Encouraging student initiative and involvement in group discussion through functional group interdependence.

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ENCOURAGING STUDENT INITIATIVE

AND INVOLVEMENT IN GROUP DISCUSSION

THROUGH FUNCTIONAL GROUP INTERDEPENDENCE

A Dissertation Presented

By

GILES PATTISON HOPKINS

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

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Education
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Approved as to style and content by:

Allen E. Ivey, Chairperson of Committee
Ronald K. Hambleton, Member
George Levinger, Member

Mario Fantini, Dean
School of Education
To my parents and the family of my youth, and

To Robbins and the family of my future.
PREFACE

This study has grown out of my work with students. My first objective as a teacher has always been to be a student among students. The method that I have proposed in the following pages was designed to allow me to be a particular kind of teacher, one who learns with a group of other students through the exchange of ideas and information. In both senses of the phrase, I want to teach the way I learn. This view of education is not new. Dewey proposed a similar role for teachers in 1938 in his "Experience and Education."

The principle that development of experience come about through interaction means that education is essentially a social process. This quality is realized in the degree to which individuals form a community group. It is absurd to exclude the teacher from membership in the group. As the most mature member of the group he has a peculiar responsibility for the conduct of the interactions and intercommunications which are the very life of the group as a community. That children are individuals whose freedom should be respected while the more mature person should have no freedom is an idea too absurd to require refutation. The tendency to exclude the teacher from a positive and leading share in the direction of activities of the community of which he is a member is another instance of reaction from one extreme to another. When pupils were a class rather than a social group, the teacher necessarily acted largely from the outside, not as a director of the processes of exchange in which all had to share. When education is based on experience and educative experience is seen to be a social process, the situation changes radically. The teacher loses the position of external boss or dictator but takes on that of leader of group activities.

Many persons have helped me in my efforts to develop ways of putting this philosophy into practice and testing its feasibility in the classroom. In particular, I am grateful to Al Ivey whose expectation of my eventual success was critical at several points, to Ron Hambleton for his patient assistance in the analysis of my data, and to George
Levinger whose knowledge of social psychology was pivotal in focusing my research.

I also want to acknowledge the expert help of Fran Irwin in editing the manuscript and supplying a broader perspective on many issues, and the willingness of Mara Donaldson over the last five years to experiment with and challenge my ideas about teaching.

This study would not have been possible without my friend and mentor, Dick Schwingel, who gave me the opportunity to teach under his thoughtful guidance and later participated in this experiment.

I have had many teachers, many who were not in schools, some of whom were students in my classes. All of these persons have shaped to some degree the ideas that are presented in this study. Of these people, I am most indebted to my wife, Robbins, and my parents, Harriet and Dean Hopkins for their nurturing support.
ABSTRACT

Encouraging Student Initiative and Involvement in Group Discussion Through Functional Group Interdependence

September 1978

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The purpose of this study was to demonstrate that by prescribing a group process based on group problem solving, a division of labor, and a non-competitive differential reward structure, student initiative, involvement, and interaction in group discussion can be increased. Classroom group discussion is usually structured as a unitary task. All students are assigned the same resources to read and prepare. The discussion is then facilitated by the teacher who asks questions to insure that students have understood the important points. The structure of the task means that potentially any student (or the teacher) can answer the questions. This also means that the preparation of all students except the student who answers the question is not required by the task. That is, given the massive duplication of preparation and the question and answer format, most group members are not motivated to take the initiative to become involved in an open exchange of ideas and information which might characterize a successful group discussion. Repeated experience with this structure may lead some students to reduce their effort in preparation as well as in participation.
What masquerades as a group discussion is actually little more than a series of parallel dialogues between the teacher and a series of students. Initiative and involvement are not logically required, made feasible, or rewarded. Is it any wonder that students do not participate? An alternative structure of the group discussion task is to manage the interdependence of the group through a functional division of labor with regard to preparation (assigning different relevant readings to different students and the teacher) and a group problem solving process with regard to subsequent discussion.

Four classes of high school students in introductory psychology were divided into eight discussion groups. Four of the groups were assigned to the conventional condition and four to the experimental condition. Each group had eight students and a teacher. The conventional discussion task was structured by giving each student an assignment packet with an article describing an event and explanations of five separate psychological concepts which could be used to explain the event. The students were told to prepare for a discussion the following day by reading the materials and applying them to the article. Instructions to the teacher specified that questions should be asked to insure that students understood the concepts and their application to the article.

The experimental discussion task was structured by giving each member of the group including the teacher a packet with the article and one of the five explanations of a psychological concept. The students were told to prepare for a group problem solving task in which they would be expected to share their resource and ask other students to share theirs in order to develop five clear partial explanations of the events
described in the article. The instructions pointed out that other students would be depending upon the contributions of each student. The teacher was instructed to be a role-model participant.

Transcripts were made from audiotapes of each of the discussions and were coded at three-second intervals using a 19 category modification of the Flanders Interaction Analysis Categories. Statistical measures of student and teacher talktime, percentages of student response and initiative behavior, and frequency of student or teacher controlled interaction patterns indicate that by prescribing a group problem solving task based on division of labor for group discussion, teachers can increase the level of student initiative, involvement and interaction.
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PURPOSE OF THE STUDY

Can student initiative and involvement be increased by establishing functional group interdependence among members of a class of high school students and their teacher? Can this functional interdependence be established through a division of labor with respect to homework preparation and through group problem solving with respect to subsequent class discussion? Can functional interdependence be established while maintaining a system of grading based on the evaluation of individual performance?

Previous studies have suggested that functional group interdependence encourages interest and involvement of group members. In applying group interdependence to classroom learning, some researchers have suggested that it is the system of grading which should be modified in order to establish group interdependence in the classroom. This study proposes an alternative.

This study is designed to determine (1) whether functional group interdependence can be established in the classroom through a division of labor and group problem solving, and (2) whether functional group interdependence will encourage more student interest, initiative, and involvement in class discussion than is encouraged in a conventionally structured class discussion.
CHAPTER I

TRAINING AND INITIATIVE: A DELICATE BALANCE

In an essay on the "aims of education" written some fifty years ago, the philosopher Alfred North Whitehead (1929) observed that both "training and initiative" are necessary to education. In the system of schooling common then, as it is now, it is the teacher who is usually expected to supply the training and the student who is expected to supply the initiative. However, Whitehead noted, teachers are confronted with what he understatedly called an "unfortunate dilemma." Although training and initiative are both necessary to education, "training is apt to kill initiative" (p. 56).

Whitehead was observing what others had observed before and have since, that education seems to require two conflicting processes, (1) the cultivation of the students' "spontaneous and undisciplined" desires to express ideas and opinions on a wide range of topics, and (2) the subordinating of these desires to an "exactness of formulation" that "proceeds by forcing the students' acceptance of a given way of analyzing the facts, bit by bit" (p. 29). The problem is to achieve a delicate balance between the two processes.

Fifty years later, the problem has been renamed, but not resolved. Instead of struggling with training and initiative, we are struggling with the relationships of teaching methodologies and student motivation. Our language is often as difficult to penetrate as the ignorance which surrounds the problem. In the daily lexicon of the classroom teacher,
the terms: motivation, interest, initiative, and involvement have all become linked. Teachers speak of students who are motivated as showing interest by taking the initiative to become involved in class; and of those students who are not involved as lacking initiative, showing little interest, and being unmotivated.

In this study, for purposes of convenience and clarity, the tendency of students to participate in a class discussion by talking to each other and the teacher will be called student involvement, and the tendency to do so without the regular solicitation of the teacher will be called student initiative. For purposes of theoretical speculations such as those in Chapter III, increases in student initiative and involvement shall be considered as behavioral manifestations of increased student interest and motivation. Given these definitions let us return to the problem at hand.

Current conventional teaching practice does not seem to strike a balance between training and student initiative. In fact many critics of the existing educational system contend that teaching in schools is killing student initiative on a monumental scale (Holt, 1964, 1969; Kohl, 1969; Postman & Weingartner, 1969; Freire, 1970; Silberman, 1971).

What is needed are methods of training that do not kill initiative, but encourage it. Why is this so difficult? Developing such methods, observed Abraham Maslow (1968), is a "ticklish task" because it simultaneously implies that the teacher knows what is best for the students and at the same time that the students may know in the long run what is best for themselves (pp. 54-55). In addition, some students in a class may want more training and others may want less. Some students may come
to the situation exercising almost no initiative and others may exercise so much initiative that they dominate others in the class. The mixture of training and initiative that the teacher attempts to establish for a given class will probably be tentative and continually readjusted in light of other variables in the learning situation.

This, then, is the problem that faces an estimated two and one half million teachers in the United States. To be successful, a teacher will have to strike a delicate balance between the responsibility to cultivate continuing student initiative and involvement on the one hand and to train competent, disciplined learners on the other. The goal is succinctly stated by one teacher, "I want students in my class to talk to me and to each other and I want them to know what they are talking about."

Most teachers have definite ideas about what skills and knowledge their students should have. Many fewer have developed effective methods of encouraging student initiative and involvement in the process of learning the skills and knowledge. According to the 1960 annual report of the National Society for the Study of Education, "Probably nothing has been of greater concern to teachers than student motivation and participation in the instructional group" (p. 95).

Some of these "concerned" teachers, it can be argued, will be satisfied with the minimum of participation necessary to "transmit knowledge." Other teachers, however, see student participation, in the form of student initiative and involvement, as worthy of cultivation beyond the immediate and practical value in teaching. Student initiative and involvement have been made the cornerstone of educational
reform. There are those who argue eloquently that the goals of education should be the humanizing of those who are oppressed. It follows that a theory of pedagogy consistent with those goals must provide an active, participatory role for students (Dewey, 1944; Freire, 1970; Rogers, 1969).

There are also those who argue persuasively that the massive problems facing today's world demand active participation of all persons in a method of inquiry that will put us all on the road to finding solutions. Education and teaching should mirror this concern with real world problems and collective attempts to find solutions (Postman & Weingartner, 1969; Toffler, 1974).

The need for methods of encouraging student initiative voiced by teachers and educational philosophers and critics is now beginning to gain support from empirical researchers. Flanders (1970) is one researcher who is "cautiously insisting" that we consider the significance of student initiative and involvement and a concomitant shift in the training role of the teacher. Based on studies of the patterns of interaction in classrooms, Flanders (1970) found the following:

When classroom interaction shifts toward more consideration of pupil ideas, more pupil initiation, and more flexible behavior on the part of the teacher, the present trend in research results would suggest that the pupils will have more positive attitudes toward the teacher and school work, and measures of subject matter learning adjusted for initial ability will be higher. A relatively small increase in attending to pupil ideas, for example from 6 to 12 per cent, has a constructive influence on educational outcomes. (p. 14)

Flanders' research on classroom interaction also seems to confirm that what teachers now do for the most part in classrooms does not encourage student initiative and involvement.
Teachers, educational researchers, and social psychologists have begun to explore ways to increase student initiative and involvement in classroom activities while maintaining a high value on students' learning of certain skills and knowledge. There are, however, many variables which may affect student initiative and involvement in classroom activities. These range from a student's interest in a particular topic to the size of the group, from the time available to the interpersonal skills of the teacher and students, from the students' perceptions of their status relative to others in the class to the amount of sleep and preparation time. Although no one avenue of research will completely answer the question of how to encourage student initiative and involvement, it is also true that all variables cannot be productively studied at the same time.

This study has been designed to focus on one cluster of variables that research seems to indicate has an effect on student behavior in the classroom. This cluster of variables can be identified as "classroom structure." The purpose of this study is to examine a particular aspect of classroom structure called interdependence to determine whether the establishment of interdependent relationships among classroom group members will encourage student initiative and involvement.

Classroom structure, for the purposes of this study, is defined as "a set of stabilized relationships among members of an instructional group... and is the result of (a) attempts by individual members to establish needs-meeting relationships with other members and (b) the requirements that the group places upon members to establish working relationships among themselves which are appropriate and effective for
accomplishing the goals of the group" (Jensen, 1960, p. 85).

The concept of interdependence describes one possible set of relationships among members of the group and is characterized by mutual dependence among members with respect to achieving goals and prescribed patterns of group functioning. It is important to note from the outset that the teacher is a member of the instructional group and therefore subject to the effects of classroom structure. This is important because as Flanders has pointed out, significant increases in student initiative and involvement are not likely to occur without concomitant changes in teacher behavior.

For example, if students are to talk more, the teacher will have to talk less. By applying a structural approach to the problem to be solved, the method will, almost by definition, have to encourage a less dominant and directive role for the teacher as well as encouraging more student initiative and involvement.

Coleman (1959) is one of the researchers to attempt an empirical analysis of student involvement and the structure of educational institutions. In his study of "academic achievement and the structure of competition," Coleman found that few things students report that they like to do and therefore show interest in, have any relation to what goes on in classrooms. His contention is that the low status of scholastic achievement among adolescents is a function of a collective student response to the institutional and classroom structure of competition and a demand for high performance. He proposes that a competitive system of grading is the significant feature of the structure of competition.
Grades are almost completely relative, in effect, ranking students relative to others in the class. Thus extra achievement by one student not only raises his position but in effect lowers the position of others. Response of the group is purely rational. By holding down efforts and achievements of those who might excel, the general level of effort required to keep the average position is reduced. The group's effort can be seen as one of combining to prevent excessive competition, and is precisely parallel to the trusts and combines of industries, which attempt by price fixing and other means to prevent excessive competition. The structure is the same in both cases. (pp. 343-344)

Hence, teachers observe in the social structure of the classroom what appear to be potent peer sanctions against those who dare to raise the curve or become a "teacher's pet." The overall result of this structure of competition may be to decrease the level of student initiative and involvement, especially when that involvement is interpreted by other class members as "excessive effort".

Whether or not we completely agree with Coleman's analysis, his structural evaluation of the determinants of student involvement provokes the question: Is the tendency of conventional classroom structure to "kill initiative", an unalterable irony of the system, or does conventional classroom structure unnecessarily stifle student initiative and involvement?

Taking as a premise that lack of student initiative and involvement is not an unalterable given, but instead has its roots in the acceptance of a structure that is inappropriate to some classroom tasks, notably class discussion, what changes in the structure of the classroom and the task of class discussion might produce more student initiative and student involvement?

At one level the answer seems simple. Replace competitive structure with cooperative structure for a task such as class discussion.
More than 100 studies have compared competition and cooperation and their relative effects on group behavior. Most of these have been reviewed by D.W. Johnson and R.T. Johnson (1974, 1975). Their conclusion is that for a classroom activity such as class discussion, cooperative structure provides a superior climate. Cooperative structure was found to reduce anxiety, produce more task orientation, encourage mutual liking, mutual concern, feelings of obligation to other students, and attentiveness; promote open, effective, and accurate communication and more student involvement.

Despite (or perhaps because of) this large body of data, two things are not clear: (1) just what exactly constitutes cooperation, and (2) how can cooperative structure be established in the classroom. (Both of these issues are dealt with at length in Chapter II and in Chapter III.) One means of establishing cooperative structure in the classroom was developed by Deutsch (1949, 1952, 1962) and later adopted by other researchers and by practitioners. This method involved a system of giving the entire group one grade for their performance. This created a goal or reward interdependence among group members. In other words, by giving one grade to all members of the group based on their performance as a group, a structure was created in which one student could get an "A" only if every other student got an "A".

This manner of operationalizing the concept of cooperative structure proved useful in controlled experiments, but in actual practice it has some serious drawbacks. First, from a pragmatic point of view, it seems unlikely that school systems will abandon the process of evaluating individual students on the basis of their independent work. Nor
perhaps should they. Second, a pilot study by this author using the concept of a "group grade" resulted in open revolt by high school students, who claimed that such a system of grading unfairly penalized those who had worked hard and rewarded those who did very little. They also pointed out that grades were used in other parts of the educational system and the job market as indicators of individual accomplishment. For example, since the whole class was not applying to the same college as a group, the teacher was interfering with each student's "right" to be evaluated on an individual basis.

Third, there is the question of philosophical consistency between ends and means. If we are trying to encourage student initiative, student interaction, and indirect teacher influence, it seems inconsistent to emphasize the primacy of teacher mediated rewards like grades. If group grading is a dubious option, what other options are available for establishing a cooperative structure?

In sorting out 24 studies of competition and cooperation which yielded conflicting results, Miller and Hamblin (1963) identified two elements of group structure which could form the basis of a method of establishing a cooperative structure. First, Miller and Hamblin made a further distinction in the nature of reward structures. Cooperative grading is not the only alternative to competitive grading. "Differential rewarding," assigning different rewards to group members, does not necessarily have to be competitive. That is, persons can be rewarded differentially according to the degree to which they demonstrate "mastery" of a set of course objectives (cf. criterion-referenced testing). "Absolute differential rewarding" makes individual evaluation possible
without introducing the potentially negative side effects that "relative differential rewarding" may have in high interdependence tasks.

Miller and Hamblin explain that in the case of relative differential rewarding, there is a limited supply of desired rewards available to group members. This results in a reward structure that makes the blocking of other group members' success as effective a strategy as improving one's own performance. In contrast, absolute differential rewarding assumes an unlimited supply of desired rewards and therefore takes away the motive for blocking others' achievement. Miller and Hamblin propose that absolute differential rewarding may reduce the productive efficiency of a group involved in an activity which has a high degree of task interdependence (i.e. class discussion).

When applied to grading, however, Miller and Hamblin point out,

There is, of course, a very real question of whether absolute differential rewarding is ever actually achieved in ongoing social systems. Teachers, for example, often attempt to grade on the basis of absolute performance, but what teacher can actually say that he is not influenced, in the long run at least, by the relative performance of the student? (p. 778)

Although a specific experiment to test the different effects of relative and absolute differential rewarding under conditions of high task interdependence is probably in order, this study proceeds from the assumption that teachers can evaluate students individually to the extent that students will not be in direct competition for rewards.

For purposes of this study it is less important that the procedure for grading be actual absolute differential rewarding than it is that students are not put in a situation in which their grades can be improved by obstructing the successful performance of other students. To this end, let us consider the second element of group structure identi-
fied by Miller and Hamblin.

Miller and Hamblin (1963) determined that there is a second and perhaps more significant dimension of cooperative structure, what they called "high task interdependence." High task interdependence can be defined as the degree to which the task or activity being performed by the group requires, in itself (regardless of the reward system), that group members interact with each other in a pattern of mutual dependence in order to successfully complete the task. Thomas (1957) also identifies this dimension of cooperative structure which he calls "facilitative role interdependence"—in contrast to "goal interdependence"—and which he suggests may result from a division of labor within the group.

Cooperation might be established, then, through a particular kind of division of labor within the group. The group's task could be divided into sub-tasks which are interdependent with respect to the group's final goal. For example, an interdisciplinary team of researchers might choose as their goal the discovery of a solution to a complex societal problem which no one of their respective disciplines could solve alone. Although each might have a sub-task in an area of specialty, the development of a truly comprehensive solution makes each member of the team dependent on the performance of the other members.

This kind of division of labor or functional interdependence is not characteristic of conventional classroom structure. Instead of a division of labor, the conventional class is based on each student's reading and preparing the same material. The "discussion" is then facilitated by the teacher who asks questions about the reading to insure that students understand the "important points." Potentially, any or all of the
students might answer a question. No cooperation among the members of the group is required by the task except perhaps the cooperation of the students to "maintain an average level of effort" amid such massive duplication of preparation. When students do participate, it is usually in the form of a series of parallel dialogues between a series of students and the teacher.

In other words, students may not actively participate in class discussion because the structure of the task does not (1) logically require active participation, (2) nor make such participation feasible, (3) nor offer any significant personal reward for it. In effect, Coleman may have identified the problem correctly as a structural one, but he may not have isolated the salient mediating factor. The problem may not be a collective student response to competitive grading per se, but a response to a structuring of tasks like discussions in such a way as to make cooperation, initiative, and involvement unnecessary, unfeasible, and unrewarding.

This study is focused on an alternative model for structuring classroom learning tasks. The basis of this model is functional group interdependence. The group chooses a topic for discussion in the form of a question to be answered or a problem to be solved. For example, "how would you explain the behavior of persons who become members of mass movements such as the Moonies?" Each member of the class group including the teacher (or each two members) prepares a different resource (reading) which is relevant to the chosen topic. The initial goal of the group discussion is to exchange ideas and information in order to increase each person's understanding of the problem. In order for each
person to gain a reasonably comprehensive understanding of the problem, each person will need to introduce his or her resource and ask questions of other persons with regard to their resources. As a secondary goal, group members can be individually evaluated on both process skills and synthesis of content. The process evaluation can be done by the group, by an observer, or through self-evaluation. Content evaluation can be done by asking group members to write a personal synthesis of the information and ideas exchanged with respect to the problem the group was trying to solve. A short answer test could be composed of questions submitted by each member of the group about his or her particular resource.¹

It is the contention of this study that the model based on functional group interdependence creates a structure in which student initiative, student interaction, and indirect teacher influence are logically required, are feasible, and are likely to be rewarded by the group. In addition to those patterns of student and teacher behavior that the model is designed to influence, there may also be some side effects. It is possible that a model based on functional group interdependence will also help students develop self-confidence in the presentation of their ideas, enhance their sense of responsibility for the success of group tasks, and improve their skills in helping others in the group to make useful contributions.

¹ This model of establishing functional group interdependence in the classroom was developed prior to the publication of a study by Aronson (1975) which also used a division of labor as the basis of small group cooperation, but which did not emphasize the defining of a content problem as the basis of discussion or focus on dependent variables of student initiative and involvement.
Summary

This chapter began with two introductory premises: (1) that training which is supplied by the teacher and initiative which is supplied by the students are both necessary to education, and (2) that training as it is conventionally practiced by teachers is apt to kill initiative.

It was concluded, therefore, that in order to achieve an effective balance between training and initiative, a teaching method needed to be developed which would encourage student initiative and involvement while maintaining a high value on students' continued learning of specific skills and knowledge.

