THE UNIVERSITY OF ALBERTA

A COMPARISON OF BALES' AND FLANDERS' SYSTEMS'
OF INTERACTION ANALYSIS AS RESEARCH TOOLS
IN SMALL GROUP INSTRUCTION

by

Ⓒ ROBERT MELVILLE ANDERSON

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The undersigned certify that they have read,
and recommend to the Faculty of Graduate Studies and
Research, for acceptance, a thesis entitled, " A
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Supervisor

....

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....
External Examiner

Date...........................

ABSTRACT

The following problems were investigated in this study: (1) What does a theoretical comparison of Flanders' System of Interaction Analysis (FSIA) and Bales' System of Interaction Process Analysis (IPA) reveal about the relative merits of each as a tool for interaction analysis? (2) What does a comparison of data obtained from the same small group instructional process reveal about the relative merits of each system as a tool for the analysis of small group instruction?

In order to guide the theoretical comparison, questions were formulated which aided the examination and comparison of the theoretical rationale, validity, and reliability of the two systems. In order to guide the comparison of data obtained from small group instruction, questions were formulated which aided an examination and comparison of interaction coded by the use of Flanders' and Bales' systems. Skilled Bales and Flanders observers collected data from fifteen, fifty minute sessions with each of two small groups of university undergraduates. The analyses of the FSIA and IPA data obtained from the small group instructional process enabled the guiding questions to be answered.

Results of the theoretical comparison of FSIA and IPA led to the conclusions that (1) each system was evolved on the basis of a firm theoretical rationale; (2) each system

is valid; and (3) each system is reliable. Each instrument fulfills a different purpose. FSIA reliably identifies a teacher's verbal behavior and enables valid implications to be drawn concerning the classroom social-emotional climate. IPA reliably identifies the verbal and nonverbal behavior of every member of a small group and enables valid implications to be drawn concerning the role structure of the group and the phases that a group passes through.

Results of the comparison of FSIA and IPA data obtained from the small group instructional setting led to the conclusion that each category system could be used as a tool for the analysis of small group instruction, although Bales' category system enabled a more varied and detailed description of the small group instructional process than did Flanders' category system. Which of the two systems an investigator used would depend upon the aspect of the small group instructional process he wished to analyze.

It was reasoned that if one wished to identify verbal and nonverbal interaction between an instructor and individual students, between-student interaction, problem-solving phases, or group role structure, then IPA should be utilized. If one wished to identify teacher behavior and to study its effect on the social-emotional climate of small groups, then FSIA should be utilized.

The IPA coding of nonverbal behavior, the coding of who-to-whom, or the more detailed identification of interaction coded as "questioning" or "lecturing" by FSIA

did not conflict with the FSIA identification of teacher
behavior. As well, the explicit identification of the
social-emotional climate enabled by IPA verified the nature
of the social-emotional climate that would be hypothesized
as a result of coding by FSIA.

ACKNOWLEDGEMENTS

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INTRODUCTION

PURPOSE

The investigator considers the use of observation instruments a valuable method for analyzing instructional processes. The investigator also considers that a valuable way to view instructional processes is to view them within the framework of group dynamics. It is these considerations coupled with the dearth of research involving critical investigation of the observation instruments themselves that have prompted this investigation.

Two observation instruments--Flanders' System of Interaction Analysis (FSIA) and Bales' System of Interaction Process Analysis (IPA)--were compared. The purpose was twofold. First, the investigator wished to assess the theoretical rationale, validity, and reliability of each observation instrument. Second, the investigator was interested in discovering if the study of small group instruction using Bales' system would generate a conception of instruction that would be fruitful for further research. The investigator was interested also in discovering how, or if, Flanders' system would aid in the conceptualization of small group instruction. Bales' system has not been related to instructional theory and Flanders' system has not been

directly related to small group instructional theory.

BACKGROUND TO THE PROBLEM

Instruction and Curriculum

The recent emphasis on "instruction" in the field of "curriculum and instruction" is useful for three major reasons. First, a consideration of instruction requires a curriculum planner to plan the actual implementation of his curriculum. Learning can result directly from the process of instruction and only indirectly from the process of curriculum development.

Second, emphasizing the importance of instruction makes possible an empirical evaluation of a curriculum. Before a curriculum can be evaluated, one must first ascertain whether the curriculum is actually being implemented in the classroom. An interesting example of the above statement is the investigation of the teaching of the Biological Sciences Curriculum Study (BSCS) by Gallagher (1967). He observed six biology teachers in classes of high ability students who were studying the same unit. His major finding is informative. He found that there really was no such thing as a BSCS presentation. Rather, there was each teacher's interpretation of it. Gallagher's finding gives support to Rosenshine (1970b) who desires more data obtained from direct observation of classroom interaction. He claims that the lack of information on classroom interaction hinders evaluation of a single

curriculum or of different curricula. Without this infor-
mation, one tends to assume that all classrooms using the
same curriculum materials constitute a homogeneous "treat-
ment variable." Such an assumption is questionable, as
Gallagher has illustrated.

Third, studying instruction has brought to the
attention of researchers that teaching itself has been a
neglected area of research. It has, for too long, been
considered a subset of learning research. One outcome of
this emphasis on learning research is that "research on
teaching has yielded relatively few solid and usable
results (Gage, 1968, p.119)." In order to obtain solid
and usable results, Gage suggests that the complex notion
of teaching be broken down for purposes of analysis. One
way to break down the complex notion of teaching is to use
tools of analyses such as FSIA and IPA to aid the study of
instructional processes.

One obvious approach to research in instruction is
direct observation of teachers and students as they interact.
It was this type of observation that enabled Gallagher to
find that there really was not a BSCS presentation. It is
this type of observation that can enable feedback to teachers
concerning instructional processes. It is this type of
observation that can enable the analysis of teaching that
Gage suggests. Medley and Mitzel further emphasize the
importance of direct observation of instruction. They state
the following:

Direct observation should play a crucial part in the
most fundamental kind of research on teaching--the
search for effective patterns of classroom behavior--
the type of research most worthy of the name 'methods
research' (Medley & Mitzel, 1963, p.249).

