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RELATIVE STABILITY OF REFERENCE SCALES
FORMED UNDER INDIVIDUAL, TOGETHERNESS,
AND GROUP SITUATIONS.

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RELATIVE STABILITY OF REFERENCE SCALES FORMED UNDER
INDIVIDUAL, TOGETHERNESS, AND GROUP SITUATIONS

A DISSERTATION

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1964

RELATIVE STABILITY OF REFERENCE SCALES FORMED UNDER
INDIVIDUAL, TOGETHERNESS, AND GROUP SITUATIONS

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RELATIVE STABILITY OF REFERENCE SCALES FORMED
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CHAPTER I

INTRODUCTION

The general problem in this study was to demonstrate experimentally the need for a generally accepted definition of group that differentiates between group social stimulus situations and the coming together of strangers. In addition, it has been intended to illustrate the usefulness of this distinction by applying it to the area of conformity-deviation. The experimental setting crucial to testing of hypotheses constituted a collective interaction situation.

Specifically, this problem was investigated in terms of relative stability of reference scales established under alone, together, and group social conditions, where individuals were subsequently exposed to a collective interaction situation. The index of relative stability is defined in this research as the degree to which estimates of subjects during collective interaction fall within their original scales.

Need for a Generally Accepted Definition of Group

Central to the area of social psychology is the question of how one can meaningfully delineate the concept group. Too often the term is an ambiguous expression that is applied to almost any form of human association.

The term may refer to a number of people who happen to be together for a short duration as in an experimental situation. On occasion, the term may refer to people who have a more enduring pattern of interrelatedness stemming from "real life." Stated explicitly or implicitly, one can find almost any set of criteria in current literature underlying operational use of the term. Borgatta and Cottrell (1955) refer to this when they state: "A current version of the chronic question, 'When does a collection of persons become a group?' occurs in the issue of whether or not groups artificially formed for laboratory experimental research are 'real' groups in the same sense as so-called natural groups, such as families, gangs, or religious sects. This problem is, of course, not peculiar to the laboratory group. The same issue is seen in considering whether or not certain ephemeral associations which are 'natural' groups, e.g., a collection of strangers who go out on a week-end charter cruise . . ." are groups (p. 665). In 1957 they

state: "A crucial problem which has recently begun to receive research attention has been that of the classification of qualities of the group as a group . . . The importance of exploring and isolating the independent qualities emerging in group behavior will be given increasing recognition . . ." (p. 42).

This problem became especially focal to the experimenter a few years ago when he was working in the area of collective interaction. At the time, some of the theoretical formulations established in attempting to delineate the area of collective interaction included inter and intra group factors as a functional part-process of the phenomena in question. It soon became apparent, however, that one could not communicate a conceptual scheme outlining collective behavior which includes use of the term group when there is little consensual agreement as to how that term should be employed.

Without a well-defined and mutually acceptable idea as to what constitutes a group in social psychology and sociology, the development of meaningful theory becomes extremely difficult. If group is almost all things to behavioral scientists, then it becomes impossible to, for example, relate the concept with any degree of precision to psychological and sociological processes operative in collective behavior. In fact, as long as the concept remains

vague, or is modified operationally from day to day in order to meet a procrustean research design, there will always be general confusion and argumentation concerning the relative efficiency of particular seating arrangements, communication channels, leadership patterns, "atmospheres," "climates," decision making patterns, problem solving arrangements, and the like.

One might agree with Coser's (1955) criticism that many small-group studies have more precision than significance, and that the proliferation of studies in this area may be a reflection of the principle of "publish or perish" rather than the result of genuine involvement in the problems at hand. This position is, however, at best argumentative. It is more useful to assume that most of the lack of significance that Coser points to is due to underlying theoretical confusion and a lack of a generally accepted definition of the concept group rather than superficiality in approach.

At this point it is of value to take a glimpse at some of the current uses of group.

"A-historical" uses. Page and McGinnies (1959) found that in small group discussions "directive" rather than "non-directive" leadership was more acceptable to sophisticated adults. This seems to contradict general findings that democratic group discussion leadership is more effective. Maier

and Hoffman (1960), in the process of conducting a study on group problem solving, divided 100 students into 25 groups of 4 each. Zander, Stotland, and Wolfe (1960) created small laboratory groups with low and high "unity" in studying identification and self-esteem of members. Lerea and Goldberg (1961) started with socialization scores (MMPI Si scale) and on the basis of individual differences so measured, set up 18 discussion groups in an effort to study the effect of "socialization" on group behavior. Schutz (1955) talks about "compatible" and "incompatible" groups where the group members are selected by the experimenter on the basis of how they relate to the focal first person chosen. Knutson (1960) found out that if you assign people to groups on the basis of whether they are vocal or not, quiet people create higher quality and more useful group products, whereas the more vocal enjoyed and were more satisfied with their group experience.

"Historical" uses. In some current studies a greater emphasis on more stable aspects of group functioning is in evidence. Blau (1960), in investigating structural effects of groups, started with 60 caseworkers who were organizationally in 12 supervisory units. Cohen, Whitmyre and Funk (1960) in studying group effects upon creative thinking started with

administrative and professional personnel of a Veteran's hospital who had ranked each other sociometrically. Ziller (1959), in studying leadership behavior under conditions of uncertainty and risk, used 39 B-26 aircrews, about 130 men who had worked together for at least two months. Taguiri (1957) investigated the perception of feelings by members of small groups and emphasized the need for study of the actual process of interpersonal perception in the context of stimulus situations relevant to real life groups. Torrance and Mason (1956) investigated effectiveness of leadership where leadership was relevant in terms of a permanent, real life group context. Ziller (1955) demonstrated the significance of the power hierarchy in affecting group decision as to the correct number of dots presented on a card.

With the implicit or explicit underlying definition of group characteristically varying as the above cited research has indicated, it is to be expected that there is little consensual agreement to be found in definitional and operational statements. Lorge and Solomon (1959) put themselves in the position of outlining a special kind of group that does not develop feelings of groupness. "An ad hoc group is defined as a group created specifically for the purposes of the experimenter to propose solutions to a problem (or problems) after interacting in face-to-face discussion. The ad hoc group,

therefore, neither has had a tradition of working together, nor does it expect to develop a feeling of groupness for problem-solving in the future." Wolman (1960) sees fit to talk of instrumental, mutual preference, and vectorial groups; depending on whether the individual joins a group for purposes of receiving, giving and receiving, or just giving, power and acceptance. MacKinnon (1960) differentiates interest and reference groups in terms of a common interest or goal for the former and a standard or norm for decision making for the latter.

At times there is a plea for a scheme in terms of which groups may be profitably conceptualized. Bates (1957), for example, makes a case for the idea that structure should be a basic conceptual element in any definition of group. However, most statements tend to be so broad and general in the attempt to encompass all the implications of operational uses of the term group, that one is left with the feeling that whenever more than one person is involved and an event transpires, we are talking about groups. Olmstead (1959) states that, " . . . group, then, may be defined as a plurality of individuals who are in contact with one another, who take one another into account, and who are aware of some significant commonality." Bachrach, Candland, and Gibson

(1961) define group as " . . . a cohesion of three or more individuals whose response patterns are associated in some activity." The latter researchers use this definition as the basis for going on to talk about group reinforcement producing and maintaining individual behavior.

The question that should be raised in thinking about a meaningful conceptualization of group is: "What are we trying to explain, understand and predict?" In answer to this question, sociologists have long since delineated the phenomena in question, i.e., Thrasher, (1927); Zorbaugh, (1929); Shaw, (1930); Whyte, (1943). These workers were interested in investigation that dealt with events of profound relevance for the individuals concerned, events of both sociological and psychological significance. At the very least their work must be given credit for providing necessary leads for research and theory into group process as related to the realities of social existence.

Labeling a number of people as an ad hoc group (Lorge and Solomon, 1959) for experimental purposes does not mean that by decree one is investigating group variables. On the other hand, it also does not necessarily mean that one has an artificial situation. Any situation involving people and a given stimulus configuration is as real as any other such situation. It would be more constructive to say that often

when a group experiment is run in an "artificial" laboratory setting that group variables are not under investigation as they are purported to be.

In many laboratory situations the assumption is made that one is dealing with dimensions of groupness when a group has not emerged, or is possibly in the very early stages of formation. Criticism of some studies of group dynamics can be made validly along these lines. A number of strangers together do not constitute a group. They are certainly influencing one another, but not in terms of a given group's norms and reciprocities. There are many studies indicating important differential effects on experience and behavior due to the awareness and influence of other people (F. H. Allport, 1920; Dashiell, 1930; Sherif, 1935; S. Asch, 1951; Blake and Brehm, 1954; Rosenbaum and Blake, 1955). The presence of other people in a stimulus situation does affect psychological structuring. All other people having an effect on the psychological functioning of individuals in a given stimulus situation, however, exert this effect in terms of whether or not a stable pattern of expectations and relatedness exists between the individuals involved.

Psychological processes such as perception and judgment are jointly determined by both external and internal factors

as they are functionally interrelated in a given situation. In man, this determining framework for perceptual and judgmental process often and importantly includes social factors. That is, relatedness to other individuals in given ways and the internalization of group norms as specific attitudes are important to the particular perception or judgment that takes place in a given stimulus setting.

If it is worthwhile differentiating group as something more than any conglomeration of interacting individuals, there have to be sociological and psychological reasons for doing so. In general, sociologically speaking, it would be conceded that "real life" groups are more directly relevant to group study than seating arrangement experiments in the laboratory. But, psychologically speaking, many social psychologists function as though any experiment involving interacting people is a study of groups, regardless of historical considerations. As there is no sharp dividing line between psychological and sociological aspects of group functioning, if groups are to be studied, then some aspect of "real life" groups must be dealt with, regardless of whether the emphasis is psychological or sociological. Groups are important psychologically to the degree in which they are major determinants of what is focal in the members' frame of reference during relevant stimulus situations. These

psychological effects must in turn be differentiable from the effects of other social stimulus conditions if the term group is to be a meaningful designation.

We have indicated that a definition of group should keep social realities in mind and at the same time be precise enough so that it does not subsume all human association.

Sherif's (1956) definition does this. It states:

A group is a social unit which consists of a number of individuals who stand in (more or less) definite status and role relationships to one another and which possesses a set of values or norms of its own regulating the behavior of individual members, at least in matters of consequence to the group. (p. 144)

As indicated by this statement, groupness is not an all or nothing state of affairs. The extent and intensity to which individuals relate to one another in terms of a mutually defined system of expectations and reciprocities vary. The range of relevance of a particular set of standards or norms varies. The degree to which any set of standards or norms is identifiable varies. As Sherif's (1956) 1949, 1953 and 1954 camp studies show, it takes time, even with centrally involving problems and situations influencing people, before continued interaction leads to group formation. The time required is typically not just an hour or two, and the sociological and psychological changes that take place do not suddenly emerge but are typically

gradual in nature. Any given group is a system of relative sociological and psychological stability. In addition, once there is enough normative and hierarchical stability for a number of individuals to be considered a group, the process does not stop. To a greater or lesser degree, this achieved stability is in turn modified. The modification that takes place being in the direction of further stabilization and intensification of the system that exists, the evolution of a new normative direction, change in the status hierarchy, or possibly a deterioration and weakening of the system as a group.

Basic to this discussion, however, is the point that there is a very great difference between a situation that can unambiguously be considered a group situation and one where we have a number of strangers together for the first time. In addition, there is a difference between a situation where an individual is alone and where he is in the presence of strangers. The latter may be termed a "togetherness situation" following Sherif (1956).

We can assign all stimulus situations where the presence or non-presence of other people and the relationships are of primary concern, onto a continuum. This abstract continuum ranges from a state of aloneness through a state of togetherness to a state of groupness. Using an individual as the

referent, we may then say that the individual is in an alone, or a together, or a group stimulus situation.

<u>Alone</u>	<u>Together</u>	<u>Group</u>
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The idea of a continuum is a useful one. An individual is differentially affected by the presence or absence of other people with whom he may have or not have an established system of relatedness. In a given stimulus situation, for example, a person walking down a street and minimally aware of passers-by, we would be referring to a point along this continuum somewhere between alone and together. An individual working at his desk on a problem without the presence of any other person would be in an alone stimulus situation. An individual in a new community, interacting with other people in the process of "making new friends," and with a background of some previous interaction with these same people, is in a stimulus situation that may be referred to a point on the continuum somewhere between together and group. An individual interacting with other people who are related to him in terms of a long established and stable group system defines a situation that may be placed somewhere on the group end of the continuum. Finally, an individual who is in the process of solving problems with a number of strangers defines a situation

that may be placed somewhere in the middle (together) of the continuum.

Positing this continuum is not an idle matter. It is of value to have a framework in terms of which any laboratory, laboratory-field, or field study may be located in terms of inter-subject stimulus significance. A laboratory experiment that purports to investigate an area pertinent to group functioning will contribute findings of greater precision if the subjects participating have been first located along this continuum. Group experiments could consistently use subjects who have a demonstrable history of relatedness to one another. Research and theory in which the concept of group is basic can be more clearly evaluated with a better basis for defining a study's areas of relevance and irrelevance.

We have now indicated that a generally accepted definition of group is needed. In addition, it has been suggested that this definition should allow for the historicism of group formation and should require that certain emergent products (i.e., norms, status hierarchy) to be in evidence. It has been noted that Sherif's definition is in line with these considerations. It has also been indicated that all studies dealing with some facet of group formation or functioning would gain in clarity if some effort is made to

place the social stimulus conditions involved somewhere along a continuum which has been defined as an alone - together - group continuity. The present study will experimentally demonstrate the validity of such a continuum by taking the three major states (aloneness, togetherness, groupness) that differentially define social stimulus situations as the major independent variable.

The necessity for an abstract continuum such as the one posited here will be demonstrated on grounds additional to the basic definitional issue. It is inevitable that if there is some ambiguity and vagueness in the meaning and use of the concept group, there will be parallel confusion with regard to the functional analysis of what is demonstrably a group product or a group-related process. It is with this in mind that we now take a look at an area that is of concern to theorist and layman alike, the area of conformity and non-conformity.

Conformity - Deviation: A Case in Point

Conformity and deviation are important aspects of many situations where human beings make judgments, discriminate, or reach a decision. Almost every behavioral scientist would agree with this statement. Agreement as to what is central to the conforming process itself, however, is a different matter. Many different facets of the problem have been

emphasized in theory and research. Fromm (1955) and Riesman (1950) illustrate an approach in which the individual and society are at times functionally dichotomized. Conformity is generally a negative event with the individual pictured as giving in to pressures from society.