The basis of this approach to developing such a method was defined as a consideration of the effects of classroom structure on student behavior. The research and analysis conducted by Coleman suggested that it is the competitive structure of grading that should be changed in order to increase student initiative and involvement. Although cooperative grading does not seem viable for both practical and philosophical reasons, an examination of research conducted by Miller and Hamblin suggests that it may be possible to assign students different grades based on pre-established non-competitive standards without inhibiting the group's performance on an interdependent task such as group discussion. In a broader sense, the importance for this study of Coleman's and Miller and Hamblin's analyses of group process is their demonstration of the value of task interdependence and classroom structure as explanatory concepts. That is, it is possible that both students and teachers behave the way they do in the classroom based on their perceptions of the demands placed on them by the nature of the tasks which are charac-
teristic of the classroom structure.

An examination of the conventional structure for the task of classroom discussion suggested that a central feature of classroom structure may be that students perceive themselves to be interdependent with respect to the successful accomplishment of a task. Hence, when all students prepare the same material and respond to teacher questions, one student may, in effect, answer the question for the whole class. Although they are interdependent, this particular structure of interdependence does not encourage student initiative and involvement.

Functional group interdependence was proposed as an alternative to this conventional structure. Interdependence in this case is based on a division of labor and group problem solving. It was hypothesized that this kind of structure necessitated the exchange of resources and thereby encourages student initiative and involvement.

This model may prove to be a step toward striking the delicate balance between the cultivation of the students' spontaneous and undisciplined desires to express ideas and opinions on a wide range of topics and the subordinating of these desires to an exactness of formulation.

The remainder of this study will (1) review the literature on interdependence of persons in groups and how it can be structured to encourage student initiative and involvement, (2) propose a tentative theory of student motivation and the structure of a successful group discussion, (3) explain the method and experimental design used to test the hypothesis that functional group interdependence will encourage student initiative and involvement in group discussion, (4) discuss the results
of the experiment, and (5) summarize the study and consider its implications for teaching and other settings in which the initiative and involvement of group members is important.
CHAPTER II
REVIEW OF THE LITERATURE

There are undoubtedly many ways in which student initiative and involvement might be encouraged in class discussion. This study considers only one of these -- the re-structuring of the conventional class discussion. This approach is based on the premise that students and teachers learn to behave in various ways because of the structural properties of the tasks which they regularly undertake. Dreeban (1968) sets out the argument in the following manner:

Whatever pupils learn from the didactic efforts of teachers, they also learn from their participation in the school setting. Implicit in this statement are the following assumptions: (a) the tasks, constraints, and opportunities available within social settings vary with the structural properties of those settings; (b) individuals who participate in them derive principles of conduct based on their experience coping with those tasks, constraints, and opportunities; and (c) the content of the principles learned varies with the nature of the setting. (p. 44)

In line with this reasoning, the basic premises of this study are: (1) that the behavior of students and teachers in the task of class discussion is significantly influenced by the structural properties associated with that setting, (2) that a central feature of the structure which is conventionally associated with that setting is that students perceive themselves to be interdependent with respect to the constraints and opportunities of the discussion task, and (3) that the other structural properties conventionally associated with the interdependent discussion task discourage rather than encourage student initiative and involvement, and (4) that a method can be developed to structure the
interdependence of the discussion task so that it does encourage student initiative and involvement.

The purpose of this chapter is to examine those studies conducted by previous researchers which (1) clarify the concept of interdependence as it is applied to the relationships among individuals who are working together in groups, (2) demonstrate a link between the structural property of interdependence and tasks which are based on a division of labor and group problem solving, and (3) support the premise that such interdependent tasks will encourage student initiative and involvement.

Defining interdependence.

Deutsch (1949a, 1949b, 1952, 1962) provided the early theoretical structure for research on group interdependence. He suggested that it was important to distinguish between two kinds of interdependent relationships among persons. First, there is interdependence that is facilitating. Deutsch saw this kind of interdependence as what is commonly referred to as cooperation. Using Deutsch's terms, a "cooperative social situation" is one in which persons are "promotively interdependent." Success by one person promotes the success of others in the group. In contrast, interdependence can also be competitive. Deutsch called this kind of situation "contriently interdependent." Deutsch provided the following descriptive definitions.

Promotive interdependence describes a situation of group functioning where the goals of the separate individuals are linked in such a way that there is a positive correlation among their goal attainments. In the case of a social situation that is purely promotively interdependent,
one person can achieve his or her goal, if and only if the other persons with whom that person is linked can achieve their goals.

Contrient interdependence, on the other hand, describes a situation where goals of the separate persons are linked in such a way that there is a negative relationship among their goal attainments. In a purely contriently interdependent social situation, one person can achieve his or her goal if, and only if, others with whom that person is linked can not achieve their goals.

Deutsch makes several observations about the patterns of group interaction that are likely to result from promotive interdependence. These are supported by his own and other researchers' empirical studies. (See Johnson and Johnson, 1974.) Promotive interdependence is characterized by (1) substitutability, (2) positive cathexis, and (3) inducibility.

Substitutability means that the actions of one person in the group need not be duplicated by other persons. If one person in the group performs the sub-task, that substitutes for others having to do it. Deutsch (1949b) also uses the term "specialization of function" by which he implies a division of labor. He hypothesized that a "greater specialization of function with respect to content or activity" would emerge under conditions of promotive interdependence. Subsequent experiments gave this hypothesis empirical support (1949a, 1952).

Positive cathexis means that when the actions of one member of a promotively interdependent group facilitate the movement of other members toward their goals, the actions of this person are likely to be favorably evaluated by the others in the group. Subsequent studies
have supported the contention that "we like those who facilitate our goal accomplishment" (Berkowitz & Daniels, 1963; Goranson & Berkowitz, 1966; D.W. Johnson and S. Johnson, 1972; S. Johnson and D.W. Johnson, 1972a; and Secord & Backman, 1964).

Inducibility (influence-ability) means that if the actions of one person in a promotively interdependent group facilitate the goal accomplishment of other members, these other members are likely to be receptive to attempts to induce them to engage in reciprocal facilitation of this first person's goal accomplishment. Subsequent research confirms this contention as well (Crombag, 1966; Devries, Mose, & Wells, 1971; Raven & Eachus, 1963; Spilerman, 1971).

Motivational and procedural dimensions.

Deutsch's theoretical model of two kinds of interdependence has been the predominant model of research comparing the relation effectiveness of "cooperation" and "competition." Many of these studies have assumed that promotive interdependence and contrient interdependence are unidimensional phenomena, especially with respect to their relative effects on group productivity. Shaw (1958) conducted an experiment in which he separated "motivational" and "procedural" factors involved in the relationship of interdependence and group functioning. The motivational factor is the individual's need to achieve under the particular conditions. The procedural factor is "the relative effectiveness of different social arrangements in the attainment of goals (i.e.) simply because of the nature of the task, one procedure or the other may be the more effective one." Although the data did not dictate a clear separation of motivational and procedural factors, Shaw concluded that the
relative superiority of promotive interdependence in the accomplishment of certain tasks does not rely entirely upon procedural factors.

**Goal facilitation versus means controlling facilitation.**

Thomas (1957) also attempted to clarify the multi-dimensional nature of interdependence. Thomas took his lead from Durkheim (1933) and Spencer (1910) who stressed the division of labor as the basis of interdependence. Thomas suggests that there are two types of facilitative (promotive) interdependence. The first type is common to Deutsch's studies, what Thomas calls "goal facilitation." This he defines as facilitative interdependence based on shared or interdependent goals.

The second type of facilitating interdependence is "means-controlling." Means-controlling facilitation is based on interdependence which is a function of a division of labor in the group's task.

To explain means-controlling facilitation, Thomas uses the following example:

Let us suppose, for example, that two persons share the work on an anti-aircraft crew, the first person hands the shells to the second, and the second loads the shells into the weapon. When the first passes the shell, he provides the means for the second person to load into the weapon. The first in other words provides a path for movement of the second person; means-controlling facilitation, then, exists for the second person. (p. 348)

To explain goal facilitation, Thomas uses this example:

Suppose, for example, that two persons have the mutual goal of sorting the good apples out of a bushel of apples of varying quality. The more good apples sorted by one person, the more the other is actually moved toward the mutual goal of having sorted out all the good apples. Each worker, to the degree that he sorts out good apples, facilitates the work of the other by moving him toward the goal. (p. 349)

Having established two types of facilitation, Thomas suggests the concept of role interdependence in which behavior of all persons in a
group is facilitative to all other members. Thomas then conducted a series of experiments comparing the effects of goal-facilitation and means-controlling facilitation on the degree of role interdependence. He found that the degree of role interdependence was higher in means-controlling facilitation than in goal-facilitation.

Thomas reasoned that in means-controlling facilitation the maximum degree of role interdependence is 100% since all acts of one person can be potentially facilitative for others in the means-controlling group. In contrast, in the goal facilitation group, the degree of role interdependence can only be measured by counting the number of persons being facilitated by any particular individual because all persons in goal facilitation interdependence are performing the same acts. Therefore, the maximum degree of role interdependence in goal facilitation is 50%, as in the case of a two person group. The degree to which one person can facilitate another in goal facilitation can only decrease with an increase in group size. Thomas, therefore, concludes that facilitation in means-control will always result in more potent effects upon group functioning than will goal facilitation.

Thomas, however, cautions researchers, as does Shaw (1958), that tasks which require either kind of interdependence are likely, in and of themselves, to create impelling forces on group members that are entirely different from those created by tasks not requiring interdependence.

Division of labor.

Jones and Vroom (1964) conducted a study on the relationship of goal attainment and division of labor in promotively and contriently
interdependent dyads. Their experiment was designed to permit division of labor if the subjects chose to solve the puzzle problem in that manner. Jones and Vroom concluded that "the behavioral data indicate that the effectiveness of persons working on a group task is greatly affected by the extent to which they divide their labor, and that the amount of division of labor is jointly affected by the structure of the task situation and whether the groups are..." promotively or contriently interdependent with regard to their initial goals (p. 320).

Although the students in Jones and Vroom's study were not in a conventional classroom setting, the reasoning supplied by the authors in their explanation of the relationship of division of labor to group and individual performance is instructive.

A task can be regarded as a set of functions to be carried out... in most task situations, effectiveness is defined in terms of the number of functions performed within a specified time period. The amount of division of labor exhibited by two or more persons working on the same group task is defined here in terms of the degree to which they attempt to perform the same functions. When each person attempts to perform the same functions, there is no division of labor; when none attempts to perform the same functions, there is a maximum division of labor. Since attempts to perform functions occupy time and since effectiveness is defined in terms of the number of functions per unit time, it follows that the more completely persons working on a group task divide their labor the more effective will be their performance. (p. 314)

Also instructive for the purposes of the current study is Jones and Vroom's observation that "unless those persons carrying out the group task have been thoroughly trained in advance in the role each is to play, the division of labor achieved will be dependent on the extent to which each can determine during the execution of the task, the functions that are being performed or have been performed by others" (p. 314).
Structure of reward distribution.

Having considered thus far some of the data relevant to what Shaw called the procedural factors, what of the motivational factors? Deutsch's (1949a, 1949b) initial conceptions of promotive and contrient interdependence were based on a theory of intrinsic motivation. Lewin (1935) postulated this theory of motivation in which a state of tension exists within the individual which motivates movement toward the accomplishment of desired goals. Relying on a conception of motivation based on learning theory or extrinsic motivation, Kelley and Thibaut (1969) proposed these parallel definitions of promotive and contrient interdependence in terms of the structure of reward distribution among group members.

Promotive interdependence is a structure in which the individual's rewards are directly proportional to the quality of group work. Contrient interdependence is a structure in which individuals are rewarded so that one receives a maximum reward and the others receive a minimum reward.

A study conducted by Deutsch (1952) on grading procedures demonstrated the apparent interchangeability of extrinsic and intrinsic motivational viewpoints, and may also explain why there seems to be confusion over what constitutes interdependence and how to establish it. The purpose of Deutsch's study was as follows:

To compare the competitive and cooperative systems of grading, the author conducted an experiment with ten sections of five students each in beginning psychology classes, five sections being told that the section as a whole would receive the same grade and five sections instructed that each student would receive a different mark on the basis of his comparison with the other four students. (p. 145)
The task that the students were asked to undertake was to discuss a problem and propose solutions. The problems did not have recognizable, discrete answers, but were dilemmas. The students were to make recommendations as to actions that should be taken in the situation.

Deutsch found that sections which received a shared grade had "friendlier discussions." (1) "There were more encouraging and approving remarks." (2) "Students in these sections evaluated the contributions of their fellow students more positively." (3) "They were more pleased with the outcome of their group discussions." (4) There was "a stronger feeling of obligation to other students and greater desire to win their respect." (5) There was "more attentiveness to each other among students in the cooperative section." (pp. 148-151)

Apparently, the establishment of a group goal was achieved through a promotively interdependent distribution of rewards. By way of clarification, rewards in this case should not be confused with "reinforcement" as in operant conditioning. Individuals are not being rewarded for particular levels of operant behavior, at least not in any direct way. Grades are ambiguous and inherently vague rewards. What was significant was not the grades as rewards, but the structure of how they were to be distributed.

Research by Bavelas, Hastdorf, Gross, and Kite (1965) suggests that even if rewards were used as reinforcement of operant levels of individual participation, this would not be sufficient to increase an individual student's rate of participation in a discussion. Since individuals are interdependent with respect to participation in a discussion task, positive reinforcement of one group member must be accom-
panied by negative reinforcement of other members' participation. In reviewing this research, Steiner (1972) hypothesized that "room" must be made for the increased verbal output of the person who was originally saying less. Therefore, in line with the reasoning inherent in a structural approach, it is sometimes easier to change the behavior of the entire group than to change the behavior of a single member (p. 181).

Berkowitz and Levy (1956) conducted a study of group-task motivation in which they manipulated the "nature" and "target" of rewards. In problem solving discussions, subjects were rewarded either individually or as a group and were given either favorable or unfavorable evaluations. Favorable evaluations rewarded to the group produced higher task motivation, as measured by the tendency to continue task-oriented discussion during a "break period." Berkowitz and Levy explain their results as follows:

Favorable evaluations should reward the group members, but differences in the target of the evaluations result in different things being rewarded. If individual members are favorably evaluated, they receive rewards for their individual performance. If the group is favorably evaluated, each S receives a reward only by virtue of his being a member in the group. In other words, the favorable evaluations of the entire group serve to create the perception that members are interdependent in attaining rewards. (p. 305)

A similar study by Berkowitz, Levy, and Harvey (1957) showed that feedback of group scores generated greater involvement in a task and greater desire for a good performance than did feedback of individual scores. Feedback of group scores also stimulated more interaction among members.

Zander and Wolfe (1964) found that "feedback of a group score has more favorable effects upon concern for other's outcomes and for
pleasantness in interpersonal relations, while feedback of the group and individual scores together has more favorable effects upon the efficiency of collaboration" (p. 67). Zander and Wolfe noted that the high interdependence created by group scores had other benefits to group functioning. Members who are aware that others are dependent on them are likely to work harder for the dependent persons than for others who are not dependent on them. This contention is also supported by studies conducted by Pepitone (1957) and Daniels and Berkowitz (1963).

Task interdependence and differential rewarding.

Miller and Hamblin (1963) conducted an analysis of 24 studies of "interdependence, differential rewarding, and productivity." Some of these studies found cooperation superior and others found competition superior. Miller and Hamblin proposed that the primary reason for these conflicting results lay in the operationalizing of the concepts of cooperation and competition in the various studies. Cooperation and competition are not entirely unidimensional, but instead involve two orthogonal dimensions that may interact to produce inconsistent effects on group productivity.

In studies that were analyzed by Miller and Hamblin, "cooperative and competitive situations were differentiated by two dimensions: (1) the presence or absence of differential rewarding for relative achievement of group members, and (2) the presence or absence of task or functional interdependence" (p. 769). Miller and Hamblin identified experimental situations involving tasks such as discussion of a human relations dilemma as high in task or functional interdependence because the accomplishment of such a task involves a mutual exchange of ideas and
information as well as the "give and take" required to make a group decision. On the other hand, experimental situations involving such tasks as reading, adding numbers, and carrying sand were identified as low in task or functional interdependence since these tasks could be accomplished without the help of other individuals in the group.

Miller and Hamblin found that under conditions of high task interdependence there is a strong negative relationship between the degree of differential rewarding and group productivity. In cases of low task interdependence, differential rewarding produced higher group productivity. However, Miller and Hamblin make a further distinction that suggests the need for additional research. There may be at least two kinds of differential rewarding, absolute and relative. To this point what has been referred to as differential rewarding is actually relative differential rewarding, that is, rewarding based on the achievements of the individual relative to the achievements of others in the group. It is possible that a system could be established in which persons received rewards based on the degree of achievement as measured by a predetermined standard or absolute standard. Persons might then be differentially rewarded, but not on the basis of strict comparison with each other.

In the classroom it is unlikely that rewards or grades are ever distributed on a basis that is entirely without considerations of relative achievement. But it is also true that grades are rarely given without some consideration of individual performance with respect to predetermined standards.
Task demands.

Steiner (1972) has also reviewed a wide range of studies involving promotive and contrent interdependence. He arrived at the conclusion that what is needed is a typology of tasks. He proposes that the concept of "task demands" can play an integrative role in a more comprehensive theory of group process. According to Steiner, different kinds of tasks make differing demands on the members of the group and the manner in which they can collectively use their resources to achieve success. Task demands include not only what is to be accomplished (a goal or goals), but also how it is to be accomplished. That is, potentially, task demands specify the patterns of interaction that group members are expected or permitted to employ as they attempt to create a group product or solve a problem.

Steiner develops the following partial typology of tasks. There are two major categories of tasks: (1) Divisible -- those tasks that can be readily divided into sub-tasks, each of which can be performed by a different individual, and (2) Unitary -- those tasks which can not profit from a division of labor or in which mutual assistance is not practical or allowed. Steiner makes a further distinction about unitary tasks that is particularly relevant to the current study.

Pulling a rope is a unitary task. To be sure, it can be conceived to involve a number of sub-tasks such as grasping the rope, bracing one's feet, contracting one's biceps, etc.; but all phases of the total act must be performed by a single individual. Several people may pull simultaneously on the same rope, but when this occurs, we have an instance of parallel performance rather than division of labor. (p. 16)

This explanation may be similar to the situation of all students preparing the same material for a discussion. Although each is doing
the same task, the task is unitary and hence what occurs is parallel performance.

Steiner also makes a point of the importance of the resources that the group has available. No matter how successful and appropriate the division of labor among members of the group is potentially, ultimately the group will still be unsuccessful if the relevant resources are not available. Hence although it may seem obvious, functional interdependence is not likely to encourage sustained initiative or involvement if the appropriate resources are not available to the group members.

Steiner also carries this a step further and suggests that once a divisible task has been divided into sub-tasks, it will be important that these are clearly specified to the group in order to avoid duplication of effort. In addition, each sub-task should be matched to a group member who is most capable of performing it. In summary, Steiner points out that the effects of functional group interdependence in the form of division of labor will be hindered or facilitated by (1) the nature of the demands that the task places on the group members, (2) the availability of appropriate resources, (3) the specification of sub-tasks, and (4) the appropriate matching of sub-tasks to group members.
Summary Chart of Concepts in Group Interdependence

INTERDEPENDENCE

PROMOTIVE (COOPERATIVE) INTERDEPENDENCE

MOTIVATIONAL DIMENSION

GOAL FACILITATION

LOW FACILITATIVE ROLE INTERDEPENDENCE

STRUCTURE OF REWARD DISTRIBUTION

DIFFERENTIAL REWARDING

RELATIVE DIFFERENTIAL REWARDING

COOPERATIVE REWARD DISTRIBUTION

ABSOLUTE DIFFERENTIAL REWARDING

INTERDEPENDENCE

CONTRIENT (COMPETITIVE) INTERDEPENDENCE

PROCEDURAL DIMENSION

MEANS CONTROLLING FACILITATION

HIGH FACILITATIVE ROLE INTERDEPENDENCE

DIVISION OF LABOR

SPECIALIZATION OF FUNCTION

TASK INTERDEPENDENCE

FUNCTIONAL INTERDEPENDENCE

TASK DEMANDS FOR INTERDEPENDENT GROUP FUNCTIONING

DIVISIBLE TASKS

SPECIFICATION OF SUB-TASKS

MATCHING OF SUB-TASKS

FUNCTIONAL GROUP INTERDEPENDENCE

RESOURCES

GROUP PROCESS

UNITARY TASKS

PARALLEL PERFORMANCE
Summary of the Literature and Implications for the Research Questions of This Study

The purpose of this chapter was to review the literature relevant to the research questions posed at the outset of this study. A review of the research on interdependence and group functioning seems to indicate that a further experimental investigation into the relationship of functional group interdependence and student initiative and involvement is warranted.

Can student initiative and involvement be increased by establishing group interdependence among members of a class of high school students and their teacher?

Can this functional interdependence be established through a division of labor with respect to homework preparation and through group problem solving with respect to subsequent class discussion?

Can functional interdependence be established while maintaining a system of grading based on individual performance?

1. Given a task such as group discussion in which the success of the group depends upon the coordination of efforts of all group members to achieve a common goal, promotive (cooperative) interdependence will be more effective as a classroom structure than contrient (competitive) interdependence.

2. There are two major factors in establishing cooperative interdependence: (a) the procedure that is prescribed to achieve the group's goal, and (b) the system used to distribute rewards to individuals based on group performance. Although individuals in a cooperatively interdependent group may have a common goal, the interdependence can...
be structured in at least two ways: (a) by prescribing a procedure to achieve the goal which requires each person to share a necessary and relevant resource with other group members (cf. means-controlling facilitation, division of labor, specialization of function, task interdependence, functional interdependence) or (b) by prescribing a distribution of rewards which will reward all members of the group equally for the success of the whole group (cf. goal facilitation, cooperative reward distribution).