In order to aid direct observation, systematic
techniques are necessary. These techniques are needed to
delimit the observer's task, as it would be impossible to
observe everything that takes place in an instructional
setting. These techniques are also needed to obtain a
valid and reliable conception of what is being observed.

Point of Departure for this Investigation

The researcher had progressed to the point that
he was in a position to compare two widely-used observation
instruments--Flanders' System of Interaction Analysis and
Bales' System of Interaction Process Analysis. Flanders'
System of Interaction Analysis was used by the investigator
to analyze the instruction of open- and closed-minded
student teachers (Anderson, 1969). FSIA enabled the
identification of different interaction patterns in the
classes of two groups of student teachers. In addition,
it proved to be a valuable aid for providing feedback to
the student teachers concerning their behavior in an
instructional setting.

Further study in the area of interaction analysis
was considered a worthwhile undertaking. As FSIA is based
on social-psychological research, the study of social
psychology and its relation to the classroom was continued.

This further study introduced the writer to Bales' System of Interaction Process Analysis, and to a concept of interaction with which he now views the instructional process--group dynamics.

Rationale for the Comparative Analysis of Flanders' and Bales' Systems

Flanders' System of Interaction Analysis was developed from social-psychological research concerning the social-emotional climate of the classroom. It is concerned largely with the role of the teacher's verbal behavior in creating this climate. Bales' System of Interaction Process Analysis was developed from social-psychological research concerning the study of the social-emotional behavior of individuals in small groups. It is concerned with the individual's approach to problem solving, his role and status structure, and changes in these over time. FSIA has been widely used as an instructional research tool. To the writer's knowledge, IPA has not been used as an instructional research tool.

The researcher suspected that IPA could be a valuable tool for instructional research, given small group conditions. It is included in Simon and Boyer's anthology (1970) of seventy-nine observation instruments of on-going human interaction. By including IPA in their anthology, the editors imply that IPA has value for instructional theory. They state that strategies for inducing learnings

from "non-educational" settings could provide a source for new behaviors for teachers in the classrooms. IPA is listed by Simon and Boyer as used in "non-educational settings."

One source for new behaviors for teachers in class-rooms could be the consideration of classroom interaction within the framework of group dynamics. Bany and Johnson have explicated the many facets of the concept of group dynamics as they compared classroom groups to other groups. They claimed that classroom groups are like other groups in the following ways (Bany & Johnson, 1964, pp.33-38):

(1) Interaction occurs. The concept of interaction refers to more than mere member-to-member actions and reactions. The concept of interaction should also direct attention to the ways in which the group and the teacher, and subgroups within the groups exert positive, neutral, and negative influences on one another.

(2) There are structural characteristics. Group structure involves a system of social stratification or hierarchy in which individuals stand high or low.

(3) Some cohesiveness develops over time.

(4) Common motives and goals are shared.

(5) Groups have psychological influences that affect individual behavior. These influences are both overt and covert.

(6) The personality of a group represents what the group is like as a whole and how it acts as a whole.

FSIA focuses mainly on teacher behavior, for Flanders' system was developed on the assumption that the teacher is primarily responsible for establishing the social-emotional climate of the classroom, and on the assumption that the system would be used only in a classroom setting. Bales' system was developed on the assumption that it would be used in many types of small group situations. IPA isolates interaction other than teacher-pupil interaction; it isolates group-member coalitions and subcoalitions; it identifies group structure, group phases, and shifts in individual roles and in group roles.

FSIA is suitable only for a teacher-led lesson. IPA would be difficult to put into practice during a regular lesson, as the group might be too large. However, if a class were divided into small groups for purposes of discussion, FSIA would not be a practical tool for interaction analysis; IPA would be. The latter could identify the role that each member played in the discussion and could identify certain phases through which a discussion progressed, if discussion did progress. If the discussion did not progress, IPA could identify why it did not.

If a teacher were conducting small group discussions, as is occurring more and more in today's instruction (Hahn, 1968; Glasser, 1969; Kranser, 1969; Litsey, 1969; Rogers, 1969; and Frazier, 1970), IPA would seem to be a valuable instrument to use for analysis. First, the use of IPA recognizes the image of the classroom that Getzels and

Thelen (1960) suggest should guide our research.

> It is not the image of a social system in equilibrium.
> It is rather the image of a system in motion or, if
> you will, in dynamic disequilibrium. It is the image
> of a group continually facing emergent complexity and
> conflict (if not confusion) and dealing with these
> realities, not in terms of sentiment but in terms of
> what the complexity and conflict suggest about the
> modifications that have to be made in the goals,
> expectations, needs, and selective perceptions of the
> teachers and learners. It is through this experience
> of recognizing and dealing with complexity, conflict
> and change in the classroom situation that we can
> educate children to take their places as creative
> and autonomous participants in the other social systems
> that constitute the larger social order (Getzels &
> Thelen, 1960, p.82).

Second, the use of IPA alleviates the criticisms

of Yamamoto (1967) and Good and Brophy (1970). Yamamoto

has pointed out that most observation systems, no matter

what type, ascribe to the entire "class" any verbal

behavior revealed by individual children. Good and

Brophy have claimed that most observation systems are

based on the following assumption:

> . . . teacher behaviors are fairly consistent across
> the students in the classroom, so that the class mean
> on a particular variable is generally representative
> of how the teacher interacts with each of the pupils
> (Good & Brophy, 1970, p.131).

This assumption was then refuted by Good and

Brophy. They presented evidence that "large intra-class

variations in teacher-pupil interaction patterns are the

norm rather than the exception. Teachers do treat children

differently (p.132)." IPA not only identifies individual

verbal activity; it also identifies individual nonverbal

activity.

The above is not meant to imply that IPA is better than FSIA; it suggests that IPA might be used as an instructional research tool. Nor does the above imply that FSIA or IPA is better than other existing observation systems; it suggests that these and other systems should all be subjected to analysis and comparison before they are further disseminated. For example, IPA is the most widely-used small group observation tool (Simon & Boyer, 1970, p.3-2). Yet, Waxler and Mishler (1966) note several scoring and reliability problems in connection with the use of this instrument. For another example, FSIA is the most widely-used classroom observation tool (Simon & Boyer, 1970, p.5-1). Flanders (1970) suggests that his system be subscripted, or form a portion of multi-aspect observational systems. Yet, Mitchell (1969) questions Flanders' "ground rules", criticizes his suggested relationships between classroom behavior and instructional outcomes, and criticizes his method of establishing reliability. These criticisms demand investigation.