Rosner (1957) has defined the issue as one where a conforming individual is one who tends to conform in various situations. Mussen and Kagan (1958) find conforming behavior to be a basic personality tendency traceable to early parent-child relationships. Others (MacBride, 1958; Bass, 1961) have also found conforming behavior to be a reliable manifestation of consistent individual differences. Milgram (1961) has found that Norwegians are more conforming than French - an instance of a personality-oriented approach to conformity (based on national character) employing a modified Aschian methodological format. Subjects who score high in "authoritarianism," as measured by the F scale, have also been found by some researchers (Wells, Weinert and Rubel, 1956; Berkowitz & Lundy, 1957) to be more conforming than those who score low, although the validity of the F scale has been questioned by others (Bass, 1955, 1957; Messick & Jackson, 1957; Kerlinger, 1958; Hare, 1961).

The question of self-confidence has also been related to the issue of conforming behavior. Self-confident subjects

have been found able to resist pressure to conform (Coleman, Blake & Mouton, 1958), while subjects lacking the necessary skills or characteristics which would allow them to conform may become "forced deviants" (Levi, Torrance & Pletts, 1954). Sex differences have been cited as determinants of differential tendencies toward conformity. Tuddenham, MacBride & Zahn, (1958), and Beloff (1958) have found women giving in more than men to pressures toward conformity.

At times, situational factors have been stressed as major factors in the conforming process. The question of whether an opinion is to be expressed publicly or privately has been taken as an important differential determiner of the tendency towards conformity. In general, it has been found that publicly expressed views are more conforming (Schank, 1932; Festinger, 1947; Kelley and Volkhart, 1952; Argyle, 1957).

The relative size of majority opinion has also been studied as an important variable. (Asch, 1955; Bennett, 1955; Luchins & Luchins, 1955; Kelley & Woodruff, 1956), there being a general tendency for a larger majority to exert more pressure for conformity. This tendency is mediated, however, by factors such as the perceived status of any given individual (Lippitt, Polansky, & Rosen, 1952).

Some work has emphasized the relationship of leadership to the process of conformity (Jackson, 1944; Merei, 1949; Hare, 1952; Pellegrin, 1953; Talland, 1954). The general trend in these studies indicates that leaders also conform, but that they play a greater part at some time in defining the norms that one conforms to than others. Recently, Luchins and Luchins (1961) found that authority was more effective than majority in producing conformity.

Recently, Endler (1960) demonstrated again the lasting effects of standards established in the autokinetic situation, citing this phenomenon as an instance of conformity to social influence. This was opposed to compliance which has to do with immediate behavioral effects that disappear with the disappearance of immediate felt need on the part of subjects.

The range of factors that may be cited having relevance to the question of conformity-deviancy is almost limitless. It is apparent from even a brief glimpse at research in progress in the area that just about any consensual agreement or behavioral isomorphism involving two or more people in almost any set of stimulus conditions falls at one time or another, for one researcher or another, under the general rubric of conformity.

As Sherif (1961) points out, however, when the topic of conformity and deviation is raised, the question that

should be asked is, What is one conforming to or deviating from? In addition, what is there about the whole issue of conformity and non-conformity that makes it such a central topic to much theory and research in the area of social psychology? It is not difficult to demonstrate empirically that in all cases where this issue is raised, conforming or non-conforming behavior can be defined only in terms of some expectation or standard that applies to the situation. This category of expected or appropriate behavior may be of superficial or trivial consequence to the individuals concerned, or it may have relevance in terms of basic ego-relatedness. In any event, as this category of expected behavior acquires more significance for the individuals concerned, we move, by definition, into an area of normative and organizational import. That is, the norms involved are not in the area of fads and fashions, or categories established in a transitory laboratory situation, but are of primary concern psychologically and sociologically as central values.

Often and concomitantly, the case is one where interpersonal expectations are involved which are based on a long and well-established organizational system. It is this area of normative and organizational importance that makes the

conforming process one worthy of scientific inquiry. It is, in turn, the fact that "conformity" of normative and organization significance relates to established groups of our time, both large and small, that puts the problem into perspective. Any category of expected social behavior must involve at least two people and must have an antecedent background. Typically, when the category in question is an important one, it involves a number of people and is based on the norms and structure of sociologically identifiable groups. These important categories would then range from small informal groups to referents at an institutional level.

Conformity is not primarily a question of personality, or "human nature," or the public versus private situation, or the virtues of giving in versus resisting pressure, or its relationship to self-actualization, or distortions in perception and judgment. Conformity is primarily a question of what values have been internalized by given individuals. These internalized values are the social attitudes that predispose the individual to perceive, judge and react in given ways under particular stimulus conditions. Typically, the individual acquires these attitudes in relation to sociologically designateable referents, i.e., family, peer group, military, etc. Social attitudes have a group basis,

and conformity has little meaning outside the context of a relevant social norm and attitude.

The very fact that some studies on conformity (Asch, 1952; Asch, 1956) pull people together randomly for purposes of the experiment reduces the issue to one of evaluating the effects of stranger upon stranger under a given set of stimulus conditions. This avoids the primary context in terms of which the issue has relevance, namely, the group. In many real life situations, the question is not so much conformity versus non-conformity to the situation, or the conforming versus non-conforming personality, but rather what happens to judgment, perception and behavior on the part of the individuals involved.

Man does not perceive or judge "veridically" and then additively conform or not conform to social pressures. Variations in the perception of social issues are real variations in perception, variations in judgment of social stimuli are real variations in judgment, all due to differing ego-involvements and attitudinal frameworks which are related in turn to group factors. Although conformity is not equivalent with the psychological processes of perception and judgment the position of others may be taken as a partial or primary basis for a particular instance of perceptual organization. This would then be one of the factors entering into the organizational

process. The instance where an individual reports white to be black or black to be white because of the status of other reporting individuals or other reasons in a conscious and deliberate way, knowing full well that this is not perceptually so, is not an instance of distorted perception or judgment but rather the perception and judgment of a given stimulus configuration occurring in relation to certain cognitive factors resulting in given behavior which may be termed "conforming." The latter, however, is often a laboratory-contrived situation that does not bear directly on the facts of social existence. When individuals take a particular stand on a social issue of importance to them, their perceptions and judgments tend to be clear-cut, and behavior tends to be consistent with their attitudinal orientation. In the United States, 1963, for example, many southerners who are violently against desegregation perceive and judge events and statements in a manner consistent with this position and behave in a way privately and publicly which runs counter to world opinion, to the expressed stand of federal judicial and executive power, and to the attitudes of the majority of their fellow countrymen.

Behavior is a functional outcome of relevant external and internal factors. In given stimulus situations other people may affect the actual perception that takes place and/or overt behavior depending on the structuredness of the stimulus,

the ego-involvement that is activated, the relationships of the people present, previous experience with similar situations, etc. Especially in highly unstructured stimulus situations the statements of another individual will enter in as an important determinant of perceptual judgment. It is well known that in unstructured stimulus situations, the number of possible alternatives to the way the situation may be organized by perceiving individuals increases. (Sherif, 1935; Luchins, 1945; Gibson, 1950; Thrasher, 1954; Sherif & Harvey, 1954; the use of various projective techniques such as the Rorschach, TAT, etc.) As a stimulus situation, be it simple sensoral or complex social, becomes progressively more structured, the number of possible alternatives to perceptual organization decrease, and there is a greater tendency to reach immediate consensual agreement as to the nature of the stimulus object on the part of perceiving individuals.

Viewed in these terms, it may be noted that it would be improbable for anyone to say that consensual agreement in a well-structured stimulus situation is evidence of a drive toward conformity. Psychological processes such as perception and judgment are jointly determined by both external and internal factors as they are functionally interrelated in a given situation. In man, this determining framework for perceptual and judgmental process often and importantly

includes social factors. That is, relatedness to other individuals in given ways and specific attitudes are important to the particular behavior, judgment, or perception that takes place under various stimulus conditions.

Groups constitute the context in which normative and organizational factors that define so much interpersonally and attitudinally can be put into perspective. All important stabilized expectations - categories of required behavior - are traceable to consensually validated or agreed upon criteria that are among the emergent products of small and large group formations, inter-group interaction, and collective interaction.

Since conformity is a relevant topic only when it is studied in relation to important and specific categories of expected behavior, and since these categories acquire their greatest import as products of group formation and change, it is imperative that a clear conceptualization of group underly theory and research in this area. Otherwise there will continue to be a plethora of studies which seem to deal with all facets of the problem but which do not, taken as a whole, establish a framework that defines the area as basically charted.

The definition of group cited earlier, and the differentiation of social stimulus situations along a

continuum defined by states of aloneness, togetherness, and groupness, is posited as a basis for resolving some of the ambiguity and confusion in the problem area of conformity.

There is very little in the area of social psychology that does not require a clear group definition. A meaningful approach to the topic of conformity and deviation depends upon just such a clear and generally accepted definition. The ambiguity prevalent in this area today serves to illustrate the point.

With these basic theoretical considerations relevant to this study delineated, we will turn now to some other necessary background factors and consider them briefly.

Social Factors and Reference Scales

As has been stated, human social existence is based upon mutually understood categories of expected behavior. Sociologically, many of these categories are manifest as norms and organizational structure. Psychologically, these categories define attitudes that individuals bring to relevant stimulus situations. A dimension of every attitudinal orientation is a particular cognitive organization that gives specific content to subject-object relatedness. Once relatedness to certain objects, persons, groups, institutions, issues, etc., along particular lines becomes established, given relevant

stimulus situations, there are predictable affective, judgmental, and behavioral implications.

By judgmental implications we refer to the fact that people holding certain attitudes will characteristically evaluate particular statements, situations, events, other people's behavior, etc., to a greater or lesser extent as good or bad, too long or too short, well or poorly presented, adequate or inadequate, tolerable or intolerable, representative or non-representative of a proper position. To the extent that these stabilized categories of social judgment exist we can speak of psychosocial reference scales (Sherif and Hovland, 1961). The judgment, for example, of a particular individual as acceptable or unacceptable socially, or acceptable to a certain extent, is dependent on a background of relevant stimulus items that have been differentially stabilized with reference to one another along the dimension(s) of acceptability-unacceptability. Psychosocial reference scales, as dimensions of attitudinal orientations, are in turn referable to the general group context of social life. As such they constitute an area of extensive future investigation and theoretical elaboration for the social psychologist. The normative aspects of group life that are internalized as individually held attitudes in effect outline the underpinnings of social judgment.

The psychological process of judgment, however, is not restricted to social stimuli. The individual who is driving a car and experiences looseness in the steering which he refers to a garage, defines it as looseness on the basis of a background of experience with steering wheels. This background of experience now being understandable as a subjective reference scale having to do with degrees of acceptable looseness in steering wheels. In the traditional psychological laboratory, judgmental processes with respect to the placement of stimuli in relation to one another in varying sensoral dimensions have been extensively investigated.

It is now well established that when an individual attempts to order a stimulus series (using the method of single stimuli) with there being at least one jnd between any two stimuli in the series, a subjective reference scale is eventually established. This scale parallels objective stimulus differences and enables subjects to know that, for example, a given weight is the fifth heaviest in a series of seven stimulus weights.

Subjective reference scales are also established when the stimulus series is not objectively well-graded. The general psychological tendency to structure experience results, with normal people, in an attempt to attain some

framework in terms of which ambiguous stimulus configurations may be ordered. It is exactly this psychological tendency that was actuated in the classic autokinetic situation and that underlies norm formation in social living.

It is this general tendency that explains the fact that when a stimulus situation is clear-cut, unambiguous, and objectively ascertainable to be a given kind or amount of something by perceiving individuals, it is difficult to obtain statements or estimates that run counter to this immediate "observable reality." Once organization has taken place, being given by an objectively structured stimulus configuration, experience is structured, and it is relatively difficult to effectuate perceptual reorganization and/or induce behavior appropriate to another stimulus definition.

When, however, a stimulus situation is not clear-cut, as has been indicated earlier, the number of possible alternatives to the way the situation may be organized by perceiving individuals increases. At the same time, the need to overcome the ambiguity of the stimulus situation becomes an important determiner of ensuing psychological events. It is in relation to this need that any new relevant internal or external factor becomes important. The estimate of another individual, for instance, may enter in as an important anchoring point for future judgments.

Since new relevant internal or external factors become important in helping to define ambiguous situations, i.e., another person's estimates, social factors may be brought in as new sources of stability in such situations; where the stimulus to be judged may be placed along some kind of psychophysical scale.

We are saying, then, that social factors become increasingly important in determining an individual's estimate or judgment of an eliciting stimulus as that stimulus, objectively, is increasingly ambiguous. This occurs whether the stimulus dimension is itself social in nature, e.g., a statement about a social issue, or sensoral, e.g., the judgment of equal sense distances. While stimulus dimensions of the former have obvious relevance for social psychology, the risk of dependent measures being confounded by "irrelevant influences" is greater: this being so because of a great range of individual differences concerning definition of social issues, amount of ego-involvement, familiarity with the issue, how the relevant concepts were originally learned, etc.

This does not obviate the usefulness of conducting experiments where the stimuli being judged or evaluated are of significance socially. Much research today employs socially relevant stimulus material. Most future research,

especially under functionally simulated real-life conditions will employ socially significant stimulus material. There is a need, however, especially at the present time, for the employment of socially neutral stimulus material in research situations so that normative and organizational aspects of social living may be brought into the laboratory under controlled conditions without the social meaning of the stimulus material itself confounding dependent measures. The greater precision thus obtained will allow for development of a better theoretical framework, i.e., conceptualization of group, in terms of which research with socially relevant stimuli will achieve more usefulness.

In line with the above and earlier considerations, it was decided that individuals would serve as subjects under alone (A), togetherness (T), and group (G) conditions, making estimates in response to the presentation of an ambiguous physical stimulus series. There are leads along this line provided by Bovard (1953) and Thrasher (1954). In unstructured situations, the relative presence or absence of organizational components of real life small groups will serve as a reinforcement for the range of estimates that an individual makes. That is, a fellow group member responding in the same range will have a greater differential effect on the establishment of a given range than a stranger.

Before stating hypotheses, collective interaction needs to be characterized as this constitutes the experimental setting for session II.

Collective Interaction Characterized

Another area that will achieve better definition and become more accessible methodologically and theoretically as a result of a clear group definition is that of collective behavior or collective interaction. Traditionally, this has been an area of special concern for sociologists. From Tarde and Le Bon to Blumer, Brown, and Turner, out-of-the-ordinary situations typically involving a good number of people engaged in dramatic behavior have constituted the content area of collective behavior. The social significance of this behavior can be seen by referring to the descriptive terms riots, lynchings, panics, etc. Collective behavior has also been a term often applied to behavioral events which, when taken over a period of time, outline the emergence of new norms, new institutions, or the reaffirmation of those in existence in a particular society.

In any event, all social stimulus situations can be thought of as constituting simple to complex patternings of various degrees of stability and fluidity. Stability may be defined as any set of standardized expectations (normative and

organizational) operative in a particular set of circumstances, and fluidity as socially important stimulus situations where an over-all set of standardized expectations is lacking. Patterns of stability are based on:

1. Normative and organizational products of groups.

That is, normative criteria for appropriate behavior and standardized interpersonal expectations with specific person referents as aspects of small and large group formations.