3. Establishing cooperative interdependence by equally distributed rewards or a group reward, and at the same time prescribing no division of labor, but instead the performance of identical tasks by each group member limits the degree to which one person's performance can be truly facilitative of the whole group. Hence, assigning all members of a discussion group identical tasks both in preparation (reading the same material) and in discussion (answering teacher questions) results in a limited need for any kind of facilitative interaction such as student initiative and involvement.

4. In contrast, establishing cooperative interdependence by a group reward and at the same time prescribing a division of labor both in preparation (different readings) and at any given point in discussion (commenting, questioning, answering, listening, etc.) results in the opportunity and need for significant facilitative interaction such as student initiative and involvement.

5. Not all tasks are alike in the kinds of demands they make on group members. A successful group discussion requires that members engage in a variety of behaviors which are to some degree reciprocal, e.g. one
person talks and another listens. Tasks of this kind make group members interdependent with respect to managing a successful group discussion. Given an interdependent task, relative differential rewarding (direct competition for limited rewards) is likely to result in a low probability of success. However, absolute differential rewarding (assigning rewards individually based on pre-established non-competitive criteria) may not have a negative effect on the probability of success. Therefore, it may be possible to assign different grades to members of a group without inhibiting discussion, or in other words to establish cooperative interdependence by prescribing procedure while at the same time not prescribing a group reward.

6. There are at least two main categories of group tasks: (a) unitary and (b) divisible. Tasks that are unitary are those tasks which cannot profit from a division of labor or in which mutual assistance is not feasible or allowed. When teachers do not allow mutual assistance and make it unfeasible by prescribing no division of labor, discussion becomes a unitary task in which all students essentially respond to the teacher simultaneously, e.g. raising hands to answer a teacher question. This is parallel performance and does not encourage initiative and involvement. Divisible tasks, on the other hand, are those tasks which can readily be divided into sub-tasks, each of which is performed by a different individual. Divisible tasks make mutual assistance feasible. When discussion becomes a divisible task students may be more likely to show initiative and involvement.

7. Effective group functioning for a given divisible task requires: (a) a group process which matches the demands of the task, and (b) the
sharing of the necessary resources. If successful group discussion requires an open exchange of information and ideas relevant to a chosen topic, then the demands should prescribe such a process. If the group process is appropriate, but the necessary resources are unavailable, the task will not be accomplished. One way to increase the likelihood that the necessary resources will be available is to specify the sub-tasks which are necessary to the completion of the larger task, and then to match these sub-tasks to students who are most interested or most capable of undertaking them. Since the task of discussion not only requires adequate preparation, but also the exchange of resources, it may also be useful to specify the kinds of sub-tasks that are necessary to the discussion process such as question asking, explaining concepts, proposing definitions and hypotheses, listening and taking notes, etc.

8. Functional group interdependence is a composite concept which has been created to describe a particular kind of interdependence which might be established in the classroom for purposes of encouraging student initiative and involvement in group discussion. It is characterized by: (a) cooperative interdependence, (b) division of labor, (c) absolute differential rewarding, (d) divisible task structure, (e) specification of sub-tasks, and (f) matching of sub-tasks.

This summary of Chapter II has set forth the major points in the existing literature on interdependence and group functioning as they might relate to the research questions posed in the purpose of this study. Using this body of primarily social psychological research as
a base, the author, in Chapter III, attempts to apply this research to the classroom setting by proposing a theory of how functional group interdependence might serve to motivate students to take initiative and become involved in a successful group discussion.
CHAPTER III
TOWARD A THEORY OF STUDENT MOTIVATION
AND THE STRUCTURE OF SUCCESSFUL GROUP DISCUSSION

In Chapter I, it was suggested that teachers need to strike a delicate balance between the cultivation of student initiative and involvement on the one hand, and the subordination of this initiative to training in an exactness of formulation and expression. The striking of a proper balance has also been referred to as matching vision with precision and creativity with competence. Translated from these pithy prescriptions to the language of daily teaching, the dilemma seems to be one of getting students to talk to each other and listen to each other while making sure they know what they are talking about.

In actual practice the teacher often finds that group process in the classroom shuttles between "pooled ignorance" and "pulling teeth." With pooled ignorance the teacher is sure the students are talking to each other, perhaps listening, and probably learning very little of what might have been intended. With the extracting of answers to review questions (pejoratively referred to as pulling teeth), the teacher is sure that students are initiating nothing, may be talking to each other but probably about something else, and might be learning the right answers.

In Chapter I, the author also proposed a tentative explanation for this unsatisfactory state of affairs. Students neither prepare adequately nor participate freely because the structure of classroom activity in general, and that question and answer activity that masquerades
as group discussion in particular rewards a contradictory set of student behaviors. In short, the conventional structure of class discussion is ineffective in encouraging the desired group process -- a successful group discussion.

In Chapter II, group structures were reviewed which if translated into classroom practice might encourage the kind of open exchange of ideas and information that forms the basis of a successful discussion. The research indicated that a structure based on functional group interdependence might prove effective.

This chapter, Chapter III, is designed to present a partial theory of student motivation and group discussion which attempts to explain why a group discussion based on a structure of functional group interdependence will motivate students to engage in behaviors which will result in a successful group discussion. The theory is focused on the relationship between the structure of the discussion task and the motivation of students to engage in a particular group process.

Assumptions and definitions.¹

Assumption No. 1 The classroom group is, by virtue of its largely non-voluntary membership, a given for most students. Therefore the option of exercising one's preferences by leaving the group is generally replaced by attempts to influence other members of the group.

Assumption No. 2 Group members including both students and teachers tend to exert influences on each other based on their own needs, their perceptions of the demands placed on them by the needs of others, and by the demands of the policies of the larger social
system that consists of the school, family, and community.

Assumption No. 3 The group process of the classroom group is affected by the patterns of mutual influence that members exert upon one another. Therefore, members are interdependent with respect to the possibility of sustaining a given group process.

Definition Successful group discussion is a group process in which all members of the classroom group participate in an open exchange of ideas and information that is relevant to an agreed upon topic or problem. The primary objectives of the classroom group discussion are to expand or refine group members' knowledge and understanding of the topic and to improve their skill in facilitating future group discussions.

1 These assumptions are presented to demonstrate the logical reasoning that has brought the author to test the usefulness of functional group interdependence as a method of increasing student initiative and involvement in class discussion. A complete consideration of the relationship of student motivation and social psychological structures is not within the scope of this study. However, the reader may find support for the validity of these assumptions in the following:

- David Jenkins, Interdependence in the Classroom. Journal of Educational Research, 1951, 45, 137-144.
Assumption No. 4 Classroom group members can either inhibit or facilitate successful group discussion. Talking should not necessarily be equated with participation. Active listening is a necessary and viable form of facilitating group discussion.

Assumption No. 5 Group discussion is a task which by its very nature requires, in order to be successful, that group members engage in behaviors that facilitate an open exchange of ideas and information that is relevant to an agreed upon topic, and to do so in a manner that expands or refines group members' knowledge and understanding of the topic and improves their skills in facilitating future group discussions.

Assumption No. 6 Students will not engage in behaviors that facilitate successful group discussion if they do not have the relevant and necessary resources.

Assumption No. 7 Students will not engage in behaviors that facilitate successful group discussion if they have the relevant and necessary resources but are not motivated to exchange their resources with other group members.

Assumption No. 8 Students will not engage in behaviors that facilitate successful group discussion if they have the relevant and necessary resources and are motivated to exchange their resources but do not know how to go about sharing their resources or asking others to share theirs. That is, they may be prepared to and want to, but not know how to.
Given these assumptions and definitions, how might a teacher encourage successful group discussion? Potentially, the teacher acts in two capacities in relation to group discussion: (1) designer of the learning task and (2) leader of the actual discussion. Conventionally, the teacher has depended heavily on the second of these roles to insure success in group discussion. The theory proposed below depends on the effective utilization of both roles.

If the teacher in the capacity of (1) designer of the learning task --
(a) provides students with relevant resources (or clear steps on how to obtain them) that are necessary to the success of the discussion,
(b) structures the preparation for the discussion so that these resources are distributed among the students (i.e. division of labor), and
(c) structures the discussion so that group members will be interdependent with respect to needing each other’s resources in order to succeed individually and as a group (i.e. group problem solving and an individual post test), and

(2) as leader of the discussion --
(a) demonstrates how to share resources by exchanging his or her own relevant and necessary resources with others in the group, and
(b) models specific effective behaviors that show the range of skills necessary to sustain successful discussion such as encouraging, active listening, making connections, asking questions, asking for clarification of ideas, making concise explanations, being silent, making suggestions about the discussion process;
The result will be that students will be motivated to engage in a successful group discussion and will do so with adequate preparation and potentially effective and appropriate process behaviors.

The motivational dimension of this theory is based on the supposition that students will be motivated to initiate interaction with adequate preparation because of the following expectations and perceptions:

(1) Their expectation that others will evaluate them favorably if they facilitate the success of the discussion and the individual success of group members;

(2) Conversely, their expectation that others will evaluate them unfavorably if they inhibit the success of the discussion and the individual success of the group members;

(3) Their perception that adequate preparation of their particular resource is likely to be rewarded by positive evaluations by others in the group;

(4) Their perception that their own success at the task is dependent upon the encouragement of and exchange with others in the group and the adequate preparation of their own resource as a medium of exchange;

(5) Their perception that they have the power to affect the group process and consequent outcome of the discussion.

These suppositions are approximately parallel to the "psychological consequences of promotive interdependence" noted by Deutsch (1962): substitutability, positive cathexis, and inducibility. (See Chapter II.) They are also consistent with the theoretical framework proposed by Alschuler, Tabor, and McIntyre (1970) to explain the relationship of
classroom structure and student motivation. Alschuler, et al. suggest that classroom structure is analogous to a game with specific rules. Different games, like different structures, motivate students to behave in different ways. Some games appeal to the need for achievement (successful completion of a task), other games appeal to the need for power (successful influence of others' behavior), and still other games appeal to the students' need for affiliation (positive evaluation by others). Some games, such as team sports, contain elements of all three: achievement motivation, power motivation, and affiliation motivation.

To understand the structural properties of a particular method of teaching and group discussion, it can be useful to construct an analogous game. In collaboration with a group of high school students, the author developed the following sets of rules as a way to present students' perceptions of the structure of the conventional "Question/Answer Game" and the alternative "Interdependent Group Discussion Game."

It seems reasonable that an adequate theory of student motivation in group discussion should explain not only why an alternative way of doing things is effective, but also why the conventional practice may be ineffective.

**Question/answer game.**

**Order of Play:** All players are told to read the same ten to twenty pages from a book designated by the teacher.

All players meet with the teacher in a large room.

At the sound of a bell the teacher begins to ask a series of questions that are related to the ten to twenty pages that each player was to read. The teacher is not required to explain how the questions are related.
When the question is correctly answered by any student or students or by the teacher, another question may be asked. The questions may be vague or concrete, specific or general, rhetorical or factual. Opinions, especially those that differ from those of the teacher, are generally not acceptable.

The teacher is the sole judge of whether an answer is correct.

Play ends after 45 minutes at the sound of a bell.

Scoring System: 1 pt. for a correct answer when called on with a raised hand.

2 pts. for having your hand raised when you are unsure of the answer and you are not called on.

1 pt. for having your hand raised when you know a correct answer.

3 pts. for having your hand raised when you are sure you do not know the correct answer. (If you are called on and you do not know the answer you get negative 2 pts.).

5 pts. for every time you raise your hand not having read the ten to twenty pages at all and are not called on (negative 2 pts. if you are).

10 pts. for making up a correct answer when you are called on not having read the ten to twenty pages.

Note: In the regular version players signify their desire to answer by raising a hand. In the tournament version the teacher may call on anyone whether the student's hand is raised or not.

Consider in comparison the rules of another game as they are perceived by a group of high school students.

**Interdependent group discussion game.**

**Order of Play:** Each player is told to read one of a group of readings all of which relate to a topic. The readings are assigned so that players read different material. Each player is also told to read a statement of a problem to be solved by the group based on a one page shared reading.

All players are told that they will have to write an essay after the group discussion which will be dependent
on understanding all the readings as presented by each group member and discussed by the group.

The players must figure out a way to exchange ideas and information in the course of a discussion in such a manner that each member understands the readings and how they apply to the shared reading given out with each individual assignment.

The teacher must also share a relevant reading and participate as a member of the group.

There is a 45 minute limit on the discussion.

Scoring System:
1 pt. for asking another group member to explain his or her reading.

1 pt. for initiating an explanation of one's own reading.

1 pt. for asking a question about the shared reading.

1 pt. for making a statement of encouragement to another player.

2 pts. for making a connection among the readings.

3 pts. for making a connection between the readings and the shared reading (problem or topic).

1 pt. for stating an opinion.

2 pts. for listening carefully and linking your statement to the statements of other group members.

3 pts. for summarizing several ideas that clarify something for other players.

1 pt. for asking for other players' opinions.

4 pts. for proposing a solution to the stated problem.

Additional scoring for the teacher only:

1 pt. for saying sincerely, "I never thought of that before."

1 pt. for asking questions that the teacher doesn't know the answers to.

4 pts. for listening even when there is a lull in the discussion.
In comparing the rules of the two games, several differences are obvious. The second game provides a much broader range of behaviors from which to choose. In the first game, students can satisfy their needs for achievement by answering questions and very little else, save perhaps answering without preparation. Contributions to the successful group discussion in the second game can be made by persons with differing skills, interests, and styles of interacting.

In the first game, the students apparently operate on the basis of getting the most points for the least effort. Although the teacher probably sees this as a lack of motivation and competence, students apparently see it as an efficient response to the game as the teacher has structured it. Given the duplication of effort that the teacher expects in preparing for the task, the likelihood of students' meeting their needs for achievement is limited and unpredictable.

In contrast, the second game is initially structured on a principle of group efficiency. Instead of each person reading everything, each person reads a smaller portion carefully and is responsible for explaining it to the group in the course of a group problem solving effort. In this game there is a minimum guaranteed opportunity for achievement for each student. In addition, the student has the opportunity for achievement as a member of the group and later as an individual in the writing of the essay.

The first game provides very few opportunities for the satisfaction of power needs except those of the teacher. Those students who are motivated by the need to influence others will more than likely be engaged in behaviors that will obstruct the goals of the teacher. In
contrast, in the second game the structure provides for the power motive by requiring the use of persuasion in arriving at a solution to the problem which is the focus of the discussion.

Affiliation motivation may be played out in the first game by the students banding together to minimize the effort necessary to maintain an average position of achievement in the class in a manner parallel to the collective response described by Coleman (1959). Another possibility is that two groups will develop, one siding with the teacher's goals and another exercising its power by demonstrating obvious disinterest.

A key dimension that distinguishes one game structure from another according to Alschuler, Tabor, and McIntyre (1970) is the nature of the obstacles to be overcome. In the conventional game, the primary obstacle seems to be the teacher and the teacher's expectation for preparation and participation. This kind of game structure tends to stimulate power motivation. On the other hand, the interdependent group discussion is designed to set up a problem as the obstacle. In the case of the interdependent game the problem is in two parts. First there is the problem posed in the one page reading which forms the basis of the discussion. The content problem is designed to stimulate achievement motivation. The second part of the problem is a process problem, figuring out how best to exchange ideas and information so as to solve the content problem and prepare all group members for the written essay. This second part of the problem solving structure is designed to stimulate power motivation through a process of mutual persuasion, affiliation motivation through a process of supporting the attempts of others and being supported in return, and achievement motivation in writing a satisfactory essay.
Limitations and implications.

What appears above is only a tentative and partial theory to explain the logic and potential effectiveness of a particular method of designing and facilitating group discussion in the classroom. It is presented didactically in the interest of simplicity and is not meant to imply comprehensive certainty.

Construing the motivation of others is at best a tricky kind of speculation. Why persons ultimately do what they do is a first principle question that will never be answered completely. However, this statement of theory purposes several points that seem to have practical value for teachers. To assume that the behavior of students and teachers is motivated entirely by internal structures seems as unfeasible as suggesting that students and teachers are mere puppets in the complex of group influences. Reinforced by the school system's need for the evaluation of individual and independent student effort, teachers have a tendency to focus on individual students when looking for the causes of unsatisfactory class interaction. This is an incomplete response to a difficult problem and one that often results in a widening of the gulf between teachers and students.

The theory presented in this chapter suggests that the classroom of students does in fact constitute an observably interdependent group. If activities such as discussion are to be successful, the teacher will do well to recognize this state of affairs and to design and manage learning tasks accordingly.

Johnson and Johnson (1974, 1975) repeatedly point out that no task structure is universally applicable to the varying demands of the
educational system. Functional group interdependence is only one structure. It is the purpose of this study merely to demonstrate that functionally interdependent task structure can be matched with the activity of group discussion to encourage effective patterns of group interaction among students and teachers.

**Summary**

The purpose of this chapter was to outline a theory that gives an explanation of what may motivate students to participate or not participate effectively in a group discussion in the classroom.

Assumptions were made and a definition was offered regarding the nature of the classroom group as an interdependent entity in which success or failure of the discussion process depends on appropriate coordination and leadership of the group by the teacher. The teacher must design the discussion task from preparation to post-test evaluation based on an understanding of the students' motivations in a group context.

Several suppositions were made about the kinds of needs which motivate students and how these needs can be met by a functionally interdependent group discussion task. In order to further explicate the theory, two sets of rules for games which were analogous to conventional and interdependent structures were compared. Different behavioral responses seem to be demanded by the two structures. Finally, the limitations and implications of the theory were summarized briefly.
The purpose of this chapter is to explain the method that was devised to determine whether functional group interdependence encourages more student initiative and involvement in class discussion than is encouraged by the conventional question/answer structure of class discussion. An experiment was designed to compare patterns of interaction observed in a series of conventionally structured group discussions with patterns observed in a series of experimentally structured group discussions. In the design, the conventional discussion task and the experimental discussion task were distinguished by fundamental differences in two areas: (1) the manner in which homework preparation assignments were divided among group members, and (2) the manner in which the teacher structured and facilitated the subsequent group discussion.

In the conventional discussion task (1) the homework assignments were parallel, that is, each student prepared the same reading assignment; (2) the teacher directed the discussion by systematically reviewing the reading covered in the assignment through a process of questioning the class.

In the experimental discussion task (1) the homework assignments were divided among the students and the teacher so that group members had differing but interrelated reading assignments; (2) the teacher posed a problem to be solved by the group which necessitated the exchange of resources, and in addition, the teacher acted as a role-
model participant in the group problem solving process.

The remainder of this chapter is divided into three sections:
(1) an overview and explanation of the design of the experiment including information about the sample, the setting, and the materials;
(2) an overview and explanation of the system used to measure and interpret the data collected from the experiment;
(3) a list of operational hypotheses that are to be tested.

Overview of the experiment.

1. Sixty-four high school students in four classes of an introductory psychology course were asked by their teachers to participate in an experiment which they were told would involve "team teaching."

2. Each class was divided in half using the following procedure: The experimenter took the names of the students in each class and randomly assigned the sixteen students in each class to two groups of eight students, drawing names randomly from a pool of girls and of boys in order to maintain a balance parallel to that of the original class. One of the groups in each pair of groups from the original four classes of sixteen was randomly assigned to the experimental discussion task and the remaining group in the pair to the conventional discussion task.

3. The two teachers who regularly taught the psychology course each normally taught two of the four classes. These teachers were assigned to the eight groups (four experimental and four conventional) using two criteria to control for teacher differences: (a) each teacher taught two discussion groups which were made up of students from his classes and two discussion groups that were originally from the classes of the other teacher, (b) each teacher taught two experimental and two
conventional discussion tasks. These criteria resulted in the development of the following table.

Figure 4 - 1
Assignment of Teachers to Conventional and Experimental Discussion Groups

<table>
<thead>
<tr>
<th>Original Class</th>
<th>Conventional Groups</th>
<th>Experimental Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class #1</td>
<td>Group 1 - C</td>
<td>Group 1 - E</td>
</tr>
<tr>
<td>Teacher A</td>
<td>Teacher A</td>
<td>Teacher B</td>
</tr>
<tr>
<td>Class #2</td>
<td>Group 2 - C</td>
<td>Group 2 - E</td>
</tr>
<tr>
<td>Teacher A</td>
<td>Teacher B</td>
<td>Teacher A</td>
</tr>
<tr>
<td>Class #3</td>
<td>Group 3 - C</td>
<td>Group 3 - E</td>
</tr>
<tr>
<td>Teacher B</td>
<td>Teacher A</td>
<td>Teacher B</td>
</tr>
<tr>
<td>Class #4</td>
<td>Group 4 - C</td>
<td>Group 4 - E</td>
</tr>
<tr>
<td>Teacher B</td>
<td>Teacher B</td>
<td>Teacher A</td>
</tr>
</tbody>
</table>

4. On the class day preceding the small group discussions, each student was given an assignment packet which included: (a) a room assignment for the next day's discussion, (b) an explanation of the procedure he or she was to follow in preparing the homework reading, (c) a copy of a written account of an event which would be the focus of the discussion, and (d) a collection of relevant readings, or in the case of those students assigned to experimental discussion tasks, one of the collection of readings.

5. Also on the day preceding the discussions, each teacher was given two sets of guidelines for teaching the groups, one for the conventional
discussion tasks and one for the experimental discussion tasks.

6. Each of the eight group discussions was audiotaped.

7. Typed transcripts were made of each discussion.

The sample. The sample consisted of 64 high school juniors and seniors at the Northfield Mount Hermon School, a college preparatory boarding school in Northfield, Massachusetts. There were 23 male students and 41 female students. All students were taking a two-quarter introductory psychology course. All students were familiar with their particular teacher's classroom style and expectations. As a group, students were above average in academic achievement compared to national standards. Since the course was an elective, students may have had above average interest in the content of the course as compared to their required courses.