PROBLEM

The main question under investigation was: What does a comparison of Flanders' System of Interaction Analysis and Bales' System of Interaction Process Analysis reveal about the value of each as a research tool? The following problems were investigated in this study:
(1) What does a theoretical comparison of FSIA and IPA

reveal about the relative merits of each as a tool for interaction analysis? (2) What does a comparison of FSIA and IPA data obtained from the same small group instructional process reveal about the relative merits of each system as a tool for the analysis of small group instruction?

SCOPE AND LIMITATIONS

Two systems of interaction analysis were compared--Flanders' System of Interaction Analysis and Bales' System of Interaction Process Analysis. Each category system is a one-factor system in which each behavior is coded only in terms of its frequency. Each category system is primarily affective, arising primarily from social-psychological theory, and analyzes process. The observed small group instruction was a means to enable comparison of the two category systems.

Limitations which may have a bearing on this investigation are the following:

(1) Only small group interaction was recorded by FSIA and IPA observers.

(2) The small group instruction took place in an experimental environment. The environment was not a natural classroom setting.

(3) The students who were observed while given instruction were university undergraduates.

DEFINITIONS OF TERMS

The following terms are defined as they apply
to this investigation:

Interaction. A process that refers to recurrent
patterns of interstimulation and response among individuals
within a group is considered to be interaction.

Instruction or instructional process. One person
interacting with another with the intention of influencing
his learning is considered to be instruction or instruc-
tional process.

Small group instruction. For the empirical portion of
this study one instructor and thirteen or fewer students inter-
acting face to face is considered to be small group instruction.

Teaching. Instructional planning and instruction
are considered to be teaching.

SIGNIFICANCE OF THE STUDY

The major significance of this study must rest
ultimately with its contribution to the further develop-
ment of the conceptualization of instruction. This
development can be furthered by establishing if, and how,
IPA and FSIA can contribute to the analysis of small group
instruction, and by assessing the relative merits of the
theoretical rationale, validity, and reliability of IPA and
FSIA.

ORGANIZATION OF THE STUDY

The aim of this first chapter was to introduce the study. To this end, the purpose, the background to the problem, the problem, and the scope and limitations for the investigation were presented; terms were defined and the significance of the study was stated. In Chapter 2, guidelines for the comparison will be set down. The method of investigation is presented in Chapter 3. In Chapter 4, the results of the theoretical comparison will be reported. Chapter 5 will contain results of the comparison of the data obtained from the observation of small group instruction. Lastly, the investigation is summarized, conclusions are drawn, and recommendations for further research are stated in Chapter 6.

Chapter 2

GUIDELINES FOR THE COMPARISON

In this chapter are considered theories unique to the development and study of category systems of observation. These theories provide guidelines with which to compare Flanders' System of Interaction Analysis and Bales' System of Interaction Process Analysis.

GUIDELINES FOR THE THEORETICAL COMPARISON

Simon and Boyer (1970) describe observational instruments as tools which can be thought of as "meta-languages" for describing communication of various kinds. Their postulates provide optimum criteria with which to evaluate and then compare FSIA and IPA. "Optimally observation systems represent sets of mutually exclusive, all-inclusive behaviors (p.6)." To be useful for describing communication, a "meta-language" must meet three requirements:

> First, it must be descriptive as opposed to evaluative, and, although it can be used to analyze emotional or evaluative situations, the language itself must be descriptive of the values or feelings being discussed.

> Second, the language must deal with what can be categorized or measured, and

> Third, it must deal with small bits of action or behavior rather than with global concepts (Simon & Boyer, 1970, p.1).

Kerlinger (1964), too, provides an optimum criterion with which to appraise and then compare FSIA and IPA. He stresses that "the first and most important consideration in any observation system is to know clearly what is being observed (p.507)." This necessitates precise and unambiguous definitions of what is being observed. Kerlinger (pp.508-515) then continues to discuss five dimensions that illustrate problems to be considered when developing observation systems. These dimensions provide guidelines which enable an appraisal and comparison of the theoretical rationales of each of the observation systems being investigated. The five dimensions are:

(1) Categories--categories must be exhaustive and mutually exclusive. In order for a category system to be exhaustive, the universe of behaviors must first be defined. This universe can be large, medium, or small, depending on the objectives of the author of the observation system.

(2) Units of behavior--this dimension illustrates the difficult problem of satisfying the requirements of reliability and validity at the same time. A high degree of reliability may be reached by using small, easily-observed and easily-recorded units. By doing this, one may so reduce the behavior that it no longer bears much resemblance to the intended observed behavior. Thus, validity is lost. By using broad definitions for units, a high degree of validity may be obtained, yet reliability could be lost due to the ambiguity of the definitions.

(3) Degree of observer inference--systems with high degrees of inference are likely more useful in research but this likelihood must be balanced by considering the amount of observer training necessary.

(4) Generality or applicability--some systems are designed for many research situations; some are designed for particular research problems only.

(5) Sampling of behavior--there are two aspects of behavior sampling: event sampling and time sampling. Event sampling involves continuity of scoring; time sampling involves a lack of continuity of scoring.

The concept of validity and reliability as discussed by Kerlinger has relevance to the investigation. He states:

> The important clue to the study of the validity of behavioral observation measures would seem to be construct validity. If the variables being measured by the observational procedures are imbedded in a theoretical framework, then certain relations should exist. Do they indeed exist (Kerlinger, 1964, p.507)?

Cronbach's (1970) thoughts on construct validity are illuminating. He stated that "construct validity is established through a long-continued interplay between observation, reasoning, and imagination (p.142)." It is this aspect of validity that was stressed when FSIA and IPA were theoretically compared.

Reliability, claims Kerlinger, can be estimated by correlating the observations of two or more observers. "When assessing the reliability of the assignment of behaviors to categories, percentage of agreement between

judges is often used (p.507)." This aspect of reliability was considered during the theoretical comparison. There is more to reliability than Kerlinger discusses, however.