2. Normative and organizational inter-group products.

That is, normative criteria for behavior and standardized interpersonal expectations with specific person referents based on traditional or established patterns of intergroup relations of small and large groups.

3. Normative and organizational collective products.

That is, normative criteria for behavior and standardized inter-personal expectations based on collective interaction or a series of collective behavioral episodes.

4. Stable social stimulus situations may be constituted by any complex arrangement of normative and organizational factors stemming from the above cited sources.

Patterns of fluidity that refer to meaningful social stimulus situations are based on the lack of stabilizing normative or organizational factors. At least these factors, when present, are not appropriate or adequate enough for

the achievement of collective stability. We may refer to such situations when they are compelling enough for the individuals present to require structuring, as collective interaction situations. That is, they are situations where an effort is made to arrive at a collective decision or norm in order to eliminate the instability or fluidity present. The psychological rootedness of such behavior has been discussed earlier.

Central or focal issues arise in human relations, especially in an increasingly complex and interrelated world, where the existing organizational and normative fabric of group, inter-group, or collective formations does not hold. It is especially under such circumstances that important collective interaction takes place. When there is a breakdown of stable patterns of relatedness, be they based on group, inter-group, or collective norms, collective interaction is the process that re-establishes stability, often with the inclusion of new psycho-cultural elements. It should be noted that collective behavior can take place with various "intact" elements of group, inter-group and collective products playing a part in the collective interaction process. For example, a collective decision to lynch or not lynch may be mediated by participating individuals who have an in-group vested interest to achieve the lynching,

who have an in-group vested interest in stopping the lynching, who oppose other individuals in the crowd in an inter-group context, etc.; these factors feeding into the collective process, but not being equivalent with it.

Group, inter-group, and collective products are key concepts to stability in human affairs, and collective interaction is a key concept to attempts at structuring fluid social stimulus situations that are not defineable in terms of existing normative and organizational formations.

When emergent properties of interaction situations cannot be explained by referring to existing normative and organizational framework, an understanding of the significance of the collective process is important. We may characterize collective interaction as follows: Collective interaction is interaction that takes place around some central issue or problem. The issue or problem is such that existing group, inter-group, or institutional frameworks that may be present are not collectively adequate. Characteristically there is uncertainty, and individuals present, who are more or less ego-involved, express judgments, take a stand, or make appraisals relevant to a collective decision or outcome concerning that issue or problem.

This characterization does not mean that group factors are not important to emergent results of collective interaction.

In fact, with everything else held constant, group-related factors enter in as weighty items in affecting the flow of collective interaction. However, it does mean that collective products are different from, and not equivalent with, group factors originally operative in the situation.

Problem and Hypotheses

It should be possible to investigate experimentally the implications of the above. It should be possible to show that individuals will establish reference scales under initial social conditions of aloneness, togetherness, and groupness with respect to an ambiguous sound stimulus series. Furthermore, that in subsequent collective interaction situations, original reference scales will be more resistant to change as the individual in question is placed further along the social stimulus continuum, moving from alone to group. The relative stability of scales established under group conditions over together conditions will constitute further support for the position that extrapolation of results from "ad hoc" group experiments to group theorization is not a valid procedure. In addition, the presence or absence of organizational group factors as operationalized here will be demonstrated to be overriding in terms of constituting a basis for continuing "conformity" to originally established

reference scales. This will be so in the face of majority pressure present in the collective interaction situations. In turn, this will serve as a basis for better understanding the collective process itself, where real-life situations finds some individuals apparently capable of maintaining positions more adamantly than others. It is maintained that this latter phenomenon can be explained primarily by considering social conditions that functionally define an individual's place in collective interaction situations, rather than by extensively evaluating personality factors or general tendencies to conform or not conform.

Accordingly, the hypotheses stated below were tested in an experimental design where subjects were first differentiated according to varying social conditions (aloneness, togetherness, groupness--session I). The task was estimating the frequency or pulse rate of each of a series of ambiguous sound stimuli. Some subjects established reference scales under alone conditions (A), some under togetherness conditions (T), and some under group conditions (G). Three different scales were established, allocated equally among the differing social conditions, and anchored in each case by E. This was followed by session II, a collective interaction session, where three subjects, each with a different social condition background (A, T, G) and different original scale (a, b, c), continued

to make estimates. The degree of stability of original scale values constituted the crucial dependent measure.

Hypotheses: When reference scales are established initially under different social conditions (alone, together, and group), and there is subsequent collective interaction, established scales will vary in their degree of stability. Specifically:

Hypothesis 1a. Reference scales established initially under group conditions will be more stable than scales established under together and alone conditions.

Hypothesis 1b. Reference scales established initially under together conditions will be more stable than scales established under alone conditions but less stable than scales established under group conditions.

Hypothesis 1c. Reference scales established initially under alone conditions will be less stable than scales established under together and group conditions.

Hypothesis 2. Estimates of frequency not falling within original ranges will fall most frequently within session I G ranges, less frequently within session I T ranges, and least frequently within session I A ranges.

Hypothesis 3. Variability of estimates during session II will be greatest for A subjects, less for T subjects, and least for G subjects.

Testing of these hypotheses requires the pre-selection of individuals as A, T, or G subjects prior to their use in Session I. In keeping with the main problem of this research, individuals initially establishing scales under G conditions must do so with a fellow member of a real life group. Individuals establishing scales under T conditions must do so with a stranger. In addition, Session II requires that the three participating subjects (A,T,G) be strangers. Session II is the session where subjects with different scales interact with one another, and as a result it constitutes the collective interaction situation. The general layout of the experiment may be seen by referring to Table 3 and Table 4.

On the basis of these requirements the necessity for considerable knowledge concerning the presence and patterning of interpersonal relations among potential subjects is obvious. It is only with this information that subject assignment to Session I and Session II can be properly made. In essence, it is this very differentiation among subjects that defines the independent variable, as "groupness" is not something that can be assigned arbitrarily and selectively to subjects in a laboratory setting.

It was also necessary while scheduling to assign equal numbers of A, T, and G subjects to the three different scales established during Session I.

The following chapter concerns itself with these problems of subject selection and scheduling before going on to discuss stimulus conditions and procedure.

CHAPTER II

SUBJECTS AND INDEPENDENT VARIABLE, STIMULUS

CONDITIONS AND PROCEDURE

Subjects and Independent Variable

Subjects in the experiment proper were all undergraduate students at Bethany College, Bethany, West Virginia. All were drawn from the sophomore class. There are six possible combinations of scales and social conditions (see Table 4), and as eight replications were run for each combination, with each replication requiring three subjects, 144 subjects were employed.

During the course of the '61-'62 academic year 104 Bethany subjects pretested the appropriateness of the stimulus material.

Pre-test Experiment. During the summer of 1962, four pre-test replications of the experiment were run, employing high school students from Norman, Oklahoma. It was necessary to ascertain small informal group patterning in order to properly assign individuals to various Session I social

condition categories. In July, questionnaires were administered to Norman high school students attending summer session. The lead to the questionnaire was as follows:

We are trying to find out if it might be possible to have teenagers assist in future civil-defense programs. One way this may be possible is to have teenagers like you work with friends - people one already knows and likes. You can help by giving us some idea as to what your friendship is like. All information will be kept in the strictest of confidence.

Two high school students distributed the forms so that the experimenter would not be seen by prospective subjects. In addition, general response to the questionnaire could best be checked informally by fellow teenagers. In general, the apparent purpose of the questions was accepted and most teenagers responded spontaneously and directly. Questionnaire forms were then processed with reference to three of the questions:

1. Who do you like the most? List as many names in order of preference as you want.
2. If you had to depend on a friend's judgment in an emergency situation, who would you trust first?
4. If local civil-defense units were created, who would you be willing "to take orders" from? List (in order of preference) as many names as you want.

Names were selected on the basis of appearing first or second in response to questions 2 and 4, and in at least the top third in response to question 1. Where possible, this was cross-checked by questionnaires filled in by the people

whose names were selected. As a further cross-check the two high school students who administered the forms were interrogated with reference to their knowledge of the socialization pattern, which was considerable. As a final cross-check, informal questions were asked later by the experimenter following the experimental situation to ascertain the presence or lack of friendship patterns.

Questionnaires, informants, and questioning then, were used to ascertain that Session I G subjects were part of real life groups, and that session I T and Session II A, T, and G subjects were strangers. Ages ranged from 15 to 18. Subjects were juniors or seniors. Each experimental run employed either male or female subjects. A sample questionnaire can be found in Appendix A.

Results were in the predicted direction and suggested the feasibility of conducting the experiment. Table 1 summarizes results for four Session II experimental runs. Values refer to percentage of estimates falling within Session I ranges for a given scale and social condition. Table 2 summarizes the same results with rows representing the four Session II experimental runs.

The same format was followed in subject selection for the experiment proper. Again, it was essential that Session I G subjects be members of established small informal groups,

Table 1

Percentage of Estimates Falling Within Session I Ranges
According to Scales a, b, c and
Social Conditions G, T, A

Original Range	Social Condition		
	G	T	A
<u>a</u>	87	41 26	4
<u>b</u>	51	72	9 7
<u>c</u>	76 95	37	5

Table 2

Percentage of Estimates Falling Within Session I Ranges
According to Scale Arrangement Per Experimental Run
and Social Conditions G, T, A

Experimental Runs	Social Condition		
	G	T	A
1	<u>c</u> 95	<u>a</u> 41	<u>b</u> 9
2	<u>a</u> 87	<u>c</u> 37	<u>b</u> 7
3	<u>c</u> 76	<u>b</u> 72	<u>a</u> 4
4	<u>b</u> 51	<u>a</u> 26	<u>c</u> 5

and that Session I T and all Session II A, T, and G (given replication) subjects not know each other. Three information sources were employed: (1) a questionnaire administered to sophomores while in class, (2) ratings by all fraternity and sorority presidents and housing proctors, (3) ratings by all sophomores, forms being distributed on the basis of social and housing affiliations.

Great care was taken to make the first questionnaire appear unrelated to other requests for information. This was accomplished by a two week time gap and by the fact that the first questionnaire appeared to be a local sociological study, while the second and third information requests were processed through the Dean of Students' office. In the latter instance, great care was taken to emphasize the fact that a nation-wide study was being conducted, and that information obtained would in no way be related to the local situation. The Dean of Students' office constituted an excellent distribution outlet because (a) the Dean was a popular, non-threatening authority figure, (b) it was readily acceptable to students that a national study would be processed through that office.

These sources of information were used in establishing sophomore patterns of interpersonal relatedness. Where individuals constituted a clear cut group any given two, preferably of at least middle status were employed for Session

I G experimental runs. As much as possible, individuals who were used for G subjects from a given group were anchored to the same scale. Where individuals did not cite one another as friends or acquaintances, they were used as Session I A, and T subjects and Session II A, T, and G (given replication) subjects. There were filter questions in the first questionnaire designed to indicate people that a given individual knew casually, or possibly related to in a negative manner. The three information sources may be referred to in Appendix B.

In addition, as much as possible, individuals were equated status-wise, regardless of whether they served as A, T, or G subjects. This was necessary so that individuals serving as G subjects would not be selectively different from A and T subjects in terms of degree of assimilation into student socialization patterns. A listing of the questions employed will show that the first information source was designed to establish the general breadth of a potential subject's interpersonal relatedness, including acquaintances and negatively valued people. The second and third sources of information were designed to ascertain the immediate in-group of the potential subject. Questionnaire 1 which was distributed to sophomores in class consisted of the following items:

1. Who do you like the most? List as many names in order of preference as you want.
2. If you had to depend on a friend's judgment in an emergency situation, who would you trust first? List in order of preference as many names as you want.
3. If you were giving a party (money and location no object,) who would you like to invite? List in order of preference as many names as you want.
4. If local civil defense units were created, and you were part of it: (a) of your friends, who would you be willing "to take orders from?" List in order of preference as many names as you want. (b) Of your friends, who would you be willing to work with but only if you "gave the orders"? List in order of preference as many names as you want. (c) Of your friends, who would you not be willing to work with? List in order of rejection as many names as you want.
5. List your friends in order of their maturity. That is, list the most mature first, the next most mature second, etc.
6. How many other young people do you think the average student on campus knows reasonably well? (circle one): (a) over 50 (b) between 40 and 50 (c) between 30 and 40 (d) between 20 and 30 (e) between 10 and 20 (f) under 10.

Questionnaire 2 which was distributed to fraternity, sorority presidents and proctors consisted of the following items:

1. Who are the sophomores in your social group?
2. Who are the sophomores in your housing unit?
3. Are any of these people especially friendly with one another?
4. In terms of being friendly and socializing, some of these people can be thought of as constituting groups. Indicate as many of these groups as you are aware of by using as many of the below charts as you need. If necessary, include others who are non-sophomores, but indicate next to their names whether they are freshmen, juniors, or seniors. Please remember to put the "more important" people at the top.

5. Generally, would you say that sophomores tend to stick together or do you feel they are assimilated in the general student body? Would you write a sentence or two in answer to this question. Thank you.

Questionnaire 3 which was distributed to sophomores on the basis of social affiliation and housing consisted of the following items:

1. List any other sophomores you know who you feel are your friends. (in order of preference)
2. Of the above, with whom do you spend the most time? (list in order of amount of time spent)
3. If housing were to be set up by units capable of handling six people, who would be the five people you would choose to live with? (list in order of preference)
4. In order of importance, list the people who constitute your closest circle of friends. If some are not sophomores, write freshman, junior, or senior after their names.
5. Generally, would you say that most of your friends are also sophomores, or are they from other classes? Why do you think this is so? (whatever the case may be) Please write a sentence or two concerning this. Thank you.

Specific criteria for subject selection were as follows:

Questionnaire 1: Individuals cited, in response to questions 1, 2, and 5; of the sophomores listed, the best-preferred (consistently) two-thirds. Question 4 - parts (b) and (c) - filter questions, any name appearing would eliminate that individual. Question 3 - a filter question useful for subject matching, that is, who knows who beyond the immediate group.

Questionnaire 2: Questions 1 and 2 were used to ascertain who the sophomores were that the proctor or president is familiar with. Question 4 - crucial question, individuals cited had to be consistent with questionnaire 1, questions 1, 2, and 5.

Questionnaire 3: Questions 1-4 - pattern of individuals selected had to be consistent with question 4 of questionnaire 2, and questions 1, 2, and 5 of questionnaire 1.

Scheduling subjects was a difficult process. Forty-seven small group clusterings were "isolated" - the number of sophomores in each averaging around three-four-five. The best procedure was scheduling Session I with two projected sets of Session II in mind. That is, four sessions I - A, A, T and G - were necessary for two sessions II - ATG, ATG. Sessions I were scheduled in line with specific Session II subject combinations necessary to the social condition requirements of the experiment.

