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THE INFLUENCE OF STATUS UPON CO-ADAPTIVE PROCESSES IN GROUPS OF RETARDED MALE CHILDREN.

THE OHIO STATE UNIVERSITY, PH.D., 1979
THE INFLUENCE OF STATUS UPON CO-ADAPTIVE PROCESSES
IN GROUPS OF RETARDED MALE CHILDREN

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
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* * * * * *

The Ohio State University
1979

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INTRODUCTION

Much conceptualization and experimentation in the social sciences in recent years has focused upon small group processes and behaviors. A review of the accumulated research reveals that the prevalent mode of analysis of group functions has been 'atomistic-mechanistic' (Brown, 1936) in design, that is, a perspective which isolates parts from the whole and studies their interrelationships largely divorced of embracing context. The network of relations of a group member has been observed, under high magnification, while the 'climate' of the group in which he functions has been left out of focus. This overriding fragmentary perspective has not only dominated the flavor of theory and basic research, but has also influenced applied practice in fields like education. The group has yet to be recognized as a gestalt capable of generating distinctive effects in learning situations. While the complementary 'organismic' (Brown, 1936) or configurational perspective has been with us for some time, it has failed to thrive in the efforts of researchers or practitioners.

A number of authors (Brown, 1936; Emerson, 1964; Gross & Martin, 1952; Trow, Zander, Morse, & Jenkins, 1950) have advanced reasons for the predominance of the fragmenting focus on group behavior and failure to perceive the group as a gestalt field. The contributing
causes appear to run deep in the traditions of various disciplines. Brown (1936), perhaps more directly and convincingly than others, has expressed the need and feasibility of perceiving groups as social fields, subject to the principles and modes of analysis of field theory.

The field theoretical approach had its roots in the efforts of the Gestaltists, though its most vital expression was in the work of Kurt Lewin and his associates. As an organismic theory, it allows for the simultaneous consideration of individual and group states of being. Modern field theory thus acknowledges the complementarity of intra-personal and inter-personal constructs while emphasizing the organismic principles underlying the group's functioning. This approach is herein taken to be the most viable alternative for investigating the structure and dynamics of a group, because of the complexity of the interrelationships.

A recurrent topic of conceptual activity pertaining to group behavior is the interpersonal process giving shape to a more or less cohesive 'mind' of the group. Whether referred to as a 'popular mind' (LeBon, 1917), 'common mind' (Durkheim, 1915), 'group mind' (McDougall, 1920; Freud, 1922), or more recently, 'collective intelligence' (Wechsler, 1971), the concept is still important to a fuller understanding of group life. It is a quality attributed to aggregates of people which seems most ready to be approached from a field-theoretical perspective, instead of being relegated to a permanent position on the fringe of scientific understanding and acceptance.
Wechsler (1971) has considered the validity of the issue of collective intellect. A conclusion derived from a logical and literary analysis is deceivingly simple: individuals in a group do indeed influence the thoughts and perceptions of each other. This perception is verified in numerous empirical studies, particularly those dealing with the phenomena of conformity and obedience to authority. In the present study, the collective mind will be investigated as an active, dynamical process of adaptation by the group to subtle intra-group demands and extra-group pressures. The collective adaptation of group members, here referred to as co-adaptation, is conceived as involving both cognitively-dependent routines of individuals as well as emotionally-based components of affiliation.

Group functioning is known to be affected by forces associated with status differences among members. Everyday, on school playgrounds, for example, children choose-up teams on the basis of perceived differences in ability, with such differences functioning as status differences within the group space at that point in time. It stands to reason that the group with the most capable and esteemed players would be the most successful. But this doesn't always, or even often, seem to be the case. We also know that the social climate generated within the group, largely determined by relative statuses and derived roles, can turn a bunch of lack-luster performers into a group of winners.
The present study looks at the impact of differential status in groups in a more systematic and salient fashion than has occurred to date. Various group compositions of differential status positions have been constructed, with an eye to their inferred 'climatic' or 'group mind' influence upon co-adaptive indices of cohesion and productivity.
Philosophies of Group Science

The functions and processes of small groups have for quite a long time been probed and dissected by social scientists. The attempt to understand the workings of the whole by extracting and studying individual pieces has resulted in a pile of disconnected parts, as is clearly evident in any review of small group research (e.g., Davis, Laughlin, & Komorita, 1976; Hare, 1976). Two difficulties are represented by this state of affairs. The first, and most critical, is the conception that in order to know a group, all that is necessary is to know its parts. The second problem follows from the first, for if dissection is the approach, there is an untold number of ways of slicing up the entity, particularly when one operates free of theory. Directionless empiricism is the result - fact out of context. In sum, this field of small group study, with a few notable exceptions, has ignored the internal gestalt of group processes in conceptualization, and in such ignorance, has fallen back upon reductionistic modes of analysis.

Anticipating the aforementioned situation, Brown (1936) identified a general philosophy underlying the modes of conceptualization and analysis just described. He called this philosophy "atomistic-mechanism", which endeavors to isolate (abstract) parts from the
whole and to lift the individual component from a dynamical inter-
action, thus robbing it of its defining context in a larger con-
figuration and climate. In contrast, the philosophical alterna-
tive that views the individual as indivisible from the whole, as
a dynamic part of a gestalt, was identified as the "organismic"
perspective.

Brown listed critical postulates upon which the two philoso-
phies of science have been constructed. In a condensed form, the
postulates of an atomistic-mechanistic philosophy are as follows:

1) The biological organism is a machine, whose organ-
ization either is unknown (typical of atomistic-
mechanism) or is known as something akin to 'soul',
being immeasurable, uncontrollable, and unverifi-
able (typical of the associated philosophy, vitalism).

2) The status of the parts taken cumulatively deter-
mines exactly the status of the whole.

3) The isolation of parts and study of inter-relationship-
s is the purpose of science.

4. The method of gathering scientific data is empiri-
cal and inductive.

On the other hand, the organismic philosophy holds to these cor-
responding postulates:

1) The biological organism is an adaptive energy system,
unlike machines that must be changed by intelligent
organisms.
2) That which happens at any given part of the whole is determined by the structure of the whole.

3) Because the state of the field determines local events, the analysis is primarily in terms of relations and functions of parts.

4) The method of gathering scientific data is hypothetico-deductive.

All in all, the postulates underlying the organismic theory appear more in keeping with a science of social organisms (Brown, 1936).

While these diametrically opposite philosophies have each gained a foothold in the social sciences, the relative newcomer, the organismic approach, has suffered largely due to the much earlier arrival of atomistic-mechanism into the traditions of associated disciplines. In psychology, an appreciation of the individual in a group (in a particular social context) was relatively late in coming on the scene. Atomistic-mechanism, in one package or another, was the norm in a variety of individual-oriented psychologies, in emulation of its predominance in the physical sciences. Indeed, reductionistic methods bundled in the atomistic-mechanistic blanket were recognized as psychology's adaptation of the scientific method. Learning theories proliferated from atomistic-mechanistic roots. Only when the Gestalt psychologists appeared on the scene did a viable representative of organismic thinking surface. Groups of individuals no
longer needed to be viewed only as machine-like collections of interacting parts, but as interpersonal configurations with unique 'personalities' or atmospheres. Unfortunately, those psychologists who could have the most dramatic influence in transmitting the organismic perspective to a larger and more practical setting (i.e., classrooms), have largely failed to actively advocate the approach in research (Trow, Zander, Morse, & Jenkins, 1950).

While the organismic message has been far from a battlecry for most psychologists, their colleagues in the field of education have also been far from receptive to the new concepts and methods. Indeed, with a tradition of instruction aimed at the individual student, the field of education indirectly contributed to a fragmentary perspective on group functioning. As described by Trow, Zander, Morse, & Jenkins (1950), the tutorial arrangement of education was in an earlier era considered to be the perfect educational design for all kinds of learning. Increases in teacher-pupil ratios in the public schools made this arrangement impractical and prompted educators to acknowledge groups as potential teaching foci, although the concurrent rise of individualized curricula served to support the individual-oriented approach in the schools. Accomplishment of individual goals through individualized means meant that the teacher needed maximal control. Spontaneous interactions of individuals in so complex a thing as a group was to be avoided. The consideration of control of group processes through environmental manipulation of internal and external variables was rarely raised. While educational
goals have been broadened over time to include social learning in addition to scholarly pursuits, the attention of teachers is still diverted to the individual out of group context, rather than to the individual as part of a group configuration.

Sociology, while sometimes defined as the study of groups, has also failed to actively advance an organismic perspective in understanding group behavior. In addition to more general deficiencies in developing rigorous theory about groups and in executing 'scientific' methods of control of variables (Gross & Martin, 1952), sociology has been permeated by vitalistic conceptualizations of group functioning. "Vitalism" (Brown, 1936) is a philosophy that maintains that the group is organized by an unobservable, immeasurable force, which moves the parts in an unpredictable manner. The weaknesses of such a philosophy in dealing with groups are evident in its association with atomistic-mechanism, and in its assertion as to the unpredictability of group action. Brown (1936) has considered the concept of 'group mind' in sociological writings by LeBon (1917), Durkheim (1915) and Levy-Bruhl (1923), among others, as representing a vitalistic force in the traditions of sociology. More recently, sociologists have channelled their attention to interpersonal processes in groups and particularly to the effects of categories of individuals on group functioning. But in most cases, this is accomplished by means of totally ignoring the individual or failing to adequately account for 'individual differences'
in functioning. The importance of the configuration of the gestalt and an appreciation of the 'climate' generated by the dynamic interaction of components have been impressed upon the field, but apparently without lasting impact.

**Field Theory**

The theoretical salmon fighting to swim upstream against these currents has been field theory, an approach which incorporates the organismic philosophy of science. While field theory has long been viable in the physical sciences, its tenets were later adapted through a series of stages to yield a field theory for the social sciences. While the initial break in philosophy came with the Gestalt school, it was Kurt Lewin and his associates who saw the danger for a social science in reducing the functions of any entity to the influence of fixed parts or to an immeasurable soul. They clearly perceived the structure of the whole as continually shaping the character of any given part. During the short growing season of Levinian field theory, his topological and vector constructs were directed increasingly at larger social fields than that of the individual, including such aggregates as family groups, housing projects, ethnic minorities, and entire nationalities.

Brown (1936) believed the impetus for field theory's appearance in social science to be the need for recognizing organization as an important factor in understanding human behavior. Nineteenth century experimental psychology emulated the atomistic-mechanistic philosophy of biology, and in so doing, was unable to explain the
organization of parts into wholes. Yet findings in psychology, particularly in the area of visual perception, made an appreciation of organization critical. The discovery of situations in which the configuration of parts psychologically determined the perception, brought the organization of the field into scientific 'focus'. Lewin, the field theorist par excellence, took many of the field theoretical principles generated by work in perception and applied them to all aspects of observable human endeavor.

The most concise treatments of basic field theoretical concepts as they pertain to individuals are to be found in Lewin's own early works (Lewin, 1935, 1936, 1938, 1948, 1951). Brown (1936) has highlighted a number of these constructs as applicable to groups. For instance, a region may be described as a segment or field of space. In a given region of social space, the individual behaves differently than he does outside the region. A person within such a field possesses membership-character, that is, he possesses certain social-psychological characteristics differentiating him from individuals not in the region. The boundary surrounding a social region and extending membership-character to the region enclosed may be physical, social, or conceptual in nature, or any interaction of the three.

Locomotion refers to a change in position in a field. Indeed, all behavior can be described according to Lewinian principles as locomotion in a field; individual behavior is locomotion in the person's psychological field, and collective behavior is locomotion
in the group's social field. The goal of locomotion may be the attainment of a given social status or solution of a problematic situation, among other endpoints. Structural aspects of the field can become barriers to locomotion, preventing freedom of movement. A boundary of a region, for example, may represent a barrier to an outsider.

Dynamic constructs from field theory that may be raised directly to the level of group space include fluidity, permeability, vector, and degree of individual freedom. Fluidity refers to the ease of locomotion through a region, limited by barriers and other restraining psychological factors. Fluidity is a dynamic characteristic of the field. Permeability, however, is a characteristic of barriers or boundaries, referring to the ease of locomotion through these blockages. Vectors are the directed forces activating all locomotions, analogous to lines of force in physical fields. Brown defines the strength of vectors in social fields in terms of the degree of success in attaining membership-character in regions. The force of vectors is created by the undissipated tension of failing to attain a locomotion. This tension might be conceived of as the inverse of fluidity, since any limitation in the pursuit of personal wants creates tension. Degree of individual freedom is a dynamic construct that recognizes personal motivations independent of goals of the group. Restricted freedom of movement causes tension and dissention in the group. The individual and the group must therefore adapt to each others' goals in order to remain unified. These basic concepts
represent a small but functional sub-set of those contained in Lewin's topological and vector psychologies. They have been selected for their proven relevance to expanding field-theoretical notions to group space (Brown, 1936).

Although Lewinian field theory was originally designed as a systematic approach to the psychology of the individual, its constructs apply also to groups of individuals in a more social psychology. The concept of the 'psychological field', as a spatial construct to which are applied phenomenal descriptions of psychological behavior, has its counterpart in the 'social field', to which sociological and social-psychological behavior are ordered. Brown (1936) has pondered field theory's capacity to operate on the plane of the group, and concluded that such was a sound and logical extension.

Lewin himself contributed to the conceptual expansion of the 'individual' psychology to a group context: In his original 1936 analysis of social distance (Lewin, 1936, 1951), we see the potential of field theory to operate on both the individual and group planes simultaneously and to utilize similar constructs in understanding the member as a whole and the group as a whole. Social distance between people was defined as the degree of accessibility (communication) of those persons. The individual personality may be conceived of as having peripheral and central regions topologically; peripheral regions being less intimate and personal, and central regions being more private and personal in comparison.
This conception of accessibility was viewed by Lewin as being applicable not only to the individual character, but to a configuration of members in a group (elements of a 'group personality'). Members who would be conceived of by others as integral to group functioning or perhaps as more capable would be considered to be in a central topological region. Members seen as barely necessary to group functioning or as inept would be considered to be in a peripheral region. Members with average interpersonal characteristics would be allocated to an intermediate region of the group. (See Figure 1)

The conceptualizations of Lewin and other modern field theorists pertaining specifically to group space culminated at this point. This developing field-theoretical conception of the group thus ended abruptly. It appears that Lewin fell into the trap of descriptive classification, a situation against which one must guard when dealing with development of theory. In Brown's early work (1936), he foresaw the detrimental effects of this kind of strategy to growth of field theory as a science. These points could bear elaboration.

In tracing the evolution of field theory, Brown (1936) acknowledged that all sciences begin their analytic processes by dividing up the world. Classification is a first step in developing scientific hypotheses. Sociology, past and present, is famous for its classificatory schemes. One such system is that of in-group
Each layer $(C, P^1, P^2)$ represents a region of the group. The thickness of a boundary line corresponds to differences in accessibility between regions. The hatched, innermost area $(C)$ represents the central part of the group, while surrounding layers $(P^1, P^2)$ represent peripheral elements.
versus out-group (Sumner, 1906). A natural division tends to occur in the field of a small group; a differentiation between 'us' (the in-group) and everyone else, 'them' (the out-group). Comradeship and peace typify the relation among in-group members, while their collective relation to the out-group is one of wariness and often hostility.

