. We have identified some of the factors involved in this rather important characteristic of a group member.

We have found that mutual choices are the most transparent. In short, members most enmeshed in mutual diads tend to be most transparent. Reciprocated choices provide the perceiver with a double set of cues due to the mutuality of feelings and the resultant interaction of diad members.

There is also a strong positive relationship between transparency, on the one hand, and popularity and apparent popularity, on the other. Since it is the popular persons who are involved in a large number

of mutual relationships -- the correlation between popularity and reciprocity of choice is very high -- we would necessarily expect the members of a group to be more aware of the choices of popular subjects.

In conclusion, our results suggest that transparency can not be explained directly in terms of popularity or any other individual "personality" factor, as we thought initially, but is dependent upon or mediated by the mutual or non-mutual social interaction in which a subject is engaged. Thus, transparency is essentially a diadic phenomenon.

A paper on this topic is in preparation (5).

IV. PROCESSES INVOLVED IN FORMING IMPRESSIONS OF OTHERS

Our review of the literature on the perception of people has strengthened our conviction, expressed emphatically in previous reports, that it is very important to study the nature of popular conceptions of personality in order to arrive at an understanding of impression formation. This is not to say that this process will be understood entirely in such terms, but merely that the kinds of categories and dimensions used by the layman in structuring his impressions must be taken into account.

We have, in the past, investigated this problem in various ways (cf. past Annual Reports), and the studies

described before are still in progress. Three new studies have been undertaken. The first of these is concerned with the organization and interrelationship of what we shall call trait attributes in the mind of the lay perceiver. When an individual knows "something" specific about a person he also knows "many other things" about this person. Knowledge of a certain trait leads, with varying probability, to inferences about other traits that may be present. It is this property of a trait -- its inference potential -- that the first study deals with. The second study inquires into what kinds of information one seeks and how one goes about obtaining it when attempting to form an impression of another person. The third study explores the effect of the nationality and occupational role of the stimulus person on impression formation.

A. Inference potential of trait attributes (Shapiro and Tagiuri)

It is apparent that the hundreds of trait attributes that are applied to a person differ widely in the amount of information they provide about a person. You probably know a great deal more about a person if you know he is "friendly" than if you know he is "neat." As noted, different trait attributes have different predictive power or inference potential. The inference potential of any given trait is also a function of whether it appears singly or in combination with other

traits. We propose to estimate the inference potential of several common traits when each is supplied singly and when they are supplied in combination as information about a person. In previous research, traits were often presented as bases for forming impressions but little was known about their relative values as sources of information. Understanding this aspect of the utilization of traits in forming impressions is necessary for a better evaluation of past and current research in this area.

By inference potential we shall mean two things: 1. The number of other traits which a subject feels he can predict from a given trait. 2. The degree of confidence with which prediction can be made by a subject from one trait to another.

The subject is first given one and only one trait-attribute of a person (i.e., that the person is "intelligent"). He is then requested to go through a check list of 60 traits and check those adjectives that fit the person, those that do not fit the person, and those on which he does not have enough information to decide. Confidence ratings are also obtained for each trait checked.

The procedure is then repeated for a second trait, also presented singly. The subject is told that this

trait characterizes another person and is asked to go through the check list again in the same manner as before. A third trait is presented under the same instructions. Finally, in the last step, all three individual traits are combined as representative of one person and the check list procedure is repeated.

Analysis of data thus obtained permits us to compare the generating power of traits in isolation and in a common context. The analysis is not yet far enough along to draw conclusions.

A second experiment has as its objective to study the manner in which traits of differing kinds and amounts of inference potential are combined by subjects in forming impressions. On the basis of the data obtained by the procedure outlined above, combinations of traits will be selected to meet the following conditions for a second experiment.

1. Combinations of traits each of which has high inference potential (when given singly) and each of which can be predicted from the other equally well.

2. Combinations of traits each having high inference potential but such that each is not predictable from the others.

3. Combinations of traits of high and low inference potential, when each can be predicted from

trait characterizes another person and is asked to go through the check list again in the same manner as before. A third trait is presented under the same instructions. Finally, in the last step, all three individual traits are combined as representative of one person and the check list procedure is repeated.

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2. Combinations of traits each having high inference potential but such that each is not predictable from the others.