In addition to the use of these questionnaires, two students served as informants. It was decided that this would be a safer procedure than direct questions in the experimental situation. The case where one individual might have related the stimulus material in any way to interpersonal relations would have invalidated the procedure. It was extremely important that everyone think that whoever happened to serve as a subject with whomever was merely a matter of chance scheduling. Sex differences were controlled for by using either male or female subjects for every experimental replication. This was a safeguard against the possibility that female subjects in the experimental situation might

defer to the judgment of male subjects because of traditionally assumed male superiority in similar psychophysical tasks.

Stimulus Conditions

In line with previous discussion, stimulus material for this experiment had to be ambiguous. When a task is psychophysical, stimulus structure has to be weak or open to many response alternatives before social factors can play a central part in judgmental organization. This may be achieved by various methods - small stimulus differences, brief stimulus presentations, use of an inherently fluid stimulus such as the autokinetic light, simultaneous or temporal presentation of a great number of items of a given stimulus dimension, etc.

Leads for relating different social factors (independent variable) to differential judgmental effects are provided by Bovard (1953), Thrasher (1954), and Deutsch and Gerard (1955).

Taubman (1950), Garner (1951), and Reese, Reese, Volkman & Corbin (1953) provide leads, with their experiments on the perception of auditory and visual number, as to the possibility of using sound where the task is judging beats or pulse rate. Following Reese, Reese, Volkman & Corbin's (1953) use of the terms, it was important that stimulus signals could only be estimated and not subitized. At the same time, the task had to be one where it would not be judged

impossible by participating subjects. That is, individuals listening to the different stimulus signals had to feel that, though it was difficult to accurately differentiate one from another, it was certainly not impossible. The stimulus series also had to be one that could be used twice in Session I and Session II without this being apparent to subjects. Though ambiguous, it was imperative that a constant stimulus be used for all subjects under all conditions so that any obtained differences would be more clearly a function of the independent variable (different social conditions).

The autokinetic light would have been very appropriate as the stimulus. It was decided, however, that it would be worthwhile demonstrating the generality of relevant theoretical concepts utilizing still another stimulus dimension (an ambiguous sound series).

In an effort to achieve desired stimulus characteristics, several tapes were built. Mechanical metronomes, mechanical and electronic, and three electronic metronomes were alternately used in an attempt to standardize an appropriate sound. These techniques resulted in the perception of grossly different figure-ground configurations for pre-test subjects which was unacceptable. This approach was abandoned in favor of using a single signal source for achieving the desired pulse rates.

As Shower and Biddulph (1931) have shown, at frequencies in the vicinity of absolute threshold small changes in cycles per second (cps) are detectable. In addition, sensation in the vicinity of absolute threshold is especially discontinuous (Licklider, 1951, after Bekesy, 1936), making pulse rate estimation a plausible task. Since the physiological basis of the quantal nature of auditory difference limens is central rather than peripheral (Stevens, Morgan, and Volkmann, 1941), quantization should become functionally inter-active with relevant social factors operative in the stimulus setting.

Accordingly, an Eico audio-generator served as the single stimulus source. The frequency settings were: channel A:19 cps, channel B:22 cps, channel C:25 cps, channel D:28 cps. Square waves rather than sine waves were used. They made the perception of pulses more plausible because of their "staccato-like" effect. On the basis of extensive previous pre-testing with electronic metronomes, a three second stimulus presentation was considered optimal, with a six second rest period preceding the next presentation. The stimulus presentation of three record duration was deemed best for enabling subjects to feel an adequate exposure to every given stimulus frequency without reaching the point of fatigue. A six second rest period allowed for recording responses of the maximum three

subjects in any experimental session, and still enabled actual presentation time of the stimulus series to take place in a half hour.

The pulse rates employed per three seconds were 57, 66, 75, and 84. A total of 164 pulse groups were taped. The first four were used in Session I to anchor subjects to lowest and highest reference scale values. The remaining 160 pulse groups constituted the stimulus series "proper" for both Session I and Session II. In building the tape, a table of random numbers was used in assigning channels A, B, C, and D sequentially to every group of four stimulus sounds. That is, four different sounds were repeated forty times, each repetition being randomly arranged. The method of recording was direct, a Meylan stop-watch being used to regulate the three and six second intervals.

During the course of the '61-'62 academic year 95 subjects were used to pre-test the appropriateness of the stimulus material. Subjects were sophomores at Bethany College (West Virginia) at the time. All subjects were allowed to make "natural" estimates of frequency or pulse rate for each sound on the tape without any attempt on the part of the experimenter to anchor them to any values. The results showed a high degree of variability as to size of range and estimated frequency. A few individual estimates of frequency were under 10, a few

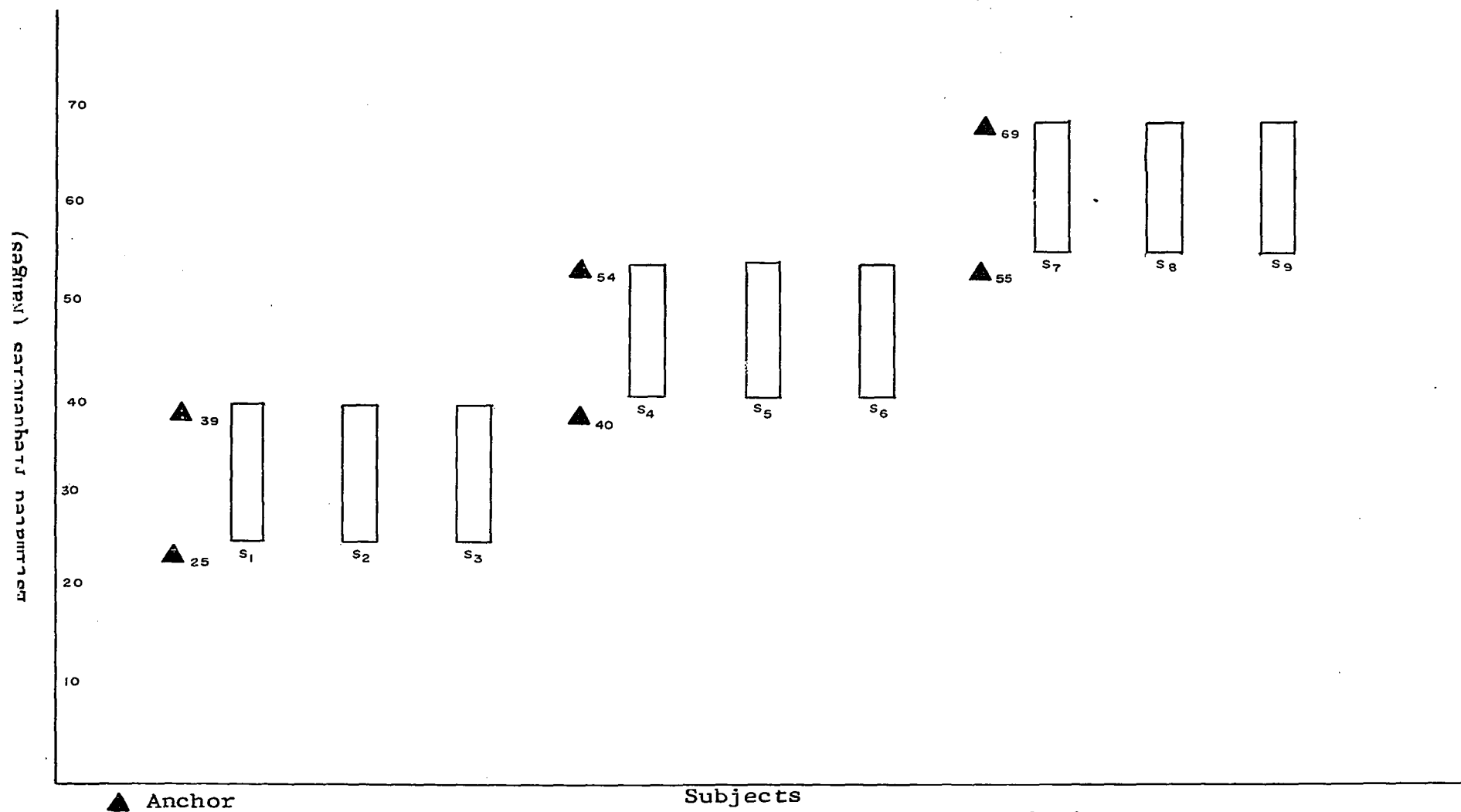


Fig. 1 Anchored Estimate Ranges of Pre-Test Subjects

were over 1000, and ranges varied from as little as ten to several hundred, indicating the ambiguous nature of the stimulus material. Most significant, however, is the fact that out of 95 subjects, 83 made estimates which fell within ranges that were to be anchored by the experimenter in Session I. Specifically these ranges are: a: 25-39; b: 40-54; c: 55-69; or an over-all total range of 25-69.

Nine subjects (three for each scale) were used in pre-testing the feasibility of establishing a, b, and c by means of experimentally introduced anchorages. The results are given in Figure 1. The experimenter anchored subjects by giving them the two end values of their respective scale. The three different scales were established easily without any overlapping.

Procedure

All subjects were run in the evening in a room especially set aside for purposes of the experiment. The building where this particular room was located was extremely quiet during the evening hours. Subjects sat along one side of a table (next to each other when there was more than one subject present) about six feet from the sound source. On the other side of the table, parallel along the edge, a curtain was suspended in order that subjects would not

relate visual cues to the auditory experience. The time lapse between session I and session II was at least 48 hours and not more than 72 hours. Monday evening session I subjects were scheduled for session II on Wednesday evening, Tuesday session I for Thursday session II, Wednesday session I for Friday session II, and Friday session I for Monday session II. A business-like atmosphere was maintained throughout.

All subjects were met outside the experimental room upon their arrival and instructed not to talk to one another. They were told this was a very important investigation connected with space flight and that any conversation would be disruptive, as total concentration was required from the time of arrival to the time of departure from the experimental room. When more than one subject were making estimates, they were told to respond from right to left, after seating had been randomly arranged. This was necessary in order for the experimenter to adequately record responses in the allotted six second intervals. The entire procedure, for either session I or session II was adequately handled in a 45 minute period, including the point of subject arrival and departure. The following were the instructions given orally to all A, T, and G session I subjects:

You are going to hear some sound vibrations. The frequency or pulse rate will vary. The sound will last for approximately 3 seconds. You will have 6 seconds after every sound in which to report your estimate of total frequency or pulse rate out loud. Frequencies will be too fast for you to be able to count, so your report will have to be an estimate. It is important to concentrate and report carefully, as the results may be useful for future warning systems in space flight.

Subjects were then asked if there were any questions. Whether there were any or not, the task was made clear. This was illustrated by moving the right hand rapidly back and forth and pointing out that the number of times a hand moves per unit time can be estimated if it can't be counted.

Following this, the above instructions were repeated. The anchoring values for the given session were then incorporated in the following directions:

To give you an idea of what you will be hearing and what the frequencies or pulse rates will be like, we will illustrate with the lowest frequency or value () and the highest frequency or value (). You will now hear the lowest frequency or value ().

The recorder was then turned on and the lowest frequency was played.

You will now hear the highest frequency or value ().

The highest frequency was played. Then in the same manner the lowest and the highest frequency were played again.

The following were the instructions given to all A, T, and G session II subjects:

You are going to hear some sound vibrations. Report the total frequency or pulse rate out loud, as you did the last time. The purpose is to test your ability to judge now that you have had some practice. Some of the frequencies will be the same as last time, some will not. Make your estimates quickly as there will only be 6 seconds after each sound in which to record each estimate.

The instructions were then repeated. The recorder was then started and estimates recorded.

Session I was the anchoring session, during which all subjects were experimentally anchored to scale a, b, or c. Session II was the collective interaction session during which the relative stability of established reference scales was tested. In session I subjects established scales a, b, or c under one of social conditions A, T, or G. That is, individuals were alone, or with a stranger, or with a fellow group member. The same subjects were used in session II. Each session II experimental run was constituted by three subjects who did not know each other, and who had established three different scales under three different social conditions. Table 3 summarizes session I subject utilization and Table 4 outlines session II social condition and scale combinations. This rotation was necessary for balancing any possible advantage of one scale over another in terms of inherent stability.

Table 3

Breakdown of Subjects by Social Condition and Scale
(All T & G Subjects Were in Pairs)

Session I				
Original Range	Social Condition			Total
	A	T	G	
<u>a</u>	16	16	16	48
<u>b</u>	16	16	16	48
<u>c</u>	16	16	16	48
Total	48	48	48	144

Table 4

Outline of Social Condition X Scale Rotation

Original Ranges	Social Condition			Session II		Total
	A	T	G	# Repli- cations	# Subjects Per Repli- cations	
	<u>a</u>	<u>b</u>	<u>c</u>	8	3	24
	<u>a</u>	<u>c</u>	<u>b</u>	8	3	24
	<u>b</u>	<u>a</u>	<u>c</u>	8	3	24
	<u>b</u>	<u>c</u>	<u>a</u>	8	3	24
	<u>c</u>	<u>a</u>	<u>b</u>	8	3	24
	<u>c</u>	<u>b</u>	<u>a</u>	8	3	<u>24</u>
						144

Sample response record sheets for session I and session II
can be found in Appendix C.

CHAPTER III

RESULTS

As expected on the basis of pre-testing, anchoring subjects to scales a, b, and c (25-39, 40-54, 55-69) was not a difficult process. All subjects for all social conditions were successfully anchored to desired scales in session I with no overlapping of estimates. Session II constituted the source of crucial data for all subjects. Subject responses were recorded in the experimental situation directly in terms of estimate of frequency values. Summary tables are presented in Appendix D.

In testing the "main effects" of different social conditions, stability of original scales could be measured as percentage of session II responses falling within the original range or frequency of occurrence of estimates within the original range. The latter constitute data appropriate for the application of Duncan's Range Test (Duncan, 1955). As McGuigan (1960) points out, this test is most applicable to a design such as this, and recommends its use because it is not too time consuming:

The importance of this discussion is that we have demonstrated our objections to the more frequently used procedure of analyzing the multi-randomized-groups design, that of an analysis of variance followed by all possible t tests. These criticisms are not directed toward the analysis of variance phase, for that by itself is perfectly legitimate. Thus you may conduct your analysis of variance and run your F test. If it is significant, then you know that there is a significant difference between at least two of your groups--but that is all that the F test tells you, for you do not know where the difference lies.