But usage of this type of classification, be it labelled in-group/out-group, open/closed, or central/peripheral, presents two problems to a science. It implies acceptance of an Aristotelian dichotomization of phenomena, which clearly does not reflect the graded status of things in reality. More importantly, usage of such a classificatory scheme only provides description of relations at the moment. It is incapable of achieving any explanatory power as relations change. Numerous classificatory, phenotypical descriptions of phenomena bring the scientist no closer to an understanding of the process underlying the whole event. Neither Lewin nor his disciples moved beyond this descriptive stage concerning the group theory as outlined above. However, a construct of group process existed in their system which could have been used to predict interpersonal relations, particularly as they would change over time.
Social Climates

That construct is the concept of group climate or atmosphere (e.g. Lewin, Lippitt, & White, 1939; Lippitt, 1940; Lippitt & White, 1943). While appreciation of the intervening concept of group climate is vital to understanding group processes because of its organizational power, awareness of the regional configuration of groups must serve as a starting point of analysis (Lewin, 1951). All told, mere consideration of the effects of regional patterns (atomistic-mechanism) leads to shot-in-the-dark empiricism and ad hoc hypothesizing. Sole consideration of the effect of group atmosphere (vitalism) leads to scientifically unverifiable hypotheses. The two factors must be considered simultaneously. It is a matter of science.

One of the most important factors in determining a social climate is the level of tension at which the group functions. Lack of satisfaction of a need, and limitation of space of free movement can cause tension within the individual, within his region, and ultimately within the whole group. Group conflicts or adjustments rise and fall on individuals' abilities to find enough space of free movement to satisfy their own personal needs without interfering with the needs of the group (Lewin, 1951), or with the needs of a leader.

French (1941) examined the behavior of organized and unorganized groups in frustrating and fearful situations capable of generating great tension. Organized groups consisted of fraternity
athletic teams and neighborhood street clubs, each with established leaders, while unorganized groups consisted of previously unacquainted undergraduates. Unfortunately, most of the findings about organization in this study are contaminated by the interchangeable use of two concepts of organization (as differentiation of roles and degree of acquaintance). However, the results pertaining to the emergence of group atmospheres still seem valid. It was found that in some groups, every member was consistently uncooperative and aggressive, while in other groups every member was just as consistently cooperative and friendly. The interaction of dissimilar individuals within a group created a social atmosphere, inducing the same behavior in all members of the group. While other groups generated even different atmospheres, each member in a group tended to behave alike. This dramatically shows the holistic effects of group climates. The fact that members of the same group tend to show similar reactions may be considered as a case of the spreading of tension from one member to another. In so far as a group is a whole composed of interdependent parts, one should expect that the spreading of the climatic conditions in the group will depend on the degree of communication among members, that is, on the character of the walls between members. The difference in structure between the organized and unorganized groups is represented in Figure 2, taken from French (1941).
FIGURE 2

GROUP TENSION IN ORGANIZED AND UNORGANIZED GROUPS

The thickness of boundary lines represents the degree of accessibility between members. Greater tension exists in groups with strong boundaries. Less tension exists among members of the organized group, including its leader (L), than among those of the unorganized group.
It follows from this that tension would spread more easily in the organized group, for there are weaker walls between members. Operationally, the strength of the walls can be coordinated to the amount of social restraint. Accordingly, when there is tension placed on the group from external sources, there should be more equal tension among the members of organized groups. The results confirmed this derivation, as individual differences were small within the organized groups.

The most basic difference between group atmospheres was thus conceived to be the degree of tension generated by each. The authoritarian group, having very distinct status levels or regions separated by a strong barrier to movement, created strong tensions between the regions. This dynamic structure, in turn, tended to encourage hostile domination by leaders, submission of members to a leader, but hostility to each other. Conversely, a democratic atmosphere, with little differentiation existing in terms of members' status and greater possibility of movement and communication, generated a low level of tension. With less tension, the probability of hostility was less. Thus, the autocratic climate produces an "I" feeling while the democratic atmosphere produces a "we" feeling of belongingness and cohesion.
The classic studies of group climate (Lewin & Lippitt, 1937; Lewin, Lippitt, & White, 1939; Lippitt, 1940; Lippitt & White, 1943) found democratic groups to be more cohesive than authoritarian groups. Cohesiveness in these studies was measured in terms of stronger expressed feelings of group unity, a high frequency of in-group interaction, and less egocentric interaction (Theodorson, 1962). Deutsch (1953) found that a higher level of cohesiveness, as measured by more group encouragement and willingness to work together, developed in experimentally-established cooperative groups.

Autocracy-democracy studies conducted at Iowa tended to focus upon group atmosphere and affective reactions of individuals rather than on productivity (McCurdy & Lambert, 1952).

McCurdy and associates (McCurdy & Eber, 1953; McCurdy & Lambert, 1952) have investigated the impact of democratic and autocratic organization of group members upon group productivity. In each of the studies, democratic and autocratic organizations were imparted to three-member groups by means of differential instructions. An autocratic set-up was established by informing members that one of its members would act as the leader. Only he would issue commands to be followed by the subordinates, while they would follow those commands absolutely and refrain from any talking. In the democratic organization, members were informed that they all could talk and discuss openly, but no one was to give any orders to others. Thus,
no leader was assigned or allowed to spontaneously emerge in the
democratic group.¹

This research was exploratory and no systematic hypotheses
were presented, although awareness of the autocracy's centralized
decision-making process versus the democracy's diffuse process
suggested differences in group efficiency. Results indicated that
no significant differences were found between the performances of
the two organizations. Yet a number of self-criticisms were
leveled, particularly by McCurdy and Lambert (1952). First, it
was recognized that the two kinds of organizations were artifi-
cially imposed and unverified as to the difference in their natures.
Also, the experimenter was perceived to be operating as a dictator
of sorts in both situations. Secondly, the small size of the
groups may have prevented more dramatic organizational effects.
Thirdly, the type of productivity measured in groups depended upon
formulating and implementing ideas. This type of production was
very different from the speeding-up of a routine process that
served as the production measure in previous organizational studies,
which found democracies to have superior efficiency (French, 1950).

¹ This democratic organization differs from Lippitt's (1940)
democracy, in which an adult leader functioned.
Group Mind

The concept of group climate is a theoretical construct invested with some power to explain the interpersonal dynamics of groups. It allows us to better understand the organization of group parts. Another concept that in the past has filled the organizational void between group components, on the one hand, and group behaviors, on the other, has been the 'group mind'.

According to Brown (1936), the problem of the group mind arose as a unique issue for the developing social sciences of the late nineteenth and early twentieth centuries. Since the social group was rightly perceived as determining most of an individual's beliefs and goals, some concept was needed to represent the sharing of these factors among group members. The concept of the group mind was thus conceived. It originally was a nominal class concept which, though varying in definition with different writers, was intended to function like a 'soul' with which all were imbued upon entering the group. Obviously, this notion smacked of vitalism, because of the unobservable and immeasurable forces being conjured. Yet the concept of group mind, in spite of its faults, spoke to a need - the need to recognize the organization of the group as the primary factor in determining the beliefs and behaviors of group members.
Many writers have directed their energies to describing the group mind. Their methods, unfortunately, have tended toward scientifically spurious explanations of organization. (Atomistic-mechanists, of course, ignored the whole issue of organization, and thus, group mind.) Some of the more significant analyses of the group mind, as a kind of organization superimposed upon a cluster of individuals, are those offered by LeBon, McDougall, and Freud. Each of these has been selected not only for prominence in the field of group mind, but because each approaches a field-theoretical perspective of group processes (Brown, 1936). LeBon (1917), probably the most influential of the early writers on group mind, described new psychological characteristics that arose from the mere act of assembling individuals together. In his own words,

the most striking peculiarity presented by a psychological group is the following. Whoever be the individuals that compose it, however like or unlike be their mode of life, their occupations, their character, or their intelligence, the fact that they have been transformed into a group puts them into possession of a sort of collective mind which makes them feel, think, and act in a manner quite different from that in which each individual of them would feel, think, and act were he in a state of isolation. There are certain ideas and feelings which do not come into being, or do not transform themselves into acts except in the case of individuals forming a group. The psychological group is a provisional being formed of heterogeneous elements, which for a moment are combined, exactly as the cells which constitute a living body form by their reunion a new being which displays characteristics very different from those possessed by each of the cells singly. (LeBon, 1917, p.29)
While this representative passage shows the dim glimmer of a field theoretical approach, it is clearly an expression of class theory (Brown, 1936). In other words, empirical study of crowds had led to the abstraction of certain group behaviors, which were taken to be 'explained' by the concept of group mind. Explaining such collective behaviors as a function of group mind, or its complement in individual mind, is far from a hypothetico-deductive approach.

LeBon presented the notion of a 'popular mind' to explain the irrationality of crowd behavior, taken to be the collective actions of persons under stressful conditions. Individuals in the life space of a crowd were seen to be totally susceptible to the direction of a leader and to unconscious basic drives, and to show a sameness of behavior in spite of differences in experience, status, or intelligence. It seems then that not only are individual characteristics suppressed in the crowd as it moves in one course, but new group characteristics are born of the association. These group properties are likely to be maladaptive, stemming from the suspension of individual intellectual control, and the right-of-way given to suggestions and contagion of feelings.

In 1920, McDougall published The Group Mind, which marked a significant move closer to an organismic approach to groups. In addressing himself to group properties, he took the following position:
For the aggregate which is a society has, in virtue of its past history, positive qualities which it does not derive from the units which compose it at any one time; and in virtue of these qualities it acts upon its units in a manner very different from that in which the units as such interact with one another. Further, each unit, when it becomes a member of a group, displays properties or modes of reaction which it does not display, which remain latent or potential only, so long as it remains outside that group. It is possible, therefore, to discover these potentialities of the units only by studying them as elements in the life of the whole. That is to say, the aggregate which is a society has a certain individuality, is a true whole which in great measure determines the nature and the modes of activity of its parts; it is an organic whole. The society has a mental life which is not the mere sum of the mental lives of its units existing as independent units. (McDougall, 1920, p.7)

He goes on to say:

We may fairly define a mind as an organized system of mental or purposive force; and, in the sense so defined, every highly organized human society may properly be said to possess a collective mind. For the collective actions which constitute the history of any such society are conditioned by an organization which can only be described in terms of mind, and which yet is not comprised within the mind of any individual; the society is rather constituted by the system of relations obtaining between the individual minds which are its units of composition. Under any given circumstances the actions of society are, or may be, very different from the mere sum of the actions with which its several members would react to the situation in the absence of the system of relations which render them a society; or, in other words, the thinking and acting of each man, in so far as he thinks and acts as a member of society, are very different from his thinking and acting as an isolated individual. (McDougall, 1920, pp.9-10)

McDougall treats the simple crowd in much the same manner as Le-Bon, as being irresponsible and maladaptive. But a real advance is made in terms of his treatment of organized groups, for which he posits "five conditions of principal importance in raising collective
mental life to a higher level than the unorganized crowd can reach." (p. 49). These group conditions include: continuity of existence, an adequate understanding among members of its composition and functions, interaction with other similar groups, a body of customs for determining relations among members, and differentiation of classes of individuals. While there is much overlap in these conditions, the concept of organization derived from interaction as a group is a prominent factor underlying all of them. What's more, this organization suggests an adaptiveness of group behavior. This assumption of adaptiveness of organized groups relative to disorganized crowds casts this treatment in the form of a dichotomic class theory, distinguishing between collective and individual mentality. Yet, its focus upon organization and resulting adaptiveness of group behavior were significant advances in conceptualization of groups.

Freud's concept of group mind, derived from his Group Psychology and the Analysis of the Ego (1922), also spoke to issues of organization and adaptiveness. His position on group psychology most closely approximated a gestalt conception of group functioning.

The contrast between individual Psychology and Social or Group Psychology, which at a first glance may seem to be full of significance, loses a great deal of its sharpness when it is examined more closely. It is true that Individual Psychology is concerned with the individual man and explores the paths by which he seeks to find satisfaction for his instincts; but only rarely and under certain exceptional conditions is Individual Psychology in a position to disregard the relations of this individual to others. In the individual's mental life someone else is invariably involved, as a model, as an object, as a helper, as an opponent, and so from the very first, Individual Psychology is at the same time Social Psychology as well. (Freud, 1922, pp.1-2)
Unlike McDougall's treatment of dynamics, Freud's conception of group mind is another version of unconscious drives being manifested in irrational behavior. Its occurrence in groups is attributed to the common Oedipal experiences of childhood, and is given expression in the hostile but intimidated reactions of the crowd to a demanding leader. Group processes are therefore unconsciously motivated, and lend to aberrant collective behavior as a result.

The reality of a group mind or collective process does not hinge upon acceptance of either the consciousness or unconsciousness of interpersonal forces. Rather, the primary concern is whether such processes result only in individual reactions, or in a new feeling of unity and new direction of combined effort evolved in the group. The new feeling of unity might be attributed to increased cohesiveness, while the new direction of collective effort might be attributed to a collective intelligence (Wechsler, 1971).

In a more contemporary analysis of group mind, Wechsler (1971) presents a three-dimensional model of collective intellectual behavior. One dimension is that of a dependent variable, efficacy, conceptually spanning a continuum between maladaptive and adaptive group behavior. A second dimension is that representing the intervening socio-cognitive process, stretching between competitive egocentrism and cooperative sociocentrism. Wechsler identifies the third variable as the degree of homogeneity among group members.
Wechsler derives these factors from group studies focusing upon the mass psychology of crowds, social gatherings, and similar short-lived group phenomena possessing intense emotional energies. Yet the factors remain important in analysis of other kinds of groups and their situationally-determined patterns of collective intelligence.

Much recent research on group processes has concerned itself with the issue of problem-solving, a function embedded in most definitions of intelligence and therefore pertinent to a consideration of collective mentation. Effective problem-solving depends on a range of factors, including motivation, experience, and goal orientation, among others. A most critical factor in the effectiveness of group problem-solving is that of the degree of internal organization or homogeneity (Wechsler, 1971). The present study has manipulated this variable in a group problem-solving format, with the intention to analyze the collective choice of solutions due to the interpersonal structures and relations in groups.

Problem-Solving

In accord with Wechsler's (1971) notions, the 'group mind' might be viewed as the collective process behind a group problem-solving strategy. How could these thoughts be given greater substance? First a problem-solving paradigm would have to be chosen. In line with the earlier discussion, a conflict situation of individual and group needs might be appropriate; particularly, a conflict situation in which cooperation or competition could be selected as alternative strategies for resolution.
In a study cast in this paradigmatic mold, Madsen and Connors (1973) investigated the cooperative-competitive interaction between pairs of educably-retarded and nonretarded children at two age levels. The results at one point suggested that the retarded pairs were more cooperative than nonretarded pairs when performances were compared at similar chronological-age levels. But when performances were compared on the basis of similar mental-age levels, retarded and nonretarded groups showed comparable increases in competitiveness with age. Retardates thus conformed to the trend found often by Madsen and associates for children becoming acculturated in a competitive American society. However, the older retarded group did demonstrate a significant increase in cooperation following an experimenter-imposed change in instructional set. This increase in cooperativeness was perceived by authors as confirmation of an outer-directed personality style of retardates (Zigler, 1966), especially prominent in older retarded individuals.