3. Combinations of traits of high and low inference potential, when each can be predicted from

each other well and when each can not be predicted from each other well.

This experiment is just getting underway at the time of writing.

Whether the same amount of information is presented simultaneously or sequentially may make a difference to the impression formation. In a final variation of the experiment, the same trait attributes used in combination and presented simultaneously in the preceding study will be given singly in sequence with the instruction that the traits being given describe the same person and that the subject is to set down his impression as it grows with each new trait presented.

The list of attributes considered in this work is shown below. It is arranged for convenience in terms of "dimensions." The lists actually presented subjects are arranged alphabetically.

INTELLIGENCE	Intelligent	- -	Unintelligent
	Intellectual	- -	Non-intellectual
	Clever	- -	Awkward
PRACTICALITY	Practical	- -	Impractical
	Efficient	- -	Inefficient
	Imaginative	- -	Unimaginative
ENTERPRISE	Enterprising	- -	Unenterprising
INDEPENDENCE	Independent	- -	Dependent
IMPULSIVITY	Impulsive	- -	Deliberate

ACTIVITY LEVEL	Energetic	- -	Placid
	Active	- -	Indolent
	Enthusiastic	- -	Apathetic
CONSISTENCY OF BEHAVIOR	Responsible	- -	Irresponsible
	Reliable	- -	Unreliable
	Neat	- -	Disorderly
MORAL CHARACTER	Conscientious	- -	
	Sincere	- -	Insincere
	Honest	- -	Dishonest
AGGRESSIVENESS	Aggressive	- -	Submissive
	Boastful	- -	Modest
	Critical	- -	Tolerant
SOCIABILITY	Sociable	- -	Reserved
	Friendly	- -	Hostile
	Warm	- -	Cold
CONSIDERATENESS	Considerate	- -	Inconsiderate
	Sympathetic	- -	Unsympathetic
	Courteous	- -	Discourteous
MOOD	Even-tempered	- -	Irritable
	Cheerful	- -	Sad
	Witty	- -	Humorless

B. The informational sequence in forming an impression
(Tagiuri and Shapiro)

Most studies on impression formation have presented information about the stimulus person in a fixed order. The question now arises as to the preferred order in which people seek information about a person when forming an impression of him. Do these preferred orders reveal a strategy of information getting and information using in this area?

A variant of the "20-questions" game is used as

the procedure in this study. As is the case in the conventional quiz game, the subject is told that the experimenter is thinking of a specific object, in this case a "person" in a specific role relationship to the subject. The subject is not to guess the mere identity of the "person" (the actual material is disguised making this literally impossible) but rather to form an impression of the "person" utilizing whatever information he sees fit to inquire about. At the conclusion of the question-and-answer phase the subject is asked first to give a free sketch or personality description and then to fill out a check list of trait attributes.

The stimulus "person" is based upon a biographical sketch of a real person intensively interviewed in advance and also well known to the experimenters. The intensive interview was based on questions that had been asked by subjects in a pre-test of the "20-questions" method. The stimulus "person" was presented in three different roles and the individual who served as the model for the "person" was intensively interviewed by the experimenters on his behavior and attitudes while actually filling these three roles. These roles will be described presently. Any given subject was given information about the

"person" in only one role -- save at the very end of the interviewing session when an inquiry was carried out along lines to be described below.

The following general hypotheses are being tested:

1. The attributes selected in the process of "categorizing" a person and the order in which they are utilized are functions of the (imaginary) role-relationship between the subject and the "person." The definition of role-relationship includes specifications of the sex and age of the participants and the presumed nature of the interpersonal situation.

2. Within the limits imposed by the specific role-relationship, the particular utilization and order of attributes are a function of the personality and the history of the subject and of the stimulus "person."

In order to insure uniformity of information given to subjects, a manual was prepared for guiding answers to questions asked. Certain forms of difficulty were also handled in the manual. For example, if the subject asked a question which could not be answered simply, e.g., "What is his Weltanschauung?", Experimenter replied, "Do you think you could ask this question more specifically so that I can give

you a definite answer?" When questioned about a dimensional attribute such as intelligence the experimenter is instructed to reply first in relative terms and then with a concrete example. It was our intention to maintain as much "color" in what otherwise might be a dull biography made grey by the presentation of factual, historical material.