Duncan's Range Test seems considerably more appropriate for it: (1) allows us to make all possible comparisons between pairs of our groups... (2) is considerably less work than running a number of t tests; and (3) provides a more reasonable level of significance for all possible t tests, considered jointly. (p. 202)

Frequency of given frequencies of estimate falling within the original range cumulated by subjects are presented in Figure 2. Raw frequency data can be found in Appendix D. We will refer to these values as stability scores. As stability scores are basic to testing the major hypothesis, it was decided to check these data for assumptions underlying use of parametric statistics. Specifically, homogeneity of variance of the criterion measures for each treatment population, and normality of distribution of the criterion measures for each treatment population were tested. For the former, Hartley's maximum F-ratio test (Walker and Lev, 1953), and the latter, chi-square goodness of fit (Peatman, 1963), were performed.

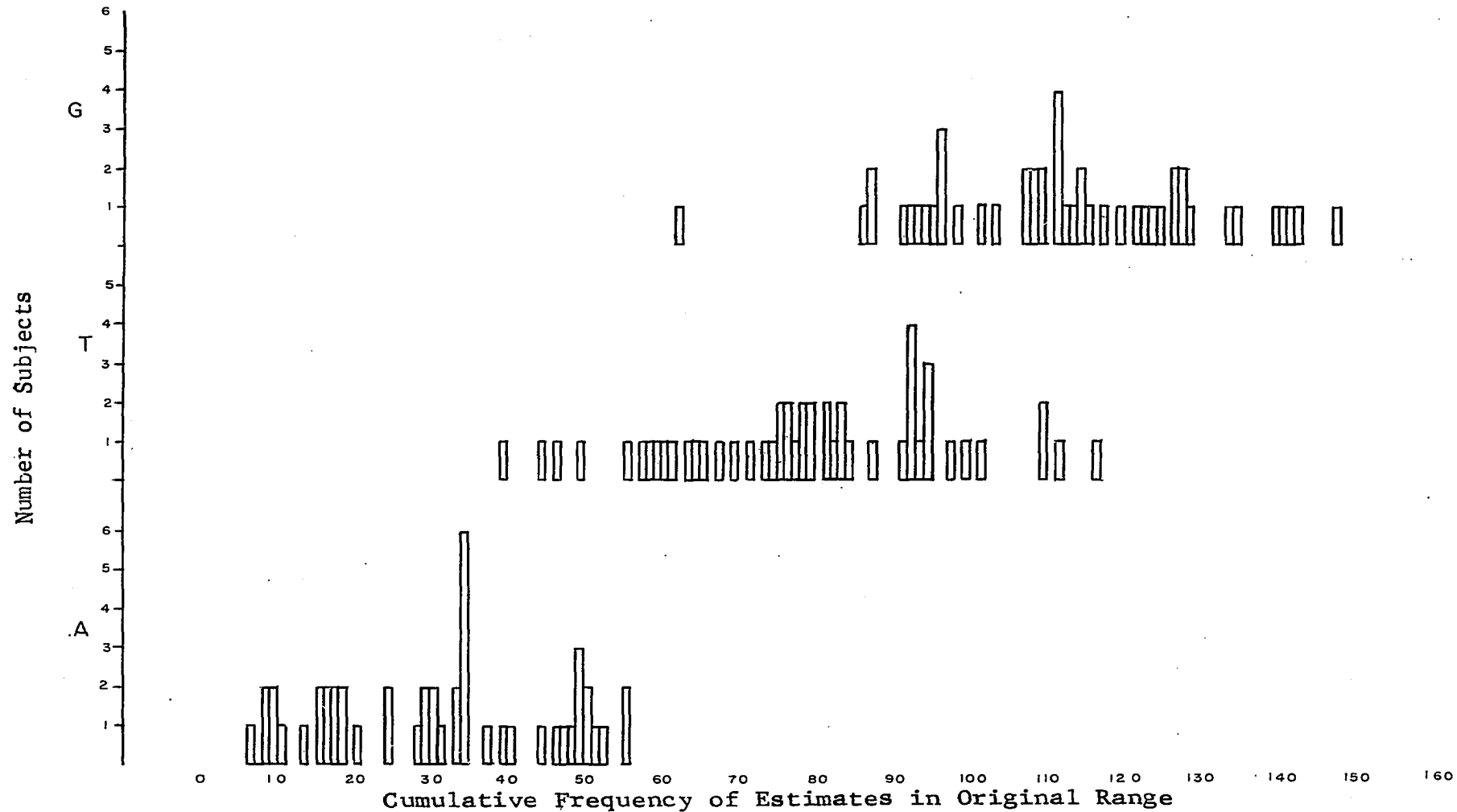


Table 5 shows the application of Hartley's maximum F test for homogeneity of variance. Where $k=3$, and there are 47 d.f.'s, $F_{\max} = 1.45$ does not fall in the critical region $F > 2.16$, where $P \{F_{\max} > 2.16\} = .05$. Accordingly, the hypothesis of equal population variances is not rejected.

Table 5

Maximum F Test For Stability Score Variances

Sample	Sum of Squares	d.f.	S^2
A	10241	47	213.6
T	14843	47	309.7
G	14555	47	302.5

$$F_{\max} = \frac{S^2_{\max}}{S^2_{\min}} = 1.45$$

Table 6 shows the results of testing for stability score normality of distribution. Degrees of freedom are two in each case as only five class intervals were used in pooling obtained frequencies. This was necessary as there were only 48 cases in each sample. Probability values are all far from the .05 level which is associated with a chi-square value of 6.0. The assumption of normality cannot be rejected which is in keeping with inspection of the data presented in Figure 3.

Table 6

Goodness of Fit - Stability Score Sampling
Distributions with Hypothesized
Normal Distribution

Sample	d.f.	Chi-Square	P
A	2	.50	.78
T	2	1.29	.53
G	2	.98	.62

As sizeable departures of data from normality and variance homogeneity are tolerable when using parametric statistics (Dixon and Massey, 1951; Anderson and Bancroft, 1952; Lindquist, 1953; McNemar, 1955; Boneau, 1960) and as stability scores indicated non-violation of parametric assumptions, it was decided that consistent use of parametric statistics would be possible throughout, unless data would indicate a marked assumption violation.

As a cross-check on the appropriateness of using range tests, analyses of variance and F tests were run on data basic to testing hypotheses 1a, 1b, 1c, 2 and 3. These over-all tests of significance demonstrate significant differences between groups for all three data sources. Results are summarized in Tables 7, 8 and 9. Table 7 applies to data used to test hypotheses 1a, 1b, and 1c. Table 8 applies to data used to test hypothesis 2. Table 9 applies to data used to test hypothesis 3.

Table 7

Over-All Test of Significance for Stability Scores
(Hypotheses 1a, 1b, 1c)

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Between Groups	160148	2	80574	287*
Within Groups	<u>39635</u>	<u>141</u>	281	
Total	199783	143		
*Significant @P .01				

Table 8

Over-All Test of Significance for Assimilation Scores
(Hypothesis 2)

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Between Groups	722257	2	36128	85*
Within Groups	<u>59653</u>	<u>141</u>	423	
Total	131910	143		
*Significant @P .01				

Table 9

Over-All Test of Significance For Variability Scores
(Hypothesis 3)

Source of Variation	Sum of Squares	d.f.	Mean Square	F
Between Groups	14.30	2	7.15	8.22*
Within Groups	<u>123.16</u>	<u>141</u>	.87	
Total	137.46	143		
*Significant @P .01				

With underlying assumptions considered and over-all significance of differences between groups established at better than the .01 level for all sample populations, specific hypothesis testing is now in order.

Hypotheses 1a, 1b, 1c

As can be surmised by referring to statements of hypotheses, there is a definite functional interrelationship between the three parts of hypothesis one. Taking stability of original scale as the criterion, we are saying: 1a $G > A$, T ; 1b $T > A$, $T < G$; 1c $A < T$, G . This may simply be stated as $G > T > A$. That is, given reference scales established under group, together, and alone social conditions, relative stability of these scales as measured in terms of estimates being within original scales during collective interaction will be of the order $G > T > A$.

There are two reasons for stating this in the form of three separate hypotheses. First, in terms of ultimately referring these experimental findings to "real-life" collective interaction, each statement has a unique contribution to make, especially as collective interaction is differentially and complexly defined by the presence or absence of alone, together, and group background factors. It is useful to consider each predisposing social condition in

terms of its projected relative effects on collective behavior. In addition, as there are six possible arrangements of results, $G > T > A$, $G > A > T$, $T > G > A$, $T > A > G$, $A > G > T$, $A > T > G$, with only $A > T > G$ predicted to be entirely "wrong," a hypothetical statement about the relative predicted position of each different social condition was necessary to a clear understanding of different possible result combinations. As has been indicated, a stability score refers to session II frequency of estimates within original range for each subject. Figure 3 shows the relative cumulative totaling of stability scores for A, T, and G subjects.

A range test was performed. As has been mentioned, this test is especially applicable to this design. This allowed for the simultaneous testing of hypotheses 1a, 1b, and 1c. Table 7 summarizes results in which \bar{X} represents the mean stability score values for A, T, and G, r_p represents least significant standardized ranges at .01 significance level, and R_p represents least significant ranges for sample values. R_p values allow for a test of significance of the distance between any two means among the ordered means A, T, and G. S_e refers to the error term used in arriving at R_2 and R_3 values.

Mean differences are all significant at $P < .01$, in the predicted directions. The null hypothesis of no difference

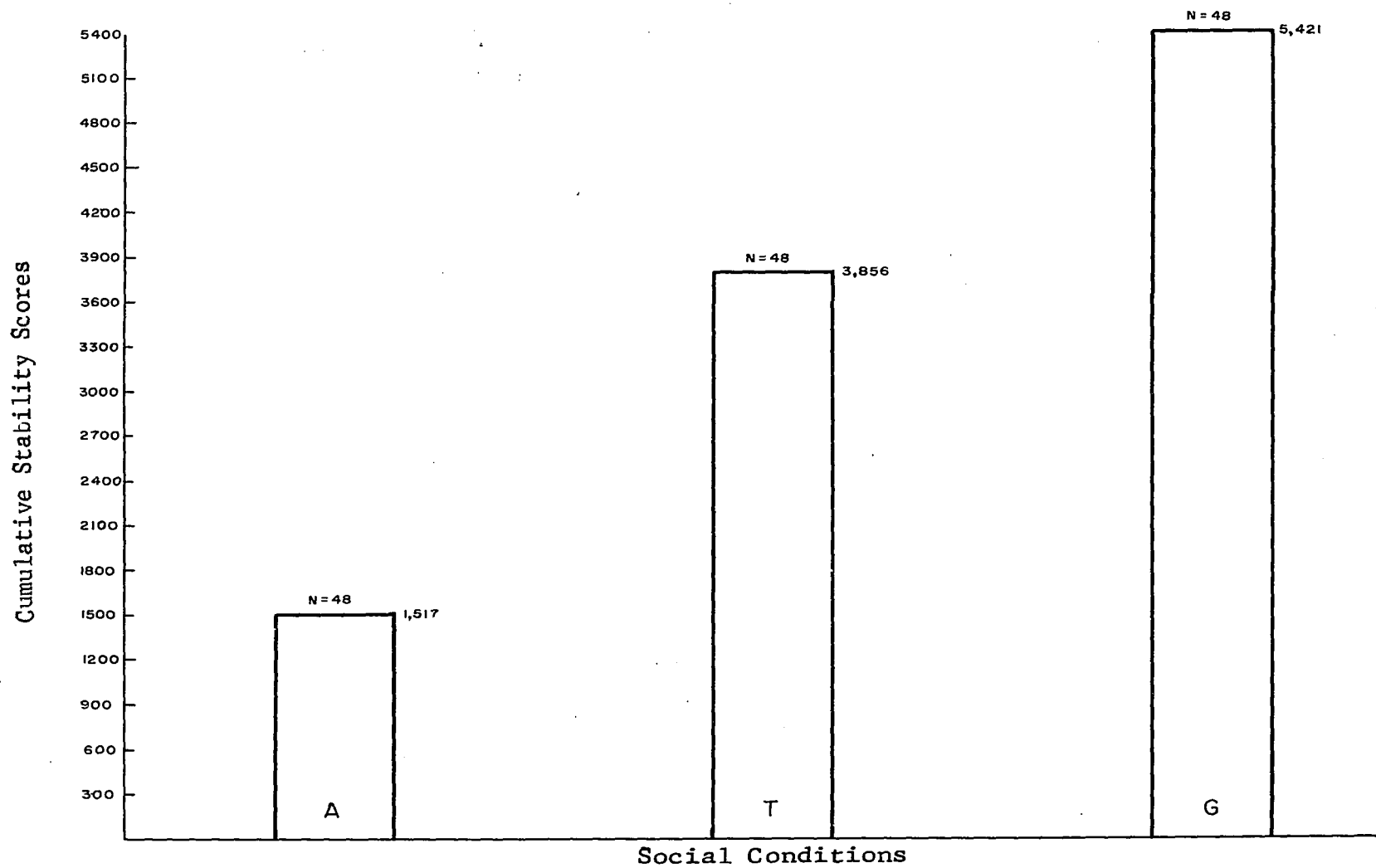


Fig. 3 Stability Score Cumulative Totals

($\mu_A = \mu_T = \mu_G$) is rejected. These results warrant the generalization that: when auditory reference scales, anchored by the experimenter, are established under differing social conditions A, T, G and there is collective interaction as defined by the conditions of this experiment: (1) scales established under group conditions are more stable than scales established under together and alone conditions; (2) scales established under together conditions are more stable than scales established under alone conditions but less stable than scales established under group conditions; (3) scales established under alone conditions are less stable than scales established under together and group conditions.

Table 10

Mean Stability Score Values and r_p , R_p Values For
2 and 3 Groups, d.f. = 141

	Social Condition			Number of Groups*	
	A	T	G	2	3
\bar{X} :	31.60	80.33	112.94	r_p 3.64	3.80
				R_p 8.79	9.18

*Significance Level @ .01, $S_e = 16.77$

Hypothesis 2

The first three parts of hypothesis one were tested on the basis of dependent measures defined as stability scores. In order to test the second hypothesis it was necessary to

delineate a measure that would adequately express subjects' relative ability to bring others around to "their viewpoint;" this being as important an aspect of collective interaction as the ability to maintain relative stability. The emergent results of collective interaction are not always an unequivocal adoption of a given collective decision or norm. Here again, however, the significance of differential social factors should be demonstrable.