Stone (1964) investigated the influence of verbally-induced competitive or cooperative sets or strategies on small group behavior in problem-solving. The problem, adapted from Mintz (1951), presents a conflict situation between the individual's needs and the needs of the group, in the format of intragroup competition. Previous research indicates that such a conflict situation produces nonadaptive group behavior in the form of individualistic, egocentric competition (Mintz, 1951). On the other hand, Stone's (1964) study indicated that subjects adaptively show competitive or
cooperative behavior corresponding to intervening sets of competition or cooperation. In the present study, also, the intervention of group compositions and the dynamics of derived group atmospheres was expected to induce adaptive intragroup responses. That is, groups were expected to shift readily to a competitive, individualistic strategy when put in a competitive climate, or from a competitive set to a cooperative one when it is advantageous to do so. This is adaptation.

"Clearly, cooperation and competition are not all-or-none processes which apply equally to all situations. They are consequences of relationship among members and between or among groups. Which consequence, or combination of consequences, is achieved depends, at least in part, on reward structures and dependency relationships." (Okun & DiVesta, 1975)

It should be stressed that in Mintz's (1951) investigation of the effects of interference, mutual facilitation, and reward-and-fine conditions, only the latter adequately accounted for the nonadaptive panic-like behavior in groups. That is, the behavior of individuals did not tend toward maladaptive competition unless the reward situation supported it. It could be that in a status grouping with a fairly homogeneous structure, individuals recognize the lesser variance of prestige levels and make moves to raise themselves in status through individual assertions. A grouping with greater variance of status positions might tend to discourage self-assertion, to say nothing of the active entrenchment of high status individuals. In other words, the democratic climate would 'reward' self-assertion,
whereas the autocratic set-up would not.

Classic Studies on Group Climate

In perhaps the most often cited investigation of social climates, Lewin, Lippitt, & White (1939) review a series of studies in which different atmospheres were created experimentally. The climates were achieved in each case through the manipulation of the kind of participation of an adult leader in a group. In an early study by Lippitt (1940), the same adult leader supervised two clubs of 10-year-olds in a mask-making task. The leader employed an authoritarian manner of leadership with one club, while employing a democratic form of participation in the other. Major distinctions in the techniques of the leader in developing the authoritarian and democratic group atmospheres were summarized as follows (from Lippitt, 1940, p.63):

<table>
<thead>
<tr>
<th>Authoritarian</th>
<th>Democratic</th>
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<tbody>
<tr>
<td>1. All determination of policy by the strongest person (leader).</td>
<td>1. All policies a matter of group determination, encouraged by the leader.</td>
</tr>
<tr>
<td>2. Techniques and steps of attaining the goal (completed task) dictated by the authority, one at a time, so that future direction was always uncertain to a large degree.</td>
<td>2. Activity perspective given by an explanation of the general steps of the process (clay mould, plaster of paris, papier maché, etc.) during discussion at first meeting. Where technical advice was needed, the leader tried to point out two or three alternative procedures from which choices could be made.</td>
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Authoritarian

3. The authority usually structured autocratically the activities of each member - the task and with whom to work.

4. The dominator criticized and praised individual's activities without giving objectives reasons, and remained aloof from active group participation. He was always impersonal rather than outwardly hostile or friendly (a necessary concession in method).

Democratic

3. The members were free to work with whomever they chose and the division of tasks was left up to the group.

4. The leader attempted to be a group member in spirit and in discussion but not to perform much of the actual work. He gave objective praise and criticism.

The effort of the leader to differentiate the two group situations into democratic and authoritarian social climates over three months time was successful, as judged by quantitative and qualitative results. Two very different pictures of group life emerged. In the authoritarian situation, group members displayed behaviors characteristic of 'I-centeredness' and of general tension. With little feeling of group belongingness, the work process showed less cooperation, constructiveness, and creativity. Group members in the democratic climate, however, demonstrated a greater feeling of 'we-centeredness', with concomitant cooperation and group-goal orientation in the mask-making task. This study by Lippitt (1940) is referred to more extensively later, because of the great applicability of its techniques and findings to present purposes.

These initial findings generated interest in elaborations and extensions of the experimental creation of group climates. Lippitt
and White (1943) organized four new clubs of 10-year-old boys, who participated in a wider variety of group activities than in the earlier study. Clubs again had an adult leader, but this time each was trained to be proficient in three leadership roles: autocratic, democratic, and laissez-faire. The first two forms of leadership-produced climates were achieved as before, while the laissez-faire variant was developed through minimal participation of the leader in policy determination and no participation of him in the particular work task. Leaders were shifted between clubs every six weeks, at which time they would adopt another leadership style. Thus, the group life of each club could be studied in different social atmospheres over time.

The findings in this study compare favorably with those obtained by Lippitt (Lippitt, 1940) for autocratic and democratic climates. Autocracy generated reactions of aggression as well as considerable submission. Democracy produced more group-mindedness and friendly behaviors. The quantity of work done in the autocracy was somewhat greater than that accomplished in the democracy, although originality and work motivation was greater in the latter. The laissez-faire climate led to the least quantity and quality of work produced, as well as to the least work-mindedness.

Lewin, Lippitt, & White (1939) looked specifically at the patterns of aggressive behavior in social climates, combining data from the studies of Lippitt and White (Lippitt, 1940; Lippitt & White, 1943). It was found that, overall, laissez-faire climates generated
very high levels of aggression, democracies produced moderate levels, and autocracies produced either extreme aggression or, more frequently, extreme nonaggression (i.e., apathy).

The paradoxical findings in autocracies have been attributed to the same underlying dynamics, namely, a high level of tension stemming from frustration of individual goals. More specifically, tension was hypothesized to arise from the smaller space of free movement, in terms of activities permitted and social status that could be attained. The case for underlying tension, particularly in apathetic autocracies, was made on the basis of several kinds of evidence: 1) dramatic outbursts of aggression when a group was freed of the repressive atmosphere of the autocracy; 2) observations by judges of a generally repressed state of interaction, with little overt emotion displayed but considerable body tension; 3) expressed dislike by group members of the autocratic leader.

According to these authors, the specific manifestation of the underlying tension as overt aggression or as apathy depends upon the influence of two factors: the rigidity of the social structure within the group, and the culture in which the group lives.

In relation to intra-group structure, aggression may be perceived as a process involving conflict between parts of the group. It is defined as a force acting to move the subgroup away from the main group, thus impairing unity of the group (Lewin, Lippitt, & White, 1939). Actual aggression will occur only if other forces exist to prevent the subgroup from leaving the main groups. Figure 3 summarizes these interrelationships of structures.
In autocracy where each member or subgroup \((M_1, R_2, ... M_5)\) has a circumscribed region of activity \((R_1, R_2, ... R_5)\), and especially where the central regions of group life (policy formation \(R^d\)) are inaccessible to most members, rigid barriers \((B)\) to own goals \((G)\) continually frustrate members' efforts. The member's own position in the group structure \((R^d)\) therefore acquires a negative valence, usually creating a force away from group membership \((f_{M,G}^d, -Gr)\). But in rigid group structures a restraining barrier \((B^l)\) keeps members or subgroups from leaving until a very high state of tension develops.

In democracy where all group regions \((R^{Gr})\) are accessible to all members \((M_1, M_2, ... M_5)\), their own goals \((G)\) are more easily attained and no such frustrating situation develops (Lewin, Lippitt, & White, 1939, p. 294).
In the studies of Lippitt and White cited previously, the autocracy was characterized by a more rigid group structure than provided by democracy or the laissez-faire arrangement. The rigidity was defined as the impossibility of changing social status in the autocracy. To make matters worse, a self-imposed barrier to any sub-group's departure from the group was erected, stemming from the interest in the recreational project. This restraint could grow until sufficient tension accumulated, at which time aggression could occur.

Yet overt aggression is not an inevitable outcome, as varying "styles" or "cultures" of living interact with gathering forces (Lewin, Lippitt, & White, 1939). These styles are habitual social patterns of action determined by the groups in which one currently lives and by those in which he has lived in the past. The style largely determines the cognitive conditions or structure from which aggression may be chosen as a path to a goal. A person living in a culture or environment where submission is the accepted, practiced norm will be predisposed to act in this fashion when confronted by conflict with others.
The significance of any influence attributed to the rigidity of group structures and the style of living has been thus summarized:

The factors named are sufficient to warn against any 'one-factor' theory of aggression. Here, as in regard to any other behavior, it is the specific constellation of the field as a whole that determines whether or not aggression will occur. In every case one has to consider both the driving and restraining forces and the cognitive structure of the field. Such a field theoretical approach seems to be rather arduous. On the other hand, only in this way will one be able to understand, for instance, the paradox of behavior that autocracy may lead either to aggression or to apathy. It was stated that aggression is partly to be viewed as an emotional outbreak due to tension and that this tension, in turn, is due to pressure and restraining forces (lack of space of free movement). We have apathy when the pressure and restraining forces from without are kept stronger than the forces within the person which lead to the emotional expression, and are due to the tension. Whether or not the forces from within or those from without are stronger depends upon the absolute amount of pressure and also on the 'willingness' of the person to 'accept' the pressure. (Lewin, Lippitt, & White, 1939, p. 297)
The goal (G) of maximum social status and space of free movement can be reached by one or more of several procedures depending on actual possibilities and the prevailing mode of behavior in that group. In our 'experimentally created cultures,' the distinguished path to G was for a child (C) in aggressive autocracy that of aggressive domination of other members. In a similar situation, the distinguished path for a member of democratic groups seemed to be that of gaining voluntary recognition of the other members as a leader through work and social efforts. In the situation of apathetic authoritarianism, the path seemed to be that of submissive obedience to authority, which might win praise from the leader. (Lewin, Lippitt, & White, 1939, p. 296)
Attention can now be returned to Lippitt's early investigation of group atmospheres (Lippitt, 1940). This work is not only truly seminal, but also has great relevance to the present study. Of particular relevance are the techniques for equating groups prior to experimental manipulation. Using Moreno's (1934) sociometric technique, a measure of a classroom's social status hierarchy was achieved. Groups from different classrooms were then equated on the basis of this stratification of social distance, as well as supporting information on interpersonal relations gained from teacher ratings, and playground and classroom observations. Groups were composed of children who had average social relations (neither especially close nor rejecting in relationship), so as to keep the analysis of the effects of experimentally-created atmospheres as uncluttered as possible. "To pick a highly interdependent clique of friends from one class and five mutually indifferent or hostile children from the other would probably alter the whole atmosphere of the situation . . ." (Lippitt, 1940). Interestingly, this concern comes close to the impetus behind the manipulations in the present study, namely, to create atmospheres on the basis of particular sociometric compositions in groups.

In his 1940 study, Lippitt checked on the actual success of creating different social atmospheres. This was determined by measuring the behavior of the leaders, who were responsible for
establishing the climate through their actions. No such procedure was employed in the present study, where group atmospheres, as intervening process constructs, are derivatives of the compositions of status positions in groups and not of leaders' actions. In other words, social climates have been inferred from the behaviors of group members, whose status relations are generating the atmospheres.

In his important study of group atmospheres (Lippitt, 1940), Lippitt developed a field-theoretical conceptualization of social powerfields which, though never generalized beyond the leader-member relationship, has clear relevance to understanding any group stratification (e.g., central-peripheral regions). The leader, because of his dominance and position of power over others, was conceived of as possessing a powerfield of social influence much more far-reaching and intense than that of the average member. The intensity (amount of directive behavior) of influence of the authoritarian leader was found to be about three times as great as that of the democratic leader. In the democratic situation, the intensity of the leader's influence was less than twice that of the average member. The area (indicated by the number of distinct activity regions of the group in which the leader has directive influence) of influence of leaders in general was also much greater than that of child members.

Before considering the actual interactional dynamics among these powerfields, a word must be said about the obvious relation
between the concept of areas of influence and Lewin's (1936b) concept of central and peripheral regions of group structure. The latter was Lewin's extension of structural organization in the individual to the plane of the group. The central region represented the subgroup with the greatest influence on the whole, i.e., sharing common boundaries with most other regions, facilitating accessibility. Peripheral regions consisted of other subgroups that were less 'central' in influence, but more open to communication.

Add to this conceptualization, the notion of intergroup differences in psychological organization of individuals, derived from Lewin's (1936b) analysis of differences between national characters. Briefly, it suggested that the accessibility of both central and peripheral regions of the individual's personality might vary in accord with his nationality, or general membership-character. The German people taken as a group were characterized structurally as possessing a large central region of many layers but a relatively limited periphery. Americans, on the other hand, were represented as possessing a more extensive periphery, but a smaller, tightly bounded central region. Accessibility to the German's central, private regions was conceived to be easier, though the limited fluidity of the peripheral regions would impede this process. Accessibility to central regions of Americans was conceived as being quite different, albeit as psychically challenging. While the greater openness of surface regions of Americans would rapidly
decrease the social distance to the private reaches of the personality, the strong boundary separating the two regions would impede penetration. These very different personality characteristics were taken to apply roughly to all individuals in the respective nations, though the reality of individual differences was acknowledged. (Lewin, 1936b)

Like national characters (a group concept), a group may be conceived of as having central and peripheral regions, which vary in degree of accessibility. While Lewin (1936b) had taken the theoretical step forward conceptualizing groups as composed of individuals having central/peripheral organizations, the groups considered were homogeneous within themselves. Thus, the stratification did not extend to the group as a whole. This conception later received expression in Lippitt's initial study of group atmospheres (Lippitt, 1940), as the differentiation between leadership powerfields and those of average members approximated the central-peripheral stratification of an interacting group.

We may now resume with the topic of social powerfield relationships, after having traversed the detour to investigate their conceptual precursors. As mentioned earlier, the leadership powerfield in both autocracies and democracies exert much more influence than those of average members. These are quantitative differences, in terms of areas and intensities of social powerfields. Qualitative differences also have been found, observed particularly in a situation
of overlap of fields. In the authoritarian group, the overlap of the leader's powerfield (which is sustained by the authoritarian climate) with that of the member meant a weakening of social influence of the latter. In the democratic organization, on the other hand, the leader's influence tended to strengthen the social powerfield of the member. The difference in impact of the leader's influence was dependent upon the overall social climate established, as personalized interactions between leader and members could not account for the consistency of leader effects across group members. It might be predicted that in a situation in which individuals' goals conflict; an autocratic climate would lead to progressive depletion of average group members' influence (and an increase in the leader's), while a democratic organization would show a reversed trend. The amount of depletion or bolstering of influence would depend upon the degree of disparity between leaders and members, or, in terms of intervening process, upon the strength and kind of climate in operation.

The tendency of the autocratic leader is to block the path to members' goals which don't coincide with his. The democratic leader, however, assists members in locomotion toward their own goals, by offering advice and information. In either case, what is it that keeps the members together in a group, rather than splintering off to pursue individual goals? The answer is the group climate, which acts as sort of a policy statement, a superordinate construct
that, regardless of effect, binds the group in a process. Because of this policy formation, the group acts as a unity as opposed to a bunch of unrelated parts (Lippitt, 1940).