After the subject had completed both free sketch and check list, the experimenter proceeded to the inquiry phase. A list of specific questions was used in the inquiry. For each question and answer unit, the subject was instructed to state why he asked the question (what he had in mind) and what he learned from the information he received in the answer. Other inquiries were made with the purpose of eliciting indirectly data related to the sequential utilization of information, strategies, and the correspondence of the method to real-life impression formation. At the conclusion of the interview the experimenter also followed up any hunches he might have developed about the subject's behavior.

Each interview was recorded and transcribed in order to enable several judges to do qualitative analyses.

Twenty interviews have been completed and a

detailed analysis of the verbatim records is proceeding. The three alternative roles in which the stimulus person was presented are: (a) superior -- "tutor in your house next year" (b) peer -- "member of your house next year" (c) subordinate -- "incoming freshman you will be advising next year."

While it is still too early to present results or to describe fully the methods that will finally be used in data analysis, some indication of methods and general findings can be given.

First as to methods, techniques for analyzing questions asked by subjects are being worked out. Individual questions can be coded in terms of (a) content asked for, (b) the kind of terminology employed, or (c) certain formal properties of the questions (e.g., subjective vs. behavioral orientation, general vs. specific, etc.). In addition the sequential ordering of questions is being studied. Two categories of ordering seem already to be apparent. The first is a form of "focussing" -- beginning with certain general information and narrowing down the scope of succeeding questions on the basis of previous information obtained. The second is a more saccadic approach: an effort to get successive glimpses or samples of the person's behavior in order to get material of a sort that might

fit together. Other forms of sequential strategy will doubtless emerge from our examination of the data. Finally, methods are being worked out for analyzing free sketches and check list responses made by subjects. Work on the study mentioned in the preceding section will be of use to us here since the same check lists are being used.

Several general observations about the behavior of subjects are of interest. First, subjects found the task a natural one, one which they reported corresponds to what they have experienced in everyday life. Subjects did report, however, that they may be going about the task of gathering information more systematically by virtue of being "in an experiment" with specialized conditions. It is also apparent that as the subject proceeds, it becomes increasingly difficult for him to find additional, useful questions to ask. There appear to be two reasons for this: (a) As an impression begins to take form, few "new" questions can be thought of, the subjects stating that further questions "will be of little help." (b) There appears to be a certain battery of questions one asks about another person in a certain role, fairly limited in number, and after the person gets through this battery, he has difficulty formulating more questions.

Finally, subjects appear to operate in somewhat the same way as a caricaturist -- seeking some vivid or idiosyncratic feature of the person around which to form their impression. It happened that our stimulus person is a well-rounded, average person with few idiosyncratic handles, and this appeared to be a source of some difficulty and even frustration to our subjects.

C. Impressions of personality as affected by socially defined role and national identification (Perlmutter and Bruner)

The Project has cooperated with the Center for International Studies, a group financed by the Ford Foundation at M. I. T., on a study of the manner in which impressions of people are affected by the nationality and social role of the stimulus person.

A study undertaken sought to explore (1) some of the bases of impressions of a stimulus person when his nationality is known to be either American, French or German and his vocation is known to be either a businessman or a college professor, (2) some of the effects on impressions of this stimulus person when he is or is not compared to other people of identical personality description but differing nationality. It is planned to obtain data in the United States, France, and Germany.

Thus far only preliminary data have been collected in this country.

The results as far as they are analyzed point in the following directions: (1) Subjects are more reluctant to use the nationality of a person for forming an impression when this person is of their own nationality and when they are judging only one person at a time. Also subjects use the vocation of the person more readily than his nationality, under these conditions.

(2) When subjects are judging three people who differ only in nationality, the nationality of the stimulus person is reported to be much more important for impression formation than before and a little more important on the average than his vocation in determining specific impressions of him.

Further experimentation will be conducted controlling the differences between the two above situations and relating it to theories of impression making.

D. The role of authoritarianism in the perception and evaluation of a prospective leader (E. E. Jones)

An extensive study on this subject, reported in considerable detail in last year's Annual Report, is now entirely completed. Copies are on file at the Office of Naval Research and in the Widener Library of

Harvard University, where the study is filed as a doctoral dissertation (7). A series of journal articles based on this research is now in preparation.