Medley and Mitzel (1963) expand on the importance of reliability. Their postulates explain why the reliability and validity of each category system were examined and compared. They refer to classroom observation techniques; their postulates need not only refer to classroom observation techniques, but can apply equally as well to nonclassroom observation techniques. An observational technique is defined as a procedure which uses

> . . . systematic observations of classroom behavior to obtain reliable and valid measurements of differences in the typical behaviors which occur in different classrooms, or in different situations in the same classroom.
>
> A measure is reliable to the extent that the average difference between two measurements independently obtained in the same classroom is smaller than the average difference between two measurements obtained in different classrooms.
>
> . . . .
>
> A measure is valid to the extent that differences in scores yielded by it reflect actual differences in behavior--not differences in impressions made on different observers (Medley & Mitzel, 1963, p.250).

Medley and Mitzel focus, not on attempts to predict some outside criterion, but on attempts to measure behavior as such. It was this content validity that was investigated during the theoretical comparison of Bales' and Flanders' systems. For a category system to be valid, it was considered that a representative sample of the behaviors must be

observed, an accurate record of the observed behaviors must
be obtained and the records must be scored so as to reflect
faithfully   differences in behavior. From the above, it
can be seen that the reliability of the observer using the
category system has an effect on the validity of the system.

Medley and Mitzel disagree with Kerlinger concerning
the reliability of a category system. They postulate that
a reliability coefficient of category systems should "refer
to the correlation to be expected between scores based on
observations made by different observers at different times
(p.253)." Inter-rater agreement alone does not establish
the reliability of the instrument being used, they claim.
Lacking a reliability coefficient, de facto evidence that
an instrument has sufficient reliability for the purpose
it is used for can be provided if the instrument enables
the rejection of a null hypothesis, say Medley and Mitzel.

Flanders and Simon (1969) take exception to Medley
and Mitzel's proposals concerning reliability. They claim
that good judgment must take into account the fact that
teaching behavior, especially effective teaching behavior,
will vary from one time to another. These between-visit
variations could be so great that the differences between
classes could be masked. Given the progress since 1960,
new conventions with regard to the definition of reliability
may become necessary, say Flanders and Simon. Rosenshine
(1970a) suggests two such new conventions: inter-investi-

gation consistency and clarity of instructions.

Rosenshine states that "the problem of inter-investigation reliability is new to educational research and is an unique by-product of the development of category systems to observe classroom interactions (p.114)." Inter-investigation reliability refers to the possibility that raters using an observation instrument might achieve high inter-rater reliability coefficients during a particular study but might not agree with other raters using the same observation instrument during a different study. This problem has arisen because coding instructions are often not sufficiently clear and detailed enough to cover the variety of behaviors that might occur. As well, ground rules by a particular investigator might sometimes change from year to year.

The experience of the present researcher led him to concur with the ideas of Flanders and Simon, and Rosenshine. It is doubtful, however, that any inter-investigation reliability coefficients are available for any observation instrument. Techniques of inter-rater reliability used by Flanders and Bales, and the clarity of their instructions concerning the use of their observation instruments were examined. Inter-rater reliability techniques and the clarity of instructions were used as guidelines when the reliabilities of FSIA and IPA were compared.

GUIDELINES FOR THE COMPARISON OF DATA OBTAINED FROM
THE OBSERVATION OF SMALL GROUP INSTRUCTION

Rosenshine (1970b), writing in the Review of
Educational Research, lists four potential uses of
observation instruments when analyzing instruction.
They are: (1) assessing the variability in classroom behavior;
(2) assessing whether the teacher's performance agrees with
specified criteria; (3) describing classroom interaction; and
(4) determining relationships between observed classroom
behavior and outcome measures. As these potential uses
of observation instruments are widely accepted by researchers
in instruction, and as Rosenshine's review of classroom
observation instruments is the most recent review available,
these potential uses of category systems formed the basis
for the comparison of the FSIA and IPA data obtained from
the observation of small group instruction.

THE CONCEPTUALIZATION OF INSTRUCTION

One potential use of an observation instrument
listed by Rosenshine--describing classroom interaction--
closely resembles what Meux (1967) feels is the most basic
use of a classroom observation system. "The most basic
use of the classroom observation system for the classroom
learning researcher is in the fundamental problem of
conceptualization (p.549)." As a result of an analysis
of the theoretical rationale and development of FSIA and

IPA, it should be possible to ascertain to what extent each observation system could aid in the conceptualization of instruction. It should then be possible to determine to what extent these conceptualizations are valid when observing the small group instruction sessions.

Chapter 3

METHOD OF INVESTIGATION

The method of the theoretical comparison of Flanders' and Bales' systems is outlined in this chapter, as is the method of comparison of data obtained from the observation of small group instruction.

PRELIMINARY INVESTIGATION

As a pilot approach to the study, The Meno was analyzed according to FSIA and IPA. This analysis enabled the writer to become familiar with the computer programs that were available at the University of Alberta, and enabled modifications of the programs[1]. This analysis also furthered the investigation by indicating if, and how, the same lesson could be conceptualized by each observation system, and how these conceptualizations could be compared. An analysis of one episode from The Meno is found in Appendix A.

THE THEORETICAL COMPARISON

The theoretical rationale and development, validity,

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[1]The investigator with the aid of Dr. D. Flathman modified the Flanders program. Mr. W. Matheson with the aid of Mr. D. Precht developed and modified the Bales program.

and reliability of the observation systems were critically examined and then compared. These comparisons provided an answer to the problem: What does a theoretical comparison of FSIA and IPA reveal about the relative merits of each as a tool for interaction analysis?

The answers to the question--How and why did Bales and Flanders select and organize the categories of their systems?--provided the major comparison of the systems' theoretical rationales. The following questions suggested by Kerlinger, and Simon and Boyer helped guide the investigator to answer the above question:

(1) Does the observation system represent sets of mutually exclusive, all-inclusive behaviors?

(2) Is the observation system descriptive as opposed to evaluative?

(3) Does the observation system deal with what can be categorized or measured?

(4) Does the observation system deal with small bits of behavior rather than with global concepts?

(5) Is the universe of behaviors being observed precisely and unambiguously defined?

(6) What unit of behavior is the basis of the observation system? Why?

(7) How much observer inference is necessary?