The setting. The discussions were held in classrooms regularly used by the two teachers involved in the experiment. Desks were arranged to be representative of the arrangements observed in classrooms where teachers held conventional discussions for the conventional discussion tasks and arranged in a floor plan assumed to be appropriate for the experimental discussion tasks. Microphones for audiotaping were placed at central locations. See Figure 4 - 2.
The materials. The materials used in the experiment included (1) a one page explanation of the homework assignment, (2) a one page article that described a situation in which persons behaved in an unusual manner, (3) five one to four page explanations of five different social psychological concepts which could be used to explain the behavior of the persons described in the article, (4) two sets of instructions for the teachers of the discussion groups, and (5) a test of content.

The one page explanation of the homework assignment appeared as the first sheet of a packet of materials that each student received prior to the day of the discussions. This page consisted of an introductory paragraph which gave a rationale for the change from regular class procedures and a paragraph of instructions which differed depending upon whether the student was assigned to a conventional or experimental discussion.

Figure 4 - 3

Introductory Paragraph of Assignment Sheet

On Monday Mr. Hopkins and Mr. Schwingel are going to do an experiment in team teaching. This will involve dividing the four psychology classes into two groups. Each group will meet with either Mr. Hopkins
or Mr. Schwingel during your regularly scheduled class period. You may be meeting in a classroom other than the one that you usually meet in. Your room number is noted on this sheet. Because this is an experiment, it will be appreciated if you do not discuss your group's class until the following regular class meeting. At the following regular class meeting, Mr. Hopkins and Mr. Schwingel will answer any questions.

Figure 4-4

Instruction Paragraph for Students in Conventional Discussion Groups

In this packet is your assignment for Monday. There is an article called Newsline and there are explanations of several social psychological concepts which have been excerpted from textbooks. Please read all these materials. On Monday they will be discussed in class. In preparing, make sure you understand each concept and consider how it can be applied to the Newsline article. There will be a closed-book-take-home test on the assignment after Monday class.

Figure 4-5

Instruction Paragraph for Students in Experimental Discussion Groups

In this packet is your assignment for Monday. You will be preparing a resource for a group problem solving task. All members of your group are not preparing the same resources, so the group will be dependent upon you to have done your job well. The problem to be solved is to exchange all the resources prepared by the group members in such a way that the group comes up with at least five clear partial explanations for the events described in the Newsline article. Although everyone will have read the article, not everyone will know the social psychological concept in your packet. You will be prepared to introduce your concept (resource) and your interpretation of how it applies to the article in the process of a group problem solving task that will last only thirty minutes. You will have to be effective at communicating your ideas and at asking others about theirs. There will be a closed-book-take-home test on the material after Monday's class. Once you have read and understood your concept, practice how you can explain it to someone else. Think of some questions that you have about the Newsline article.

The second page of each assignment packet was a copy of an article from Psychology Today's Newsline section. The article had the advantages of being brief, descriptive rather than analytical, unusual enough
to create interest and yet close enough to the life experiences of the sample group to be easily comprehensible, and written in a style that generated many questions. It seems probable that the success of discussions will be dependent to some degree on the quality of this piece of the preparation materials. Posing problems for discussion that students have no interest in whatsoever may undercut any benefits which might result from changes in the structure of discussion. The Newsline article appears on the following page.

Following the assignment page and the article page of the homework packet was a third section. This section consisted of readings on relevant social psychological concepts which had been excerpted from various textbooks. At the beginning of each reading unit was a paragraph of questions designed to help the students begin to relate the particular concept to the situation described in the Newsline article. There were readings on five concepts: (1) cognitive dissonance, (2) normative dependence and obedience to legitimate authority, (3) influence by gradations, (4) personality needs, (5) contagion. These appear in Appendix A.

In the case of each assignment packet given to students in conventional discussion tasks, the packet included all five concepts. In the case of the experimental discussion participants, the concepts were divided among group members. In all cases the teacher was assigned the reading on contagion. The other four concepts were randomly assigned so that two students in each group were given packets containing one of the four remaining concepts. Therefore, of the eight students, two had the same concept resource. This distribution recommended it-
Education

The Third Wave: Nazism in a High School

The Third Wave started as a learning experiment and ended five days later as a nightmare. Ron Jones was teaching his high-school history class about Nazi Germany when a student asked the inevitable questions. How could so many Germans claim they didn’t know what was going on? How could so many neighbors and friends of Jewish families say they weren’t even there when the family suddenly disappeared?

Jones decided to involve the class directly in finding the answer. He started the following Monday’s class by introducing a key Nazi concept: discipline.

Jones demonstrated the pleasures and pains of discipline by having students sit in a new posture: feet flat on the floor, hands placed flat across the small of the back to keep the spine straight. “There. Can’t you breathe more easily? Don’t you feel better?” The students practiced until they could move in a few seconds from standing outside the classroom to sitting at attention.

Jones wondered how far he could push unquestioning obedience. He introduced new rules, including one stating that students must stand beside their desks when asking or answering questions, and must always start by saying, “Mr. Jones.” All answers were to be crisp and short.

Soon everyone started popping up with questions and answers, even the usually hesitant pupils, and Jones wondered what was happening. As a strong believer in the open classroom and self-directed learning, he had deliberately created an authoritarian environment and was shocked when it worked. Students were responding accurately and asking better questions. They even seemed more cooperative.

When Jones entered the classroom Tuesday, everyone was sitting at attention. A few students were smiling, but most were staring rigidly ahead. He went to the blackboard and wrote in big letters: “STRENGTH THROUGH DISCIPLINE,” and below it, “STRENGTH THROUGH COMMUNITY.” Jones had the students chant the slogans over and over. Near the end of the period, he created a salute for class members—the right hand raised to the shoulder, fingers curled. He called it the Third Wave salute: Wave because the curled fingers looked vaguely like a wave about to topple; Third because beach lore says that each third wave is the largest.

For the rest of the day, in the halls and classrooms, Jones and his students exchanged the Third Wave salute. On Wednesday morning 13 curious students cut their regular classes to join the 30 original Third Wavers in Jones’s study of Nazi Germany. Jones issued membership cards to the 43 students and assigned three students to report any members not complying with class rules.

The assignment proved unnecessary. On Wednesday alone, 20 students came to Jones with news of students not saluting, criticizing the experiment or being uncooperative in other ways.

Thursday morning Jones walked into his class, now grown to 80 students, and announced “the real reason for the Third Wave.” It wasn’t just a classroom experiment, but a nationwide program “to find students willing to fight for political change.” Jones said that at noon the next day a presidential candidate would appear on national television and announce the Third Wave program. There would be a special rally in the high-school auditorium to watch the announcement—a rally for Third Wave members only.
By noon Friday the auditorium was jammed with more than 200 students. Jones closed the doors and posted guards to keep everyone else out. Just before noon, Jones walked to the front of the auditorium and asked the audience to "demonstrate the extent of our training." He saluted, and 200 arms rose in reply. He shouted, "Strength Through Discipline," again and again, and each time the response got louder and louder.

At 12:05 Jones turned off the lights, walked to the TV set and clicked it on. Everyone stared at the flickering tube, the only light in the room. Minutes dragged by: 12:07, 12:08, 12:09. Suddenly a student yelled out: "There isn't any leader, is there?" The others looked at him, disbelieving, and turned to Jones. He switched off the set, and started to speak:

"Listen closely... There is no such thing as a national youth movement called the Third Wave. You've been used, manipulated, shoved by your own desires to where you are now. You're no better or worse than the German Nazis we've been studying. You thought you were the elect—better than those outside this room. You bargained your freedom for the comfort of discipline... Oh, you think you were just going along for the fun, that you could extricate yourself at any moment. But where were you heading? How far would you have gone? Let me show you your future."

Jones switched on a rear-screen projector. A Nazi rally came on, followed by pictures of people being shoved into vans of death camps, and of people pleading ignorance at the war crimes trials: "I was only doing my job." Suddenly the film froze on a single frame, with the words: "Everyone must accept the blame. No one can claim that they didn't in some way take part."

After a long silence, the questions came. Jones admitted his own feelings of sickness and remorse, and explained that the experiment started with the classic question about Nazi Germany. How could ordinary, decent people permit the tragedy, and then claim that they didn't know what was happening?

"In the next few minutes, and perhaps years," Jones told the silent students, "you'll have a chance to answer this question... If our enactment of the fascist mentality is complete, not one of you will ever admit to being at this Third Wave rally... You won't admit to being manipulated, to accepting this madness as a way of life... It's a secret I shall share with you."

—Jack Horn

Ron Jones has included this report and others in a collection of articles. No Substitute for Madness ($1.50), published by

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self for two reasons. Given the relatively short amount of time available for discussion, it would have been difficult to introduce more than five concepts. In addition, having two students read the same concept made it more likely the group would get a complete explanation of the concept without requiring a duplication of effort of the level required in conventional discussion preparation.

Although assignments of readings were random, research indicates that matching sub-tasks such as these to group members most able or motivated to perform them is likely to improve the group process. That is, for example, if it were determined that one student had more interest in a particular resource or more of the necessary skill to prepare it, the group would benefit if the person were matched with the appropriate task. (See Steiner, 1972, pp. 42-66.) This approach may, however, be in conflict at times with the teaching objective of challenging students to expand their areas of knowledge and skill by preparing new material. A combination of these strategies will probably prove successful.

Even if the readings are not matched with individual group members, each reading must be easily understood, concise, and directly relevant. Just as the quality of the article on which discussion is focused will likely influence the quality of subsequent discussion, the quality of the resources that are made available to the group members will also affect the quality of the discussion process.

Once the students had their assignments, the teachers were also given instructions which explained how they were to manage class discussion under the two different sets of conditions.
Figure 4 - 6

Instructions to Teacher

for Conventional Discussion Tasks

You are going to lead a class discussion. Your objective is to make certain that your students have read and understood the reading assignment. Discussing the concepts and the article with them is also intended to prepare them to take a test which you will hand out at the end of the class. Each student will take the test by himself or herself at the soonest convenient time after the class period. She or he will be expected to use no materials except paper and pencil or pen. You want to be sure to cover each of the five concepts and to apply them to the article. You should divide the class period along the following lines. Three to five minutes for getting ready by getting people seated and putting name tags on desks, answer a few questions, and explain the purpose of the discussion. Thirty to thirty-five minutes to discuss each of the concepts and apply them to the article, and five to seven minutes to summarize and hand out tests.

The basic format for discussion will be for you to ask the students questions which will give them the opportunity to show their knowledge of the reading. You should take each concept in order. Ask for a definition until you are satisfied the class has heard an adequate definition. If you need to clarify what others have said to accomplish this, do so. Ask for an example of how this concept might explain the events in the article. Ask further questions and make comments until you are satisfied the class has heard an adequate explanation of how the concept might explain some part of the behavior described in the article. Summarize what has been said about this concept and repeat this sequence.

As a general guideline do not call on students who do not indicate they wish to volunteer. If the choice is between silence and calling on someone, you may call on any student.

Figure 4 - 7

Instructions to Teacher

for Experimental Discussion Tasks

You are going to lead a class discussion. Your objective is to make certain that your students have read and have understood their reading assignments. Discussing the concepts and the article is intended to prepare the students for a test which you will hand out at the end of the class. Each student will take the test by himself or herself at the soonest convenient time after the class period. She or he will be expected to use no materials except paper and pencil or pen. You want to make sure that each of the five concepts is covered in the process of trying to develop explanations for the behavior described or implied
in the article. Students have prepared different resources and it is important that each shares his or her resource so that all students will have the information.

You are to present the discussion as a problem solving task. The problem to be solved is to exchange all the resources available to the group so that the group comes up with at least five clear partial explanations for the events described in the article. This is to be accomplished in thirty minutes. You will be a teacher and a member of the group. Your resource will be the information on contagion. Although you should not be the first to share your resource, at a point in the discussion where your resource relates you should share your ideas, being careful to model the behavior of connecting what you say to what others have said and recognizing them by name as you do so. You will also be a time keeper and should close the discussion with ten minutes left in the period so that the group will have time to summarize and you will have time to hand out the tests. Begin by asking what about the article struck them as interesting and why do they think people behaved that way.

The post-test of content. The purpose of the post-test was primarily to demonstrate that evaluation of student achievement on an individual basis can be made an integral part of functionally interdependent classroom structure. There are, however, built-in problems with using regular classroom testing techniques to measure achievement. Teachers have extremely varied philosophies on testing and grading. One teacher may use unannounced tests to keep students reading regular homework assignments. Another may use tests as the culmination of study on a particular topic, and an opportunity for students to pull together their own ideas. The same teacher may use tests for different purposes at different times.

Philosophies of grading also vary significantly from teacher to teacher. There does seem to be general agreement among teachers, students, parents, school administrators, college admissions officers, and prospective employers on two points. Grades are based at least in part on measures of student performance such as tests and papers, and
that these tests and grades represent individual not group performance. This is not to say that an individual's grades will not be evaluated in the context of the school's (in effect the larger group's) performance compared to other schools. Without exploring the many implications of current systems of grading, the point is simply that the method proposed in this study for encouraging student initiative and involvement deals with only a limited aspect of the testing and grading issues.

To the extent that a system of grading approximates a structure of relative differential rewarding (i.e. norm referenced grading), it can be said to be a competitive reward structure. To the extent that a system of grading approximates a structure of absolute differential rewarding (i.e. criterion referenced grading), it can be said to be non-competitive. Competitive grading increases the probability that students will employ a strategy of blocking others' achievements as well as improving their own performance. Non-competitive grading removes the motive for employing the blocking strategy.

In this experiment, the two teachers maintained their normal system of grading which was non-competitive. Grades were assigned on the basis of two criteria. First, performance was measured against a fixed standard. In the case of "essay" tests such as the one used in this experiment, the teacher made a list of items that would be included in a hypothetical perfect essay. Individual performance was measured against this standard. Grades were not assigned on a curve.

Second, grades were affected by the teacher's perception of relative improvement of the student's performance compared to previous performance on other tests. This allowed the teachers to reward what
they perceived to be increased effort, increased skill, and increased knowledge. This approach was predicated on the assumption that all material was new to the students and that performance was therefore not the result of previous knowledge.

Although grades might be assigned relative to overall performance of an individual, that is, relative to previous achievement, grades were not assigned relative to the performance of other class members. It is, however, important to point out that in discussing systems of grading, both teachers suggested that they were prone to evaluate overall performance of the class as a reflection of their teaching effectiveness. Hence, poor overall performance by the class sometimes led them to readjust the fixed standard grading scale so that all students' grades were proportionately higher. Given these characteristics of the grading system, all that can be said with assurance is that the grading of the tests was non-competitive and that the students were accustomed to this system prior to the experiment.

The post-test undoubtedly has other effects in addition to those inherent in the reward structure. It can be argued that telling students prior to the discussion that they will be tested on the material afterwards produces more achievement motivation. If so, it is possible that the increased achievement motivation with reference to successful performance on the test would be the same under both conditions.

On the other hand, with reference to motivation to participate in the group discussion, the presence of a post-test may have differing effects under the two conditions. Successful performance on the post-test requires different behaviors of group members depending on the
structure of the discussion task. Where students in the conventional discussion could theoretically prepare for the test without the benefit of group discussion since they already had the necessary resources, students in the experimental discussion were dependent upon their cohorts for information that could lead to successful performance on the post-test.

Given this state of affairs, it could be argued that the presence of the post-test had a more significant effect on experimental discussions than conventional ones. That is, if students wishes to perform successfully on the post-test, they would be more likely to participate in a discussion structure that requires interdependence of group members with respect to the necessary resources than a structure that does not.

Therefore, although a post-test could be used to evaluate students individually on specific content learning, it is not an accurate measure of comparative performance for the two conditions in the experiment. The test is not only measuring specific content learning but also in the case of the experimental discussion task, the ability of students to gather necessary information from other group members in the process of discussion, a skill in which very few students have adequate practice. In contrast, most students are practiced in gathering necessary information from written assignments.

Some tentative conclusions could be drawn from scores on the post-test. If, for example, some students in the experimental group perform as well as students in the conventional group, it could be concluded that it is possible to learn the same content under the experimental
conditions as under conventional ones.

Given that the information required on the test related to specific concepts which had not been covered in class and were not in the textbook, and that the test required specific applications of the concepts which were made during the discussion, it may be reasonable to assume that the level of performance on the test was not due to students having the necessary information prior to instruction.

The post-tests were scored by the teachers without knowledge of the student's name or group membership in the discussion. The test appears below and was designed to be similar in length and format to tests that students had taken previously.

Figure 4 - 8

Post-Test

In class we discussed five social psychological concepts. 1. Cognitive dissonance. 2. Normative dependence and obedience to legitimate authority. 3. Influence by gradations. 4. Personality needs and motivations. 5. Contagion. In five separate sections, write as much as you can about each of these concepts and how it can be used to explain the behaviors of the students and teacher described in the article on the Third Wave. Begin with a definition of the concept at the beginning of each section.

Overview of the system of measurement.

The first section of this chapter explained how an experiment was devised to determine whether functional group interdependence encourages more student initiative and involvement than is encouraged by the conventional structure of class discussion. The second section of this chapter explains how the data gathered from this experiment was measured and interpreted.

The system of measurement and interpretation used in this study is
based on the work of Flanders as presented in his book, *Analyzing Teaching Behavior* (1970). In order to compare the performance of students and teachers in two kinds of classroom discussions, a method of measuring performance should be reasonably objective and have relevance to the particular variables of initiative and involvement of students.

Classroom interaction analysis is one means of obtaining a measure of teacher and student behavior in discussion tasks. There are various systems of classroom interaction analysis. In general, each has a procedure for coding spontaneous verbal communication, a means of arranging the resulting data into a useful display such as a matrix or flow chart, and prescribed steps for using this organization of the data to interpret and measure patterns of teaching and learning.

Of the many systems of coding classroom interaction, each has a different emphasis. A system tends to abstract certain dimensions from the original flow of verbal exchange while ignoring other dimensions. Therefore, it is important that the system used in a particular experiment abstracts the information relevant to the variables which are the basis of the study.

This study was designed to focus on the variables of student initiative and involvement and teacher directiveness as evidenced in patterns of group discussion. Flanders has developed a system of interaction analysis which potentially meets the requirements of this study. The Flanders Interaction Analysis Categories (FIAC) is a system which codes patterns of initiative and response in classroom interaction. The basic ten category system coding chart appears on the following page.
TABLE 2-1

Flanders' Interaction Analysis Categories* (FIAC)

<table>
<thead>
<tr>
<th>Teacher Talk</th>
<th>Response</th>
<th>Initiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accepts feeling. Accepts and clarifies an attitude or the feeling tone of a pupil in a nonthreatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included.</td>
<td>4. Asks questions. Asking a question about content or procedure, based on teacher ideas, with the intent that a pupil will answer</td>
<td>5. Lecturing. Giving facts or opinions about content or procedures, expressing his own ideas, giving his own explanation, or citing an authority other than a pupil.</td>
</tr>
<tr>
<td>2. Praises or encourages. Praises or encourages pupil action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying &quot;Um hm?&quot; or &quot;go on&quot; are included.</td>
<td>6. Giving directions. Directions, commands, or orders to which a pupil is expected to comply.</td>
<td>7. Criticizing or justifying authority. Statements intended to change pupil behavior from unacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing, extreme self-reference.</td>
</tr>
<tr>
<td>3. Accepts or uses ideas of pupils. Clarifying, building, or developing ideas suggested by a pupil. Teacher extensions of pupil ideas are included but as the teacher brings more of his own ideas into play, shift to category five.</td>
<td></td>
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<th>Pupil Talk</th>
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<td>8. Pupil-talk—response Talk by pupils in response to teacher. Teacher initiates the contact or solicits pupil statement or structures the situation. Freedom to express own ideas is limited.</td>
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<td>9. Pupil-talk—initiation Talk by pupils which they initiate. Expressing own ideas; initiating a new topic; freedom to develop opinions and a line of thought, like asking thoughtful questions; going beyond the existing structure.</td>
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| Silence | |
|---------||
| 10. Silence or confusion. Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer. | |

*There is the scale implied by these numbers. Each number is classification; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale.

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Flanders suggests that this basic set of ten categories can be expanded to code more specific behaviors. The basic ten category system is designed to code communication which is primarily from the student to teacher and teacher to student. For example, there is no category for coding a student response to another student. Since a successful group discussion potentially includes the dimension of student to student interaction, and since such interaction might be taken as an indication of student involvement and a less directive role for the teacher, the author of this study expanded the basic ten categories.

However, rather than developing and validating an entirely new set of additional categories, the range of categories originally applied to the teacher was simply extended to the students. Hence categories 1 through 7 on the FIAC were extended into 91 through 97. In addition, categories 8t and 94t were included to distinguish between questions that were directed to the teacher from those directed to students. The resulting 19 category FIAC appears in Figure 4-9.

Procedure for coding transcripts. The typed transcripts were made for each group discussion from the original audiotape. Each of the transcripts was then marked with slashes at the end of each three second interval in the typescript. This was accomplished by marking the transcript while listening to the original audiotape and another tape with a beep signal every three seconds.

Using the modified 19 category FIAC, two persons were trained in coding classroom interaction. The two persons then independently coded the transcripts, assigning category numbers to 6672 separate three second segments or units. On the first coding of the 6672 units,
Categories 1 through 7 are identical to Flanders' first seven categories (see Figure 4-8).

Category

8 Student response to direct teacher question. Contact is initiated by teacher; question is designed to elicit a specific or predictable answer and student's answer fills all or part of the teacher's expectation; short answer without embellishment; student responses in a repeating pattern of 4 - 8, 4 - 8.

8t Teacher response to direct student question. Student initiates contact. If and when teacher moves to expressing ideas beyond the student's question, shift to category 3 if the teacher is building on the student's idea and to category 5 if not.

98 Student response to direct student question. Student initiates contact. If and when the responding student moves to expressing ideas beyond the first student's question, shift to category 95.

91 Student accepts feeling. Accepts and clarifies an attitude or feeling tone of a student in a nonthreatening manner.

92 Student praises or encourages. Student praises or encourages another student's action or behavior. Minimal encouragers such as "um hum," "o.k.," and "yea" are included.