V. PSYCHOLOGICAL FACTORS IN SOCIAL CHOICE

In previous investigations of the perception of the characteristics of chosen and rejected fellow members of groups, two problems have emerged. The first is the degree to which members of diads match in terms of independently defined personality characteristics. The second is to what degree the actual similarity that exists is perceived by each member of a diad. The following are studies which explore these problems.

A. Psychological factors in friendship choice and rejection (Shapiro)

The major focus in this investigation is the study of some psychological correlates of friendship choice and rejection as obtained by the sociometric method. Although sociological and adventitious factors may variously influence the individual's preferences, it is assumed that if a subculture is made homogeneous enough, such factors will be minimized leaving personality factors to play the major role in determining friendship choice and rejection. By using highly homogeneous groups we were able to approximate this condition.

Various theories were reviewed in an attempt to derive a theoretical framework for this research. Two preliminary hypotheses were formulated.

Hypothesis A: Individuals tend to choose as friends those persons who are similar to themselves in the way they describe themselves.

Hypothesis B: The above principle of friendship selection operates to a greater degree and more effectively for those individuals who are relatively high in self esteem.

Exploratory data available from a study already completed are now being reanalyzed. The general design of this investigation involved the use of a small residential group of 19 sorority girls, 19 to 22 years old, and highly homogeneous in socio-economic background. Criteria of friendship choice and rejection were established and measures of several personality characteristics obtained, including self evaluations and evaluations of and by associates in the group.

Standard objective personality and value tests were administered. In addition check lists were employed to provide measures of "Real-Self" and "Ideal-Self." The same check list was used to obtain guesses by each subject of the responses made by his most liked

and most disliked fellow group member. Five sociometric questions were administered in order to establish the criteria of friendship preference. They were (a) Liking, (b) Friendship Choice, (c) Roommate Choice, (d) Current Friends, (e) Leisure Time Associates.

A first finding is that with respect to consistency of the five sociometric criterion questions (i.e., Liking, Friendship Choice, etc.), first and second choices and first and second rejections yield consistency among the different criteria, while third choices or third rejections fail to yield such consistency.

Recall now that each subject fills in a check list to describe himself. We also asked subjects to fill in the same check list as they thought their most liked and most disliked fellow members would fill it in. Thus, we have a score of actual similarity between self ratings of members, and a score for the ability of a subject to guess how another member would fill in the check list. Finally, we may ask about the degree to which there is a correspondence between a member's own self-rating and the self rating that he attributes to another member, be that member his most liked or disliked associate. The first measure we shall call Similarity, the second Accuracy, and the

third Correspondence.

The major hypotheses were generally confirmed, although because of the size of the sample no overwhelming effects were observed. Subjects tended to select similars and reject dissimilars. This did not hold up for third place preferences which, as we have pointed out, were not stable. Subjects who were high in Self Satisfaction (defined by the matching of Subjects' "Real-Self" and "Ideal-Self" descriptions) tended to choose similars and reject dissimilars more consistently than Subjects with low Self Satisfaction, when all choices and rejections are considered.

Additional findings may be summarized as follows: subjects tended to describe those they chose as corresponding more to themselves than those they rejected. Although the accuracy of description is greater for choices than for rejections, this trend was not highly significant. As to the relations between similarity, accuracy, and correspondence, it was found that, in general, where any one is present in a diad, there is a much higher than chance likelihood that all three properties will characterize the diad.

B. Personality and Sociometric Choice (Lindzey and Urdan)

The object of this investigation was to discover

some of the personality characteristics of people varying in sociometric popularity and in their pattern of diad memberships in a group. It was our hope that by learning more about personality correlates of choice, we would be in a better position later to understand the stimulus properties of group members in work on interpersonal perception.

Some 100 subjects were used, residents of six college dormitories at Radcliffe College. On each subject, self ratings, personality test scores, and projective test measures were obtained. Included in the battery employed were such measures as the Study of Values, the Gough Masculinity-Femininity Scale, the Dominance Subscale of the MMPI, the Maslow Security-Insecurity Test. On the Sociometric side, the popularity of subjects in their dormitories was measured as well as their diadic position in the group.

The principal findings were these. Popularity is curvilinearly related to several variables, notably to Dominance and Security. That is, the very high and the very low in dominance and security are less popular than those in the middle range.