(8) How general is the observation system?

The comparison of the theoretical rationales of FSIA and IPA was made on the basis of the answers to the above

questions.

How did Bales and Flanders establish the validity of their observation systems? The answer to this question provided the second major theoretical comparison of the two instruments. How well the construct and content validity of each instrument were achieved was the optimum criterion for comparison.

The third major question asked was--How did Flanders and Bales establish the reliability of their observation systems? A critical analysis of the inter-rater reliability techniques suggested by each author and of the instructions for the use of each instrument set down by each author formed the basis for this comparison.

The final question of the theoretical comparison was--How does each system enable the conceptualization of instruction? This question was answered by studying the theoretical rationale and subsequent development of each observation system. Again, the two systems were compared on the basis of the answers to this question.

THE COMPARISON OF DATA OBTAINED FROM THE OBSERVATION OF SMALL GROUP INSTRUCTION

A comprehensive experimental study during the Fall of 1970 in the Department of Educational Psychology, University of Alberta, provided a unique opportunity for FSIA and IPA both to be used to analyze the same small group instructional situation. The experiment is outlined

in Appendix B. One of the experimental treatments of the above study was labelled "Direct Communication Training" (DCT). It could be referred to as "teacher-directed, small group instruction." This treatment consisted of fifteen, fifty-minute sessions with each of two groups. Each group was composed of approximately twelve students and one instructor. The instruction was to be similar for each group. Each group had the same instructor and the same intended learning outcomes. A description of the DCT is outlined in Appendix C. All sessions were videotaped[2]. The IPA data were collected live by two skilled Bales observers. The data were made available to the writer, who assisted in the tabulation of these data. The FSIA data were collected from the videotapes by two skilled Flanders observers. The writer was one of these.

Data collection by the Bales and Flanders observers was done by one observer recording for approximately the first thirty minutes and the other observer recording for approximately the last thirty minutes of every fifty-minute session. The inter-rater reliability of the Flanders observers was calculated from the overlaps. Analysis of the total overlap for each group--approximately forty-two minutes of observation for each group--yielded inter-rater

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[2]The videotape and audiotape of Session 12, Group One were accidentally erased. No analysis of this session was therefore possible by the Flanders observers.

reliability coefficients of .98 and .94. These coefficients were calculated by using the procedure suggested by Scott (1955). These coefficients indicated that the Flanders observers achieved a high level of inter-rater reliability, as Flanders considers a Scott coefficient of .85 an adequate level of inter-rater agreement.

It was originally planned that the overlaps in each session be used by the Bales observers to calculate inter-rater agreement. However, it was found that the first observer, after recording for thirty minutes, was recording at a faster rate than the second observer. This finding was consistent even though the observers alternated being the first recorder. Data from the overlaps were therefore considered invalid assessments of inter-observer agreement. Because of this, one sixty-minute session was coded by both IPA observers. Inter-rater reliability for categorization was tested by the use of Chi-square as suggested by Bales (1950). The level of probability achieved by this technique was .80. This probability level indicated that the Bales observers achieved a high level of inter-rater reliability as Bales considers a probability level of .50 an adequate level of inter-rater agreement.

The FSIA and IPA data were put on IBM cards. These data were then analyzed with the aid of an IBM-67 computer. The analyses of each session and of the total sessions for each group provided a solution to the problem --What does a comparison of FSIA and IPA data obtained from

the same small group instructional process reveal about the relative merits of each system as a tool for the analysis of small group instruction?

Three of the four potential uses of observation instruments for analyzing instruction, discussed by Rosenshine, formed the basis for questions to aid in the comparison of the data. These questions follow:

(1) Does each instrument enable the investigator to identify variability in classroom behavior? If so, how? Variability between sessions and between groups, as identified by the use of FSIA and IPA, was analyzed.

(2) Does each instrument enable the investigator to compare the instructor's performance with pre-determined criteria? If so, how? Criteria for the role of the small group instructor were known by the investigator. The instructor's performance as identified by FSIA and IPA was compared with the pre-determined criteria for the instructor's behavior.

(3) Does each instrument enable the investigator to describe the small group instructional process? If so, how? The answer to this question ascertained how each instrument enabled conceptualization of small group instruction and ascertained how closely the theoretical conceptualizations of instruction enabled by each instrument were observed in practice.

For each of the three questions, the answers were the basis for the comparison of FSIA and IPA.

The fourth use of an observation instrument--determining relationships between observed classroom behavior and outcome measures--suggested by Rosenshine could not be used as a guiding question. It became apparent that no such relationship could be validly determined by the present investigation. Only one instructor was observed. Not enough outcome measures were available. Finally, a possibility arose that some of the outcome measures that were available might need further validation.

Chapter 4

THE THEORETICAL COMPARISON

In this chapter the theoretical rationale, validity, and reliability of the two instruments are studied and then compared. A conceptualization of instruction from the frame of reference of each instrument concludes the chapter.

THE THEORETICAL RATIONALE

How and why did Bales and Flanders select and organize the categories of their systems? This question enabled the major comparison of the systems' theoretical rationales. Questions overarched by the above were the following: (1) Do the systems represent sets of mutually exclusive, all-inclusive behaviors? (2) Are they descriptive, as opposed to evaluative? (3) Do they deal with what can be categorized or measured? (4) Do they deal with small bits of behavior rather than with global concepts? (5) Is the observed situation precisely and unambiguously defined? (6) What unit of behavior is the basis of the observation system? Why? (7) How much observer inference is necessary? (8) How general is the observation system?

All conclusions drawn on the basis of the answers to the above questions must be qualified by the assumption that all interaction analysis systems are essentially crude

tools of measurement. For example, if it is concluded that categories are precisely and unambiguously defined, then they are as precisely and unambiguously defined as is possible when designing a system of interaction analysis. Instances will always arise when there is doubt concerning the coding of a particular aspect of behavior.