93 Student accepts, uses, or responds to ideas of another student. Clarifying, building on, developing, or responding to another student's statement. Not a response to a direct question which would be 98. The purpose of category 93 is to provide an indication of student to student interaction in conjunction with categories 95, 94, and 98. First consider the entire sequence of student to student interaction. Use a pattern of coding that will indicate changes in the speaker when this happens. Follow these guidelines: (1) 93 should be used to indicate student statement that is supportive or neutral in relation to the immediately preceding student statement. (2) 95 should be used for contradictory or new topic or unrelated statement in the sequence. (3) 93 may follow 8 or 98 to indicate building on or clarifying. The student statement immediately following should then be coded 95 if it does not fit a category other than 93. (4) Sequences should be coded so that two students' statements which follow one another consecutively
are coded in different categories to denote a change in the student speaking. (5) Avoid a shift to 95 within one student's statement.

94 Student asks question of another student. Student asks another student a question about content or procedure.

94t Student asks questions of the teacher.

95 Student initiated talk. Talk by students which they initiate; expressing own ideas or ideas from reading which have not been directly solicited by the teacher or another student. Responses to open-ended questions or speculative statements by the teacher or another student which ask for opinions or experiences from the student's own life. Initiating a new topic or direction in the discussion.

96 Student giving directions.

97 Student criticizing or justifying authority.

10 Silence or confusion. Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

the two independent coders agreed on 5742, yielding an agreement of 86%. Subsequently the author met with the two coders to develop further guidelines in applying the 19 categories. A re-coding of those sections of the transcript on which the coders had initially disagreed yielded an overall agreement of 97%.

Procedure for transferring data to matrices. In order to increase the amount of information that can be obtained from the coded transcripts, Flanders developed a system of recording the data on a matrix. Since the system classifies units at a constant rate (three second intervals) and in sequence, it is possible to consider pairs of events (two consecutive units) as a single unit of two equivalent parts. A matrix can therefore record not only how much of a certain kind of behavior but
the order in which behaviors occur. Figure 4 - 10 shows a 19 by 19 matrix used for recording data from a coded transcript.

Suppose that a sequence of coded units on a transcript were read as follows: 5, 95, 95, 93, 93, 94, 98, 4, 8, 8, 5, 5, 4, 8, 95, 3, 4, 8. This sequence would be recorded on the matrix in consecutive overlapping pairs: 5-95, 95-95, 95-93, 93-93, 93-94, 94-98, etc. The first number of each pair always denotes the row and the second number always denotes the column. Figure 4 - 10 has been used to tally the above sequence. Obviously more tallies are necessary to have a matrix which will be useful in determining patterns of interaction.

Procedure for interpreting a 19 by 19 matrix. Flanders has also developed a step by step method for interpreting matrices of tallied data. A detailed explanation can be found in Chapter IV of his monograph, Analyzing Teaching Behavior (1970). The procedure used in this study is based on the principles set forth by Flanders.

First, two assumptions are made about the data recorded on the matrix. (1) "The total number of tallies and their configuration adequately represent those aspects of the original interaction which were encoded within the limitations of the category system" (Flanders, 1970, p. 97). (2) Each tally represents a fixed interval of time (three seconds) and therefore numbers tabulated on the matrix are presumed to be equivalent units which can be added, divided, subtracted, and multiplied to calculate such figures as percentages.

Given these assumptions, the matrices in this study were used to interpret the data in four areas: (1) the balance of teacher and student talktime, (2) the balance of percentages of behaviors in various
Figure 4 - 10

Recording Coded Pairs on a Matrix

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categories, (3) the balance of initiative and response, and (4) the balance of differing patterns of interaction in the flow of verbal communication.

**Talktime.** The amount of time that the teacher talks relative to the amount of time students talk is one quantitative measure of interaction. Monopolizing talking time is probably the most common way in which the teacher asserts control in classroom interaction. Since classroom discussions usually take place in a fixed amount of time, talktime for an individual such as a teacher is calculated as the proportion of the total talktime for all members of the group rather than in absolute numbers. This also allows comparisons among discussions which lasted different lengths of time. In this study, talktime was calculated by counting the number of three second intervals taken up by an individual's talking, multiplying the number by twenty to determine the number of minutes, dividing this figure by the total number of minutes for the group, and multiplying by one hundred to yield a percentage.

**Category totals.** Category totals were calculated by figuring the sum of all tallies in a given row or column of the matrix. Therefore, for example, the category total for category 5 expresses the number of pairs of coded units in which at least one of the category numbers was 5. By comparing a category total with the sum of all category totals for that matrix, a percentage figure can be calculated that expresses the proportion of verbal communication which was coded in category 5, teacher lecture. Differences within matrices in proportions of various categories can be used to make comparisons among
matrices.

**Initiative and response.** In measuring this dimension of the matrix, the assumption is made that initiative and response are in some manner reciprocal. If one person in the group discussion is initiating, others are likely to be responding. Flanders has developed a method of calculating ratios of initiative and response which express their relative balance. By grouping categories on the basis of the likelihood of their being characterized by initiative or response, percentages can be derived from the matrix that represent the teacher's and students' tendencies toward response or initiative behavior during a given class discussion. For purposes of this study, five ratios were calculated to provide measures of the balance of initiative and response. The formulas for these ratios appear in Figure 4-11.

**Figure 4-11**

Formulas and Explanations for Initiative/Response Ratios

**Teacher Response Ratio** is defined as an index representing the teacher's tendency to react to the ideas and feelings of the students. It is calculated by taking the sum of all teacher talk category totals which represent any kind of response by the teacher to the classroom situation (accepting student feelings, praising and encouraging, accepting and using student ideas, answering student questions, giving directions, or criticizing and justifying authority) and determining what percentage of the sum total represent reactions to student ideas and feelings. The formula is:

\[
TRR = \frac{\text{category totals} \times 100}{(1 + 2 + 3 + 8t + 6 + 7)}
\]

**Teacher Question Ratio** is defined as an index representing the tendency of a teacher to use questions when guiding the more content oriented part of the class discussion rather than using statements. It is calculated by taking the sum of the two teacher talk category totals that represent teacher initiative in the area of content (asking questions and making statements or lecturing) and determining what percentage of
the time the teacher asked questions rather than making direct statements. The formula is:

$$TQR = \frac{\text{category totals}}{(4 \times 100)} \div (4 + 5)$$

Student Initiative Ratio is defined as an index which indicates what proportion of student talk time was judged by two independent coders to be an act of initiation. It is calculated by taking the sum of all student talk category totals and determining what percentage of the sum total represents those categories which demonstrate student initiative. The only student talk categories that do not indicate student initiative are 8, student response to a direct teacher question, and 98, student response to a direct student question. Therefore, the formula is:

$$SIR = \frac{\text{category totals}}{(91 + 92 + 93 + 94 + 94t + 95 + 96 + 97) \times 100} \div (8 + 91 + 92 + 93 + 94 + 94t + 95 + 96 + 97 + 98)$$

Student to Student Response Ratio is defined as an index of the tendency of students to respond to students in the course of discussion. It is calculated by taking the sum of all student talk category totals and determining what percentage of this sum total represents student response to other students. The categories that represent student to student response are 98, student response to a direct student question and 93, student accepts or uses, or responds to the ideas of another student. The formula is:

$$SSRR = \frac{\text{category totals}}{(98 + 93) \times 100} \div (8 + 91 + 92 + 93 + 94 + 94t + 95 + 96 + 97 + 98)$$

Student Question Ratio is defined as an index which represents the tendency of students to ask questions of each other and of the teacher in the course of discussion. It is calculated by taking the sum of all student talk category totals and determining what percentage of this sum total represents students asking questions. 94 is student asking question of another student and 94t is student asking question of the teacher. The formula is:

$$SQR = \frac{\text{category totals}}{(94 + 94t) \times 100} \div (8 + 91 + 92 + 93 + 94 + 94t + 95 + 96 + 97 + 98)$$

In addition to calculating statistical measures of talktime, category totals, and initiative/response ratios, the matrix can also be used to create a graphic representation of the flow of interaction. Since the category system has only a limited number of ways of classifying behavior, it is predictable that over an extended period of interaction (e.g. several hours), sequences of behavior can be discov-
These patterns of interaction can be presented by using the matrix to build a flow diagram.

A flow diagram is essentially a picture of events which uses arrows and boxes to show what behaviors follow or precede other behaviors and how frequently this sequence occurs. Patterns of interaction emerge in the form of "loops" which trace the "traffic patterns" of verbal communication for a given discussion or set of discussions recorded on the same matrix.

In this study flow diagrams were constructed using the following steps: (1) Each matrix contains (19 by 19) 361 cells (e.g. cell 5-4 or cell 95-93). Each matrix for each of the eight discussion transcripts was tabulated by writing the total number of tallies for each cell in that cell. (2) The four matrices for each of the two conditions of the experiment were compiled to make a composite matrix for each condition. (3) A complex preliminary flow diagram for each of the two composite matrices was completed by: (a) circling the cell with the largest number, that is, highest frequency of tallies, (b) drawing an arrow from that cell to the cell which most frequently followed the first cell in the flow of interaction. This is done by inspecting the row of the category corresponding to the second number of the first cell and finding the cell with the highest frequency in that row, (c) repeating this process until all cells with a minimum number of tallies were connected in closed loops. When an arrow was drawn to a cell which was already circled, the arrow was continued to the cell in that row with the next highest frequency. (4) In order to simplify these complex flow diagrams: (a) all cells with a frequency of 20 or less were excluded unless they were essential to the completion of a
loop with cells of a frequency over 20, (b) cell 6-6 was excluded because in all cases the tallies in this cell represented the directions given prior to the beginning of discussions, (c) all columns and rows which contained no cells which had a minimum number of 20 were removed from the matrix.

Two final simplified composite matrices were compared. There were three major flow patterns possible on the matrix. These can be seen by dividing the matrix into quadrants (excluding row and column 10) as shown in Figure 4-12.

Quadrant A is the teacher quadrant. Tallies in the cells in this quadrant indicate that the teacher is exercising control over the flow of discussion. Quadrant C is the student quadrant. Tallies in this quadrant indicate that students are exercising control over the flow of discussion. Quadrants A and C contain all the steady state cells (1-1, 2-2, 3-3, 4-4, etc.). Steady-state cells indicate sustained talk in a given category. Quadrants B and D are transition quadrants. Tallies in Quadrant B indicate a transition from teacher initiative to student initiative and tallies in cells in Quadrant D indicate a transition from student initiative to teacher initiative.

The three major patterns of communication flow are: (1) teacher initiated student response patterns, (2) teacher-student interactive patterns, and (3) student to student interactive patterns. Teacher initiated student response patterns are patterns indicated by loops in Quadrant A. A common loop of this kind would start at cell 5-5, go to 5-4 to 4-4 to 4-8 to 8-8 to 8-3 to 3-3 to 3-5 to 5-5 again. Teacher lecture to teacher question to student response to teacher accepts stu-
**Figure 4 - 12**

Quadrants of Matrix

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dent idea to teacher lecture and through the cycle again. **Teacher-student interactive patterns** are indicated by loops which pass through all four quadrants. A common loop would start at cell 5-5, go to 5-95 to 95-95 to 5-5 again. Less common, but still in this category would be 5-5 to 5-4 to 4-4 to 4-8 to 8-8 to 8-95 to 95-95 to 95-5 to 5-5. And also less common, 5-5 to 5-94 to 94-94 to 94-8 to 8-8 to 8t-8t to 8t-5 to 5-5. Teacher-student interactive loops may start at any point in the loop. **Student to student interactive patterns** are indicated by loops within Quadrant C. The most common loop would probably be 95-95 to 95-93 to 93-93 to 93-95 to 95-95. A less common loop would be 94-94 to 94-98 to 98-98 to 98-95 to 95-95 to 95-94 to 94-94.

These three categories describe the basic patterns. The existence or absence of one pattern or another tells something about the kinds of interaction that were characteristic of the particular group discussion or set of group discussions that the matrix represents. However, this is not the only measure. In addition to the existence of a given loop, the predominance of that loop in the overall interaction can be gauged by noting the frequencies in the cells which make up the loop compared to the frequencies in other loops.

**Summary and Operational Hypotheses**

The purpose of this chapter was to give a step by step explanation of the method that was devised to determine whether functional group interdependence encourages more student initiative and involvement in a group discussion than is encouraged by the conventional structure of class discussion.

The first section of the chapter was an overview of the experi-
Figure 4 - 13

Quadrant A and Quadrant C Loops
Figure 4 - 14

Transition Loops - Quadrant B and D
ment. The experiment was designed to compare two ways of structuring and leading group discussion in the classroom. The first was a conventional task structure in which students prepared identical assignments and the teacher led a review discussion using a question and answer format. The second discussion was structured so that students and teacher prepared differing but interrelated assignments and all subsequently participated in a group problem solving task which required the exchange of information and ideas. The sample, the setting, the materials, and the procedures used to conduct the experiment were explained.

The second section of the chapter was an overview of the system of measurement. The method of gathering data using classroom interaction analysis was introduced and explained. The particular relevance of the Flanders Interaction Analysis Categories was noted. The FIAC focuses on the dimensions of initiative and response in the classroom as evidenced in patterns of interaction. In order to make the FIAC applicable to the broader range of student behavior likely to occur in a successful group discussion, the original 10 category system was modified and extended to code the same range of behaviors for students as it did for teachers.

The resulting 19 category system also had other advantages. By spelling out clear coding guidelines, a provision was made to obtain a measure of student to student interaction within the flow of discussion. Provisions were also made to code student questions and student answers separately from teacher questions and teacher answers.

The procedures for using the 19 category system to code typed
transcripts of group discussion and for recording these data on matrices was reviewed. These 19 by 19 matrices formed the data base and were interpreted in four areas: (1) the balance of teacher and student talktime, (2) the balance of percentages of behaviors in various categories, (3) the balance of initiative and response, and (4) the balance of differing patterns of interaction in the flow of verbal communication. Procedures for interpretation of the matrices in each of these areas were reviewed.

Hypotheses were made in each of the four areas of matrix interpretation.

**TALKTIME**

**Hypothesis I** * The proportion of talktime will be greater for the teacher and less for the students in conventional discussion tasks than it will be in experimental ones.

**Hypothesis II** The proportion of talktime will be less for the teacher and greater for the students in experimental discussion tasks than it will be in conventional ones.

**CATEGORIES TOTALS**

**Hypothesis III** A greater proportion of talktime will be tallied in each of the following categories in experimental discussion tasks than in conventional discussion tasks: 91, 92, 93, 94, 94t, 95, 96, 97, 98.

**Hypothesis IV** A lesser proportion of talktime will be tallied in each of the following categories in experimental discussion tasks than in conventional discussion tasks: 1, 2, 3, 4, 5, 6, 7, 8, 8t.

**INITIATIVE/RESPONSE**

**Hypothesis V** The teacher question ratio (TQR) will be higher in conventional discussion tasks than it will be in experimental discussion tasks.

**Hypothesis VI** The teacher response ratio (TRR) will be higher in conventional discussion tasks than it will be in experimental discussion tasks.
Hypothesis VII The student initiative ratio (SIR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.

Hypothesis VIII The student to student response ratio (SSRR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.

Hypothesis IX The student question ratio (SQR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.

FLOW DIAGRAMS

Hypothesis X In comparing the flow diagrams of conventional discussion tasks with those of experimental discussion tasks, the experimental discussion task diagram will show a higher frequency of student to student interactive patterns and a lower frequency of teacher initiated student response patterns than will be shown in the conventional discussion flow diagram.

Hypothesis XI In comparing flow diagrams of conventional discussion tasks with those of experimental discussion tasks, the conventional discussion task diagram will show a higher frequency of teacher initiated student response patterns and a lower frequency of student to student interactive patterns than will be shown in the experimental discussion task flow diagram.

Each of these operational hypotheses will be considered in light of the results presented in the next chapter.

* Hypotheses I and II, and III and IV are not duplications, but provide for the possibility that the proportion of silence will be a factor. Teachers could talk less without students talking more.
CHAPTER V
RESULTS AND DISCUSSION

The purpose of this chapter is to present the findings of this study and their implications and to discuss the limitations of the research design. This study was designed to determine whether student initiative and involvement can be increased by establishing a structure of functional group interdependence for the task of class discussion.

Functional group interdependence was established in experimental discussion groups by specifying a procedure of division of labor in the preparation of resources and a procedure of group problem solving in the subsequent discussion. The patterns of verbal communication resulting from the experimental discussion tasks were compared with the patterns of communication resulting from the conventional class discussions. The conventional groups were based on the common procedure of assigning all students the same homework preparation and using a question and answer format during subsequent discussion.

In this chapter, comparative data for the two discussion conditions (experimental, E; conventional, C) are presented in four areas in which operational hypotheses were made: (1) the balance of student and teacher talktime, (2) the balance of talktime by interaction category, (3) the balance of initiative and response, and (4) the balance of teacher initiated and controlled patterns of interaction versus student initiated and controlled patterns of interaction.
The data base for comparisons of experimental and conventional groups in the first three areas appears in Table 5 - 1. These are numerical and arithmetic expressions of the relative proportions of talktime for different categories of verbal communication within a discussion and ratios of those categories which indicate initiative versus those which indicate response. Data in the fourth area of operational hypotheses is presented graphically in the form of flow diagrams superimposed on a matrix which records the frequency of particular sequences of verbal communication.

The data in Table 5 - 1 were used to compute the statistical significance tables for each of the first three areas of operational hypotheses using a one-tailed $t$ test of the following hypothesis:

$$\text{Mean of experimental group, } M_E \geq \text{mean of conventional group, } M_C.$$ 

Since there is a total of 26 tests, the probability of making type I errors is greatly inflated. Therefore, a reasonable value for significance is probably .005. A second limitation of this treatment of the data may be that the assumptions underlying the $t$ test, normality and equal variances, are violated. Given the small sample size of four conventional and four experimental groups, the violations of these assumptions could have considerable effect on the test statistic. Despite these limitations, the $t$ test yields a more useful presentation of the data.
Table 5-1

Data Base for Comparisons of Conventional and Experimental Discussion Groups

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TALKTIME

Hypothesis I

The proportion of talktime will be greater for the teacher and less for the students in conventional discussion tasks than it will be in experimental discussion tasks.

Hypothesis II

The proportion of talktime will be less for the teacher and greater for the students in experimental discussion tasks than it will be in conventional discussion tasks.

Table 5 - 2

Percentage of Student and Teacher Talktime for Conventional (C) and Experimental (E) Discussion Groups

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<th>Variable</th>
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<th>Standard Deviation</th>
<th>t</th>
<th>Significance</th>
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<td>C</td>
<td>E</td>
<td>C</td>
<td>E</td>
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<tr>
<td>Per cent Teacher Talktime</td>
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<td>35.03</td>
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<td>5.75</td>
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<td>Per cent Student Talktime</td>
<td>39.68</td>
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<td>13.97</td>
<td>5.76</td>
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</table>

*Significance refers to a one-tailed test, Ho: Mean E ≥ mean C.

The data presented in Table 5 - 2 indicate that teacher talktime was greater and student talktime less in the conventional groups than was the case in the experimental groups. The converse was also true. Talktime was greater for students and less for teachers in experimental groups compared to conventional groups. It is interesting to note that the proportions of talktime for students and teachers are almost exactly reversed in the two conditions. By way of comparison, Flanders (1970) has collected baseline data for talktime. The normative expectations for proportions of talktime over a variety of classes and age
Table 5 - 3

Comparison of Percentage of Talktime in Each Category for Conventional and Experimental Discussion Groups

<table>
<thead>
<tr>
<th>Variable (Category)</th>
<th>Means</th>
<th>Standard Deviation</th>
<th>t</th>
<th>Significance*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group C</td>
<td>Group E</td>
<td>Group C</td>
<td>Group E</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0.05</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2.65</td>
<td>0.78</td>
<td>1.17</td>
<td>.17</td>
</tr>
<tr>
<td>3</td>
<td>6.58</td>
<td>2.43</td>
<td>2.71</td>
<td>1.91</td>
</tr>
<tr>
<td>4</td>
<td>10.30</td>
<td>5.23</td>
<td>1.37</td>
<td>1.29</td>
</tr>
<tr>
<td>5</td>
<td>34.83</td>
<td>17.30</td>
<td>15.71</td>
<td>2.89</td>
</tr>
<tr>
<td>6</td>
<td>5.08</td>
<td>7.50</td>
<td>1.89</td>
<td>2.66</td>
</tr>
<tr>
<td>7</td>
<td>.08</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>15.40</td>
<td>5.10</td>
<td>7.36</td>
<td>1.97</td>
</tr>
<tr>
<td>8t</td>
<td>.83</td>
<td>1.75</td>
<td>.70</td>
<td>1.48</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>92</td>
<td>.005</td>
<td>.60</td>
<td>.05</td>
<td>.69</td>
</tr>
<tr>
<td>93</td>
<td>2.78</td>
<td>12.50</td>
<td>1.55</td>
<td>3.52</td>
</tr>
<tr>
<td>94</td>
<td>.30</td>
<td>2.88</td>
<td>.35</td>
<td>1.78</td>
</tr>
<tr>
<td>94t</td>
<td>.25</td>
<td>1.58</td>
<td>.21</td>
<td>1.16</td>
</tr>
<tr>
<td>95</td>
<td>19.85</td>
<td>39.25</td>
<td>6.75</td>
<td>3.93</td>
</tr>
<tr>
<td>96</td>
<td>0</td>
<td>0.025</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>97</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>98</td>
<td>.03</td>
<td>2.53</td>
<td>.34</td>
<td>1.23</td>
</tr>
<tr>
<td>10</td>
<td>.78</td>
<td>.53</td>
<td>.36</td>
<td>.73</td>
</tr>
</tbody>
</table>

*Significance refers to one-tailed test, Hypothesis: mean E > mean C.
levels are 68% for teacher, 20% for students, and about 12% for silence and confusion (p. 101).

**Interaction category totals.**

**Hypothesis III**  
A greater proportion of talktime will be tallied in each of the following categories in the experimental discussion tasks than in the conventional discussion tasks: 91, 92, 93, 94, 94t, 95, 96, 97, 98.