Each person possesses a social powerfield, of greater or lesser magnitude. The power derives from the ability to direct the behavior of others. The powerfield of the authoritarian leader was dominating in nature and tended to draw social strength from group members, making them dependent on the leader. The social powerfield of the democratic leader, as mentioned before, served to enhance the powerfields of members by means of helpful influence. This kind of influence helped make the members more independent of his position.

The leader in the autocratic atmosphere was more dominating and thereby more separate, more inaccessible to members than the democratic leader. Furthermore, his relation was asymmetrical to others, as his overlapping powerfield caused others' dependence upon his increasingly strong influence. The democratic leader, though occupying a central position, was accessible and less psychologically separated from others. The direction of influence was more symmetrical between his region and peripheral regions, flowing back and forth rather than only from the central region outward.

The maintenance of asymmetrical, dominating relationships by the authoritarian leader was found, in effect, to ostracize a number of members to similar peripheral regions of the group. Individual
differences in psychic structure and status of children were thereby ignored. In order to regain uniqueness in the authoritarian group, members tended either to do a poor job (gaining negative attention from the leaders) or to perform well (gaining positive attention from the leader). Both of these characteristic actions confirm the dependency relationship of members toward the authoritarian leader. The respective effects of these behaviors were to sacrifice one's powerfield to depletion by the leader, or to bolster one's powerfield and status through the leader's approval. Thus, apathetic submissiveness or task-oriented competition resulted among members of the authoritarian group. Both behaviors, paradoxically, were designed to gain a more central social status through association with the leader.

In the democratic situation, the leader's efforts to distribute his influence when overlapping powerfields with members, so as to strengthen others, also tended to 'desensitize' the attractiveness of the central position. In addition, the democratic leader recognized the individuality of personal differences among members and thereby, raised the status of all. The net result was for the democratic group as a whole to avoid disintegration into a climate of individuality, but to merge members' efforts toward a group goal. Such cooperative efforts tended to raise everyone's status and provide increased security of social status (Lippitt, 1940).
In the same study of group climates (Lippitt, 1940), it was noted that democratic group members tended to direct a high proportion of their social actions toward the leader, while authoritarian group members approached their leader considerably less. The greater number of friendly or objectively ascendant approaches of democratic group members suggested little reluctance to overlapping the powerfield of the leader. On the other hand, authoritarian group members were apparently more hesitant to open themselves to greater domination and the inevitable reduction of their space of free movement and their status powerfields.

Thus, the authoritarian leader differed from the democratic leader in quantitative as well as qualitative ways. The leader in the autocratic climate entered members' own central regions frequently, as when, for example, he interrupted their decision-making processes by deciding for them. The democratic leader, by directing decision-making back to the group members, less frequently intruded in their private regions. In terms of qualitative differences, the authoritarian leader's directive approach depleted the members' powerfields, while the approach of the democratic leader supported and enhanced members' social strength.

A number of 'group' forces have been identified by Lippitt (1940): impersonal or situational forces, socially induced forces, and personal forces. These forces have varying effects on communications, depending upon the climate in which they are operating. With
reference to situational forces, it was observed in the democratic group that the work situation induced much social expression (like strategy discussions). That is, the work situation directed members toward the goal of the group by the path of social expression. The same work situation, however, in a climate where the autocratic leader blocked such paths, led to less communication within the group.

The primary source of forces of social induction was the leader in both clubs. These socially induced forces thus differed in encouragement of social expression because of the difference in leaders' powerfield relations with members. The authoritarian leader demanded compliance in his asymmetrical relationship with members, while the democratic leader encouraged free social expression in a more symmetrical interaction with members.

Personal forces also operate in these situations, manifested as a directed force associated with the goal of completing the task, and as an undirected force associated with emotional tension. In the mask-making task of Lippitt's study (Lippitt, 1940), the goal was found to be equally strong for both clubs. Yet the emotional tension generated by the authoritarian situation, displayed as delayed or immediate aggression, decreased personal communication and increased antisocial behavior.

Summing across all forces for and against social expression, it was predicted that the volume of social expression in the authoritarian group would be less than that in the democratic atmosphere, and such was found to actually be the case in frequency counts (Lippitt, 1940).
It is clear that where the dominating power of the leader overshadows the individual's needs, there occurs for the member a restriction of the space and means of locomotion to a goal, a weakening of his powerfield by the leader, and a continued denial of status. Lippitt (1940) believed that the effect of this social frustration was a loss of security and increased inner tension. The attempt to establish or reinstate social status became the dominant individual goal in the authoritarian structure, conflicting with the group's cooperative goal of task completion. In the democratic organization, there was less social frustration and depletion of personal power, and therefore, less individual drive to maintain status. The result for democratic members was, thus, less conflict between the goals for individual and group success, and more cooperation in the performance of the group's task.

Lippitt summarizes the social dynamics of task performance in this way:

Consider the meaning of the work situation for the group members. To gain a more secure social status in the authoritarian situation meant to become somehow more recognized as an 'individual' and thus to increase his social powerfield in relation to the other members of the group, and especially the leader. We have seen that dominating demands for the attention of the leader to work seemed to be one attempt of the authoritarian members to gain status. These incidents are a clear indication that sometimes the craft activity was viewed as a possible means to more satisfactory social status. From the group log we find that democratic members also asked for approval from time to time. Reading those incidents, one finds an interesting difference from the authoritarian group situation. The attempt to gain recognition for good work usually was directed to the group as a whole in the democratic situation and was most often given by the other child members who praised each other much more
often than did the authoritarian members. In the authori-
itarian group, this means of gaining status tended
to be very unsatisfactory. First of all, the source
of status (the leader) was also the source of power
depletion, and thus there was often a negative valence
to member initiation of social interactions toward him.
Also, the demand for attention is most often met by an
impersonal remark of approval or further directions as
to what to do next. We come to the conclusion that in
this particular authoritarian atmosphere the leader's
domination of the work situation and his function as a
restrictor of free movement seemed clearly to bar a work-
minded path to social status. In the democratic atmo-
sphere, work abilities were the clearest path to social
status. (Lippitt, 1940, pp. 183-184.)

Findings from the study of frustration by Barker, Dembo, & Lewin
(1940) indicate that blockage of goal locomotion causes high tension,
in turn causing dedifferentiation of personal structures and primiti-
tion of behavior. In their experiment, there was a decrease in
the constructiveness of play due to frustration in attaining more
interesting toys. In the study by Lippitt (1940), analogous primi-
tivation of behavior (in terms of scapegoating and dominating
ascendancy of members) occurred as a frustration response to the
social barriers preventing acquisition of higher status.

Throughout this series of studies on group climate, the differ-
ent atmospheres were experimentally created by means of different
leadership styles of adults. The adult-induced climates are concept-
ually similar to real life teacher-student classroom relationships.
Thompson's (1944) study of the effects of active and reserved teach-
ing styles suggests that teachers can indeed create different so-
cial atmospheres in classrooms.
But what of all-child groups? Can such climatic differences be attained in aggregates of children without the imposition of an adult leader, that is, in peer groups as peer groups? Research on peer groupings among children lead us to believe that climates can arise in peer groups, as a function of perceived differentiations among members and the development of different roles as a result of the differentiation.

Recent investigations (Ahlbrand & Doyle, 1976; Graziano, French, Brownell, & Hartup, 1976; Schmuck, 1963) have studied the impact of grouping patterns upon various behaviors of school children. Ahlbrand and Doyle (1976) reviewed the literature on ability groupings. They found that studies comparing homogeneous-ability groupings with heterogeneous-ability groups revealed no consistent relationship between the group composition and a child's academic progress. However, they observed that an individual's status among peers was positively related to his academic achievement. The authors concluded that if the practice of grouping children was to continue in school, social variables like status needed to be included along with cognitive factors.

Graziano, French, Brownell, & Hartup (1976) compared the task performance of two age groupings: same-age versus mixed-age triads.
In hypothesizing differences in peer interactions between the two compositions, the authors cited several instructive studies. For instance, Suomi & Harlow (1972) found that disturbed social behaviors of isolated monkeys could be dramatically lessened by contacts with younger monkeys, while experience with age-mates or older monkeys produced no significant change. Results of a study by Ferguson (1964) indicated that social reinforcement from a non-age-mate (either three years older or younger) facilitated individual task performance more than feedback from an age-mate. In a study of language behavior, Shatz & Gelman (1973) found that verbalizations of 4-year-olds varied according to the age of a listener in dyadic groupings.

Graziano, French, Brownell, & Hartup (1976) observed same-age and mixed-age triads of minimally-acquainted individuals interacting in block-building tasks. Triads were selected as units for examination because of the greater potential for disagreement among members, approximating that existing in larger groups. While it was found that age mixture did not effect the total efficiency of triadic production, the singleton status of older individuals in a group induced a very high level of activity relative to that achieved by the younger majority. Similar results in a study by Ahlbrand & Doyle (1976) were explained in terms of the supportive environment induced when older children were integrated into younger classrooms. These findings suggest that in heterogeneous grouping, differential status does arise to affect behavior.
In considering ways to promote effective interpersonal relationships through group treatment, D'Augelli (1973) emphasized the importance of the composition of the group for maximal effects. In preparation for sensitivity-training sessions, D'Augelli constructed homogeneous groups of individuals, independently rated as being high or low in initial interpersonal skills. After the sensitivity-training was completed, individuals evaluated each other's skill as a group member as well as the cohesiveness of their group. It was found that individuals rated by trained observers as highly skilled in interpersonal functioning were perceived similarly by their group-mates. The same relationship held for less skilled individuals in their groups. Additional data collected on these subjects in group discussions indicated that the peer evaluations were indeed accurate assessments of members' interpersonal competencies.

The major implication of the study pertains to the planning of groups. The findings indicated that knowledge of prospective group members' interpersonal skills is valuable in predicting their group performance, at least in homogeneous aggregates. For whatever purpose the group is gathered, knowledge of poor interpersonal skills among members allows one to predict resultant problems in the group's subsequent interactions. This fore-knowledge of probable results might be an incentive to offer intensive training programs to increase interpersonal skills of individuals prior to their group encounter (D'Augelli, 1973). D'Augelli suggests that behavioral
techniques such as assertiveness training or systematic desensitization might be employed, or even the use of heterogeneous groups. While all types of remediational methods are possible, one thing can be said with certainty: merely assigning individuals to a treatment group without considering the skills or capacities they bring with them is inefficient and potentially detrimental. Individual differences among participants in group interactions must be recognized and utilized appropriately (D'Augelli, 1973).

Smelser (1961) created pairings of dominant and submissive males to determine their joint effectiveness in a cooperative problem-solving situation. It was found that complementarity of established personal patterns of interaction among group members produced the greatest amount of cooperative productivity. These results were predicted from the assumption that an individual's habitual mode of interaction is functional, enabling him to maintain anxiety at a minimal level. With anxiety held to a minimum, disruption of cognitive functioning is less likely to occur in performance of a task. The findings suggest that an established mode of relating is most functional and efficient when paired with its complement instead of a similar mode. Results from a study by Tuma (1955) are supportive of these findings. High correlations were found between the initial difference in dominance between a therapist and client, and client improvement through counseling.

The 'grouping' studies cited thus far have identified 'status' as a common denominator to understanding the workings of group
compositions. Schmuck (1963) investigated the effects of different peer-group status structures upon intrapersonal perceptions and individual performances. In groups where the status-assignment of members was clearly delineated in black and white terms, members tended to clearly perceive the assignment and to fulfill expectations through performance. In groups with a more diffuse frame of reference relating to popularity, members tended to respond accordingly: with less accurate perceptions of their own status and fulfillment of others' performance expectations. Does it not stand to reason that groups purposefully constructed on the basis of these status structures will generate corresponding results? Numerous studies report that any previously-established status difference perceived as operational in a group arrangement, even if it is irrelevant to the task at hand, generates an interpersonal expectation structure, activating differential self-other expectations and performances in accord with status characteristics. (Berger & Connor, 1969; Berger & Fisek, 1970; Harvey, 1953; Harvey, 1956; Moore, 1968).

Status characteristics thus act as important determinants of the ordering of power relations in the group, and therefore, of the functioning of the whole. Status is a broad concept. It has been variously described in grouping studies, as in the sample cited above, as capability, leadership, or popularity (Ahlbrand & Doyle, 1976). In point of fact, if one is dealing with relations
between group members, all of these factors interact to yield a
composite sense of order. Status differentiation is basic to any
group experience; the human need to categorize, to distinguish
similarities and differences. It is a result of active adaptations
and social learnings in interpersonal situations, and is a mutually
reciprocal phenomenon, in that we tend to see ourselves as others
see us (Harvey, 1953; Harvey, 1956). The sociometric technique
(Moreno, 1934) has been employed since its inception as a means of
tapping a broadly-defined but highly salient concept of status.

Status is a relational device, and in this sense suffers from
the same ailments as other descriptive, classificatory schemes. So
back we come, full circle, to the problem presenting itself to
field theory's analysis of group processes. Classifications of
individuals, dichotomous classifications at that, based on sociologi­
cal differences do not alone allow one to predict group behaviors.
Nor do they allow one to predict changes and development in group
behaviors. The reason for this state of affairs is that classifi­
catory schemes are basically reductionistic, derived from atomistic­
mechanistic thinking. The complexities of a group demand something
more, or at least something different, associated with organismic
conceptions.
The concept of adaptive behavior has received its greatest articulation and most functional expression in the course of contributing to the definition of mental retardation. In 1973, the American Association on Mental Deficiency published the following definition: "Mental retardation refers to significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior, and manifested during the developmental period." (Grossman, 1973). In the context of this definition, adaptive behavior has been conceived to be the individual's response to natural and social demands of his environment. The concept of adaptiveness, relative particularly to the domain of retardation, but more generally as well, may be understood as consisting of three behavioral factors:

1. **Independent functioning**, defined as the ability of the individual to successfully accomplish those tasks or activities demanded of him by the general community, both in terms of the critical survival demands for that community and in terms of the typical expectations for specific ages.

2. **Personal responsibility**, defined as both the willingness of the individual to accomplish those critical tasks he is able to accomplish (generally under some supervision) and his ability to assume individual responsibility for his personal behavior. This ability is reflected in decision-making and choice of behaviors.

3. **Social responsibility**, defined as the ability of the individual to accept responsibility as a member of a community group and to carry out appropriate behaviors in terms of these group expectations. This is reflected in levels of conformity, socially positive creativity, social adjustment,
and emotional maturity. It was further analyzed in terms of the acceptance of some level of civic responsibility leading to complete or partial economic independence (Leland, Nihira, Foster, Shellhaas, & Kagin, 1968, p.14).

This collective scheme of adaptive behavior has been seen as one aspect, a community-oriented aspect, of the whole "intelligence" of the individual (Leland, 1973).