Bales' Interaction Process Analysis

Bales' initial interest in developing a category system of interaction analysis was theoretical and general. He was interested in the possibility of using the study of small groups as a means of developing a more adequate body of theory relevant to the analysis of full-scale social systems as well as to the analysis of small groups. Basic structural characteristics and dynamic processes one would expect to find in small groups were formulated, as were hypotheses concerning the relationships between various aspects of small group structure and process. In order to test these hypotheses, it was believed desirable to develop a method of observation which would give operational definitions of the method involved and which would be sufficiently generalized to apply to a large variety of small groups. In this way, norms could be made available based on a large number of observations in terms which would enable one to evaluate the findings of any one study. IPA therefore resulted from a conclusion of Bales that there was a need for the following:

. . . a general-purpose set of categories derived as
clearly as possible from a generalized theoretical
framework, with detailed definitions of categories and
detailed instructions and training methods for observers
(Bales, 1950, p.v).

What resulted was a way of classifying direct,
face-to-face interaction as it takes place, act by act, in
small groups. A series of ways of summarizing and analyzing
the resulting data in a useful manner was also obtained.
Interaction Process Analysis: A Method for the Study of Small
Groups (1950) is the result of Bales' initial work. The
book contains a description of IPA, a complete explanation
of its theoretical framework, methods of observer training
and of appraising observer reliability, methods of analysis
and interpretation using IPA, and detailed definitions of
the categories.

In 1946, Bales began the development of his system.
A beginning was made on a strictly empirical, ad hoc level
by observers inventing, on the spur of the moment, categor-
ies that described ongoing interaction. These categories
were then ordered according to theoretical preconceptions
concerning small group dynamics and tried again empirically.
This interactive development process between empiric trial
and theoretical formulation was the paradigm for the
development of IPA. After each empirical trial the cate-
gories were revised in order to eliminate overlaps or to
add previously uncategorized behavior. Lists of existing
category systems also contributed to the development of
IPA.

The 1950 formulation of IPA brought all of the categories within a single problem-solving frame of reference. It was the result of about twelve major revisions and three years of exploratory experience. The number of categories separately distinguished during this period varied from five to eighty-seven. Bales' thoughts on his category system at that time provide valuable information concerning the nature of his category system. He believed the following:

> The set of categories as it now stands is a kind of practical compromise between the demands of theoretical adequacy, the curbs introduced by the number and kinds of distinctions moderately trained observers can make in actual scoring situations, and the demand for a reasonable simplicity in the processing of data and the interpretation of results to subjects for feedback and training purposes. Although it is expected that further changes will be made, the series of revisions viewed in retrospect shows a rather convincing and consistent trend toward the essential simplicity and generality of the form as it now stands (Bales, 1950, p.viii).

As it now stands, IPA is concerned with process or interaction content, not topical content. This process content, it is believed, can be detected in any small group. It is assumed that any small group consists of a plurality of persons who have certain common task problems arising out of their relation to an outer situation, and certain problems of social and emotional relationships arising out of their contact with each other. It is further assumed that each act of each individual in the group can be analyzed with regard to these problems.

The method of scoring, and the content and arrangement of the categories are considered of importance. To understand why, one must understand Bales' two frames of reference for the analysis of small group interaction--the actor and situation, and the problem-solving sequence.

The actor--the individual initiating an act--and the situation--the self, other individuals in the group, or the group as a whole--form two poles of a major conceptual dichotomy. The actor and the situation are descriptive aspects of the act at the moment, serving to aid the observer in categorizing the act. This frame of reference dictates the scoring of "who-to-whom" by an IPA observer.

The problem-solving sequence is visualized by Bales as a system of interaction distributed in time and between members with a general tendency to move from an initial state in which some problem is recognized to a terminal state in which the problem is solved. The content and the arrangement of IPA reflect the above postulate. The system of categories and their major relations are shown in Table 1. Each category is meant to gain its central meaning from its position in the set of categories.

The 'nesting' of the problems shown in Table 1 illustrates Bales' hypothesis that tension reduction and reintegration is the state of affairs toward which the interaction process tends. Further, it implies that each problem (communication, evaluation, control and decision) must be solved in turn. "If there is a failure of solution

Table 1

Bales' System of Categories and Their Major Relations
(1950)

Social-Emotional Area: Positive	A	1 <u>Shows solidarity</u>, raises other's status, gives help, reward:
		2 <u>Shows tension release</u>, jokes, laughs, shows satisfaction:
		3 <u>Agrees</u>, shows passive acceptance, understands, concurs, complies:
Task Area: Neutral	B	4 <u>Gives suggestion</u>, direction, implying autonomy for other:
		5 <u>Gives opinion</u>, evaluation, analysis, expresses feeling, wish:
		6 <u>Gives orientation</u>, information, repeats, clarifies, confirms:
	C	7 <u>Asks for orientation</u>, information, repetition, confirmation:
		8 <u>Asks for opinion</u>, evaluation, analysis, expression of feeling:
		9 <u>Asks for suggestion</u>, direction, possible ways of action:
Social-Emotional Area: Negative	D	10 <u>Disagrees</u>, shows passive rejection, formality, withholds help:
		11 <u>Shows tension</u>, asks for help, withdraws out of field:
		12 <u>Shows antagonism</u>, deflates other's status, defends or asserts self:

a b c d e f

Table 1 (continued)

Bales' System of Categories and Their Major Relations
(1950)

KEY:

a Problems of Communication
b Problems of Evaluation
c Problems of Control
d Problems of Decision
e Problems of Tension Reduction
f Problems of Reintegration

A Positive Reactions
B Attempted Answers
C Questions
D Negative Reactions

of any of the sub-problems we assume there is by so much a failure of tension reduction, and the integration of the system is threatened (Bales, 1950, p.61)."

The scoring of who-to-whom in each of the twelve categories enables the reconstruction of the social structure within the group. Bales does more than stress that his system is concerned with interaction content as opposed to topical content, and that the interaction content is concerned with task and social-emotional problems. Operationally defined are a "small group," the situation for which IPA would be suitable, and an "act," the unit of behavior that is scored.

> A small group is defined as any number of persons engaged in interaction with each other in a single face-to-face meeting or a series of such meetings, in which each member receives some impression or perception of each other member distinct enough so that he can either at the time or in later questioning, give some reaction to each of the others as an individual person, even though it be only to recall that the other was present (Bales, 1950, p.33).

This definition delimits the use of IPA. For example, it would seem doubtful that a group of university students gathered together for a lecture would need the requirements of Bales' definition of a small group. IPA would be an inadequate tool for analysis in such a situation. It would, however, be an adequate tool for the analysis of interaction between two people in a situation.