**Hypothesis IV**  
A lesser proportion of talktime will be tallied in each of the following categories in experimental discussion tasks than in conventional discussion tasks: 1, 2, 3, 4, 5, 6, 7, 8, 8t.

The data presented in Table 5-3 indicate that Hypothesis III held true for categories 93, 94, 94t, 95, and 98. Hypothesis IV was supported by the data for categories 2, 3, 4, 5, 8, 8t. Some of these differences in the kinds of talktime which accounted for differences in the overall proportion of student and teacher talktime between the two conditions are more significant than others. Table 5-4 presents in ascending order of significance the interaction categories of verbal communication as they accounted for differences in overall talktime between the two kinds of discussions.

**Figure 5-4**

**Category Differences in Order of Significance**

<table>
<thead>
<tr>
<th>Too few tallies to compute significance</th>
<th>1 teacher accepts feelings</th>
<th>7 teacher criticizes or justifies authority</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>91 student accepts feelings</td>
<td>96 student gives directions</td>
</tr>
<tr>
<td></td>
<td>97 student criticizes or justifies authority</td>
<td></td>
</tr>
<tr>
<td>No significant differences</td>
<td>6 teacher gives directions</td>
<td>8t teacher response to direction student question</td>
</tr>
<tr>
<td></td>
<td>92 student praises or encourages</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 silence or confusion</td>
<td></td>
</tr>
</tbody>
</table>
.05 significance of differences 5  decrease in teacher lecturing in E
94t  increase in student's asking teacher question in E

.025 significance of differences 8  decrease in student responses to direct teacher questions in E
94  increase in student's asking other students questions in E
3  decrease in teacher's acceptance and use of student's ideas in E

.01 significance of differences 98  increase in student responses to student questions in E
2  decrease in teacher praise and encouragement in E

.005 significance of differences 4  decrease in teacher asking direct questions of students in E
95  increase in student initiated talk in E
93  increase in student acceptance and use of other students' ideas in E

INITIATIVE AND RESPONSE

Hypothesis V  The teacher response ratio (TRR) will be higher in conventional discussion tasks than it will be in experimental discussion tasks.

Hypothesis VI  The teacher question ratio (TQR) will be higher in conventional discussion tasks than it will be in experimental discussion tasks.

Hypothesis VII  The student initiative ratio (SIR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.

Hypothesis VIII  The student to student response ratio (SSRR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.

Hypothesis IX  The student question ratio (SQR) will be higher in experimental discussion tasks than it will be in conventional discussion tasks.
Table 5 - 5

Initiative and Response Ratios

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
<th>Standard Deviation</th>
<th>t</th>
<th>Significance*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>E</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>TRR</td>
<td>68.89</td>
<td>40.62</td>
<td>10.79</td>
<td>13.99</td>
</tr>
<tr>
<td>TQR</td>
<td>25.34</td>
<td>23.29</td>
<td>10.61</td>
<td>5.15</td>
</tr>
<tr>
<td>SIR</td>
<td>60.46</td>
<td>88.73</td>
<td>9.47</td>
<td>4.74</td>
</tr>
<tr>
<td>SSRR</td>
<td>7.48</td>
<td>23.01</td>
<td>4.17</td>
<td>4.52</td>
</tr>
<tr>
<td>SQR</td>
<td>1.44</td>
<td>6.95</td>
<td>.67</td>
<td>2.29</td>
</tr>
</tbody>
</table>

*Significance refers to a one-tailed test, Ho: Mean E > mean C.

The data in Table 5-5 indicate the following tendencies toward initiative and response:

1. The tendency of the teacher to react to ideas and feelings of students is greater in conventional groups than in experimental groups. This difference is significant at the .01 level. Assuming as Flanders does that response and initiative are reciprocal tendencies, less teacher intervention, even in the form of reacting to student ideas, may allow more student initiative.

2. This supposition is apparently supported, since the proportion of student talk which was judged to be an act of initiation was greater in experimental groups than in conventional ones. This difference was significant at the .001 level.

3. That less teacher intervention in the course of discussion allows
for the possibility of more student initiative is further supported by the data which indicate that the teacher's tendency to use questioning rather than direct statements when guiding discussion is not significantly different in experimental compared to conventional discussion. That is, how the teacher guided discussion seemed to be less important with regard to student initiative than how often.

4. The greater proportion of student initiative in experimental groups may be linked with increased student to student interaction. The tendency of students to respond to other students' ideas in the course of discussion was greater in experimental groups than in conventional ones, a difference significant at the .005 level.

5. Asking questions was another indication of student initiative. The tendency of students to ask questions of each other and the teacher in the course of discussion was greater in experimental groups than in conventional ones, a difference also significant at the .005 level.

PATTERNS OF INTERACTION

Hypothesis X In comparing the flow diagrams of conventional discussion tasks with those of experimental discussion tasks, the experimental discussion task diagram will show a higher frequency of student to student interactive patterns and a lower frequency of teacher initiated student response patterns than will be shown in the conventional discussion flow diagram.

Hypothesis XI In comparing flow diagrams of conventional discussion tasks with those of experimental discussion tasks, the conventional discussion task diagram will show a higher frequency of teacher initiated student response patterns and a lower frequency of student to student interactive patterns than will be shown in the experimental discussion flow diagram.

The data presented in Flow Diagram 5 - 6 indicate that in experimental groups the frequency of loops in Quadrant C, student initiated
and controlled interaction, is higher than the frequency of loops in Quadrant A, teacher initiated and controlled interaction. That is, the predominant patterns of interaction in experimental groups were student to student interaction and student initiated interaction. In addition, there are no completed loops of any frequency that are within Quadrant A. Therefore, the patterns of student to teacher interaction were apparently not characterized by repeated teacher question and student answer sequences.

Flow Diagram 5 - 7 presents the data for conventional discussion groups. A consideration of these data indicates that in conventional groups the frequency of loops in Quadrant A is higher than Quadrant C. That is, the predominant patterns of interaction are teacher initiated and controlled. The only loop in Quadrant C is extremely low frequency indicating that there is almost no sustained student to student interaction. The most predominant pattern of interaction is the repeated cycle of teacher question and student answer.

Conclusions.

First steps in research of this kind tend to generate more questions than answers. Strictly speaking, the statistical analysis of the data does not prove a causal relationship, it only suggests the probability that hypothesized relationships among variables are not due to chance. That is, the null hypothesis is disconfirmed, but this does not confirm the operational hypotheses of this study. The hypotheses have not been proven correct, they simply have not been proven incorrect.

Given these initial limitations and considering only those hypo-
theses which yielded differences which were significant at the .005 level or above, what conclusions can be tentatively drawn from this study?

1. Patterns of group interaction in the classroom which are characterized by student initiative, student to student interaction, and student questioning apparently occur with a significantly higher frequency in discussion tasks which are based on a structure of functional group interdependence than in discussion tasks which are based on a conventional structure.

2. This higher frequency of student initiative and involvement can apparently be accompanied by a significantly lower frequency of teacher questioning in functionally interdependent groups in comparison to conventional groups, when the conventional group structure is based on a question and answer format.

This combination of conclusions leads the author to speculate further that increased student initiative and involvement in the functionally interdependent discussion groups may have resulted from something other than direct teacher solicitation of more student participation. That is, since teachers asked fewer questions in functionally interdependent discussions and yet obtained more student initiative and involvement, other variables are likely to be involved.

The data seem to support the hypothesis that differences in the overall structure of the discussion tasks motivated students and teachers to interact in patterns that were significantly different under the two conditions. The task which is structured on the basis of functional group interdependence (division of labor and group problem solving) apparently encourages more student initiative and involvement than does a task which is structured conventionally (parallel prepara-
Flow Diagram 5 - 6

Composite Matrix of Interaction Analyses* of Experimental Discussion Groups

*All cells with a frequency of 20 or less were excluded unless they were essential to the completion of a loop with cells of a frequency over 20. Cell 6-6 was also excluded because all tallies in this cell represented the directions given prior to the beginning of discussion.
Flow Diagram 5 - 7

Composite Matrix of Interaction Analyses* of Conventional Discussion Groups

*All cells with a frequency of 20 or less were excluded unless they were essential to the completion of a loop with cells of a frequency over 20. Cell 6-6 was also excluded because all tallies in this cell represented the directions given prior to the beginning of discussion.
tion and question/answer format).

**Limitations.**

This study was designed as a pilot study. The author intentionally "loaded" both the experimental and conventional conditions with factors which would be likely to increase differences in results between the two conditions. Hence, if no differences had been found, further research would have been unproductive. By the same token, further research is necessary to determine which of the independent variables (i.e. seating arrangement, division of labor, etc.) accounts for the results.

1. As previously mentioned, the reliability of the statistical analysis is undermined by the size of the sample. By comparing patterns of group interaction rather than, for example, the behavior of individual students, the sample drops from a comparison of two groups of 32 individuals to a comparison of four experimental groups and four conventional groups. This situation perhaps could be remedied by tallying the category distributions of talktime for each student and teacher and comparing them by experimental and conventional conditions. This, however, in effect, is what the existing data represent, a summation of each student's and teacher's talktime by category. Although the alternative method would likely yield similar results, it would, in addition, determine which or how many students were responsible for the differences between groups.

2. A second limitation to this study is that it is a short term experiment. Short term studies tend to bring out the effects of stronger stimuli. In general, effects of weaker stimuli appear over the period
of a long term experiment. Since this study consisted of only one class period for each group, it does not generate any data about the long-range effects of functionally interdependent discussion tasks.

Although some of the short term effects are apparently significant, it is possible that the effects of practice, for example, might result in even more significant differences between experimental and conventional discussions. Many factors which enhance cooperation, trust, for example, take time to develop. In contrast, it is also possible that student initiative and involvement might decrease in the long range due to some unforeseen effects; perhaps the wearing off of the novelty of an alternative format of discussion.

In order to deal with these questions, a study should be conducted to compare patterns of interaction in classes which regularly use functionally interdependent discussion tasks with patterns of interaction generated in classes which regularly use a conventional discussion task. In addition, data could be collected on changes in verbal behavior of individual students over the time of regular participation in a particular kind of discussion task.

3. In order to insure strict experimental controls, this study would ideally have used two "naive" teachers to teach groups of students with whom they had had no previous contact. The practical availability of a sample dictated otherwise. The author of this study was also one of the teachers in the experiment. Obviously, this created a situation in which potentially, the experimenter in the role of teacher could have significantly affected the results. In order to limit this possibility, instructions for each teacher were spelled out for each
condition in the experiment. After the experiment was conducted, it was also possible to check for differences which might have occurred as a result of the manner in which one teacher may have behaved significantly differently from the other. By dividing the data in Table 5 - 1 by teacher rather than kind of discussion, differences for each variable by teacher were calculated. A comparison of differences by teacher indicated no significant differences for any of the variables which were previously compared by kind of discussion.

Although teachers were assigned to groups to control for differences between the original four classes, an analysis was also made to determine the possible effects of a teacher's teaching a group of students with whom he was familiar versus teaching a group of students with whom he was not familiar. Again there were no significant differences for any of the original variables tested.

4. The experimental design used in this study is not adequate to prove or disprove the motivational aspects of the theory proposed in Chapter III. Future research should include an instrument to systematically gather data from students about their perceptions of the task and their reasons for choosing to participate in the manner that they did.

5. The experimental design also did not adequately consider the quality of participation and the extent of content learning. Although the experimental discussion was based on the exchange of information which was relevant to the content objectives of the course, there was no successful measure of content learning. The procedure for collecting post-tests broke down due to a previously negotiated evaluation system
in two of the four classes which was not initially known to the experimenter.

Students were allowed to choose which four of six assignments they wished to count toward their final grade. Since the experiment was conducted toward the end of the term, twelve students in two classes chose not to complete the take-home test. Therefore, of the 52 tests that were collected, the only conclusion that could be drawn was that, given the presence of "A" papers in both test groups, it was apparently possible to perform successfully on a post-test regardless of the structure of the discussion task. Students who had to rely on other students to exchange their resources were still able to perform as well as students who originally were given all the resources.

6. Three limitations of the experimental design relate to problems of applicability to standard teaching situations. First, each group in the experiment had only eight students and a teacher. Depending on the school system, classes range anywhere from fewer than eight to forty or more. Group size can be a significant factor in determining group process and productivity. It certainly could be argued that the sheer size of most classes forces teachers to use the conventional question and answer format of discussion. If this is in fact the case, perhaps teachers should consider the option of dividing classes into smaller functionally interdependent groups for tasks like discussion.

The second limitation on applicability of the results is that the course content of psychology may offer more opportunities for group problem solving discussion and division of labor than say mathematics. It is not clear that all course content will lend itself to
the procedure for establishing functional group interdependence in the manner outlined in this study. Further research is needed here.

A third limitation involves the question of minimum levels of particular skills. Teachers and students may need certain interpersonal skills as prerequisites to the successful implementation of functional group interdependence. Both teachers in this study were experienced in the management of group process and the students were, in general, academically motivated, highly verbal, and comfortable with their classmates. To some extent it is possible that prerequisite skills may be age related. Further research is necessary in this area also.

Implications for teaching.

Although there are clear limitations to this study, some tentative conclusions still seem valid. Teachers can use functional group interdependence to structure the task of class discussion to accomplish two goals which they usually find are in conflict under the conditions of a conventional class discussion. That is, through functional group interdependence, (1) discussion can be focused on particular ideas and information that are relevant to pre-determined curricular objectives, and (2) student initiative and involvement in the exchange of these ideas and information can be increased.

Functional group interdependence is based on a division of labor and group problem solving. It does not require implementing an overall cooperative reward structure with regard to grades. Students may still be evaluated on the basis of individual performance. The author proposes that the success of functional group interdependence as a structure for promoting successful group discussion hinges on the relationship of
motivational and procedural dimensions of interdependence. The procedural requirements or task demands which are perceived by students in a functionally interdependent group (the logic, feasibility, and rewards of mutual assistance) tend to motivate them to participate in discussion. In contrast, lack of these task demands in a conventional discussion provide little motivation to participate, and may in fact motivate students to engage in behaviors which hinder discussion.

What are the implications of this study for teachers and teaching?

1. Teachers may gain a more adequate understanding of student behavior by considering a class of students and teacher as an interdependent group of persons confronted with various tasks.

2. Teachers may gain a more adequate understanding of student motivation by considering what procedures or group process is most likely to encourage an interdependent group of persons to accomplish a particular task.

3. Teachers may be able to use functional group interdependence in the form of division of labor in preparation and group problem solving in subsequent discussion to encourage behaviors necessary to a successful group discussion.

4. Teachers may be able to encourage student initiative and involvement while maintaining a system of grading based on the evaluation of an individual's performance. This evaluation may include not only content learning, but also the individual's skills in discussion (listening, presenting, questioning, etc.).

5. Teachers who believe that lack of student participation is primarily a function of students' laziness or poor background and can
only be improved by "recruiting" a "higher quality of self-motivated student" may have to re-examine this belief system and reconsider their own existing and potential effects on the tedium of class discussion.

6. Teachers may initially have to spend more time designing tasks and learning to model behaviors which will accomplish their objectives for an interdependent group.

7. Teachers who have been committed to the concept of a problem solving approach or a problem-posing curriculum (cf. Freire, 1968 or Postman and Weingartner, 1969) may be able to use functional group interdependence to make a transition from conventional methods.

8. Teachers who try to increase student participation by asking more questions of students may find that asking more questions as a means of encouraging student initiative and involvement may reach a point of diminishing returns, and that the further increase in student initiative and involvement may be dependent on an actual change in the structure of the discussion task.

Further implications.

The implications of this study are not limited to teaching. The successful management of interdependent groups is a common goal in many settings: community organizing, interdisciplinary research, leadership of administrative staffs, committees, departments, and other formal and informal sub-groups of businesses, social service organizations, and governments. The basic principle of matching the structure of group interaction to the demands of the task are still important. The management strategies of (1) defining a problem in
such a way that all participants' resources are necessary to the group problem solving process and (2) the distributing of the necessary resources (or responsibility for gathering them) among members of the group in such a way as to make the participation of all members necessary to solve the problem at hand -- may both be effective in encouraging initiative and involvement of group members in these settings.

Summary

The purpose of this chapter was to present the findings of this study and their implications for teaching. In comparing the data on the patterns of interaction in experimental discussions with the data on patterns of interaction in conventional discussions, the author concluded that the structure of the experimental discussion tasks, functional group interdependence, was more effective than the structure of the conventional discussion tasks in encouraging student initiative and involvement.

Limitations of experimental design and statistical analysis suggest that further research is in order. This research should be long term and focused on a larger sample. Research of this kind would provide the opportunity for further exploration of the implications of the results of the present study for teachers and teaching. In particular, more attention should be given to the dynamics of classroom interaction in light of the interdependent nature of classroom social structure and the interdependent nature of many classroom tasks.

To the three questions which were posed at the beginning of this study:

(1) Can student initiative and involvement be increased by establishing
functional group interdependence among all members of the class including the teacher?

(2) Can this functional interdependence be established through a division of labor with respect to homework preparation and through group problem solving with respect to subsequent discussion?

(3) Can functional interdependence be established while maintaining a system of grading based on individual performance?

-- the tentative answer to all three questions is "yes."
CHAPTER IV

SUMMARY *

For teachers who believe that group interaction is essential to effective classroom learning, few experiences are more frustrating than trying to lead a group discussion in which students do not participate. Attempting to promote participation by abandoning curricular objectives in favor of the temporary benefits of appealing to students' immediate interests can often be equally as frustrating. Neither "pulling teeth" nor "pooling ignorance" is ultimately a satisfactory pattern of group interaction for group discussion. The problem is to get students to talk to each other and to the teacher and to know what they are talking about.

A method of encouraging student initiative and involvement in group discussion is presented in this study. A significant feature of the social structure of the classroom is the mutual dependence that group members experience when undertaking group tasks. The appropriate and effective management of this interdependence has been the subject of more than 100 studies (Johnson and Johnson, 1974). A large proportion of this research has focused on the relative benefits of cooperatively interdependent versus competitively interdependent reward structures. Attempts to translate this research into viable techniques to encourage student participation has met with limited success because of the emphasis on changes in the system of grading. Employing a cooperative system of grading (giving all students in the group the

*This chapter is written in the form of a publishable article.
same grade based on group performance) as suggested by Deutsch (1952) and Coleman (1959) does not adequately consider the current educational system's essential reliance on the evaluation of students' individual achievement.

Other researchers, however, have begun to consider the nature of cooperative interdependence in group tasks in a broader "procedural" framework. Of particular significance is a study by Miller and Hamblin (1963) in which they conducted an analysis of 24 previous studies which had compared group productivity in cooperatively and competitively structured tasks. First, in contrast to Coleman (1959), Miller and Hamblin suggested that assigning students differing grades (differential rewarding) is not inherently competitive. Grades can be assigned on the basis of pre-established non-competitive standards of mastery of the materials and specific skills (i.e. criterion-referenced grading versus norm-referenced grading). Second, the effects of a particular reward structure depend in large part upon the procedural or process requirements of the task. For example, where a competitive reward structure might inhibit the process of mutual assistance required in a group discussion, competitive rewarding may facilitate the task of improving group members' speed in performing an individual manual task. Therefore, (1) what group members do in a collective task may be as much a function of the group process that is prescribed or permitted as it is a function of the reward structure and (2) a differential, non-competitive reward structure based on criterion-referenced grading is likely to provide for individual evaluation without any inhibitive effects on a cooperatively interdependent task such as group discussion.
The purpose of this study is to demonstrate that by prescribing a group process based on group problem solving, a division of labor, and a non-competitive differential reward structure, student initiative, involvement, and interaction in group discussion can be increased.

Theory.

Steiner (1972) brings together the findings of Miller and Hamblin's study and the research tradition in group problem solving and division of labor (Thomas, 1957; Kelley and Thibaut, 1969; Vroom, 1964; and others). Steiner defines two major kinds of group tasks. Unitary tasks are those which cannot profit from a division of labor or in which mutual assistance is not feasible or allowed. Divisible tasks are those in which the larger task can be readily divided into sub-tasks, each of which can be performed by a separate individual. Divisible tasks provide different opportunities, constraints, and rewards from those provided by unitary tasks. Each task can be described as having different task demands. In addition to the task demands, the actual group process that occurs will depend upon the availability and the utilization of the relevant and necessary resources.

Classroom group discussion is usually structured as a unitary task. All students are assigned the same resources to read and prepare. The discussion is then facilitated by the teacher who asks questions to insure that students have understood the important points. The structure of the task means that potentially any student (or the teacher) can answer the questions. This also means that the preparation of all students except the student who answers the question is not required by the task. That is, given the massive duplication of pre-
paration and the question and answer format, most group members are not motivated to take the initiative to become involved in an open exchange of ideas and information which might characterize a successful group discussion. Repeated experience with this structure may lead some students to reduce their effort in preparation as well as in participation. What masquerades as a group discussion is actually little more than a series of parallel dialogues between the teacher and a series of students. Initiative and involvement are not logically required, made feasible, or rewarded. Is it any wonder that students do not participate?

An alternative structure of the group discussion task would be to manage the interdependence of the group through a functional division of labor with regard to preparation (assigning different relevant readings to different students and the teacher) and a group problem solving process with regard to subsequent discussion.

Group discussion is an interdependent task which requires, in order to be successful, that group members engage in behaviors that facilitate an open exchange of ideas and information that is relevant to an agreed upon topic or problem, and to do so in a manner that expands or refines group members' knowledge and understanding of the topic or problem and improves their skills in facilitating future discussions.

In order to engage in behaviors that are facilitative for a given class discussion, students must (1) have relevant and necessary resources, (2) be motivated to exchange these resources, and (3) have the skills to exchange the resources effectively.
These provisions can be met by the teacher in the capacities of designer of the task and as leader of the discussion. The teacher can encourage student initiative and involvement in group discussion by (a) providing the students with relevant resources (or clear steps for obtaining them) that are necessary to the success of the discussion, (b) structuring the preparation for the discussion so that these resources are distributed among the students, (c) structuring the discussion so that group members will be functionally interdependent with respect to needing each other's resources in order to succeed individually and as a group (i.e. group problem solving and an individual criterion-referenced post-test), (d) demonstrating how to share resources by exchanging his or her own relevant resources with other group members, and (e) modeling specific effective discussion behaviors.