While the factors of independent functioning and personal responsibility certainly take account of the general community in which the individual functions, the factor of social responsibility is a component of adaptive behavior that is more specifically attuned to the social demands of the community in which one functions. "These community demands, however, are not a single thing, in the sense that they are consistent throughout the community or throughout the broad areas of the environment. These critical demands change with geography and with sub-cultural groups within the community . . . . Thus, when the individual develops adaptive strategies consistent with the social demands of his environment, these may differ from the adaptive strategies he would use in another environment."

(Leland, 1973, pp.94-95).

The concept of "co-adaptiveness" proposed here would take greater measure of the interpersonal demands emanating from a specific environment (e.g. a peer group) with specific demands, thereby gauging the unique dynamics in a certain kind of social community. In this investigation, we are interested in the socially-structured
'space' of the peer group. While this concept of co-adaptiveness at present has no diagnostic value as does that of individual adaptive behavior, none is really intended. Rather, the concept of co-adaptiveness is a construct intended to be descriptive of the process of a group's particularized adaptations to internal and external demands; i.e. a measure of groups' "individual" differences in terms of strategies of interaction. In the present research, it is intended to represent differences between peer groups on the basis of pre-arranged compositions of status and inferred social climates. In this sense, co-adaptation is not just an accumulation of individual adaptations between members of a group, but a collective adaptation to the interpersonal climate existing in the group; a proto-theoretical, organismic conception.

While the concept of co-adaptation acknowledges kinship to the notion of individual adaptation, it is not without relations in the conceptual domain of group organization. Specifically, Stogdill (1972) presented a model of organization of groups in which interpersonal social relations were perceived as a prominent component of any group enterprise. In his review of a wide variety of group studies, Stogdill focussed upon three common factors as being important to the understanding of organizational dynamics of groups: productivity or effectiveness, cohesiveness, and drive. The first two factors have most often been found to be independent components of group processes in factor-analytic studies, while the drive
variable mediates the relationship between them. That is, group productivity and cohesiveness tend to be positively correlated under conditions of high drive, but negatively related under conditions of lower drive. The importance of recognizing both productivity and cohesiveness as vital organizational goals, and of appreciating their relationship with motivation, is brought home by a case in point from the work-a-day world. The decision of an employer to push for production at the expense of morale often results in employee dissatisfaction, which in turn produces work slowdowns, but heightened cohesiveness against management.

These factors are taken to be important to co-adaptive functioning in small groups as well. Indeed, co-adaptation might be conceived as operationalized in a group problem-solving task in terms of indices of productivity and cohesiveness. The concept of co-adaptiveness would thus correspond to an interaction of essentially the same components of group organization as derived by Stogdill, namely, productivity, cohesiveness, and drive (herein, to be held constant across treatment groups). In this sense, co-adaptiveness is representative of a group's organizational integrity, manifested through the 'adaptiveness' of the group strategy in problem-solving and the affiliative feeling of 'belongingness' developed among members in the process of solving the group's problem. Intra-group relations stemming from roles and status positions will be a powerful determinant of organizational integrity, affecting group productivity and cohesiveness.
Present Investigation

Since a difference in status among members seems to be a key factor in the functioning of groups, the present study constructed treatment groups with varying hierarchical structures of status positions. The interpersonal rankings were derived from the members themselves, to assure the salience of differences among statuses in subsequent groupings. The planned differences in hierarchical organizations of statuses were expected to create different social climates. No adult leaders were imposed upon the peer groups. Instead, the status positions and their relative powerfields were brought into interaction in a group problemsolving format, with inferences about social climates made on the basis of the particular organization of statuses. Inferences of different group atmospheres allows one to make differential predictions about the development of group adaptations (in terms of productivity and cohesiveness measures) across trials, or in other words, across the span of that group's life.

More specifically, two types of groups were constructed from sociometric differentiations among classmates. One set of groups ('heterogeneous' organization) consisted of a status hierarchy of extremes, i.e., the very high ('central') and very low ('peripheral') status positions from a classroom pool of subjects. The other treatment groups ('homogeneous' organization) were comprised of students in the intermediate range, just above and below the mean sociometric status and also representing relative centrality and peripherality of positions.
The heterogeneous organizations are herein conceived to represent authoritarian-like power structures because of the large disparity in component positions of status. Field theory's treatment of the effects of overlap of comparably disparate powerfields in the authoritarian group situation would lead us to infer the following climatic conditions: Restriction by central members of the peripheral members' freedom of movement and need to attain status, with the resulting increase of internal tension among peripherals. In the authoritarian climate established by adult leaders in the classic group atmospheric studies, this state often resulted in aggression of one form or another. Yet more often, the tendency to not rock-the-boat because of the attractiveness of the activity resulted in lack of expression of internal tensions, and therein, conformity behaviors of peripheral members. Initially, this type of interregional adaptation might result in something that looks much like cooperation, that is, a 'false efficiency' of group problem-solving. Yet, given that an authoritarian atmosphere is present and tension persists, either active aggression or full-blown apathy would result among peripheral members while centrals increasingly assert their influence for power. In either case, climatic conditions would induce increasing tension levels, with progressive inefficiency of problem-solving and decline in cohesiveness in the group as a whole.

For the present purposes, the homogeneous structure of groups was conceptualized as representative of a more democratic organi-
zation. As such, it would allow greater freedom of movement for peripherals, particularly toward improved status by association with the central region of the group. But an even more potent, and perhaps overriding characteristic, is the tendency of its leaders to be supportive of peripheral members' drives for elevation of status, paradoxically creating an atmosphere where actual locomotion for status improvement is less likely. With an increased sense of status security, and indeed, a feeling of group locomotion toward improvement in status for all, the peripherals in experimental democracies have tended to funnel their efforts to cooperative, efficient task completion, and their morale to increased togetherness. These results would be predicted in the present homogeneous groups, on the basis of the role dynamics of an inferred democratic organization.

Predictions could be made about the development of interpersonal relations in a democratic climate. Here, it might be stressed, in the prediction of future events in the group space, is the decided benefit of the field-theoretical concept of group atmosphere—a process concept, though never fully recognized by Lewin and associates as such. It is predicted that the less centralized atmosphere generated by near-equality of central and peripheral positions will induce much testing and assertions of self until some security of status is achieved (if it is achieved) among members. Depending upon the reactions of the leaders, different
effects may obtain over time. If the leaders that emerge (not necessarily the central members) enhance the 'leveling' atmosphere, They'll promote increasing efficiency of task performance through cooperation, and greater cohesiveness among members. However, if the leaders continue to show insecurity of their own status, the threadwork of the democratic weave will begin to unravel. Though probably never degenerating to the state of division and domination-submission proposed for authoritarian groups over time, the productivity and togetherness of unstable democracies will decline.

A third possibility might be mentioned as well. If, after the assumed period of status security, a phenomenon such as 'the cream coming to the top' occurs as a function of the work situation, these emergent leaders may be granted more power by those less skilled, without rivalry. In such an instance, the productivity and cohesiveness would probably be of an intermediate magnitude (as in real-life democracy perhaps, or even a benevolent autocracy).

The basic question, then, being addressed by this research is as follows: Do planned group structures, derived from a simple sociometric analysis of interpersonal influence, produce effects in terms of cohesiveness and productivity in expected (atmospheric) directions? An additional issue of concern is whether the two measures of cohesiveness and productivity, taken as unique components of a superordinate concept of co-adaptiveness, are so highly related as to be interchangeable, or are relatively unrelated dimensions of group behavior.
METHOD

Subjects

The individuals who participated in this experiment were moderately retarded male children of school age in the Franklin County (Ohio) Program for the Mentally Retarded. Although their etiologies were found to be quite diverse, all subjects demonstrated general intellectual and adaptive-behavioral deficits in functioning, qualifying them for educational placement in a program for retarded persons. More specifically, the subject pool consisted of moderately retarded persons with the following characteristics (from Grossman, 1973): 1) Significantly subaverage general intellectual functioning, represented by a score of between three and four standard deviations below the mean score of a standardized intelligence test (e.g., on the revised Wechsler Intelligence Scale for Children, a net score falling in the IQ range of 54–40); 2) deficits in adaptive behavior calculated to be between three and four standard deviations below the population mean (e.g. on the AAMD Adaptive Behavior Scale, a set of deficits leading to an overall Level II classification); 3) verification of insult having occurred during the developmental period. In addition, the study required that the subjects possess a functional degree of receptive and expressive language, so as to be capable of comprehending simple verbal
instructions and communicating needs, respectively. A functional level of motoric skill for standing, grasping with a hand, and pulling with the whole arm was also a prerequisite.

Classroom units were identified with numbers of children meeting these criteria for participation. As it turned out, most of the intact classes were composed predominantly of males. Due to this apparently naturally imbalanced sex-ratio and the statistical need for a representative number of participants in cells of the design, male subjects only were selected as participants. This restriction on the pool of subjects limits the generalizability of findings to males.

The chronological ages of children selected for the study ranged from approximately 13 to 18 years, and their mental ages from approximately 4 to 6 years; all subjects being selected from the junior and senior levels of classes at several schools. These factors in selection of subjects, together with the population characteristics described earlier, provided for a fairly homogeneous pool of individuals. Eight subjects meeting all these criteria needed to be enrolled in a given class, as this common point of origin for the eight was important to subsequent procedures in
determination of status hierarchies.

Classes were given at least four weeks to establish and solidify interpersonal relationships, prior to any intrusion of any procedures. Both summer school classes and regular-term classes were tapped for participants, as the compositions of classrooms were similar in both terms. An individual who overlapped in targeted-class membership between the independent sessions was allowed to participate as a subject only once. A total of 12 classroom groups (each having eight subjects meeting the requirements established for the study) with mutually exclusive membership roles was thus employed; a total of 96 subjects.

Before any child was allowed to participate in the study, the experimenter secured parental consent for the child's involvement. The nature of the experiment was explained to the child's parents or guardians by letter, providing them the opportunity to consent to their youngster's participation, refuse to consent, or ask for more information (see Appendix A). Parents were advised that they were free to give or withhold consent without fear of their decision being recorded in any school file. The identity of all participants was to be kept confidential, not to be divulged in any publication, audio or video recording, or data file. Parents and children were advised of their right to withdraw consent for participation at any time during the course of the research.

Materials

The materials employed during the sociometric phase of research
consisted of: 1) an array of photographs of eight individuals chosen for participation from the subject's class, and 2) a manila folder. The photographs were 1" by 1½" portrait-type glossies of Program clients taken by a professional photographer at the end of the previous school year. These photos were mounted by means of a taped backing to a single side of an open-faced manila folder, in a pattern of two rows of four pictures each.

The apparatus utilized during the experimental session was similar to that employed originally by Mintz (1951) and later by Stone (1964). The equipment consisted basically of a plexiglass bottle and tethered aluminum cones; the cones to be pulled from the interior of the bottle through its narrow neck. The plexiglass bottle used here possessed a water-cooler shape with dimensions as portrayed in Figure 5. Just as Mintz (1951) had found the opening through the bottle's neck to be too large for the purpose of his experiment, so it was with the present study. His solution was adopted here, i.e., drilling a hole one-inch in diameter through a two-inch length of aluminum rod (1 1/8 inch diameter). The resulting cylinder, when wrapped with electrical tape, fits securely into the bottle's neck. Its length allowed the cylinder to extend down into the bottle just past the glass shoulders, thus providing a cushion against the cones' impact with the glass while not impairing the exit of cones. Sand, three inches in depth, was placed in the bottom of the bottle, so as to cushion falling cones and to anchor the bottle against shift in position.
FIGURE 5
CROSS-SECTION OF THE BOTTLE

Bottle and cone dimensions (adapted from Mintz, 1951)

FIGURE 6
VIDEOTAPEING ORIENTATION

The open corridor for filming, with sight line of camera
The cones were made of aluminum turned on a metal lathe, to the same specifications as those designed by Mintz (1951). A nylon tether was attached to the nose of each cone, where a small hole had been drilled extremely close to the tapered tip. While some experimentation went into finding the most appropriate means of attachment, the hole drilled through the tip at approximately 1/16 of an inch from the end of the cone best allowed a site for tying the nylon tether, without impeding the smooth removal of the cone from the bottle neck. Each cone that was constructed, four in all, was wrapped with black and white electrical tape in its own distinctive pattern, so as to be clearly distinguishable when filmed.

Videotape equipment was utilized to record interpersonal behavior. A Sony camera and videotape machine equipped with thirty-minute reel to reel tape recorded all action and sound. The camera with built-in microphone was mounted on a tripod approximately 20 feet from the bottle, which was the center of activity. In order to maintain a clear corridor for filming, two plastic rods borrowed from a giant tinker toy set were taped to the floor, stretching out from the bottle’s base and creating a 'V' shaped channel. The subjects were instructed not to block the camera (to which they became adjusted almost immediately) by standing in the 90° lane, but rather to stand within the remaining 270° crescent area around the bottle (See Figure 6).

Four red jerseys were provided to teammates representing a given class during the group interaction. Each jersey was marked
with a masking-tape label graphically depicting the assigned pattern on a child's cone - for purposes of quick identification and distribution of respective cones by the experimenter.

Each phase of the experimental session was conducted in an otherwise unoccupied room, varying somewhat in size in different buildings. Besides having the videotape equipment and experimental apparatus positioned within it, the room contained two rows of chairs, four per row. The rows were positioned to face each other and to line the visual corridor from the camera to the bottle. In one phase of the research, a single team of four members occupied the testing room and sat in unassigned chairs, while another team of four was occupied with drawing materials and clay in a separate and secluded room.

Procedure

A. Status and Group Differentiation

Once a class with eight appropriate males was identified, each child in turn was called from the classroom and asked a set of sociometric questions by the experimenter within an hour before the start of the experimental session. Each subject was shown the array of photographs of the eight classmates pre-selected for participation (and with whom he shared equal familiarity). The photo display consisted of a matrix containing two rows
of four pictures each, mounted on one whole side
of a manila folder. Photographs were randomly distri-
buted across the array for different subjects, in an at-
tempt to prevent any positional effects on order of
choice. Prior to having the actual sociometric questions
administered, the subject was introduced to and familiar-
ized with the array of photographs by means of three pro-
cedures: 1) the experimenter identified the group of
pictures as being those of classmates in the child's
classroom; 2) the child was asked to pick out his own
photograph and remove it from the array, thus establish-
ing the basic procedure for subsequent selections; 3)
the child was asked to look at and name, if possible, all
photographs that the experimenter randomly pointed out.
(The experimenter would name each photograph that could
not be named by the subject, to insure comparable intro-
duction to the materials across subjects.)

Having acquired this introduction to all the possible
faces in the array, and presumably an opportunity to pri-
oritize peers for selection, the experimenter asked the
subject the following set of sociometric questions (adapted
from Thibaut, 1950):

Suppose we were going to play some games like
throwing bean bags, and were going to choose
up sides. Of all these children shown here,
which one would you like to have on your side
the most? Point to that person and give me
the picture . . . Now point to the next best person you'd like to have on your side and give me the picture . . . Now point to the next best person you'd like to have on your side. . . (Repeat last instruction prior to each selection, until the entire array is cleared from the board).