It is consistent with the general viewpoint developed in this research that individuals with a G background in comparison to individuals with a T or A background should be relatively more capable of assimilating others to their framework. Accordingly, an "assimilation score" was obtained for each subject by dividing the total number of estimates falling within the subject's range (made by other session II subjects), by one-half. In effect, this score is then a mean assimilation score for every subject in session II. Cumulative assimilation scores are presented in Figure 4. Assimilation score data are presented in Appendix E. Inspection of Appendix E will also show relative assimilation scores for each session II experimental run. As stated in hypothesis 2, we expect that assimilation scores be consistently greater as we move along the social condition continuum from alone to group, that is, $G > T > A$. The

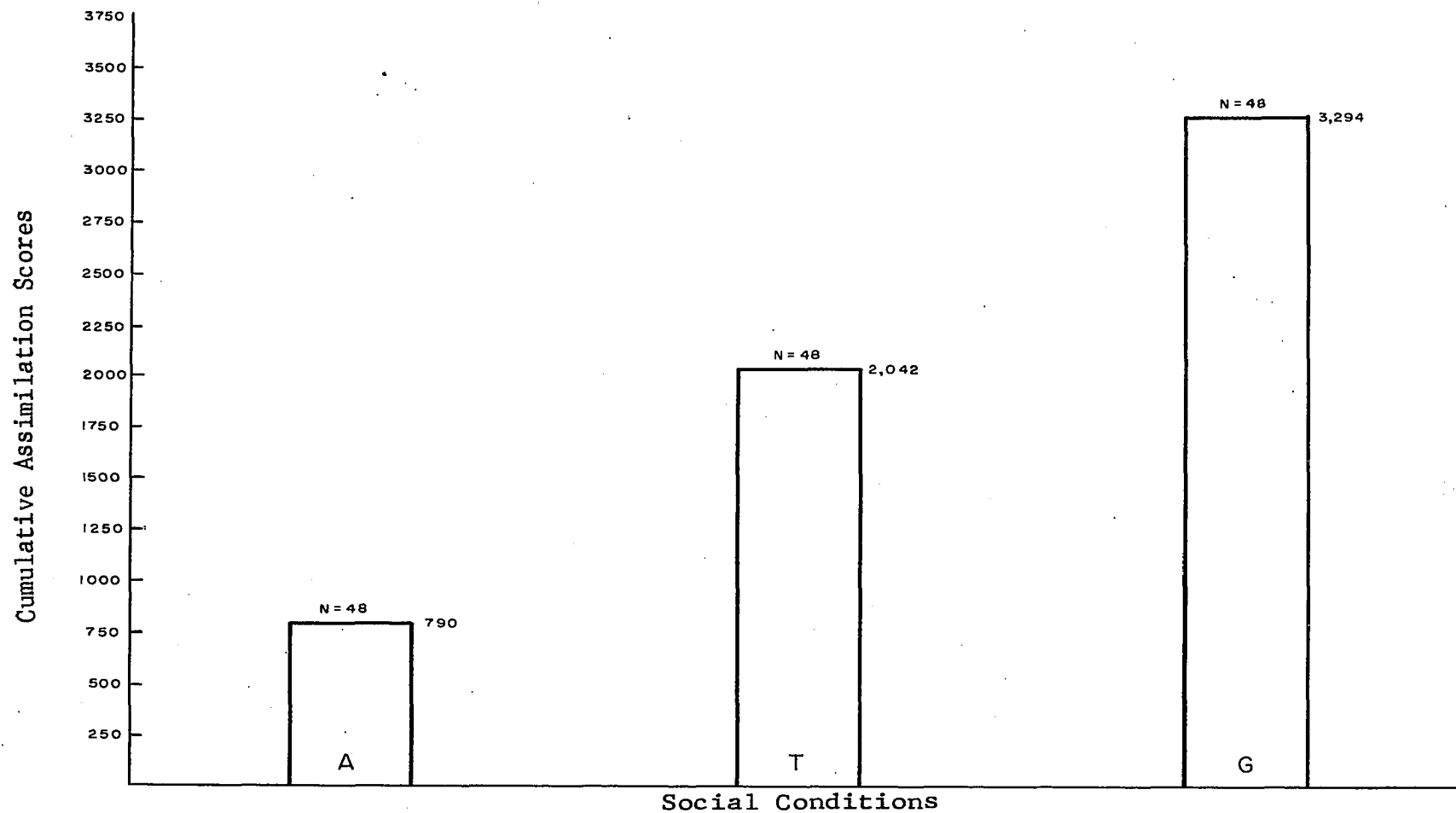


Fig. 4 Assimilation Score Cumulative Totals

hypothesis was tested by application of a range test. The results are summarized in Table 11.

Table 11

Mean Assimilation Score Values and r_p ; R_p Values For
2 and 3 Groups, d.f. = 141

	Social Condition			Number of Groups*	
	A	T	G	2	3
\bar{X}	16.46	42.54	68.62	r_p	3.64 3.80
				R_p	10.78 11.26

*Significance level @ .01, $S_e = 20.57$

Mean differences are all in the predicted directions at $P < .01$. The null hypotheses of no difference between means is rejected. These results warrant the generalization that: When auditory reference scales, anchored by the experimenter, are established under differing social conditions A, T, G and there is collective interaction as defined by the conditions of this experiment, then estimates falling outside individuals' original ranges will reflect original ranges of other interacting individuals to a greater extent as we move along the social condition continuum from alone to group.

Hypothesis 3

Consistent with the approach developed to this point, a variability score was computed for each subject. This

score was based on the total distance each subject moved from estimate to estimate during session II divided by the total number of estimates. The prediction is that variability will be of the order $A > T > G$. Variability scores have been cumulated and are presented in Figure 5. Variability scores for each subject are presented in Appendix F. Range test results are summarized in Table 12.

Table 12

Mean Variability Score Values and r_p , R_p Values For
2 and 3 Groups, d.f. = 141

	Social Condition			Number of Groups*	
	G	T	A	2	3
\bar{X}	5.09	5.36	5.85	r_p 3.64	3.80
				R_p .49	.51

*Significance Level @ .01, $S_e = .94$

All results are in the predicted direction. Mean differences can be properly ranked in the order $A > T > G$. However, while $A > T$ is significant at $P < .01$, and $A > G$ is significant at $P < .01$, $T > G$ is not significant at the .05 level. This is in keeping with inspection of Figure 6 where variability differences in general are not as marked as stability and assimilation score differences, with the T-G variability difference in particular being negligible. Another picture of variability differences may be obtained

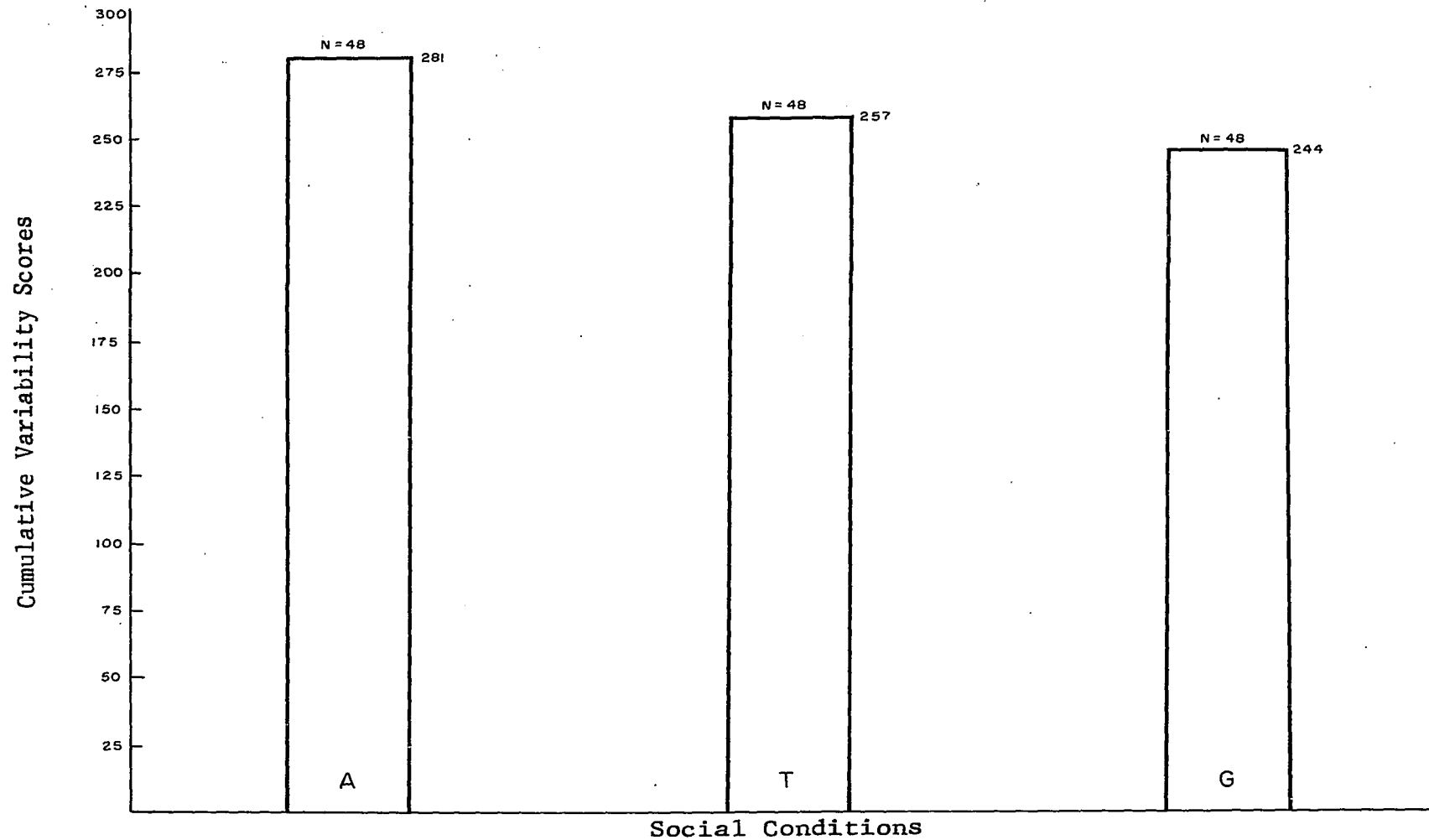


Fig. 5 Variability Score Cumulative Totals

by referring to Appendix G, where interquartile ranges are indicated for all subjects. The values refer to the total number of frequency categories covered by the middle 80 estimates including those categories for which there were no responses. Mean interquartile ranges for A, T, and G are 14.8, 13.2, and 10.6 respectively, which are rankable in the predicted direction $A > T > G$. These results warrant the generalization that: When auditory reference scales anchored by the experimenter are established under differing social conditions A, T, G and there is collective interaction as defined by the conditions of this experiment, then variability of estimates is greater in the order $A > T > G$. The findings $A > T$ and $A > G$ are statistically significant; the finding $T > G$ is not.

In general, even where statistically significant, variability differences are not as pronounced as stability and assimilation differences. A full explanation will have to await a study where assimilation and contrast effects are studied in greater detail using a similar stimulus setting and fewer subjects.

CHAPTER IV

DISCUSSION OF RESULTS

Experimental results that are to be discussed may be summarized as follows. Different auditory reference scales were anchored by the experimenter and established under alone, together and group social conditions. Subjects in session I established subjective scales by making estimates out loud by themselves, or in the presence of a stranger, or with a fellow group member. During session II the same subjects made estimates again in response to the same stimulus series; subjects being arranged in sets of 3 where each of the three entered session II with a different social condition and scale background.

Individuals with a group background in session I maintained session I scales more consistently than those with a together session I background, and, in turn, individuals with a together background in session I maintained session I scales more consistently than those with an alone

background in session I. At the same time subjects with a group background were able to influence others toward their scale positions more consistently than subjects with a together background, and, in turn, subjects with a together background were able to influence others toward their scale positions more consistently than subjects with an alone background. Measures of variability showed an inverse relationship, with alone background subjects in particular showing significantly greater variability of estimate than together or group background subjects.

It should be noted that no difficulty was experienced in anchoring scales during the beginning of session I. This attests to the truly ambiguous nature of the stimulus material. At the same time, no one complained of the task being impossible, indicating presence of enough inherent stimulus structure.

Session I scales could have been established from the beginning, especially for T and G subjects, by allowing them to emerge naturally through interaction. This would, however, have required at least another session, would have wasted subjects where scales could not be matched, and would have made all emergent scales more "unique" and less easily classifiable as belonging to a particular scale group. In addition, scheduling in terms of subject availability, an

already severe problem, would have been almost impossible. The use of only four anchoring sounds at the beginning of session I, while "setting the limits," still allowed enough interactive stabilization (160 estimates) to take place within those limits so that the relative import of present social factors was able to achieve functional significance when estimates were made latter in session II.

Findings lend support to the notion that the concept group, if it is to be a meaningful one, should be defined in terms of criteria of relevance to important aspects of human living. If, within the limits of this experiment, auditory reference scales established under group social conditions are relatively more stable than those established under together and alone conditions, then it is not an unwarranted extrapolation to maintain that in real life situations, where normative as well as organizational dimensions are involved along with higher ego-involvement, more stability and directional force is exhibited by those individuals who are interacting in the situation in terms of relevant group ties.

This consideration is of major concern. Many social stimulus situations are not single dimensional; they are not explainable by referring to a particular norm or status relationship. Rather they are complex arrangements of

in-group, inter-group and collective factors. Understanding the significance of group factors in such complex social situations is basic to a fuller comprehension of important areas of social behavior. The finding of greater scale stability in the order $G > T > A$ is evidence for rejection of the application of the term group to any aggregate of individuals where the slightest commonality is either ascertained or hurriedly established.

Of special interest to the topic of conformity is the finding that individuals "conformed" significantly more or less depending on their social condition background. If we take the criterion shifting to another's position, or being influenced by others as defining conforming behavior, then we are put in the peculiar position of saying that subjects conformed in session II to a greater extent in the order $A > T > G$. This is peculiar because it moves toward the generalization that, holding other factors constant, group-related behavior is less conforming than together-related and individual-related behavior. If, on the other hand, we put the question of conformity into its proper context, that is, behavior related to group-defined standards or norms, then we are put in the reasonable position of finding subjects conforming more in session II in the order $G > T > A$, which was in fact the case. It is

especially interesting to note that group subjects conformed significantly more than together subjects. Standards or scales established under group conditions are more stable than those established under together conditions, and subsequently, will be more effective in eliciting conforming behavior. This finding is evidence for the usefulness of placing the social stimulus setting of any experiment or study on conformity onto the social condition continuum outlined earlier. In relation to this, a direction for research that would be of significance to real life situations would be investigation of factors and conditions facilitative to and inhibitive of conforming behavior, where group norms and standards are the relevant criteria of conformity.

Although variability of estimates differed in the predicted direction, $A > T > G$, $T > G$ was not significant, and variability differences in general were not as pronounced as other dependent measures. One explanation for this may be the fact that the stimulus material was extremely ambiguous, and group subjects varied their estimates within their own ranges more than they might "normally" as the result of hearing estimates being made outside their ranges.

Suggested Research

Several directions for research have been suggested by this experiment. First, more experimental evidence needs

to be accrued to substantiate the validity of approaching the question of group in terms of the definition posited and in relation to the social stimulus continuum outlined. As indicated earlier, this is a necessary first step towards being able to operationally deal with complex stimulus situations where group is a part-factor. Experiments would employ other psychophysical stimulus dimensions and carefully selected social issues. The general format would be simpler than the design employed here, and would test for simple differential effects of varying social conditions. The simplicity would be that collective interaction would not be the setting in session II but rather a standardized individual treatment for all different social condition background subjects where the relative strength of established scales or standards would be tested. The simpler design would have the advantage of allowing a body of research to accumulate within a reasonable time period that would unequivocally demonstrate the need for not confusing together and group aspects of theory and research in the field of social psychology and the social sciences in general.