The author hypothesized that this method of structuring and leading group discussion will motivate students to participate and interact because of (1) their expectations that others will evaluate them favorably if they facilitate the success of the discussion and the individual success of group members, (b) their expectations that others will evaluate them unfavorably if they inhibit the success of group members, (c) their perceptions that adequate preparation of their particular resources is likely to be rewarded by positive evaluations by others in the group, (d) their perception that their own success at the task is dependent upon the encouragement of and exchange with others in the group and the adequate preparation of their own resources as a medium of exchange, and (e) their perception that they have the power to affect the group process and consequent outcome of the discussion.
Method.

Four classes of high school students in introductory psychology were divided into eight discussion groups. Each group had eight students who were randomly assigned. Four of the discussion groups were assigned to the experimental condition and four to the conventional condition. One of two teachers was assigned to each group in a pattern which controlled for the affects of teacher differences on outcomes.

The conventional discussion task was structured by giving each student an assignment packet with an article describing an event and explanations of five separate psychological concepts which could be used to explain the event. The students were told to prepare for a discussion the following day by reading the materials and applying them to the article. Instructions to the teacher specified that questions should be asked to insure that students understood the concepts and their application to the article.

The experimental discussion task was structured by giving each member of the group including the teacher a packet with the article and one of the five explanations of a psychological concept. The students were told to prepare for a group problem solving task in which they would be expected to share their resource and ask other students to share theirs in order to develop five clear partial explanations of the events described in the article. The instructions pointed out that other students would be depending upon the contributions of each student. The teacher was instructed to be a role-model group participant and not to dominate discussion.

Both groups were instructed that they would be given a closed-
book take-home test after the discussion which would be graded in the same manner as previous tests in their regular classes, criterion-referenced grading.

Transcripts of verbal communication were made for each of the eight discussion groups from audiotapes. The transcripts were coded independently by two persons using a 19 category modification of the Flanders Interaction Analysis Categories. Flanders' basic 10 category system was expanded by extending the same range of behavior classifications applied to teachers to apply to students. Additional guidelines provided for clear distinctions between student response and student initiative and a measure of student to student interaction.

Each three-second interval (unit) of verbal communication was coded with one of the 19 categories. The teacher categories were:
1 - Accepts feeling, 2 - Praises or encourages, 3 - Accepts or uses ideas of pupils, 4 - Asks questions, 5 - Lecturing, 6 - Giving directions, 7 - Criticizes or justifies authority, 8t - Response to a direct student question. Student categories were: 8 - Response to a direct teacher question, 91 - Accepts feeling, 92 - Praises or encourages, 93 - Accepts, uses, or responds to ideas of another student, 94 - Asks question of another student, 94t - Asks question of teacher, 95 - Initiates talk, 96 - Gives directions, 97 - Criticizes or justifies authority, 98 - Response to a direct student question.

Consecutive overlapping pairs of coded units were recorded on a 19 by 19 matrix in the sequence in which they occurred. A sequence of 4, 8, 95, 5 was therefore recorded in the consecutive overlapping pairs 4-8, 8-95, 95-5. The first number of the pair denotes the row
and the second number the column on the matrix. The matrix was then used (1) to calculate percentages of behaviors which were teacher responses, teacher questions, student initiatives, student to student responses, and student questions, and (2) create a flow chart (Figure 1) of the patterns of group interaction.

Discussion.

The findings of this study suggest that prescribing a group process based on group problem solving, a division of labor, and a non-competitive differential reward structure will increase student initiative, involvement, and interaction in group discussion. The data in Table 1 indicate that student talktime was greater in experimental discussions than in conventional discussions. What were the changes in patterns of interaction which accounted for this difference? The tendency of the teacher to react to ideas and feelings of students (Teacher Response Ratio, TRR) was greater in conventional discussions than in experimental discussions. Assuming as Flanders does that response and initiative are reciprocal tendencies, less teacher intervention, even in the form of reaction to student ideas, apparently allows more student initiative in the experimental discussions. This hypothesis is further supported by the data which indicate that the teacher's tendency to use questioning rather than direct statements when guiding the more content oriented parts of discussion is not significantly different in experimental or conventional discussions. That is, how the teacher guided discussion seemed less important rela-
tive to student initiative and involvement than how often.

The greater student initiative (Student Initiative Ratio, SIR) in experimental discussions is apparently linked to the increased student to student interaction (Student to Student Response Ratio, SSRR). Students also asked more questions (Student Question Ratio, SQR) of each other and the teacher in experimental discussions. An analysis of flow charts for the discussions supported the above findings. Patterns of interaction in conventional discussions were characterized by repeated teacher questions and student short answers. There were virtually no student to student interactions. In contrast, experimental discussions were characterized by direct statement exchanges among students and between the teacher and students.

The combination of greater student initiative and involvement in experimental discussions with less teacher response to students' ideas and no increase in teacher questioning leads the author to hypothesize that the increased student initiative and involvement resulted from something other than direct teacher solicitation of more student participation. The data seem to support the hypothesis that differences in the overall structure of the discussion tasks may have motivated students and teachers to interact in patterns which were significantly different. The task which was structured with a division of labor and group problem solving apparently encourages more student initiative and involvement than a task which is structured using a conventional parallel preparation and question/answer format. This successful cooperative interdependence is achieved while maintaining differential rewarding with respect to grading by using a criterion-referenced
grading system. It is possible that task structure of group problem solving and a division of labor motivates students to participate and interact because students perceive that this structure makes initiative, involvement, and interaction feasible, logical, and rewarding.

Limitations of design.

The implications which can be drawn from this study are subject to several limitations. The sample was sufficiently small that replications with larger groups are needed to insure that the assumptions of normality and equal variances of the t-test have not been violated. These groups were drawn from one high school in one setting. A long-term study is also needed to determine if other variables are introduced with regular use of the functional group interdependence method which may affect student initiative and involvement.

Implications for teaching.

Teachers may gain a more adequate understanding of student motivation by considering what procedure or group process is most likely to encourage an interdependent group of persons to accomplish classroom tasks. Teachers who are frustrated by the lack of student initiative and involvement in their classes may have to look at the way in which they have structured task demands to determine whether they have made such participation logical, feasible, and rewarding.

Using a functional group interdependence method may mean that teachers will have to spend more time at least initially on task design and evaluation of classroom patterns of interaction. Given the data in this study it appears that simply asking more questions to
encourage student initiative and involvement reaches a point of diminishing returns where the teacher only monopolizes more talktime. Further increases in student initiative and involvement may require that teachers re-design classroom tasks.

Further research is needed to determine what effects if any a functionally interdependent task structure has on levels of student achievement. Do students learn more, less, or similar amounts of information in functionally interdependent discussions when compared with conventional discussions? What content can be productively taught using a group problem solving and division of labor task structure? The e and other questions need to be answered in order to evaluate the effectiveness of functional group interdependence as a structure for classroom tasks such as discussion.
Figure 1

Composite Matrix of Interaction Analyses* of Conventional Discussion Groups

*All cells with a frequency of 20 or less were excluded unless they were essential to the completion of a loop with cells of a frequency over 20. Cell 6-6 was also excluded because all tallies in this cell represented the directions given prior to the beginning of discussion.
Table 1

Comparison of Conventional (C) and Experimental (E) Discussion Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Means</th>
<th>Standard Deviation</th>
<th>t</th>
<th>Significance*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
<td>E</td>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>Percent Teacher Talktime</td>
<td>60.33</td>
<td>35.03</td>
<td>13.97</td>
<td>5.75</td>
</tr>
<tr>
<td>Percent Student Talktime</td>
<td>39.68</td>
<td>64.98</td>
<td>13.97</td>
<td>5.76</td>
</tr>
<tr>
<td>TRR</td>
<td>68.89</td>
<td>40.62</td>
<td>10.79</td>
<td>13.99</td>
</tr>
<tr>
<td>TQR</td>
<td>25.34</td>
<td>23.29</td>
<td>10.61</td>
<td>5.15</td>
</tr>
<tr>
<td>SIR</td>
<td>60.46</td>
<td>88.73</td>
<td>9.47</td>
<td>4.74</td>
</tr>
<tr>
<td>SSR</td>
<td>7.48</td>
<td>23.01</td>
<td>4.17</td>
<td>4.52</td>
</tr>
<tr>
<td>SQR</td>
<td>1.44</td>
<td>6.95</td>
<td>.67</td>
<td>2.29</td>
</tr>
</tbody>
</table>

*Significance refers to a one-tailed test, Ho: Mean E mean C.
BIBLIOGRAPHY


Deutsch, M. An experimental study of the effects of cooperation and competition upon group process. Human Relations, 1949, 2, 199-232. (a)

Deutsch, M. A theory of cooperation and competition. Human Relations, 1949, 2, 129-152. (b)


Jones, S.C., & Vroom, V.H. Division of labor and performance under cooperative-competitive conditions. Journal of Abnormal and Social


Johnson, D.W., & Johnson, S. The effects of attitude similarity, expectation of goal facilitation, and actual goal facilitation on interpersonal attraction. Journal of Experimental Social Psychology, 1972, 8, 197-206.


APPENDIX A

The following pages constitute the resource packet that each student in conventional discussion tasks received. In the experimental discussion tasks, two students in each group received the pages for one concept and the teacher received the page on the concept of "contagion." All materials are reproduced here with permission of the publishers.
Once a person is involved in an activity or group, what kinds of reasoning does he or she use to justify continued participation in the activity or group? How is it that when you are a member of a group you are able to perceive all its good qualities and none of its bad ones? The following explanation is from Social Psychology: People in Groups, B. Raven and J. Rubin, Wiley, 1976, pp. 231-236.

**Dissonance Reduction and Attributions following Social Influence**

It may seem obvious that if a person has been generously rewarded for doing something, he may begin to enjoy that activity; the greater the reward, the more he will like the act. Now consider a rather different and opposing position—that a person may enjoy doing something even more if he is rewarded only *moderately,* just enough to persuade him to do it. This was the conclusion reached by Leon Festinger in his theory of cognitive dissonance (1957). The results of his first study, which tended to support this view (Festinger and Carlsmith, 1959), seemed to be so counter-intuitive that they caused a raging controversy among social psychologists—one that has not yet been fully resolved. Let us first review the theory of cognitive dissonance.

**The Theory of Cognitive Dissonance.** Festinger views an individual’s world as composed of a large number of cognitive elements, that is, things of which we are aware—"knowledges," if we may use the plural of that word. We are aware of our behavior: that we are smoking, that we are wearing a woolen suit, that we have just purchased a new Volkswagen, and so forth. We are also aware of certain facts and our own beliefs and attitudes: that we like smoking, that smoking may lead to lung cancer, that the Volkswagen has a good resale value, that citrus fruits are raised in Florida and California, that the highest mountain in North America is Mt. McKinley. Most of these cognitive elements are not related to each other—my knowledge that I am smoking is not related to my knowledge that citrus fruits are grown in Florida and California: the fact that Mt. McKinley is the highest mountain in North America is not related to the fact that VWs have a good resale value. On the other hand, other pairs of elements are related to each other. If the implications of one piece of knowledge are opposed to another, the two elements are dissonant. The knowledge that smoking may lead to lung cancer implies that we should not be smoking. Thus, the knowledge that we are smoking is dissonant with the knowledge that smoking is harmful. On the other hand, the knowledge that smoking is enjoyable suggests that we should be smoking; therefore, these two elements are consonant. The same is true for the knowledge that we have just purchased a VW and VWs have a good resale value.

Festinger goes on to state that dissonance is uncomfortable and produces tension, and that when we become aware of cognitive dissonance we tend to make a cognitive or behavioral change in order to reduce that dissonance and restore consonance. If we are smoking and know that smoking may lead to lung cancer, we may do one of the following: give up smoking, reject the information that smoking leads to lung cancer, try to obtain information on the positive values
of smoking, contribute money toward the development of a noncarcinogenic cigarette, and so forth.

As an example in decision-making, imagine that we wish to purchase a car but do not know whether to get a Ford or a VW. It is difficult to decide between them since the Ford has many positive features (it is roomy, aesthetically pleasing, quieter in operation, and easier to have repaired) as does the VW (it is less expensive, it has a good resale value, and it has lower repair costs). The Ford also has many negative features (it has high repair costs, it has a low resale value, and it is difficult to park) as does the VW (it makes one feel cramped inside, it is rather ugly, and it has unpleasant wartime associations). All of these cognitive elements make the decision difficult, but decide we must. Afterward (let us say we bought the VW) our dissonance is increased. Why? Because all of the negative factors of our choice are still cognitively present (the VW is still small, ugly, and unpleasant) as are all of the positive factors of the rejected alternative (the Ford is still roomier, prettier, and quieter). Festinger says that after making a decision, the individual has a special need to reduce his dissonance—by finding out additional factors that make his choice seem a good one, by trying to convince friends to make the same decision, by reading articles or pamphlets showing that the rejected alternative is a poor product, and so forth. The greater the conflict was before the decision, the greater the dissonance will be afterward. Have you ever seen someone who has just given up smoking trying with great vigor to get his friends to stop? Possibly he is extremely pleased with his own decision and wants to share its benefits with those whom he loves. But all too often, the vehemence of his behavior suggests that he is also trying to satisfy himself that, despite all of the pleasures he is forgoing, his decision was a good one; effectively convincing others will also help him to convince himself. (See the discussion about the proselyting behavior of the Seekers on page 16.)

Dissonance and Forced Compliance. Festinger's theory of cognitive dissonance after making a decision can readily be applied to our analysis of social power. A person who is asked to do something that he really does not want to do is, almost by definition, undergoing conflict: should he comply or not? If he decides to comply, he must again resolve his dissonance; the greater the conflict he experienced before the decision, the greater will be his dissonance afterward. This concept is illustrated in Figure 6.6.

It is reasonable to assume that there are very few acts that most people would not commit if the power exerted on them were great enough (say, the threat of death). But, to take a less extreme example, think about the issue of cheating on an examination. We hope that
most students would never contemplate such a thing. But at some price, for example $1000, some students probably would. Suppose that only $1.00 were offered for a student to take an exam for a classmate. Most students would probably reject this offer without hesitation. But what if the offer were $10,000? Undoubtedly some students would consent to cheat with very little hesitation. In rejecting the $1.00 offer or accepting the $10,000 offer, there would be no conflict before making the decision. The rejected offer would require no explanation, for the reward is so small. The accepted offer would also carry its own justification—cheating may be bad, but for $10,000! Suppose that $1000 is the breaking point, the point at which the offer is just large enough to balance all of the arguments against cheating. At this point, conceivably, nothing would happen, and the student would just fluctuate back and forth. Let us make it $1001. There may be a lot of hesitation and soul-searching, but finally it is accepted. If the amount is $999—not quite enough—there may also be a lot of hesitation and conflict, but finally the offer is turned down. In both cases, the student must resolve his post-decisional dissonance. Compliance: "Why did I compromise my morals by agreeing to cheat? Did I do it for only $1001? No. (Possible dissonance reduction:) I guess that cheating is not all that bad. Most people have done it at one time or another. Besides, that exam is stupid." Noncompliance: "Why did I reject $999—money that I could have used so nicely to do so many things I would like to do? Obviously because cheating is a terrible thing—now that I think about it, worse than I had ever imagined. Anyone caught cheating should be strung up from the nearest lamp post."

This tendency for an individual to change his views to make them consistent with his behavior has led to much research in social psychology on the issue of forced compliance. When Judson Mills (1958) conducted a field experiment with sixth-grade children, he found that those who cheated for high rewards, or did not cheat for low rewards, did not change their views about cheating. However, those who cheated for relatively low rewards became more lenient in their views about cheating. And those who did not cheat, despite attractive inducements, became very harsh and critical in their attitudes toward anyone who would even consider it.

Cognitive change for one dollar? The first major test of the dissonance and forced compliance hypothesis was carried out by Leon Festinger and J. Merrill Carlsmith (1959). The subject was asked to participate in a "measure of performance." Imagine yourself filling a tray with 12 spoons using only one hand, then emptying the tray and refilling it again, over and over, for half an hour. You would probably be relieved when the experimenter tells you that this test is over. But then he gives you a board with 48 square pegs and instructs you to turn each of these one quarter turn, again with only one hand. When you have finished this, you must start again and turn each one another quarter turn for an additional half hour. And that is the experiment—performing unusually monotonous tasks for an hour. When it is over, you prepare to leave. But wait. The experimenter tells you of a problem and asks your help:

| There are actually two groups in this experiment. In one, the group you were in, we bring the subject in and give him essentially no introduction to the experiment... In the other group, we have a student that we've hired that works for us regularly... and I introduce him [to the subject]... I say: This is so-and-so, who's just finished the experiment, and I've asked him to tell you a little of what it's about before you start. The fellow who works for us then, in conversation with the next subject, makes these points [about the experiment]: "It was enjoyable, I had a lot of fun, I enjoyed myself, it was very interesting, it was intriguing, it was exciting..." Now the fellow who normally does this couldn't make it today... so we've been looking for someone that we could hire to do it for us. You see, we've got another subject waiting [Festinger and Carlsmith, 1959, p. 204]. |
At this point the experimenter offers you either $20.00 or $1.00 (depending upon the experimental condition) to tell another subject that the task was enjoyable, intriguing, and so forth. Practically all of the subjects (like you, perhaps) agree to cooperate and then proceed to tell an innocent-looking young woman (who is an accomplice) a convincing story about how enjoyable the task has been. Now (following her instructions), the accomplice says, "But my roommate took part in this experiment and said that it was really very dull and boring." “Oh, no,” you respond (if you are like the typical subject). “She must have been in another experiment. This one is really very interesting and enjoyable.” The experimenter then thanks you for helping him out in the emergency, pays you the $20.00 or $1.00, and you leave.

An hour or so later, you are interviewed by a departmental investigator elsewhere on the campus (presumably he has no relationship with the experimenter). The investigator is trying to find out what is happening in various psychological experiments that are being conducted on campus and specifically asks you about the experiment in which you participated. Did you find the task you were given (spool-packing and peg-turning) enjoyable?

You have cooperated in an extremely dull experiment, have been inveigled into telling another innocent "subject" that it was interesting and enjoyable (for $20.00 or $1.00), and are now asked how interesting and enjoyable you really thought it was. Under which condition ($20.00 or $1.00) would you say that it was truly enjoyable? What prediction would you have made if this situation had been described to you before you became familiar with dissonance theory? What prediction would you make now?

From dissonance theory, you can see that the $1.00 subjects would be at about point c in Figure 6.6; the $20.00 subjects would be at about point d. Each subject may ask himself: “Why in the world did I tell that poor, innocent girl that turning those pegs and packing those spools was such an interesting and enjoyable experience?” The $20.00 subjects can respond to this question rather easily: “For $20.00, that’s why. The task was boring, but for $20.00 I can compromise somewhat on my usual penchant for telling the truth.” The $1.00 subjects would have more difficulty. They might say, “Well it wasn’t for $1.00—that is not enough to get me to do much of anything. I guess the reason I said the task was enjoyable and interesting is because there were certain things about it that were enjoyable and interesting. While turning the square pegs, I could pretend that I was operating a complicated switchboard in a space station. And I saw the spool-packing as something of a challenge—a chance to test my own manual dexterity.” In any event, although Festinger and
Carlsmith did not discover the exact reasons that the subjects gave for their compliance, they did find dramatic evidence that those who received only $1.00 were much more inclined to consider the task pleasurable.

The findings of this study—that the more you pay someone to do something he really doesn't want to do, the less you will affect his opinion—certainly seem to run counter to our intuitive beliefs. It flies in the face of much of the traditional work done in psychology, which holds that the larger the reward, the greater the effect. Yet, the

Festinger and Carlsmith study was followed by many others that seemed to support the same conclusion. Furthermore, it appears that other bases of power may operate similarly, particularly the socially dependent ones; could it be, for example, that complying with an authority because of his high legitimate power might lead to less private acceptance (since the legitimacy justifies the compliance)?

How to get people to eat grasshoppers—and like them. One of the more intriguing studies of referent power and forced compliance was conducted by Ewart Smith (1961) and developed further by Philip Zimbardo and his associates (Zimbardo et al., 1965). It consisted of trying to persuade army reservists and college students to eat fried grasshoppers. One communicator was very friendly, relaxed, casual, and generally likable; another was cool, stiff, forbidding, and unlikable. Those who ate the grasshoppers at the request of the unlikable communicator were much more inclined to say later on that they found them tasty; why else would they eat them? Those who complied with the request of the "nice guy" had a built-in explanation for their behavior—they did it for that fellow because he was so nice; they did not need to reduce their dissonance by liking the grasshoppers.
Conformity to norms is a basic societal building block. People sometimes behave the way they do in groups because of established social norms. They depend upon norms to govern their behavior and the behavior of others.

Neither social control nor conformity should be valued as good or bad for its own sake. The same applies to the opposite of conformity, whatever that turns out to be. A norm—which is implied by conformity—is simply a shared expectation about the world and the people in it and what they do. All social endeavors depend on norms and hence, on conformity. Any society involves many kinds of social endeavor. Large, complex societies, because they involve more people and more endeavors, have more norms. If an individual is engaged in various endeavors, obviously, he is exposed to several different sets of norms. Sometimes they are onerous, but most of these shared expectations stabilize the world for us. They make it reliable and dependable, thereby freeing us to pursue our own individuality.

After all, if the self is socially defined, then social definitions are essential to its functioning. Suppose, the next time you went to the post office to mail a parcel, the clerk tried to sell you a pair of socks. The time after that, he required you to roll up your sleeve for a vaccination. The time after that, perhaps he took your parcel and appropriated it for himself. Multiply this experience by all the social interactions in daily life and you would soon be too disoriented to function at all. We are able to take large parts of the world for granted because of those very shared expectations. We build up expectations about the physical world, too, but these are viewed as scientific or engineering facts, so no one gets bothered about them (e.g., you expect water when you open the bathroom tap, not clam chowder).