An act, the unit to be scored, is defined as follows:

> . . . the smallest discriminable segment of verbal or nonverbal behavior to which the observer, using the

> present set of categories after appropriate training,
> can assign a classification under conditions of
> continuous serial scoring (Bales, 1950, p.37).

Since nonverbal, as well as verbal behavior is scored by
an IPA observer and since each group member is separately
recorded, a time unit for IPA would not be suitable. For
example, while one person speaks, if another person makes
a negative nonverbal gesture towards that person, an IPA
observer would have to score the latter act as well as the
acts of the person speaking.

It appears then that Bales has precisely and
unambiguously defined the universe of behaviors which
IPA is meant to analyze. The observation system does
represent sets of mutually exclusive, all-inclusive beha-
viors. If an observer follows three of Bales' postulates--
consider the total set of categories as a gestalt, score
continuously, and score all persons in the observed groups--
every act which can be observed can be classified in one
positively defined category.

How much observer inference is necessary? Bales
stresses that the classification which an observer makes
is clearly and unequivocally a matter of interpretation.
An observer must make inferences concerning the meaningful
or functional content of behavior. Bales has attempted to
insure, however, that the inference necessary is reliable
and at a minimum. His observation system deals only with
what can be categorized in a descriptive manner. Bales

(1950) states that categories have been omitted which do not apply on the level of the single act, which require the observer to be evaluative in the moral, ethical sense, which require him to make judgments of logical relevance, validity, and rigor, or which are not readable in themselves or in a minimum context (p.37).

Flanders' Interaction Analysis

Flanders' initial interest in developing a category system of interaction analysis was practical. He was interested in the degree to which students' attitudes affect their subsequent achievement, and the influence of different teaching methods on the development of such attitudes. FSIA is particularly concerned, therefore, with the influence pattern of the teacher in the classroom.

The purpose of FSIA is to record a series of class-room acts in terms of predetermined concepts. The concepts refer to the teacher's control of the students' freedom of action. The category system is used to separate those acts which invite more creative and voluntary participation from those acts which result in compliance. Verbal behavior is considered an adequate sample of a teacher's total classroom behavior. Subject matter is deliberately irrele-vant to this study of classroom teacher behavior. Contrib-uting to the development of FSIA were interaction analysis systems by Bales (1950), Anderson et al. (1945, 1946a, 1946b), Withall (1948), and Mitzel and Rabinowitz (1953). The frame

of reference for Flanders' theories emerges from social-psychological research on classroom climate--generalized attitudes toward the teacher and the class that the pupils share in common despite individual differences--by such people as Lippitt (1940), Anderson et al. (1945, 1946a, 1946b), Withall (1948), Flanders (1951), and Cogan (1958).

In 1955, Flanders began the development of his system. His earliest system had ten categories for teacher talk and one for student talk. The recording was not done in sequence and was not continuous.

Table 2 reveals a marked similarity between Withall's category system and Flanders' first draft of his system. It would appear that Withall's work influenced Flanders when he categorized teacher statements.

Table 2

Comparison of Withall's (1948) and Flanders' (1955) Categories

Withall's Categories	Flanders' Categories
No. Statement	No. Statement

1. Learner supportive
2. Acceptant or clarifying
3. Problem-structuring
4. Neutral
5. Directing
6. Reproving
7. Teacher supportive
	1. Accepts and clarifies
	    feeling
	2. Praises and encourages
	3. Asks questions of procedure
	4. Accepts and/or clarifies
	    student ideas
	5. Asks general questions
	6. Routine administration
	7. Gives information, opinion
	8. Gives directions
	9. Gives criticism
	10. Justifies own authority
	11. Student talk

In 1957, during a study in New Zealand, the categories were revised; continuous scoring in sequence was introduced and, most important, procedures were developed for tabulating the data in a matrix. Flanders acknowledges contributions of Bales (1950) and Darwin (1959) for enabling this conceptualization of his data.

The third revision occurred after 1957, and was used for empirical research between 1958 and 1960 in Minnesota. This third revision represents the present categories. The 1960 category system is presented in Table 3.

The content of Flanders' categories is important, but not the arrangement. There is no scale implied by the category numbers. However, categories 1,2,3, and 4 represent teacher indirect influence that theoretically encourages student participation and thereby increases freedom of action. Categories 5, 6, and 7 represent teacher direct influence that theoretically increases the control of the teacher and often stimulates dependence and compliance. Categories 8 and 9 are meant to provide a check on the freedom of the student action within the system of categories. "The major purpose of these categories is the analysis of teacher influence (Flanders, 1966, p.5)." Category 8 is associated with an above average pattern of direct teacher influence; an above average pattern of indirect teacher influence is associated with category 9. The inclusion of category 10 enables continuous scoring.

Table 3

Flanders' Categories for Interaction Analysis (1960)

TEACHER TALK	**INDIRECT INFLUENCE**	1. ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a non-threatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included. 2. PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, or saying "um hm?" or "go on" are included. 3. ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to category five. 4. ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	DIRECT INFLUENCE	5. LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions. 6. GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply. 7. CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
	STUDENT TALK	8. STUDENT TALK--RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement. 9. STUDENT TALK--INITIATION: talk by students which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.
		10. SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

There are times when FSIA should not be used in a classroom. Flanders states the following:

> The system of categories is designed for situations in which the teacher and the students are actively discussing schoolwork. It is an inappropriate tool when the verbal communication is discontinuous, separated by fairly long periods of silence, when one person is engaged in prolonged lecturing, or is reading aloud to the class (1966, p.6).

Flanders' System of Interaction Analysis uses a three second time unit as the basic unit to be scored. Flanders appears to have settled on the three second unit in an heuristic fashion. He says, "There is nothing magical about a three second period. An experienced observer after considerable practice, tends to classify at this rate with this particular category system (Flanders, 1970, p.37)." A rationale for the time unit is explained. It is a regular tempo of scoring that is the most important element of the time unit. Most conclusions depend on rate consistency, not on speed. One of Flanders' intentions is that his system be used to make comparisons between categories during one classroom session or to make comparisons between sessions in one particular category. In order to enable these comparisons, Flanders feels that steady continuous scoring based on a small unit of time is the best method. Since only verbal behavior is recorded by a Flanders observer and since individual student behavior is not noted, a small time unit such as three seconds seems a suitable method of scoring.