It is of some interest that objective test measures show a stronger association with sociometric status than do either self-ratings or projective measures.

An interesting methodological byproduct of this study is that the effects obtained are washed out when one pools the subjects of the six dormitory groups studied. It appears that between-group variance is considerably in excess of within group variance and that groups rather than individuals provide the critical definition of the sample one uses.

A paper based on this research is in press (9).

VI. A REVIEW OF SOCIOMETRIC MEASUREMENT AND METHOD (Lindzey and Borgatta)

A review of the literature on sociometric method and its applications has been completed and filed with the ONR. This work is in press and will appear in the Handbook of Social Psychology (8). The review attempts to outline the ways in which sociometric data can be collected, appropriate methods of analyzing these data, and some of the areas of investigation and application where sociometric measures may be useful. Although certain limitations in sociometric measures and their customary application have been noted, the general impression is that the measures are of substantial value to the investigator concerned with group processes or with the individual in a group setting. Their full significance is likely to be understood only when they are examined against a background of additional psychological and social data on group members and group structure.

VII. PLANS FOR THE COMING YEAR

The coming year will be the last year of operation of the Project. This fact dictates the pattern of work being planned. Three general lines of work are foreseen.

A. Completion of research now in progress

Several studies reported in preceding sections are still in the stage of data-gathering or analysis. These will be completed and prepared for publication. Other work has recently been completed and is being prepared in the form of reports or of articles. Completion of work in progress and of writing will take a considerable part of the Project's time during the coming year.

B. Supplementary studies

There are several points in our research where interpretation of findings requires that additional information be gathered. We shall attempt to limit new research to such studies in the coming year.

C. Preparation of a monograph on Relational Analysis

A major part of the effort of the Project has gone into the development and assessment of Relational Analysis (see Part III of the present Report). A monograph, drawing together all of the relevant material in this subject, is to be prepared during the coming year.

VIII. LIST OF PUBLICATIONS AND REPORTS

1. Bruner, J. S., Riecken, H. W., & Tagiuri, R. Annual Technical Report No. 2, ONR Contract N5ori-07646. Laboratory of Social Relations, Harvard University, March 1, 1953, mimeographed.
2. Bruner, J. S. On social perception. Paper read at the Seminar of the Office of Naval Research, January 1954.
3. Bruner, J. S. & Tagiuri, R. In G. Lindzey (Ed.), Handbook of Social Psychology, in press.
4. Bruner, J. S. & Tagiuri, R. Accuracy in perceiving interpersonal feelings. Report in preparation.
5. Bruner, J. S., Tagiuri, R., & Kogan, N. Transparency of interpersonal feelings. Report in preparation.
6. Goodnow, R. E. & Tagiuri, R. Religious ethnocentrism and its recognition among adolescent boys. J. abnorm. soc. Psychol., 1952, 47, 316-320.
7. Jones, E. E. The role of authoritarianism in the perception and evaluation of a prospective leader. Unpublished doctoral dissertation, Harvard University, 1953.
8. Lindzey, G. & Borgatta, F. E. Sociometric measurement. In G. Lindzey (Ed.), Handbook of Social Psychology, in press.

9. Lindzey, G. & Urdan, J. Personality and social choice. Sociometry, in press.
10. Luce, R. D., Macy, J., & Tagiuri, R. A statistical model for relational analysis. Laboratory of Social Relations, Harvard University, 1953, mimeographed.
11. Maher, H. Personality adjustment and social adjustment. Unpublished Honors thesis, Harvard University, Jan. 1952.
12. Och, M. Estimation of group opinion and its correlates in sociometric status. Unpublished Honors thesis, Harvard University, 1953.
13. Tagiuri, R. Relational analysis: An extension of sociometric method with emphasis upon social perception. Sociometry, 1952, 15, 91-104.
14. Tagiuri, R., Blake, R.R., & Bruner, J. S. Some determinants of the perception of positive and negative feelings in others. J. abnorm. soc. Psychol., 1953, 48, 585-592.
15. Tagiuri, R., Bruner, J. S., & Kogan, N. Estimating the chance expectancies of diadic relationships within a group. Laboratory of Social Relations, Harvard University, 1954, mimeographed.
16. Tagiuri, R., Bruner, J. S., & Kogan, N. Relational Analysis: an approach to the study of interpersonal perception. Report in preparation.