In an earlier chapter, we noted that to be human means to grow up among humans. Human groups that are more or less permanent develop shared expectations through interaction. The members become similar in their relations with the "outside world" without coercion and without the application of strong negative sanctions, without the purpose of achieving homogeneity. Similarity of speech, dress, and other routine patterns of behavior is just more obvious than similarity of attitudes, but the likenesses of members exist on this deeper level, too. Group members themselves create the group's power of mutual influence by: (1) recognizing themselves as belonging to it, and (2) participating in interaction with the others.

one kind of norm is obedience to what is perceived to be legitimate authority or power. (Excerpt from Social Psychology, Raven and Rubin, Wiley, 1976, p. 217)

**Legitimate Power.** The basic statement of conformity to legitimate power may be phrased as follows: “I do as he says because he has a right to ask me to do this, and I am therefore obliged to comply.” **Should,** **ought,** **oblige,** and similar words signal a legitimate power relationship. Legitimate power is evident in formal social organizations—military units, industrial organizations, governmental agencies—where each person has a specific place on the organization chart, and it is clear who has power over whom (see Chapter 7). What else is implied in Kipling’s phrase, “Ours is not to reason why; ours is but to do or die,” but the military dictum that the line soldier is subject to legitimate power and should neither expect nor demand information?

Even in less formally organized social units where roles are prescribed for group members, legitimate power is also exercised. In the traditional family, the father often assumes legitimate power to determine where the family will live; the mother may have legitimate power to decide how the house will be decorated or what the family will eat for dinner; the children have less legitimate power, although perhaps they may be given the right to decide where the family will go for a Sunday outing. To be sure, the role relationships in a modern family, as well as the designations of legitimacy, are not what they used to be 50 or more years ago.

The following is a review of the classic study in obedience and persons’ dependence (even in extreme situations) on the norms which govern behavior.

**Obedience**

Adolf Eichmann and Lieutenant William Calley, among others, have defended acts of brutality on grounds that, in effect, they had “just obeyed orders.” Most people may loathe these actions and feel confident that they would never commit such atrocities. But research data suggest that this confidence is largely unwarranted. What would you do in the following situation?

You have been summoned to participate in a study of the effects of punishment on learning with another subject, who is a pleasant middle-aged man. The two of you draw slips of paper from a hat to determine who will be the teacher and who will be the learner. You are designated the teacher, and the experimenter explains that your job will be to teach a series of word pairs to the learner. You watch the learner being strapped into an electric-chair apparatus (to prevent excessive movement on the part of the learner, the experimenter explains). You watch an electrode being taped to the man's wrist and electrode paste applied to his skin (to prevent blisters and burns, the experimenter tells you). The experimenter explains that the electrode is attached to a shock generator in an adjoining room. You are to administer a shock to the learner by pressing lever switches on the fearsome-looking shock generator each time the learner makes a mistake in recalling the word pairs he must memorize. There are thirty lever switches on the shock generator, labeled from left to right in 15-volt increments from
15 to 450 volts. The lever switches are also labeled with verbal descriptions of the intensities of shock, ranging from "Slight Shock" to "Danger: Severe Shock"; the last two lever switches on the extreme right are labeled "XXX." The experimenter instructs you to move one 15-volt level higher on the shock generator each time the learner gives a wrong answer. He assures you that "although the shocks can be extremely painful, they cause no permanent tissue damage." The experiment begins, and the learner indicates each response by pressing one of four switches in front of him that lights up one of four quadrants atop the shock generator.

After the learner's first mistake you raise the voltage from 15 to 30 volts; a third mistake you punish with a 45-volt shock; and so on. As the experiment progresses, the shocks become increasingly severe. After you press the 300-volt switch, you hear the learner pound on the wall in protest; from this point on his answers no longer appear on the panel in front of you, and eventually even the learner's protests cease and he falls completely silent.

If you look to the experimenter for guidance, he instructs you to consider no answer a wrong answer and to increase the voltage accordingly. If you protest that the experiment should be discontinued and the learner's condition investigated, the experimenter repeatedly tells you to continue with your task, making statements like "the experiment requires that you continue" and "you have no choice, you must go on."

You may think it impossible that you would ever follow such commands when your obedience was apparently injuring a fellow human being. But if you are like 65 percent of Milgram's (1963) subjects, you would indeed follow the experimenter's instructions until you had pressed the switch administering the highest possible voltage. In actuality, all of the subjects played the role of teacher in the study, because the learner was in fact Milgram's accomplice and received no shocks. The typical subject did not relish his obedient actions. Many of Milgram's subjects became quite upset during the experiment. Consider, for example, the reactions of one subject as reported by an observer:
I observed a mature and initially poised businessman enter the laboratory smiling and confident. Within 20 minutes he was reduced to a twitching, stuttering wreck, who was rapidly approaching a point of nervous collapse. He constantly pulled on his earlobe, and twisted his hands. At one point he pushed his fist into his forehead and muttered: "Oh God, let's stop it." And yet he continued to respond to every word of the experimenter, and obeyed to the end. (page 377)

Other subjects responded with fits of nervous laughter, bit their lips, sweated profusely, or dug their fingernails into their flesh after the learner began pounding in protest. But many of these same subjects nevertheless continued to increase the voltage level. Some reported after the experiment that, although they had wanted to stop, they continued the punishment because the experimenter "wouldn't" let them stop.

Milgram designed this experiment to study the phenomenon of obedience to legitimate authority. His subjects obeyed voluntarily; no threat of reprisal discouraged them from leaving at any point during the experiment. The experimenter's ability to exact so much obedience apparently must be attributed to his status as a legitimate authority in the laboratory setting. Milgram's findings have been replicated in subsequent experiments.

Obedience is a phenomenon of central importance—social life as we know it would almost certainly crumble without it. Numerous organizations depend on obedience for their functioning (see Chapter 16). But obedience can serve forces of evil as well as forces of good: It was the rise of Nazism in Germany that inspired Milgram's obedience research. He speculated that fascism was particularly likely to arise in countries in which people are especially obedient. Milgram's original plan was to conduct a cross-national study of obedience in two countries—Germany and the United States—because he expected obedience to be more prevalent in Germany. When Milgram began his research, however, he found his American subjects so much more obedient than he and his colleagues had suspected that to extend the research to Germans seemed beside the point. (pp. 274)
In considering why people behave the way they do in group situations, it is important to consider the behavior of the leader. Does the leader use certain techniques that are effective in getting agreement to his plans where other approaches might not have been successful?

Much of the research on techniques of social influence focuses on pressure emanating from the source of influence toward the target person whose attitudes or behavior the source wants to change. However, one line of research has recently focused on how a source can get a person to comply without resorting to the usual social pressures. One of these modes of influence—the foot-in-the-door technique—is discussed next.

The Foot-in-the-Door Technique

Jonathan Freedman and Scott Fraser (1966) have studied a technique named after a practice used by salesmen—the foot-in-the-door technique. A salesman will first try to get a customer to comply with a small request, such as allowing the salesman to enter the customer's home, after which the salesman will have an easier time getting the customer to comply with a larger request, such as buying the salesman's product—or so proponents of the technique claim.

Freedman and Fraser devised two studies in order to determine the effectiveness of the foot-in-the-door technique. In one study, housewives were approached and asked to comply with a small request—to answer questions about the kind of soap used in their homes. Later, the experimenters contacted each of the housewives again and made a larger request: they asked permission to have several men come to the subject's home and spend two hours listing and classifying all household products. In the control condition, the experimenters did not precede the large request with a smaller request; only the large request was made. Freedman and Fraser found that compliance with the early request did make a difference: significantly more subjects agreed to the large request when it was preceded by acquiescence to the first request. In another experiment, Freedman and Fraser were able to get large numbers of people to put a big sign urging safe driving in their front yards by using the foot-in-the-door technique; without it, they got little compliance.

As a result of the research they and others have conducted, Freedman and Fraser believe that the foot-in-the-door technique works because the first act of compliance changes the target person's self-perception. Freedman and Fraser suggest that after a person has complied with a small request, "he may become, in his own eyes, the kind of person who does this sort of thing, who agrees to requests made by strangers, who takes action on things he believes in, who cooperates with good causes." In the preceding chapter, it is pointed out that people may form self-perpetuating impressions of themselves by noting their own behavior, much as other observers might. A change toward a more generous self-concept makes a target person more susceptible to subsequent requests. However, there are also conditions under which this technique is resented: If the foot in the door is too large, reactance may well result.
Compare the preceding excerpt from K. Gergen, 1974 to
the following further explanation from Rubin and Raven,
1976.

Influence by Gradations: The Foot-in-the-Door Technique
When Jerome Frank's subjects had reached the point where they
would not eat another soda cracker, Frank found that he could per-
suade them to change their minds by using the gradation technique.
"Would you at least pick up a cracker? Now smell it. Now touch it to
your lips. Taste it. Now would you eat it?" (Frank, 1944). This ap-
proach has long been used by salesmen, military conquerors, se-
ducers, and others. Jonathan Freedman and Scott Fraser (1966), who
called it the "foot-in-the-door" technique, demonstrated that if you
can get someone to comply with a small request (signing a petition to
encourage safe driving), he will more readily comply with a larger
request (agreeing to allow a large, ugly sign—"DRIVE CARE-
FULLY"—to be posted on his front lawn). The technique can be
seen as an aspect of Festinger's cognitive dissonance paradigm (Fig.
6.6): if you apply just enough pressure to induce someone to comply
with a request, then he will reduce his cognitive dissonance by
agreeing with the behavior (yes, since I have done this, then safe
driving must be important); and since his attitude has changed, he
will be prepared to engage in even more extreme behavior. It is also
possible that the influencing agent, by successfully persuading the
individual to comply with a small request, has helped to establish his
power position for future use.

People in the Netherlands have told me that during World War
II the Nazis would have encountered stiff resistance from the Dutch
people if they had immediately started arresting Dutch Jews and
deporating them to concentration camps and gas chambers in Ger-
many. However, their technique was far subtler. First of all, they
required the Jews to wear yellow stars of David (a bit silly, but
nothing to get upset about); then the Jews were forbidden to use
public parks; then they were restricted in their employment; then
they were forbidden to live in certain areas; then they were forced
to move into a restricted ghetto area; then that area was sealed off
with barbed wire and gun emplacements. After waiting an appropri-
ate length of time, the Nazis spirited the first Dutch Jews to "work
camps" in Germany. Each step seemed less severe, once there had
been compliance with the previous step.
PERSONALITY NEEDS

Do people behave the way they do in groups because "that's just the kind of people they are"? Some theorists think so. Many of us imply that we agree when we evaluate persons as "types." "He is a conformist" "She is a born follower." What personal motivations do people have in regard to being members of groups?

Experiments with lower animals show that depriving them of social contact in early life leads to abnormal social behavior in later life. Humans may also have a need for social reinforcement and be particularly influenced by it at different stages in their development.

The following from Social Psychology, Leigh Yarlowe, 1971.

The bulk of these social reinforcements requires others to attend to the individual who is responding so as to receive them. Thus, the individual becomes dependent upon others. Although adults can care for themselves physically, having outgrown the physical helplessness of their early years, few can wholly meet their own needs for social reinforcement. Imitation and attachment have a social learning history. During their establishment individuals also learn to match the responses of others. Doing the same thing the others were doing has earned the individual massive positive social reinforcement in the past. Doing something different had the opposite effects, more often than not. There is nothing surprising about the fact that in the presence of others a person is suggestible, persuasible, or conforming. These are the rewarded behaviors in those circumstances. Differences in suggestibility, persuasibility, and conformity are related to social reinforcement and sensitivity to social stimuli, as well as to the nature of the self. But the individual's responses to his self are socially learned also.

Evaluation of dependency hinges on viewpoint and social characteristics. A dependent child is one whose behavior is more easily controlled by the parents. A dependent adult is one who conforms to the group more readily, heeds the suggestions of advertisers regarding the social enhancement of the self, etc. At the same time, there is some positive value placed on adult males being independent (in our society), while a too-independent female (i.e., one who does not rely heavily on male approval for social reinforcement) is denigrated. That is, socialization pressures towards dependency vary at different times in life, have a situational component and are not the same for males and females. Individuals who have idiosyncratic goals indicate less dependency than persons who attempt to match the goals of those around them.
Are there personality types that are more susceptible to authoritarian leadership? Consider the following from K. Gergen, *Social Psychology*, 1974

**Personality Needs and Motivation**

Personality needs also play a role in pulling individuals into a political group, particularly a mass movement. The relationship between personality and political involvement has been investigated by many researchers whose concern goes beyond the bounds of theory. Political events have been major catalysts. During and after World War II, for example, many psychologists joined the ranks of the journalists, philosophers, and historians who attempted to explain the appeal of Nazism. Because these writers viewed Nazism as categorically evil, they inevitably portrayed the personality of a typical Nazi, too, as evil. Suspending criteria of good and evil is difficult when one is morally outraged. Psychologists who use moralistic models, for example, cannot objectively study personality as a variable. Nazism, however, was not a unique instance of collective behavior—nor were Nazis the only personalities whose actions have been explained on the basis of moral rather than scientific criteria. (Later on, when Communism entered the American pantheon of categorical evils, many writers also portrayed American Communists as evil personalities.)

Social scientists began trying to supply a link, suggesting that individuals who join mass movements—whether on the political right or the left—must have similar personalities and must derive similar satisfactions from immersing themselves in movements with powerful ideologies, movements that promise to construct a new world order.

Some of the most influential works in this area have been provided by Theodor Adorno, Else Frenkel-Brunswik, Daniel J. Levinson, and R. Nevitt Sanford (1950); Erich Fromm (1941); and Eric Hoffer (1951). These authors, with the exception of Hoffer, in trying to explain the appeal of Nazism and fascism, draw a clear distinction between supporters of right-wing and left-wing movements. Hoffer, a longshoreman turned social philosopher, does not make this distinction: “When people are ripe for a mass movement,” he says, “they are usually ripe for any effective movement, and not solely for one with a particular doctrine or program.”

These three works indicate that the moral model is still in use, insofar as all six authors reach remarkably similar conclusions about why people join whichever mass movements the writer happens to dislike (Nazism and fascism for Adorno and his colleagues and Fromm; Communism, fascism, and even Christianity for Hoffer). These observers claim that followers of
such movements are attempting to bring meaning to their empty lives by submerging their weak egos in a large collectivity whose power may be extended to them. According to Fromm, such individuals are unable to accept the freedom and responsibility to organize their own lives, so they allow others to do this for them. Adorno and his co-workers use the term authoritarian to describe these people.

Authoritarianism and Radical Movements. According to Adorno and his colleagues, authoritarians feel most secure in situations where those above them in a status hierarchy issue clear commands that must be obeyed without question and in situations where they in turn can demand the unquestioned obedience of those beneath them. It is also alleged that authoritarian individuals see everything in very clear-cut, black-and-white terms. There are only good guys and bad buys—and “we” are the good guys. This personality trait, according to Hoffer, explains why many ex-Communists do not become inconspicuous citizens but instead turn into fervent anti-Communists, as firmly committed to the belief that Communism is an unspeakable evil as they had previously been committed to the notion that it would save mankind. Hoffer bases his conclusions on impressionistic observations and historical analyses. Fromm goes further and adds in-depth psychological case studies. Adorno and his co-workers developed a test, the F scale, to measure authoritarianism.

In numerous studies, application of the F scale has indicated that supporters of right-wing movements and individuals with conservative political beliefs have significantly higher authoritarian scores than do left-wingers and liberals. Does the concept of authoritarianism then explain the appeal of right-wing, but not left-wing, mass movements?

Adorno’s work has been criticized on a number of serious methodological counts by Herbert Hyman and Paul Sheatsley (1954) and others (see Chapter 7). Milton Rokeach (1960), for example, suggests that the attitude statements on the F scale tap only right-wing authoritarianism. An item such as, “A person who has bad manners, habits, and breeding can hardly expect to get along with decent people,” may reflect a sort of authoritarianism, but it also suggests a right-wing political bias—conservative people are more likely to associate decency with manners and etiquette than are radicals. Rokeach developed a new measure of authoritarianism, the dogmatism scale. The items on this test are free of explicit political content, yet they still measure the extent to which a person is rigid in his thinking, intolerant, and sympathetic to authoritarian ideas (see samples at right). In 1954 Rokeach administered his new test to British college students who identified themselves as supporters of the Conservative, Liberal, Labour, or Communist parties (Rokeach, 1960). When these students were tested with the F scale, Communists obtained the lowest mean score on authoritarianism and Conservatives, the highest. But on the new dogmatism scale, Communists and Conservatives both scored higher than supporters of middle-of-the-road parties. Rokeach concluded that authoritarian (dogmatic) individuals are ripe for extremist politics of either the right or the left.
The membership of mass movements—members' personal characteristics, motivations, and loyalties—have often been a source of heated controversy among intellectuals. The irrationality of the crowd was a central focus of classic authors such as Sigmund Freud and Gustave Le Bon, although the positive qualities of members of mass movements have been emphasized by current writers, such as Kenneth Keniston.

One social critic, Eric Hoffer, who raised himself by his bootstraps in the traditional American-dream style from longshoreman to late-night TV guest is inclined toward the former position. He says this about mass movements and their appeal to certain persons:

A rising mass movement attracts and holds a following . . . by the refuge it offers from the anxieties, barrenness and meaninglessness of an individual existence. It cures the poignantly frustrated not by conferring on them an absolute truth or by remedying the difficulties and abuses which made their lives miserable, but by freeing them from their intellectual selves—and it does this by enfolding and absorbing them into a closely knit and exultant corporate whole. (1966, page 44)

An effective mass movement cultivates the idea of sin. It depicts the autonomous self not only as barren and helpless but also as vile. To confess and repent is to slough off one's individual distinctness and separateness, and salvation is found by losing oneself in the holy oneness of the congregation. (pages 55-56)

The vigor of a mass movement stems from the propensity of its followers for united action and self-sacrifice. . . . Both . . . require self-diminution. . . . To ripen a person for self-sacrifice he must be stripped of his individual identity and distinctness. He must cease to be George, Hans, Ivan, or Tadao . . . . The fully assimilated individual does not see himself and others as human beings. When asked who he is, his automatic response is that he is a German, a Russian, a Japanese, a Christian, a Moslem, a member of a certain tribe or family. He has no purpose, worth and destiny apart from his collective body; and as long as that body lives he cannot really die. (pages 57-60)

The impression that mass movements, and revolutions in particular, are born of the resolve of the masses to overthrow a corrupt and oppressive tyranny and win for themselves freedom of action, speech and conscience has its origin in the din of words let loose by the intellectual originators of the movement in their skirmishes with the prevailing order. . . . They take it for granted that the masses who respond to their call and range themselves behind them crave the same thing. However, the freedom the masses crave is not freedom of self-expression and self-realization, but freedom from the intolerable burden of an autonomous existence. (page 129)

Hoffer is surely a dour spectator on the sidelines of mass movements. From his perspective, neither the insecure common man nor the rhetorically overblown intellect understands or deserves the power and prerogatives that mass movements gain. Of what value is Hoffer's perspective? How can he help explain the rise and fall of student activism in recent years? Whether or not Hoffer's rhetoric withstands the scrutiny of empirical tests remains to be seen.

Researchers have found that outbreaks of "sickness" which do not have any physical cause can be traced to a kind of group suggestability. Apparently some behaviors which do not occur normally are transmitted similarly to a contagious disease. Consider the following: (Social Psychology, K. Gergen, Random House, 1974, p. 591)

Contagion: Causes Are Catching

A concept that is frequently used to account for collective behavior is contagion, the process by which feelings and responses spread from one crowd participant to another. This mechanism has been used to account not only for uniformity within a crowd but also for heightened emotionality. Floyd Allport (1924) introduced the notion of circular reaction to describe the interactive process that occurs when one person's behavior serves as a model for another's—and the model, observing the other's imitation, becomes stimulated to even higher levels of activity and excitement. Among persons engaged in the same type of behavior, circular reactions can stimulate higher and higher intensity.

Considering the popularity of the contagion concept, it is surprising that few social psychologists have attempted to explain why and when it occurs. The most comprehensive approach has been taken by Ladd Wheeler (1970); his conclusions are based only on experiments done with small groups, but what he says is quite useful to an understanding of crowds. Wheeler believes that contagion will occur when (1) an observer is motivated to behave in a certain way; (2) he knows how to behave in this way but is not doing so; and (3) he sees someone else perform this behavior. It is interesting to note the similarity between Wheeler's model and those of Freud and Le Bon. All three models assume that restraints govern a person's behavior but that these restraints may be removed when a person observes others behaving in a tabooed way. The reason for the assumption that restraints exist is unclear. It may be the case that individuals learn nonnormative behavior for the first time when they see others displaying it. If this view is correct, there is no need to posit unobservable psychic forces. In any case, Wheeler has shown in a number of experiments that contagion will not occur when the model is punished for his behavior; if he gets away with it, however, observers will probably follow his lead.

Research by Alan Kerckhoff and Kurt Back (1968) indicates that emotional reactions can very easily be spread through contagion. They investigated a small Southern textile factory employing 200 women, about one-fourth of whom reported having been bitten by a mysterious bug and experiencing nervousness, nausea, weakness, and numbness as a consequence. No one found the bug, but Kerckhoff and Back found an interesting pattern: Social interaction in the factory had determined the bug's biting pattern. The imaginary bug first bit social isolates, people who had few friends in the factory. Social restraints preventing bizarre behaviors such as nervousness and fainting seemed not to affect the isolates, and soon their few friends also experienced the symptoms. After this point, the symptoms spread rapidly among friends. If one member of a friendship group reported being bitten, the others soon succumbed. The investigators noted that women who experienced the most strain in the factory—by working overtime, by being responsible for more than half their family's income, and so on—were more likely to be bitten than were others.

What implications about crowd behavior can be drawn from this study of contagion?