Second, research is needed that deals specifically with the formation and breakdown of the scales themselves in collective interaction situations. This would necessitate

the use of fewer subjects than employed here in a more intensive way. Results would provide leads into the process of assimilation and contrast in complex social stimulus situations where the issues are of vital concern. Here also, stimulus material could range from the psychophysical to the socially relevant. In addition, the use of experimentally introduced anchorages could be varied in degree, different degrees being compared as well as their use versus non-use as related to effects on the formation and change of subjectively established reference scales.

Third, collective interaction itself needs to be investigated further where there are individuals present in the stimulus situation that can be differentially defined in terms of varying relatedness to one another and where the stimulus setting is non-social. A design similar to this one would be appropriate. Different stimulus dimensions could be employed such as the autokinetic, flashes of light, tachistoscopic presentation of dots, ambiguous figures, speed of trajectory of a light point, etc. In these experiments, the emphasis would be on collective outcomes or collective norms emerging over a series of sessions as they are related to different subject social condition backgrounds. This can be contrasted to this experiment where the emphasis has not been on collective

outcome, but rather on the relative stability of original position as related to the social condition background of the original established scale. Further experiments in this area could vary social condition background factors along more and more complex lines. Results should provide leads as to the relative impact and effect of different social condition arrangements on collective products.

Fourth, real life issues and values need to be brought into the collective interaction laboratory. This can be done by attempting to equate potential subjects with regard to degree of ego-involvement, socio-economic background, education, age, etc., and having them arrive at stands concerning the issue or value as functional aspects of differing social conditions. This would then be followed by various collective interaction sessions where the differential impact of these various background factors could be evaluated. Ideally, following the leads provided by Sherif with his camp studies of '49, '53 and '54, the study of collective interaction could be brought into the field. Conditions would be almost as controlled as those of a laboratory study while providing an environment that would be experienced as natural as any in every day life by participating individuals. Such a study could be conducted with adults. There are many ostensibly

acceptable reasons to adults for participating in a large camp-conference. Careful planning would result in the taking of stands and the establishment, under different original social conditions, of various latitudes of acceptance and rejection by individuals. Results should provide a great degree of insight into the collective process operative in crucial human behavior which is central to all social change.

Fifth, another line of research suggested by this experiment, is that of investigating the relationship of collective interaction to the increase and reduction of inter-group hostility. Often, inter-group relations do not follow a pattern that is strictly explainable by in-group norms and the collective products of inter-group interaction. There are many critical collective interaction situations affecting inter-group relations where other individuals (not members of either in-group) play an important part. In fact, in today's complex technologically advanced world this tends to be a typical rather than an atypical state of affairs. The relationship of collective interaction to inter-group relations could be explored following research along the lines indicated in the fourth point above. Results should give us a better understanding of some of the relatively more or less important factors affecting inter-group relations other than the normative and organizational frameworks of the groups themselves.

CHAPTER V

SUMMARY AND CONCLUSIONS

The need for a generally accepted definition of group was stated and illustrated with a sample of current inconsistent use of the term. The point was made that the throwing together of any operational definition to meet immediate experimental needs often does violence to the historical basis of normative and organizational structures underlying real life groups. Sherif's definition of group was cited as one meeting historical, normative and organizational requirements. The general adoption of this definition, or a similar one by social scientists would constitute a significant step toward the alleviation of great areas of confusion in behavioral theory and research. In addition, the dimension of groupness and non-groupness was put onto an abstract continuum which was defined as moving from a state of aloneness, through a state of togetherness, to a state of groupness. These various states were characterized and illustrated.

Since a valid conceptualization of group is necessary to many areas in social psychology and the behavioral sciences in general, conformity-deviation was selected as an example area where progress is inhibited by lack of general acceptance of a valid group conceptualization and, in turn, a lack of awareness of the functional relatedness of conformative behavior to group standards. Research was cited that demonstrated a somewhat fragmentary approach to the problem. Francis Bacon's observation of more than four centuries ago, where he likened previous empiricists to ants collecting material without finding any order in it (Reichenbach, 1959), is an analogy that can still be applied to current research efforts where necessary theoretical constructs underlying explanation of behavioral phenomena are ignored.

The relationship of social factors to reference scales was discussed. The general significance of reference scales as psychophysical formations basic to judgmental process was considered. Theory underlying use of the particular stimulus arrangements of this experiment was outlined.

As collective interaction constituted the experimental setting for session II, collective interaction was characterized. This characterization, aside from a definitional statement, included a discussion of sources of stability and fluidity

in complex social stimulus situations.

In line with these considerations, the research to be conducted needed to test and be demonstrative of the usefulness of approaching the definition and operational use of group as outlined, using the fact that subjective reference scales are susceptible to social influences when the stimulus is ambiguous, and the fluidity of collective interaction as research tools.

The general design employed consisted of the establishment of subjective reference scales (session I) under alone, together, and group social conditions. The stimulus material was constant throughout, consisting of an ambiguous sound series, previously pre-tested, where the task was to estimate the frequency or pulse rate of each sound. End values were presented briefly at the beginning of session I by the experimenter, and served to anchor scales within required limits. This was followed by an experimental session for all subjects (session II) where every subject entered a collective interaction situation with two other individuals, all three representing three different scales established under three different social conditions. Dependent measures used to test hypotheses were taken from raw session II data in the form of stability scores, assimilation scores, and variability scores. Inter-quartile distances of estimate ranges were ascertained as an added descriptive variability indice.

One hundred forty-four sophomores at Bethany College, Bethany, West Virginia were used in the experiment, forty-eight for each social condition and twenty-four for each scale - social condition combination. Subjects were scheduled in terms of their relatedness or lack of relatedness to one another. Three questionnaires were used to ascertain and cross-check the existence of small informal groups among the subject population.

The specific hypotheses tested were:

1a. Reference scales established initially under group conditions will be more stable than scales established under together and alone conditions.

1b. Reference scales established initially under together conditions will be more stable than scales established under alone conditions but less stable than scales established under group conditions.

1c. Reference scales established initially under alone conditions will be less stable than scales established under together and group conditions.

2. During session II subjects will exert a greater influence on estimates of other subjects if they are group subjects, less influence if they are together subjects, and least influence if they are alone subjects.

3. Variability of estimates during session II will be greatest for alone subjects, less for together subjects, and least for group subjects.

Results fully supported hypotheses 1a, 1b, 1c, and 2. Hypothesis 3 was partially supported. These findings lend support to a number of statements.

The stimulus material employed in this experiment constitutes a useful tool for research where various social factors need to be brought into the laboratory. The extremely ambiguous nature of auditory pulse groups recorded at near the lower frequency limit allows for the observation and measurement of differential effects associated with varying social conditions that are functionally operative during the estimation process. The fact that the stimulus material is auditory rather than visual adds to the uncertainty of the situation. At the same time, the task of estimating frequency was not responded to as being unreasonable or impossible.

Under the conditions of this experiment, subjects who established scales under group social conditions maintained their relative positions more consistently than subjects who established scales under together and alone social conditions, and subjects who established scales under together social conditions maintained their relative positions more consistently than subjects who established scales under alone social conditions.

Under the conditions of this experiment, subjects who established scales under group social conditions were able to

most consistently influence others toward their relative positions. Subjects who established scales under together social conditions were less able to consistently influence others toward their relative positions than group social condition subjects, and subjects who established scales under alone social conditions were least able to influence others toward their relative positions.

Under the conditions of this experiment, variability of estimate was greater for alone social condition subjects than it was for together and group social condition subjects. Variability of estimate tended to be greater for together condition subjects than for group condition subjects but not significantly.

The format of collective interaction was found to be a useful one for the demonstration of the functional significance of a differing background of social factors.

Results were discussed. The question of experimentally anchoring scales to predetermined values was considered as it had relevance to this study.

The general significance of findings for defining group as outlined and the usefulness of the alone to group social stimulus continuum was indicated. The pertinence of findings for a reappraisal of the approach to the question of conformity-deviation was stated.

Finally, a number of research directions suggested by this study were outlined.

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APPENDIXES

APPENDIX A

Pre-Test Questionnaire Used With High School Students

Name: _____ Age: _____ Sex: _____

Check one: Freshman _____ Sophomore _____ Junior _____ Senior _____

We are trying to find out if it might be possible to have teen-agers assist in future civil-defense programs. One way this may be possible is to have teen-agers like you work with friends - people one already knows and likes. You can help by giving us some idea as to what your friendship group is like. All information will be handled in the strictest of confidence.

1. Who do you like the most? List as many names in order of preference as you want.

Name: _____ Age: _____ Name: _____ Age: _____

2. If you had to depend on a friend's judgment in an emergency situation, who would you trust first? List (in order of preference) as many names as you want.

Name: _____ Age: _____ Name: _____ Age: _____

3. If you were giving a party, who would you like to invite? List (in order of preference) as many names as you want.

Name: _____ Age: _____ Name: _____ Age: _____

APPENDIX A (Concluded)

-
4. If local civil defense units were created, and you were part of it: a) Of your friends, who would you be willing "to take orders" from? List (in order of preference) as many names as you want.

Name: Age: Name: Age:

- b) Of your friends, who would you be willing to work with but only if you "gave the orders"? List (in order of preference) as many names as you want.

Name: Age: Name: Age:

- c) Of your friends, who would you not be willing to work with? List (in order of rejection) as many names as you want.

Name: Age: Name: Age:

5. List your friends in order of their maturity. That is, list the most mature first, the next most mature second, etc.

Name: Age: Name: Age:

6. Do you feel that the average young person in Norman knows a large number of other young people well or a small number? (Circle one)
a) over 50 (b) between 40 & 50 (c) between 30 & 40 (d) between 20 & 30 (e) between 10 & 20 (f) under 10.
-

APPENDIX B

Information Sources Used to Assign Subjects to Experimental Groups

Questionnaire 1

Name _____ Age _____ Sex _____

Check one: Freshman _____ Sophomore _____ Junior _____ Senior _____

This is part of a study to find out to what extent students on a small college campus socialize. A similar questionnaire will be distributed in May to see if the school year causes changes in the socialization pattern. Everything will be held in the strictest of confidence. Names are needed only to establish friendship patterns and changes. This will in no way be used to evaluate you. Your help is needed and appreciated.

1. Who do you like the most? List as many names in order of preference as you want. (Use the back if you have more people.)

Name	Age	Name	Age
1. _____	_____	8. _____	_____
2. _____	_____	9. _____	_____
3. _____	_____	10. _____	_____
4. _____	_____	11. _____	_____
5. _____	_____	12. _____	_____
6. _____	_____	13. _____	_____
7. _____	_____	14. _____	_____

2. If you had to depend on a friend's judgment in an emergency situation, who would you trust first? List in order of preference as many names as you want.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

3. If you were giving a party (money and location no object), who would you like to invite? List in order of preference as many names as you want.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

4. If local civil defense units were created, and you were part of it: (a) Of your friends, who would you be willing "to take orders" from? List in order of preference as many names as you want.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

- (b) Of your friends, who would you be willing to work with but only if you "gave the orders"? List in order of preference as many as you want.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

- c) Of your friends, who would you not be willing to work with? List in order of rejection as many names as you want.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

5. List your friends in order of their maturity. That is, list the most mature first, the next mature second, etc.

Name	Age	Name	Age
1. _____		8. _____	
2. _____		9. _____	
3. _____		10. _____	
4. _____		11. _____	
5. _____		12. _____	
6. _____		13. _____	
7. _____		14. _____	

6. How many other young people do you think the average student on campus knows reasonably well? (Circle one)
 (a) over 50 (b) between 40 & 50 (c) between 30 & 40 (d) between 20 & 30 (e) between 10 & 20 (f) under 10.

Questionnaire 2

1. Who are the sophomores in your social group?

2. Who are the sophomores in your housing unit?

3. Are any of these people especially friendly with one another?
YES NO (Check one)

YES _____ NO _____ (Check one)

4. In terms of being friendly and socializing, some of these people can be thought of as constituting groups. Indicate as many of these groups as you are aware of by using as many of the below charts as you need. If necessary, include others who are non-sophomores, but indicate next to their names whether they are freshmen, juniors, or seniors. Please remember to put the "more important" people at the top.

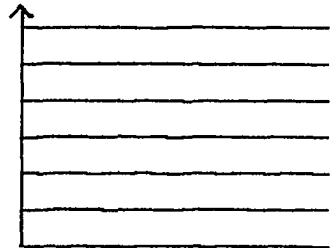
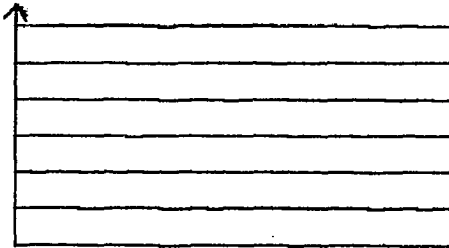
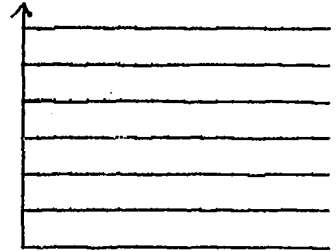
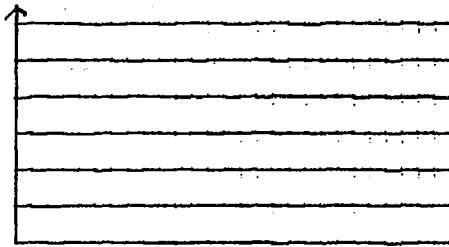
order
of
import-
ance
to
the
group

A blank coordinate grid with a vertical y-axis and horizontal lines. The y-axis is on the left, with an arrow pointing upwards. There are six horizontal lines, including the x-axis, which are evenly spaced. The grid is intended for plotting a graph.

5. Generally, would you say that sophomores tend to stick together or do you feel they are assimilated in the general student body? Would you write a sentence or two in answer to this question. Thank you.

The below may be used as additional group charts if needed.

order
of
import-
ance
to
the
group



1. List any other sophomores you know who you feel are your friends. (in order of preference)

- [illegible]

- _____
- _____
- _____
- _____

-
- Handwriting practice lines for the letter 'a'. The page contains two columns of horizontal lines. Each line is composed of a solid top line, a dashed middle line, and a solid bottom line. The letter 'a' is written repeatedly on each line, demonstrating its placement relative to the guidelines. The first column shows the letter 'a' written in a cursive style, while the second column shows it written in a more formal, upright style.

5. Generally, would you say that most of your close friends are also sophomores, or are they from other classes? Why do you think this is so? (Whatever the case may be) Please write a sentence or two concerning this. Thank you.