Through this procedure, a hierarchy of personal preferences could be established. Presumably, the choices were made on the basis of both popularity and gaming skills in accord with the purposefully-ambiguous orientation of directions. Yet no attempt was made to isolate the effects of differential factors of status, as a personally-meaningful gestalt of sociometric choice was desired.

This sociometric information was then quantified in order to construct two teams with approximately equal totals of interpersonal choices. By assigning each selection a weighted score, beginning with seven for the first choice, six for the second, and so on through the seven choices, a portrait of mutual attractiveness was derived (Thibaut, 1950). Each subject received a cumulative score indicating his personal attractiveness to others in his classroom group, based upon the ranks by which he was chosen. A hierarchy of cumulative scores for interpersonal preference was set up, and two 'teams' were fashioned; a 'heterogeneous' team consisting of those individuals receiving the highest two point totals and the lowest two point totals of the eight classmates, and a 'homogeneous' team consisting of
the remaining four children, all scoring within an intermediate range. This apportionment was conceptually based upon the natural "sociodynamic effect" (Moreno, 1950) of sociometry, where a choice pattern approximating a normal distribution typically obtains (Fessenden, 1953). All class-affiliated teams were found to be fairly well balanced on the basis of the average number of status-preference points within a team. Table I shows the comparability of teams' averaged sociometric scores.

Very simply, this pre-session sociometric process provided a basis for assigning the eight classmates from a given classroom to either of two subgroups or teams. The distribution of subjects to the two teams resulted in groups which were roughly equal in terms of the average number of sociometric choices elicited by the membership, but which were very different in terms of status compositions. From a Lewinian perspective, two phenotypically-similar sociometric groupings were constructed. Yet, these groups could be conceived of as representing widely divergent genotype structures; one aggregate composed of the most and least desirable
TABLE 1

SOCIO METRIC MEANS FOR TEAMS

<table>
<thead>
<tr>
<th></th>
<th>Heterogeneous Team</th>
<th>Homogeneous Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1</td>
<td>25.75</td>
<td>27.25</td>
</tr>
<tr>
<td>Class 2</td>
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<td>27.75</td>
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<tr>
<td>Class 3</td>
<td>28.75</td>
<td>27.25</td>
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<td>Class 4</td>
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</tr>
<tr>
<td>Class 12</td>
<td>27.00</td>
<td>29.00</td>
</tr>
</tbody>
</table>

Grand Mean: 27.73  
S.D.: 1.03  

Grand Mean: 27.81  
S.D.: 0.99
statuses, and another composed of more similar statuses. The four-member team comprised of peers of extremely high and low statuses represented a distinctly segmented structure of central and peripheral roles, respectively. The team with a more homogeneous composition of roughly average statuses was less differentiated in terms of interpersonal role relations (although conceptually possessing central and peripheral regions also).

Different dynamic processes proposed to underlie the two group structures have been discussed earlier as social climates. A group composed of heterogeneous statuses would be hypothesized to produce an authoritarian climate when its members engaged themselves in interaction; an atmosphere generated by the great disparity in influence of individual powerfields. Conversely, a group composed of more nearly similar statuses would be hypothesized to foster a democratic type of social climate through interaction of its equally-powerful membership roles. Predictions about group behaviors in accord with compositional manipulations and atmospheric assumptions are presented on pages 61 through 64.
So as to maintain a clear understanding of procedural sequence, the course of events leading up to the experimental session was as follows: Classrooms were screened for those having eight males fitting the physical, intellectual, and adaptive-behavioral characteristics needed for qualification as subjects; once identified, the eight males from a given class were individually administered the sociometric measure outside of the classroom; the sociometric selections were quantified and two equally weighted, but structurally different, teams of four members each were designed. The experimenter then gathered the eight subjects from the classroom and conducted everyone together to the door of the testing room. Having already determined the composition of the two teams from the earlier sociometric measurement, one experimenter escorted one group to a private room for involvement in individualized activities, while another experimenter directed the other team to enter the testing room and to be seated. But before separating the two teams, they were informed that they'd be exchanging places later, and should try to do their best in both settings.
Observations indicated that each team was attentive and motivated in both rooms. Team members showed no apparent signs of adverse reaction to the randomly determined order of team participation, nor did they manifest signs of direct competitiveness with the affiliated team.

B. Bottleneck Game

This phase of the experiment was conducted with a single team of four children. Upon entering the testing room, each child was asked to put on a red jersey. This procedure had been used in previous research (Manheim, 1960) and had been found to enhance identification processes within a team. In the present context, the donning of a team color was intended to insure the overlap of individuals' psychological spaces into a collective psychological space, thus justifying references to a 'group'.

The gaming and videotaping materials had been positioned in the room prior to the team's entrance. The attention of the subjects typically turned immediately to the camera and videotape machine. The experimenter directed the children to take a seat before
addressing their curiosity about this equipment. The subjects were told that the experimenter needed to film the group's work to help in remembering just how that group performed. By explaining the camera in this direct, honest, and rather low-keyed fashion at the outset, it was found that little attention was diverted to the equipment by the subjects immediately thereafter or during the bottleneck game.

The nature of the game was described as being that of pulling metal cones out of a bottle. This task, originally designed by Mintz (1951), and modified slightly by Stone (1964), allows many adaptations without substantially changing the game's basic dynamics. As the task was modified for this experiment, each of the four team members was required to pull from a bottle his own cone attached to a length of nylon tether. The experimenter initially introduced the game apparatus and its operation to the subjects, and demonstrated the basic procedure of pulling a cone from the bottle. It was explained that at the beginning of each trial, the cones were to be lowered to the surface of the sand at the bottom of the bottle as a starting point. The subjects were to execute the withdrawal of cones after hearing the instruction, "Everyone is in the sand . . . . ready, go!"
Once the subjects were briefly introduced to the equipment and nature of the task, the following instructions were given:

The object of this game is to get all the cones out of the bottle as quickly as you can. I want to see it empty as fast as possible. The game is finished only when all the cones are out. But there's something tricky about this game. You see (demonstrate with two cones), if you pull them out one at a time, they come out quickly and don't get stuck. (Return cones to sand at bottom of bottle.) But, if all of you try to get the cones out at the same time without taking turns, they get stuck like this. That takes a lot of time and is slow, and your team will finish very late. Remember, I'd like to see this bottle with no cones left in it as soon as possible. The game is over only when the bottle is completely empty.\(^3\)

---

3. While many studies with a competitive/cooperative format incorporate monetary incentives to foster motivation, no such component was included in this research. As this task was found to be sufficiently motivating intrinsically, no external reinforcement needed to be imposed. Some studies (e.g. Crawford & Sidowski, 1964) have found that no significant monetary incentive effects obtain in group problem-solving. The prospect of incentives in the present study represented an artificial, intrusive force imposed upon the developing life span of the classroom teams. These classmate clusters come to the experiment with an interpersonal history, made manifest through sociometric rankings. Reinforcement contingencies other than those existing naturally in a group problem-solving format would needlessly disturb the development of inherent adaptive tendencies of socially-familiar teammates. In addition, the decision to avoid using incentives here was aided by the probability of competitively-motivated subjects quitting when another's cone was pulled first from the bottle. While Mintz (1951) foresaw this first-or-nothing phenomenon and compensated for it by administering varying degrees of incentive, such a differential reward approach was found in pilot work preceding the present study to be ineffective in maintaining all retardates' motivation to succeed.
Two 'controlled-practice' situations were arranged so as to give the subjects opposite alternatives for problem-solution. Though the techniques provided to them were extreme opposites in group interaction, they were assumed to be only experiential models from which the teams would derive their own unique variations, in accord with the dynamics of group relations. One practice situation consisted of an "autocentric" competitive strategy, created by an instructional set requiring that each child 'try to pull the cone out faster than others and try to beat as many of the others as possible.' The other practice situation consisted of a "sociocentric" cooperative strategy, created by an instructional set requiring that each child 'try to work together with others and try not to beat other teammates or jam any cones at all.'

The competitive practice (A) was conducted first for two trials with the respective set of instructions repeated before each trial, to be followed by the cooperative counterpart (B) for two trials. Two cycles were completed (ABAB) to allow for sufficient experience with, and discrimination between, the strategies, and to prevent subsequent order effects of the practice situation. Pre-conditioning or experience in the gaming environment, provided immediately prior to the experiment proper has been found to minimize biasing toward any given response or using time for reflection (Conrath, 1969).

---

4. Instructions adopted from several sources, including Crawford & Sidowski (1964), Emerson (1964), Forlano (1932), Hammond & Goldman (1960), and Whittemore (1925).
Following these practice trials of pure intra-group competition and pure intra-group cooperation (to be distinguished from that form of cooperative situation which in actuality is inter-group competition), the team was asked to sit for a moment while the experimenter "got everything ready for the real game, now that practice is over." Having the team sit for approximately two minutes while the experimenter gave the appearance of being very busy, provided an interval for their integration of the practice techniques and dissipation of any sense of sequence of group strategy.

The experiment proper consisted of four trials of playing the bottleneck game. The only instruction repeated prior to each trial was, "Get all the cones out as quickly as possible and shout when the bottle is empty." A trial was considered completed when all of the embottled cones were removed from the container. This situation was designed to be of mixed-motive, where either an intra-group competitive or cooperative strategy could be adopted in solving the group's problem. The experimenter operated a stopwatch in full perception of all subjects and 'timed and recorded' the group's performance during the trial. While the sight and sound of the watch's operation and the recording of data on a paper tablet by the experimenter appeared real to the subjects, these procedures were designed only to create an external field of pressure upon the group. All data in actuality were derived later from review of the videotape record of the session.
Upon the completion of one team's involvement, the other team, whose members had been engaged in individualized activities in another room, was brought into the testing room, exchanging places with the first team. This second team was presented with the same instructions and procedures as the team before it. The exchange of locations, as mentioned earlier, was perceived by team members as the interchange in a two-stage process, and was received well according to on-the-spot observations made by the experimenters. When the second team completed the bottleneck game, both teams were reunited. All of them were individually praised for their skill and cooperation. Questions or concerns of the subjects were discussed at this time, all in an effort to alleviate any feelings of conflict that remained. The children were then returned to class.

The videotaped behaviors of group members were converted into data by engaging impartial judges to view the sessions on a television monitor and to quantify the actions. Three judges, performing independently of one another, scored each group member's action on each trial. Two kinds of scores for each person were derived from the videotapes: the amount of time (in tenths of seconds) it took the individual to remove his cone from the bottle after the command to begin the trial, and the number of distinct vocalized units of communication emitted during each trial. These scores
represent the operational measures of the dependent variables, productivity and cohesiveness, respectively. After the two scores were acquired for each group member on each trial, the three judges' estimates were averaged to yield a single score for each dependent measure for each child on each trial. The inter-rater reliability across trials was 0.65 for productivity scores and 0.73 for cohesiveness scores.
RESULTS

The results of the analyses of variance of mean scores obtained on the two dependent measures, productivity and cohesiveness, are presented in Tables 2 and 3, respectively. The main effects of the Composition (heterogeneous versus homogeneous groupings) variable across Tables are found to be quite different - falling far short of the critical F (1, 22) of 4.30 needed for statistical significance at the .05 level on the productivity measure, but far exceeding that value on the cohesiveness measure. This, of course, indicates that only in terms of amount of intra-group communication did the heterogeneous groups differ significantly from the homogeneous groups, with the latter showing greater communicativeness. (See Figure 7)

The Status (central versus peripheral positions) variable also varied in its ability to consistently account for variance on the two dependent measures. For productivity, a strong main effect of Status obtained, but not so for cohesiveness. Figure 8 shows that the cell mean for the peripheral members was larger than that of the central status level, meaning that 'peripherals' were relatively less efficient in removing their cones from the bottle quickly.

On the productivity measure, the 2 x 2 interaction of Composition and Status variables was found to be significant at the five percent level of confidence. The statistical significance of the
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<th>Mean Square</th>
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Table 2 (continued)

ANALYSIS OF VARIANCE FOR PRODUCTIVITY MEASURE

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<th>Mean Square</th>
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Table 3 (continued)

ANALYSIS OF VARIANCE FOR COHESIVENESS MEASURE

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</tr>
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<td>Trials x Subjects</td>
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<td>144</td>
<td>0.51</td>
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</tbody>
</table>
FIGURE 7

MAIN EFFECT OF COMPOSITION ON COHESION

Mean Number of Communications

Heterogeneous  Homogeneous

Composition
FIGURE 8

MAIN EFFECT OF STATUS ON PRODUCTIVITY
overall F indicates only that there is some (at least one) significant difference between cell means considered in pairwise comparisons. Using Scheffe's (1953) S method for comparison of means, it is found that only the difference between the mean durations of centrals and peripherals in the heterogeneous group is significant at the 0.05 level. In Figure 9, heterogeneous group members of central status are depicted as functioning more efficiently in cone-withdrawal times than their teammates of peripheral status. In considering comparisons of performance on the cohesiveness variable, however, the nonsignificance of the overall F indicates that none of the cell means is different from any other with an appreciable degree of statistical confidence.

Moving down the listing of sources of variance in each table, we come to categories involving 'Groups' and 'Subjects'. The effects listed for each were calculated as error estimates, which are necessary for all computation of standard effects in the ANOVA model. These terms were found to be without statistical significance when an F value could be determined.

The remaining analyses in each Table consider the effects of the Trials variable, alone or in interaction with other factors. Because this variable represents a quantitative continuum, it is possible to deal with trend effects associated with the analysis of variance. The statistical and conceptual appropriateness of such an approach has been described by Hale (1977). The standard
FIGURE 9

COMPOSITION X STATUS INTERACTION ON PRODUCTIVITY

- Heterogeneous
- Homogeneous
ANOVA is taken to be insensitive to developmental change along any multileveled, ordered scale, yielding only probabilities of effects collapsed over levels of the dimension. A trend analysis, however, allows a more elaborate and sensitive description of the changing relationship of effects on the developmental continuum. Hale points out that quite frequently in developmental research, an interaction of one variable with age, or another ordered dimension, yields a nonsignificant overall F value, though a trend analysis reveals a significant developmental function.

Based upon the soundness of the argument for trend tests being performed in addition to, if not in place of, an overall F test for multilevel scaled variables (Hays, 1973; Kirk, 1968; Winer, 1971), analyses of linear, quadratic, and cubic relationships of means were calculated. Scheffe's (1953) S method was utilized also for trend tests of nonpairwise comparisons. It was easily adapted to such purposes by changing the constants in the formula to the orthogonal polynomial coefficients corresponding to linear, quadratic, and cubic relationships. The format used here begins with an analysis for the linear function, since so many developmental changes can be described in terms of this trend. Considering the source variable, Trials, in both Tables, main effects are found to be statistically significant. The main effect on productivity yields an F value of 3.65, significant at the 0.05 level, while the corresponding effect of Trials on the cohesiveness measure
produced an F of 15.12 with significance beyond the 0.01 level. These results suggest that for each dependent variable, some significant changes in mean effects across the development of trials did occur.