APPENDIX C

Sample Session I and Session II Record Sheets

Session I

Name _____

Sex _____

INSTRUCTIONS

Read to S(s)- "You are going to hear some sound vibrations. The frequency or pulse rate will vary. The sound will last for approximately 3 seconds. You will have 6 seconds after every sound in which to report your estimate of total frequency or pulse rate out loud. Frequencies will be too fast for you to be able to count, so your report will have to be estimate. It is important to concentrate and report carefully, as the results may be useful for future warning systems in space flight."

Ask if there are any questions. Whether there are or not, make sure that the task is clear. Illustrate by moving a hand rapidly back and forth, and pointing out that even if it was too fast to count, a person could still estimate the number of times the hand moved back and forth. Then, repeat the above instructions.

Check the anchoring values (on the back of this sheet), and state: "To give you an idea of what you will be hearing and what the frequencies or pulse rates will be like, we will illustrate with the lowest frequency or value () and the highest frequency or value (). You will now hear the lowest frequency or value ()." The recorder is turned on and the lowest frequency or value is played. "You will now hear the highest frequency or value ()." The highest frequency is played. This is then repeated (for the lowest and the highest). Finally E asks: "Are you ready?" Ss then go ahead and make estimates for the entire stimulus series.

Appendix C (Continued)

1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
10	_____
11	_____
12	_____
13	_____
14	_____
15	_____
16	_____
17	_____
18	_____
19	_____
20	_____

21	_____
22	_____
23	_____
24	_____
25	_____
26	_____
27	_____
28	_____
29	_____
30	_____
31	_____
32	_____
33	_____
34	_____
35	_____
36	_____
37	_____
38	_____
39	_____
40	_____

Session 2

Name _____

Sex _____

Previous scale _____ S.S.C. _____

INSTRUCTIONS

"You are going to hear some sound vibrations. Report the total frequency or pulse rate out loud, as you did the last time. The purpose is to test your ability to judge now that you have had some practice. Some of the frequencies will be the same as last time, some will not. Make your estimates quickly as there will only be 6 seconds after each sound in which to record each estimate." E repeats above instructions. "Ready?" E then starts the tape, and records the estimates.

1 _____	15 _____	29 _____
2 _____	16 _____	30 _____
3 _____	17 _____	31 _____
4 _____	18 _____	32 _____
5 _____	19 _____	33 _____
6 _____	20 _____	34 _____
7 _____	21 _____	35 _____
8 _____	22 _____	36 _____
9 _____	23 _____	37 _____
10 _____	24 _____	38 _____
11 _____	25 _____	39 _____
12 _____	26 _____	40 _____
13 _____	27 _____	
14 _____	28 _____	

APPENDIX D

Summation of Subject Frequency of Estimates Falling Within Different Scales (Session II) by Social Condition and Original Scale for Combination

Aa, Tb, Gc

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 1			
<u>Aa</u>	7	88	65
<u>Tb</u>	-	70	90
<u>Gc</u>	-	19	141
Experimental Run 7			
<u>Aa</u>	35	74	51
<u>Tb</u>	13	82	65
<u>Gc</u>	-	67	93
Experimental Run 13			
<u>Aa</u>	25	101	34
<u>Tb</u>	8	88	64
<u>Gc</u>	-	68	92
Experimental Run 19			
<u>Aa</u>	19	72	69
<u>Tb</u>	-	94	66
<u>Gc</u>	-	64	96
Experimental Run 25			
<u>Aa</u>	41	65	54
<u>Tb</u>	17	93	50
<u>Gc</u>	-	61	99
Experimental Run 31			
<u>Aa</u>	9	62	89
<u>Tb</u>	-	72	88
<u>Gc</u>	-	51	109

Aa, Tb, Gc (Continued)

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 37			
<u>Aa</u>	50	101	9
<u>Tb</u>	17	110	33
<u>Gc</u>	6	29	125
Experimental Run 43			
<u>Aa</u>	29	73	58
<u>Tb</u>	-	75	85
<u>Gc</u>	-	40	120

Combination Aa, Tc, Gb

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 2			
<u>Aa</u>	9	130	21
<u>Tc</u>	-	94	66
<u>Gb</u>	-	148	12
Experimental Run 8			
<u>Aa</u>	11	102	47
<u>Tc</u>	-	98	62
<u>Gb</u>	-	123	37
Experimental Run 14			
<u>Aa</u>	51	100	9
<u>Tc</u>	11	65	84
<u>Gb</u>	14	88	58
Experimental Run 20			
<u>Aa</u>	31	97	32
<u>Tc</u>	-	80	80
<u>Gb</u>	-	140	20
Experimental Run 26			
<u>Aa</u>	49	111	-
<u>Tc</u>	-	65	95
<u>Gb</u>	16	112	32
Experimental Run 32			
<u>Aa</u>	19	141	-
<u>Tc</u>	-	115	45
<u>Gb</u>	-	142	18
Experimental Run 38			
<u>Aa</u>	16	128	16
<u>Tc</u>	8	96	56
<u>Gb</u>	8	128	24
Experimental Run 44			
<u>Aa</u>	14	86	60
<u>Tc</u>	-	78	82
<u>Gb</u>	-	102	58

Combination Ab, Ta, Gc

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 3			
<u>Ab</u>	3	35	122
<u>Ta</u>	59	77	24
<u>Gc</u>	-	42	118
Experimental Run 9			
<u>Ab</u>	55	50	55
<u>Ta</u>	92	31	37
<u>Gc</u>	18	55	87
Experimental Run 15			
<u>Ab</u>	57	30	73
<u>Ta</u>	77	35	48
<u>Gc</u>	26	40	94
Experimental Run 21			
<u>Ab</u>	35	56	69
<u>Ta</u>	80	40	40
<u>Gc</u>	39	33	88
Experimental Run 27			
<u>Ab</u>	50	16	94
<u>Ta</u>	50	17	93
<u>Gc</u>	-	17	143
Experimental Run 33			
<u>Ab</u>	73	47	40
<u>Ta</u>	76	34	50
<u>Gc</u>	27	29	104
Experimental Run 39			
<u>Ab</u>	19	40	101
<u>Ta</u>	47	46	67
<u>Gc</u>	15	30	115
Experimental Run 45			
<u>Ab</u>	78	48	34
<u>Ta</u>	93	49	18
<u>Gc</u>	65	32	63

Combination Ab, Tc, Ga

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 4			
<u>Ab</u>	96	31	33
<u>Tc</u>	13	79	68
<u>Ga</u>	134	16	10
Experimental Run 10			
<u>Ab</u>	93	38	29
<u>Tc</u>	24	75	61
<u>Ga</u>	127	33	-
Experimental Run 16			
<u>Ab</u>	79	35	46
<u>Tc</u>	45	32	83
<u>Ga</u>	97	33	30
Experimental Run 22			
<u>Ab</u>	61	53	46
<u>Tc</u>	13	30	117
<u>Ga</u>	129	23	8
Experimental Run 28			
<u>Ab</u>	94	34	32
<u>Tc</u>	49	32	79
<u>Ga</u>	112	25	23
Experimental Run 34			
<u>Ab</u>	65	35	60
<u>Tc</u>	34	50	76
<u>Ga</u>	109	33	18
Experimental Run 40			
<u>Ab</u>	56	50	54
<u>Tc</u>	32	33	95
<u>Ga</u>	95	35	30
Experimental Run 46			
<u>Ab</u>	71	17	72
<u>Tc</u>	22	45	93
<u>Ga</u>	110	19	31

Combination Ac, Ta, Gb

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 5			
<u>Ac</u>	23	120	17
<u>Ta</u>	40	120	-
<u>Gb</u>	15	135	10
Experimental Run 11			
<u>Ac</u>	62	77	21
<u>Ta</u>	79	72	9
<u>Gb</u>	30	122	8
Experimental Run 17			
<u>Ac</u>	19	112	29
<u>Ta</u>	64	96	-
<u>Gb</u>	48	112	-
Experimental Run 23			
<u>Ac</u>	31	94	35
<u>Ta</u>	78	66	16
<u>Gb</u>	32	112	16
Experimental Run 29			
<u>Ac</u>	33	76	51
<u>Ta</u>	98	48	14
<u>Gb</u>	33	108	19
Experimental Run 35			
<u>Ac</u>	42	66	52
<u>Ta</u>	102	50	8
<u>Gb</u>	35	114	11
Experimental Run 41			
<u>Ac</u>	61	89	10
<u>Ta</u>	77	83	-
<u>Gb</u>	32	128	-
Experimental Run 47			
<u>Ac</u>	26	99	35
<u>Ta</u>	65	95	-
<u>Gb</u>	36	124	-

Combination Ac, Tb, Ga

Subjects	Scales		
	<u>a</u>	<u>b</u>	<u>c</u>
Experimental Run 6			
<u>Ac</u>	22	93	45
<u>Tb</u>	33	110	17
<u>Ga</u>	115	32	13
Experimental Run 12			
<u>Ac</u>	55	88	17
<u>Tb</u>	72	84	4
<u>Ga</u>	97	63	-
Experimental Run 18			
<u>Ac</u>	60	68	32
<u>Tb</u>	51	93	16
<u>Ga</u>	110	50	-
Experimental Run 24			
<u>Ac</u>	66	60	34
<u>Tb</u>	40	112	8
<u>Ga</u>	113	47	-
Experimental Run 30			
<u>Ac</u>	41	63	56
<u>Tb</u>	34	95	31
<u>Ga</u>	97	51	12
Experimental Run 36			
<u>Ac</u>	47	95	18
<u>Tb</u>	76	74	10
<u>Ga</u>	108	44	8
Experimental Run 42			
<u>Ac</u>	74	76	10
<u>Tb</u>	75	85	-
<u>Ga</u>	127	33	-
Experimental Run 48			
<u>Ac</u>	64	71	25
<u>Tb</u>	41	100	19
<u>Ga</u>	116	31	13

APPENDIX E

Assimilation Score Values for Each Subject by Experimental Run and Previous Social Condition

Experimental Run	Social Condition (Subjects)		
	A	T	G
1	0.0	53.5	77.5
2	0.0	16.5	112.0
3	59.5	1.5	73.0
4	47.5	21.5	54.5
5	5.0	19.0	120.0
6	15.0	62.5	27.5
7	6.5	70.5	58.0
8	0.0	42.5	100.0
9	43.0	36.5	46.0
10	54.0	14.5	58.5
11	8.5	46.0	74.5
12	2.0	75.5	63.5
13	4.0	84.5	49.0
14	12.5	33.5	82.5
15	37.5	41.5	60.5
16	32.5	38.0	62.0
17	0.0	33.5	104.0
18	8.0	59.0	55.5

Experimental Run	Social Condition (Subjects)		
	A	T	G
19	0.0	68.0	67.5
20	0.0	26.0	88.5
21	36.5	37.0	54.5
22	26.5	27.0	40.0
23	16.0	31.5	80.0
24	4.0	53.5	53.0
25	8.5	63.0	52.0
26	8.0	16.0	88.0
27	17.0	25.0	93.5
28	28.5	27.5	71.5
29	16.5	33.0	62.0
30	21.5	57.0	37.5
31	0.0	56.5	88.5
32	0.0	9.0	128.0
33	31.5	50.0	45.0
34	41.5	39.0	49.5
35	9.5	38.5	58.0
36	9.0	69.5	61.5
37	11.5	65.0	21.0
38	8.0	20.0	112.0
39	38.0	17.0	84.0
40	34.0	42.0	44.0

Experimental Run	Social Condition (Subjects)		
	A	T	G
41	0.0	46.5	86.0
42	0.0	54.5	74.5
43	0.0	56.5	71.5
44	0.0	59.0	82.0
45	40.5	71.5	26.0
46	32.0	51.5	46.5
47	0.0	31.0	97.0
48	16.0	51.0	52.5

APPENDIX F

Variability Score Values for Each Subject by Experimental Run and Previous Social Condition

Experimental Run	Social Condition (Subjects)		
	A	T	G
1	6.76	6.40	5.23
2	4.99	5.57	4.49
3	6.63	7.63	5.28
4	7.90	6.67	7.63
5	6.11	5.27	5.05
6	4.55	4.42	4.96
7	5.38	4.48	4.69
8	5.75	5.33	4.43
9	5.71	5.94	5.14
10	8.14	6.57	4.94
11	3.45	5.55	4.48
12	6.07	5.75	4.65
13	6.38	5.72	4.72
14	5.14	5.13	4.78
15	6.99	5.89	5.19
16	5.33	4.85	5.38
17	5.78	5.39	4.84
18	6.41	5.18	4.71

Experimental Run	Social Condition (Subjects)		
	A	T	G
19	5.89	4.73	4.67
20	5.18	4.67	4.12
21	6.18	6.07	5.28
22	4.41	4.78	5.43
23	5.55	5.77	4.92
24	6.09	4.76	6.09
25	5.46	4.83	4.80
26	4.88	3.99	5.10
27	7.97	5.83	5.18
28	6.07	5.16	5.23
29	7.02	6.07	5.43
30	5.95	4.92	5.09
31	5.96	5.82	5.46
32	4.89	4.45	4.38
33	7.85	7.13	6.49
34	5.46	4.59	5.95
35	5.04	5.07	4.91
36	4.06	4.69	4.23
37	5.00	4.29	4.66
38	5.82	5.91	5.52
39	4.65	4.97	4.52
40	6.68	5.73	5.28

Experimental Run	Social Condition (Subjects)		
	A	T	G
41	4.76	4.36	4.14
42	7.97	6.36	6.65
43	9.23	7.45	6.80
44	4.19	5.13	4.70
45	4.87	4.55	4.80
46	5.36	4.44	4.72
47	6.07	4.97	4.67
48	4.84	4.23	4.39

APPENDIX G

Interquartile Ranges for all Subjects by Experimental Run and Previous Social Condition

Experimental Run	Social Condition (Subjects)		
	A	T	G
1	9	11	7
2	8	8	6
3	8	12	9
4	15	13	10
5	9	8	10
6	14	11	8
7	17	11	10
8	10	10	7
9	22	21	13
10	17	11	9
11	11	15	9
12	12	8	8
13	11	13	9
14	13	14	11
15	22	22	15
16	22	22	19
17	9	8	7

Experimental Run	Social Condition (Subjects)		
	A	T	G
41	4.76	4.36	4.14
42	7.97	6.36	6.65
43	9.23	7.45	6.80
44	4.19	5.13	4.70
45	4.87	4.55	4.80
46	5.36	4.44	4.72
47	6.07	4.97	4.67
48	4.84	4.23	4.39

Experimental Run	Social Condition (Subjects)		
	A	T	G
40	18	19	16
41	12	11	6
42	15	11	10
43	19	11	8
44	12	11	8
45	18	11	22
46	24	16	19
47	13	8	6
48	13	12	12