An analysis of linear trend of the Trials means on productivity yields an F of 7.48, significant at the five percent level (df = 1, 22; critical F = 4.30). This finding indicates that the mean points on the curve show a significant linear relationship. Statistically speaking, a significant linear trend indicates that a straight line has a significant slope. The plot of the means in Figure 10 shows that the productivity relationship roughly increases across trials for all individuals and groups combined. Analyses of quadratic and cubic trends yield no significant effects. These findings seem reasonable, as the sum of squares for the linear trend in productivity accounts for 68 percent of the variance of the means.

In terms of mean amounts of communications (Table 3), the test of linear trend across Trials yields highly significant effects in support of the overall main effect of Trials. Yet the quadratic function is also found to be highly significant, and indeed, accounts for 52 percent of the variance of the Trials factor, as compared to 43 percent attributed to the linear function. The joint effect of these two component trends is represented in the curve of means in Figure 11. Except for a significant upturn in performance between
FIGURE 10

MAIN EFFECT OF TRIALS ON PRODUCTIVITY

Mean Duration

15.00
14.50
14.00
13.50
13.00
12.50
12.00
11.50
11.00
10.50
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50

T1  T2  T3  T4
Trials
FIGURE 11

MAIN EFFECT OF TRIALS ON COHESION
trials three and four, accounted for by the quadratic effect, a roughly linear decrease in data points along trials obtained.

Some results of great value to this investigation, namely, the interactions of variables with Trials, appear next in Tables 2 and 3. Table 2 shows a barely nonsignificant (critical F=2.76, if df=3,66) effect on productivity of the Composition x Trails interaction. Yet the test for linear trend in this relationship yields a value significant at beyond the five percent level. Here is an instance of the situation described by Hale (1977), where developmental trends may be obscured by an overall F value lacking significance, whereas the appropriate trend test reveals the developmental difference in relationships across trials. Figure 12 demonstrates that the curve of Homogeneous means remains practically stable across trials, while the plot of Heterogeneous means reveals an increasing monotonic function, essentially linear for the first three trials. The significance of the planned test of linear trend indicates statistically that there is a significant interaction between treatments and the linear trials trend. This information, in addition to graphic information, means that the Heterogeneous grouping tended to increase in mean duration of cone withdrawal (becoming less efficient) at a different and faster rate than did the Homogeneous groups. Additionally, it was found that trend tests for differences in quadratic and cubic relationships of levels of the Composition variable across trials were statistically nonsignificant and that these functions accounted for little of the variance of means.
FIGURE 12
COMPOSITION X TRIALS INTERACTION ON PRODUCTIVITY
The overall F value of the Composition x Trials interaction gauged on the cohesiveness measure was also found to be of non-significant probability of occurrence. Yet, as with its counterpart on the productivity measure, this interaction yields a significant difference between linear trends of levels of Composition on cohesiveness. In other words, there is a reliable basis for the inference that treatment effects are changing developmentally across trials (Hale, 1977). Figure 13 shows that both Heterogeneous and Homogeneous groupings became decreasingly communicative across trials, with a slight reversal on trial four. While none of the pairwise comparisons of means is statistically significant, as indicated by the standard ANOVA test of overall effects of the interaction, the difference between components of linear trends of Composition levels across trials is significant. Tests calculated for quadratic and cubic trends revealed that little of the variance of means was accounted for by these functions.

The Status x Trials interaction was found to be statistically significant by standard ANOVA only for the productivity measure, but not for cohesiveness. None of the trend effects achieved a level of significance for cohesiveness either. Yet the interaction between Status levels and the linear trend for Trials proved highly significant, beyond the one percent level. Figure 14 reveals that Central members tended to change very little in mean duration across trials, while Peripheral members showed a roughly progressive increase in durations (more inefficiency) with stronger linear trend for the first
FIGURE 13

COMPOSITION X TRIALS INTERACTION ON COHESION

- - Heterogeneous
\(\bullet\) Homogeneous

Mean Number of Communications

<table>
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<tr>
<th>Mean Number</th>
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FIGURE 14
STATUS X TRIALS INTERACTION ON PRODUCTIVITY

X—X Centrals
□—□ Peripherals

Mean Duration

T1 T2 T3 T4 Trials
three of the four trials. Quadratic and cubic trend tests offered no significant accounting for variance of means.

In Table 2, the three-way interaction of Composition, Status, and Trials yields insignificant results according to standard analysis of variance procedures and trend tests. But on the cohesiveness measure reported in Table 3, this interaction yields an F value of high (.01) significance. Any attempt to calculate all possible pairwise comparisons of means to find significant differences would be an effort in futility. Again, it is appropriate and practical to ask if there are any indications of overall developmental changes in treatment effects. It appears that there is a strong linear development across trials, as the interaction between treatments and linear trial trends is significant at the one percent level. Inspection of Figure 15 allows one to conclude that the basic trend of treatments is a decreasing linear function. No other trend analyses accounted for a significant degree of variance in the Composition x Status x Trials interaction on cohesiveness.

A correlation between the dependent measures of productivity and cohesiveness was calculated, to determine the amount of overlap between these two response modes. The individual's scores in terms of cone-withdrawal time per trial and number of communications per trial were used as raw data, as was true for the analyses of variance and associated trend tests. The following correlation coefficients of the inter-relationships between efficiency scores and cohesiveness
FIGURE 15

COMPOSITION X STATUS X TRIAL INTERACTION ON COHESION
scores were obtained for each trial, and across all trials:

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<th>Trial</th>
<th>Score</th>
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<td>Trial One</td>
<td>0.11</td>
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<tr>
<td>Trial Two</td>
<td>0.09</td>
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<td>Trial Three</td>
<td>-0.06</td>
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<td>Trial Four</td>
<td>-0.07</td>
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<td>Trial Total</td>
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Interrelations of productivity scores and cohesiveness scores were anticipated to be in a negative direction, because of the intuitive relationship between task efficiency (low durations) and cohesiveness (high numbers of communications). This was found to be true for three of the five correlation coefficients. It is interesting to note, however, that the correlations are consistently low, indicating a meager relationship between dependent measures across trials. None of the correlations is significantly different from zero.
DISCUSSION

The findings in this study are, in large part, consistent with expectations that suggest that group climates can be created and predicted in peer groups engaged in group problem-solving. It was found, for example, that homogeneous compositions showed a significantly greater capacity to nurture group cohesiveness, or, for lack of a more precise term, 'morale' during the course of problem-solving than did the heterogeneous groups. This result is very much in accord with predictions derived from theory and previous research on atmospheric differences in friendly and supportive intra-group communications. In a democratic climate, because of, 1) greater accessibility of the more prestigious and influential individuals to those whose influence or importance is less central to group success, and 2) the resulting de-emphasis of individual status-seeking and redirection of energies to group processes, supportive communications among members tended to be facilitated and a sense of group togetherness nurtured. Such was the result in this study among homogeneous group members, though not so within the heterogeneous ranks.

The prototypical authoritarian group structure consists topologically of regions of divergent membership-character; in the case of the present design, mutually perceived poles of the sociometric
scaling of a classroom. Because of the disparity in strength of powerfields, there exist strong boundaries between regions. The impermeability of the boundaries serves to restrict the accessibility of those influential and status-conferring regions. Communications, friendly or otherwise, tend to be severely restricted in number because of inaccessibility, as demonstrated in the field-theoretical studies of group climate (Lewin, Lippitt, & White, 1939; Lippitt, 1940; Lippitt & White, 1943). And indeed, this was the finding with regard to communications in the present experiment among heterogeneously-structured groups; a confirmation of theory and previous research findings on cohesiveness (i.e. frequency of communications) in autocratic climates.

Developmental changes in cohesiveness, operationalized here as the variation in frequency of communications across trials, were found to be strong within both heterogeneous and homogeneous groupings. The trend tests performed on the data indicated a strong linear trend characterizing the groups' ongoing states of cohesiveness. Graphical representations of changes in frequency of communications within the two groups revealed that the linear trend applied principally to the first three trials and was of a declining nature. That is, both group structures tended to produce progressively fewer communications over the first three trials, reversing the trend significantly only after the third trial. (Since several
instances of unintentional cuing of the last trial by experimenters during testing were discovered, the significant changes in behavior on Trial Four are suspect.) In addition, the plot of the two groups' communications reveals a parallel course across trials, with significantly more communications attributed consistently to the homogeneous than heterogeneous groupings, in spite of the mutually-experienced developmental decline.

The uniform dampening of communicativeness is a phenomenon that may be explained in several ways, but with varying degrees of power. The decline in communications for the first three trials in both the heterogeneous and homogeneous groups could represent a decline in inferred cohesiveness or morale, since the number of communications was taken as the operationalization of group cohesion. In other words, a general decline in task motivation or drive (Stogdill, 1972) might be associated with the process of solving the specific problem presented to groups in this experiment. Yet, this appears to be a less satisfactory explanation, as interest in the game-like task appeared to remain fairly stable throughout any given group's performance, according to observational reports.

An alternate means of trying to account for the trend of decreasing communications involves certain assumptions about team strategies. As grouped individuals function together over time, it is reasoned that they will establish a more or less successful strategy of interaction. With the development of such strategies,
it is further suggested that the need to communicate with members is lessened. In a sense, they come to know what others' reactions will be. This does not necessarily imply that the interpersonal strategy has to be of an increasingly cooperative nature. The interpersonal strategy could consist of an expectation of continued or increasing conflict. Indeed, growing resistance among members, with resulting inefficiency in productivity, was demonstrated across groups in the present study. The point is that the expectation of probable conflict may have become increasingly strong among members, serving to eliminate the need to communicate out of uncertainty, without necessarily impairing the individual's task motivation.

A third mode of explanation requires an appreciation of the probable history of interaction of mentally retarded individuals with the larger social community. The community demands that all people conform to societal or cultural norms and expectations. It is the retarded person's inability to do so appropriately and successfully that defines him as retarded, that makes him 'visible' (Leland & Smith, 1974). In most social situations, the retarded individual's learned expectation of failure or helplessness puts him immediately in a subordinate and passive psychological posture.
Most of their social encounters (particularly with the 'normal' community) possess the dynamics of an authoritarian climate, with others both possessing all the power and depleting the powerfield of the retarded person (for example, through stigmatization and discrimination). It is possible that learned adaptations to expectations of power depletion (or perhaps, to the uncertainty of their fate) in social interactions were manifested among the retarded peers as this study developed. That is, the members of both status compositions became less accessible as interaction progressed, and thus less communicative. Further, it is possible that such a mental set resulted also in production inefficiency, most likely due to a 'compounding of errors' derived from the anxiety of learned subordination.

The last two explanations, while unverified and in themselves untested, seem to offer more power in terms of conceptualizing the process of adaptation to the group. They make assumptions about one's adjustment to "the whole", that is, to the present group members and to expectations attached to being a social interactor. These lines of reasoning by no means deny the importance of the perceived statuses of centrality or peripherality, as these are interpersonal expectations which are integral to the adaptation process. The fact that the 'climatic' differences between groups in terms of
levels of communication obtained across trials, suggests that differential status expectations were in operation, bringing about distinctly different membership-adaptations in the two group compositions.

Looking more closely at the status subgroupings, it is interesting to note that, grouped across trials, the disparity between peripherals and centrals in terms of numbers of communications emitted was greater (though not of a statistically significant level) in heterogeneous compositions than in homogeneous groups. Peripherals in the heterogeneous group tended to communicate less often, in accord with predictions regarding the impermeability of central status regions as goal regions. Peripheral members in the homogeneous groups tended to produce approximately equal numbers of supportive communications as central members, in response to their roughly equalized powerfields and equalizing social climate. In addition, it is interesting to note that on Trial One, peripheral members of heterogeneous groups deviated significantly ($p<0.01$) not only from centrals in that group in terms of mean numbers of communications produced, but from both status levels in the homogeneous group. Such a state of affairs would be expected of peripheral members in the (inferred) authoritarian, heterogeneous group - to be seen and not heard.

Along the declining linear trend over Trials Two and Three, convergence of communicativeness occurred within compositions. This
would indicate that while communications were developmentally decreasing in frequency in heterogeneous and homogeneous teams as a function of grouping over status levels, in actuality, an internal, equalizing force toward conformity in communication between statuses was operating in each. This finding adds to the credibility of both of the "explanations" of developmental effects in communication offered tentatively earlier in this paper - namely, that a mutually-perceived strategy or group expectation of behaviors among members may have developed as teams interacted, and that a proposed, subordinate mind-set of retardation induced progressive conformity of behavior, at least in regard to intra-group communication. Actually, these alternative explanations might be considered as interacting in one unified process; a strategy of subordinate behaviors in communications. Whether such explanations are appropriate when applied to the data of the productivity index will be considered, as we now turn attention to those results.

Though distinct climates could be inferred to have had a powerful effect upon intra-group communications, through the compositional differences of groups, a less dramatic impact was observed in terms of group productivity. It may be recalled that no significant differences were obtained between the overall efficiency of heterogeneous versus homogeneous groups. This was a surprise,
because the expected feature of cooperation in democracies was supposed to have benefitted the homogeneous groups in task efficiency. That is, the lesser social distance between centrals and peripherals in the democratic group was expected to have produced less rigid boundaries between regions and to have encouraged greater freedom of movement in the group space. From the feeling of increased freedom would flow a greater appreciation for the individual, and at the same time, a de-emphasis upon individuality and re-emphasis upon the group's welfare. It was hypothesized that such dynamics would set the stage for increasing cooperation among members, as opposed to status-seeking competition and lengthy productivity times in authoritarian groups.

However, it is apparent from the main effect of the Composition variable that the expected difference between treatment groups did not obtain. It would seem from the relative sizes of the mean durations that members of both heterogeneous and homogeneous groups were competing among themselves fairly actively. This seems particularly descriptive of the performance of peripheral members, taken together, as opposed to that of central members; the former attaining a mean time of cone-withdrawal suggestive of considerable conflict. The nature of the bottleneck task was one in which, if any member decided to act impulsively or egocentrically, chances were good that jamming would occur and high group durations would result. This seems to have been the state of things in both
heterogeneous and homogeneous groups.

Why did the proposed group effects not occur here as they did on the dependent measure of cohesiveness? The difference has something to do with the kind of expression of the Status variable in the cone-pulling activity. While peripherals in the homogeneous structure did not differ significantly from the group's central members in their mean durations of cone withdrawal, the peripheral members in heterogeneous groups produced significantly greater times than associated centrals. These findings seem to be consistent with predictions, as defensive centrality and status-seeking peripherality in heterogeneous groups produced more potential for conflict between regions, while the more status-stable environment of the homogeneous group laid the groundwork for greater cooperation between regions of different membership-character.

Yet the actual magnitude of these relationships was different from the expected. While mean durations of peripherals and centrals in homogeneous groups were, indeed, not significantly different, each was unexpectedly long, suggesting a good deal of intermember conflict as opposed to the anticipated shorter times characteristics of cooperation. Differences between productivity times for centrals and peripherals in heterogeneous groups were expected to occur, but not with the range of means demonstrated (2.95 and 11.11, respectively). This range would tend to indicate, in accord with
observations made during these group interactions, that the peripheral members in the heterogeneous groups were responding apathetically to the competitive bursts of centrals. Thus, rather than the anticipated intermember competition stemming from the tensions of inequality of status and role in heterogeneous groupings, apathetic or lacksidasical compliance appeared among peripherals. These effects, it is reasoned, are actually a result of differential social climates. These conclusions are not unique, as such have been advanced with similar data trends in previous research on democratic and authoritarian climates (Lewin, Lippitt, & White, 1939; Lippitt, 1940; Lippitt & White, 1943).

Developmental effects on the productivity variable were determined as a function of analyses of changes in mean durations of the cone-withdrawal efforts across trials. Trend tests indicated that only the linear trend adequately described the function of developing productivity across groups. This linear trend tended to increase operationally in terms of units of time over trials. Were it not for this supplementary trend analysis, the interaction of the Composition and Trials variables would have been undervalued, because of the statistical insignificance of the overall effect in a standard ANOVA. As it turned out, the linear trend was identified as a powerful descriptor of a developmental function, observed as a decrease in efficiency of groups over time.

Closer inspection of the Composition x Trials interaction reveals that members of the heterogeneous groups were largely
responsible for the progressive inefficiency of production. Their mean durations for cone-withdrawal increased significantly following Trial Two, and remained significantly higher than those recorded for the homogeneous groups in the remaining trials. We may reasonably infer from these data that (1) some kind of task-oriented group adjustment corresponded with the dramatic behavioral change measured in heterogeneous groups in the wake of Trial Two, and (2) this intra-group adaptation differed from the mode of adaptation of homogeneous groups, whose productivity indices remained fairly consistent across trials.

The mode of adaptation adopted by heterogeneous groups could be described as one of conflict of production. Peripheral members increasingly responded to the extreme competitiveness of centrals with production times indicative of an apathetic reaction. This difference between status groupings tended to grow over trials, yielding longer whole-group times for productivity. That is, the lack of conformity meant that conflict would persist, and inefficiency of production of the heterogeneous groups would increase.

On the other hand, the homogeneous groups appear to have adopted a more cooperative course of interaction. The mean productivity times for the central and peripheral subgroupings indicate an interactive adaptation which is far from a coordinated, cooperative effort, yet which is equally distant from the splintering phenomenon measured in the heterogeneous groups over trials. The
level of productivity for the homogeneous groups was lower than was to be expected, based upon the more nearly equal statuses and power-fields of component subgroups. Instead of the anticipated cooperation netting high productivity, considerable competition arose among members. Yet apparently all individuals in the homogeneous group felt equally secure in engaging in mild competition, while avoiding major sacrifices in integrative functioning. It is as though a centrifugal-like force was pushing the members into expansive competition while at the same time pressing them more closely together just within the boundary of the group. The overriding embrace of the group (perhaps, attributed to group climate), despite the jockeying for status positions among members, may largely account for the relatively greater cohesiveness within homogeneous groups. Conversely, the lack of such an integrative condition at the group boundary, in addition to less accessible borders between members, may account for the decreased communication within heterogeneous groups.

At this point in the discussion, some pulling together of dangling threads is appropriate. The finding of significantly different levels of communication-cohesion across trials for heterogeneous versus homogeneous groups verified the inference of differential climates in the two compositions. The tendency toward more or less convergence of communication levels of status subgroups within each compositional group led to a dual-explanation of interpersonal
process applicable to each group. That dual-explanation consisted of a strategy or style of conformity in overt communications. No clearer delineation of process could be proposed, in keeping with the data. Yet on the productivity performances just considered, it was proposed that very different processes were in evidence, both between and within the compositional groups. While each group demonstrated interpersonal conflict across trials, the homogeneous composition demonstrated a milder form of competition among status subgroups; a competition which, because of its control, could be interpreted as task-oriented. On the other hand, the heterogeneous groups were disintegrating in terms of group function, as status subgroupings separated -- centrals maintaining a highly competitive profile and peripherals responding increasingly apathetically with minimal levels of task compliance.

Assuming these proximate explanations to be valid (something which can be determined with certainty only by means of their direct manipulation in subsequent research), it would be reasonable to conclude at this time that very different interactive processes are in operation in the heterogeneous and homogeneous groups. The extremely low correlations between the productivity and cohesiveness indices across groups suggest even deeper differences in interpersonal processes in the present design.

The differences in productive and cohesive group behaviors (and inferred processes) represent particular co-adaptations among
members of the groups. Co-adaptation, once again, is presented here as an operationalized concept of intra-group interaction. It incorporates group factors of productivity and cohesiveness, as adapted from Stogdill's (1972) conceptualization of organizational forces in groups. Furthermore, it draws upon two "systems" of thought about adaptive behavior, derived from (1) the conceptualization about the retarded individual's adaptation to others, and (2) the writings about the concept of group mind. By way of review, the former concept of adaptive behavior refers to the individual's response to natural and social demands of his environment. In this context, adaptive behavior has been conceived of as an aspect of intelligence, representing the individual's capacities to function in his community (Leland, 1973). The other concept of adaptive behavior, derived from diverse discussions pertaining to 'group mind', may be capsulized as a group's (members') experience of a new feeling of unity and new direction of combined effort. That is, the 'group mind' concept of adaptation consists of the members' feelings and thoughts stemming from a collective undertaking. In this sense, the notion of group mind comes very close to the concept of co-adaptation advanced in this study.

One major difference between the two notions of 'group' adaptation is that co-adaptation assumes neither rationality nor irrationality as invariably characterizing group efforts, as does the majority of 'group mind' advocates. Rather, co-adaptation assumes that groups
varying in composition and situational-developmental circumstances will vary along the component dimensions of productivity and cohesiveness. In addition, co-adaptation is intended to be an organismic concept, emphasizing the group's organization and function as varying along a continuum of interpersonal adaptiveness; analogous to the scaling of 'individual' adaptive behavior along a normative community-based behavioral dimension. 'All too often, 'group mind' has referred to a lack of organization and collective function.

From the perspective of co-adaptation, the homogeneous groups developed a mode of interpersonal adaptation characterized by frequent communications (with strong cohesion being inferred) and moderate productivity times (with internal adjustments of status positioning being inferred). The more-nearly-similar sociometric divisions of central and peripheral statuses comprising the homogeneous compositions were hypothesized as being the structural pattern which induced this form of co-adaptation in a group problem-solving situation. Relative to the earlier discussion of power-fields of social influence associated with different levels of interpersonal status, the central and peripheral membership regions in the homogeneous groups were considered to be of roughly equal influence, accessibility, and security of position. These intra-group dynamics led to predictions of greater communicative accessibility and greater freedom of movement among members. In accord with these predictions, the status subgroupings in the homogeneous
groups demonstrated relatively high levels of communication (cohesiveness), and moderate efficiency of productivity (somewhat deflated due to competitive 'movement'). The interpersonal process proposed to account for these productivity times was characterized as essentially cooperative. Further, it was conceived as being similar to the prototypical democratic atmosphere, described behaviorally in previous climatic research as an active, participating, and communicative interaction among peers.

Intra-group adaptation among heterogeneous teams was characterized by infrequent communications (weak cohesion being inferred) and moderate productivity times (found to be comparable to those achieved by the homogeneous groups). The distribution of sociometric extremes of status within the heterogeneous composition represented a system of imbalanced power relationships, inaccessibility between membership regions, and restriction of social movement. The more influential members of central status were conceived of as being surrounded by an impermeable boundary, which prevented others from gaining access to social influence and which could be defended and strengthened by the continued display of central members' power. It was reasoned that peripheral members would initially seek to increase their social power by cooperating with central members, but because of restrictions on social accessibility and movement, would ultimately react apathetically, with minimal task compliance. Such intra-group adaptations were found to obtain in this study.
Apparently, as predicted, an atmosphere of conflict and high tension arose, due to the static imbalance of status power among members. As a result, communications were significantly less frequent in heterogeneous groups as compared to homogeneous groups, though levels of efficiency in production were comparable.

The finding of similar levels of productivity in heterogeneous and homogeneous groups was unexpected, as the authoritarian and democratic power structures were predicted to produce wide differences in both co-adaptive indices. No doubt the moderate competition between status levels in homogeneous groups, and the dramatic swing from conformist to apathetic behaviors among peripheral members relative to the consistent competition of central members in heterogeneous groups accounts for the statistical similarity between the two groups' efficiency of production. Yet, in spite of the similarity in measured behavior, the processes of interpersonal adjustment are suggested to be quite different, as discussed earlier in this section. In sum, the patterns of co-adaptation in the heterogeneous and homogeneous groups appear to be far from carbon-copies of each other, in terms of behavioral measurements and/or underlying processes. The success in predicting the patterns of intra-group adaptation may be attributed to employing a field-theoretical understanding of interpersonal structures and dynamics of status.

With compositional arrangements of groups quite comparable to those in the present study, Graziano, French, Brownell, and
Hartup (1976) observed behaviors similar to those obtained in this investigation, yet without the benefit of the predictive power of field theory from which to derive hypotheses about interpersonal processes. Their study was designed to investigate the outcomes of interaction in mixed-age versus same-age peer groups. These authors expected group behaviors to differ in accord with the harmony of age mixture, although such expectations were devoid of any theoretical foundation in interpersonal dynamics. Nonetheless, it was anticipated that the average performance of groups with mixed-age patterns would be lower than that of groups comprised of same-age peers. Results over trials indicated that levels of task productivity did not differ between mixed- and same-age groups; comparable to results for productivity in the present investigation. No significant group differences were demonstrated with regard to numbers of blocks placed or skill in tower-building.

Yet one prominent difference in the groups' activities was noted. Same-age groups talked more often than mixed-age groups. Thus, these kinds of findings pertaining to task efficiency and intra-group communications are almost identical to results attained in the present study along similar dimensions of co-adaptiveness. While the age interactions observed by Graziano, French, Brownell, and Hartup (1976) are most likely attributable to powerfield relationships comparable to those associated with status in the present investigation, no such theoretical source is tapped by these authors. In
In this respect, at least, the current study represents an advancement in the investigation of group dynamics.

In addition, Graziano, French, Brownell, and Hartup (1972) reported that talking apparently had little relevance to the tower-building task, as correlations were low between amount of communication and measures of block-placement. The present study also found extremely low correlations between amount of communications, representing the cohesiveness variable, and duration of cone-withdrawal, representing the productivity variable. Both sets of findings suggest that the cohesiveness and productivity variables are highly independent measures of group interactions. They further suggest that a more powerful conceptualization of group dynamics should include at least these two dimensions. The concept of co-adaptiveness proposed earlier would incorporate both factors, though others with power could perhaps be added. The aim at this point is not to systematically formulate a new theoretical concept, but rather to suggest that there is more to adaptive functioning of individuals in groups than either production rates or levels of togetherness. That is, adaptiveness of a group's functioning must be conceived of as being as much multidimensional as is the adaptiveness of an individual's functioning. One of those dimensions appears to be socio-cognitive in nature, measured in terms of a group's problem-solving strategy, and another to be socio-affective, measured in terms of feelings of group morale or togetherness. There are
undoubtedly other equally relevant and important dimensions awaiting identification, conceptualization, and investigation.

Nevertheless, the present study has served its broader purpose of utilizing organismic, field-theoretical constructs to facilitate the ability to predict and understand the status dynamics in small groups. Starting with two very different group configurations of statuses, it was found that different socio-affective (social-communicative) climates were established early in interaction and were maintained throughout trials, albeit along a declining but parallel trend. No such differentiation across trials was revealed for the socio-cognitive (task-oriented) aspect of group behaviors.

Therefore, instructors of retarded adolescent males, but more generally, teachers of all children, must be aware of at least these two things when grouping individuals for a joint endeavor: (1) the pattern of members' statuses is a powerful and complex determinant of the group's interactional behavior, and (2) differential advantages (in terms of morale or cohesiveness) in group functioning may result from selective clustering of members of fairly-similar statuses from the larger group. While the variable of status was featured in the present research, other interpersonal variables (e.g., sex) and tasks must be incorporated in future investigations of multidimensional group functioning.
SUMMARY

This study has demonstrated the feasibility of employing field-theoretical constructs in predicting and explaining interpersonal behaviors produced by groups of varying status configurations. Groups consisting of a heterogeneous mixture of extremely high and low statuses were predicted to generate great interpersonal tension, resulting in decreases both in supportive communications and in group efficiency of task performance. Conversely, groups composed of a more-nearly homogeneous assortment of roughly similar statuses were hypothesized to produce less interpersonal tension, thus prompting increases both in supportive communications and in group efficiency of task performance. Numbers of communications and durations of cone-withdrawals functioned as operational indices of the dependent variables of cohesion and productivity, found to be highly independent components of a superordinate concept of co-adaptation. Data analyses revealed that the hypotheses for both groups pertaining to levels of communications were confirmed, thereby also supporting the inference of differential social climates within the two compositions. However, expectations of significant differences in efficiency of performance of the problem-solving task were not confirmed. Results suggest that the grouping of retarded male children into the prescribed
status configurations has little differential effect upon the mem-
bers' efficiency in group problem-solving, but does differentially
affect the members' morale or feeling of cohesiveness. A number
of notions, including the social nature of retardation, were of-
fered in explanation of some of the developmental changes in co-
adaptive indices. Finally, the importance of instructors' aware-
ness of status as a complex determinant of multidimensional group
processes was discussed.
APPENDIX A

CONSENT FORM

Dear Parent/Guardian:

My name is Bruce Hust. I am employed by the Franklin County Program for the Mentally Retarded, but am also a graduate student at Ohio State University. In the next few weeks, I will be conducting a research study in the Franklin County Program for my doctor's degree in psychology.

I would like to invite your child to play in some games. You see, I'm interested in seeing how children actually go about the business of being a group member. Your child would be asked to play in a group game. The game requires the child to pull some metal cones out of an unbreakable bottle along with the other classmates on his/her team (assignments to two teams being made on a random basis from among the children in the child's class). I'll want to observe how quickly your child's team can empty its bottle of cones, as well as how cooperatively or competitively they do so. I'll also want to determine whether your child's team develops a greater or lesser feeling of group belongingness throughout the action, by recording the number of friendly and supportive communications within the team. An adult supervisor will be present at all times in the session, and the group interactions will be videotaped for later evaluation. The videotape record of the study will be kept in my possession and
will remain strictly confidential, released to no one.

The following information about informed consent must be provided to you, although you are not required to give your signed consent. Please check the appropriate box that indicates your wishes, and sign and return the form to your child's teacher at his/her school. With regard to any of the options, your choice concerning permission will in no way place you or your child in jeopardy. If you consent to your child's participation, the results of the study will be shared with you at the time of its completion. Thank you.

* * * * * *

The nature and general purpose of the research procedures have been presented to me in an understandable fashion. It is understood that any further inquiries I make concerning this procedure will be answered. I understand my identity or my child's identity will not be revealed in any publication, document, record, videotape, or other data storage, and that the experimenter must keep my child's participation in strictest confidence. Finally, I understand that I am free to withdraw my consent and discontinue my child's participation at any time following the notification of the project director, Bruce Hust (work: 268-8673).

( ) I give my consent for my child, __________ to participate in this study with all the safeguards mentioned above.

( ) I do not give my consent for my child's participation in this study.

( ) I would like more information before I decide about giving or withholding consent. I will get in touch with Mr. Hust.

Signed ____________________

Date ____________________

Investigator


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