Flanders, too, has precisely and unambiguously defined the universe of behaviors that FSIA is meant to analyze. It is meant to analyze non-topical classroom verbal interaction in terms that refer to the expansion and restriction of students' freedom of action. The verbal behavior of the teacher and students is what is coded. It is the teacher's verbal behavior that FSIA is designed to focus on. All observed communication can be classified in one positively defined category, thus FSIA consists of mutually exclusive, all-inclusive categories.

There is an element of inference in FSIA that is not present in IPA. Amidon and Flanders (1963) suggest that it is best for the observer to spend five to ten minutes getting oriented to the situation before he begins to categorize. This time is meant for the observer to get the feeling of the interaction before he begins to record. Flanders (1970) instructs an observer to classify doubtful statements into categories which are consistent with the prevailing balance of teacher initiation or response. No such instructions are given by Bales. On the other hand, Flanders has attempted to make his observation system as descriptive as possible. Flanders (1964) states the following:

> The following kinds of information will be ignored--right, wrong, good, or bad content information--whatever is being discussed; the variety of instructional materials being used; the various class formations during learning activities; the preparation of the

teacher as revealed by lesson plans; and anything else
not directly revealed by verbal communication (p.198).

1970 Revisions to FSIA and IPA

Tables 4 and 5 reveal the latest revisions of
Bales' and Flanders' category systems. The IPA revisions
are all concerned with the naming and content of the
categories. The categories have not been changed by
Flanders but their conceptualization has been changed.
Both revisions are the result of several years of exper-
ience using the instruments as research tools.

Flanders (1970, pp.102-106) proposes that a more
parsimonious way to conceptualize the indirect-direct
aspect of classroom interaction is to use the same concepts,
initiation and response, to describe both teacher and
student talk. "Indirect" now refers to "teacher response
with pupil initiative" and "direct" refers to "teacher
initiative with pupil compliance." Research and mathe-
matical problems have arisen with the indirect-to-direct
ratios which have been used to describe FSIA data. It
has been found that unless there are well over one thousand
tallies, the indirect-to-direct ratios have not been stable
and useful statistics. As well, different researchers have
used different methods of calculating these ratios. As a
result, Flanders proposes new ratios based on the analysis
of the balance between initiation and response. These
ratios were used in the present study for the analysis of
the small group data.

Table 4

Flanders' Interaction Analysis System (1970)

Teacher Talk	Response	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. 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 "Um hm?" or "Go on" are included. 3. ACCEPTS OR USES IDEAS OF PUPILS. Clarifying, building or developing ideas suggested by a pupil. Teacher extensions of pupil ideas are included.
		4. ASKS QUESTIONS. Asking a question about content or procedure, based on teacher ideas, with the intent that a pupil will answer.
	Initiation	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. 6. GIVING DIRECTIONS. Directions or commands to which a pupil is expected to comply. 7. CRITICIZING OR JUSTIFYING AUTHORITY. Statements intended to change pupil behavior from nonacceptable to acceptable; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
Pupil Talk	Response	8. PUPIL TALK--RESPONSE. Teacher initiates the contact or solicits pupil statement or structures the situation. Freedom to express own ideas is limited.
	Initiation	9. PUPIL TALK--INITIATION. Expressing own ideas; initiating a new topic; freedom to develop opinions and a line of thought, going beyond the existing structure.
		10. SILENCE OR CONFUSION. Pauses, short periods of silence or of confusion in which communication cannot be understood by the observer.

Table 5

Bales' Interaction Process Analysis System (1970)

A. SOCIAL-EMOTIONAL AREA: POSITIVE AND MIXED (RE)ACTION

1. Seems friendly. (f)

2. Dramatizes. (e)

3. Agrees. (d)

B. TASK AREA: ATTEMPTED ANSWERS

4. Gives suggestion. (c)

5. Gives opinion. (b)

6. Gives information. (a)

C. TASK AREA: QUESTIONS

7. Asks for information. (a)

8. Asks for opinion. (b)

9. Asks for suggestion. (c)

D. SOCIAL-EMOTIONAL AREA: NEGATIVE AND MIXED (RE)ACTION

10. Disagrees. (d)

11. Shows tension. (e)

12. Seems unfriendly. (f)

Key: a. problems of information, b. problems of evaluation,
c. problems of control, d. problems of decision,
e. problems of tension-management, and f. problems
of integration.

Bales' changes in the naming and content of his categories are the result of twenty years of empirical developments. Of particular importance to the revisions is the factor analytic work of Couch (1960). Bales' categories are now used to identify an individual's group role in terms of the social-psychological direction that he is moving toward. These individual group roles formed a portion of the analysis of the small group data in the present study. Bales' revised version was also used by the IPA observers. A complete detailed explanation of the revisions can be found in Appendix 4 of <u>Personality and Interpersonal Behavior</u> by R. F. Bales (1970).

Summary Comparison

The two systems of interaction analysis under investigation were developed by different methods and for different purposes.

Bales explicitly desired to develop a category system that could then be used to analyze the interaction of many different kinds of small groups. To this end, Bales drew upon knowledge and impressions generally current in sociology, social anthropology, social psychology, and :: psychology concerning group dynamics in an attempt to formulate some basic structural characteristics and dynamic processes that would be expected to be found in small groups. He began the development of his category system at an <u>ad</u> <u>hoc</u> level, subsequently revising it to make use of

theoretical formulations developed concurrently with the categories. Lists of categories similar to IPA were made use of during its development.

Flanders developed his category system in order to use it as a specific tool in the investigation of certain hypotheses concerning the effect of teacher classroom behavior on student attitude and achievement. The development of Flanders' category system was not begun at an ad hoc level. The categories of FSIA and its theoretical formulations emerged from social psychological research into the social-emotional climate of the classroom.

The two systems are similar in that they each were revised several times after empirical trial over a period of several years.

Both IPA and FSIA would be considered general observation systems. A person using each system deliberately ignores the subject matter or the content of the on-going interaction in order to record the process of the interaction. Each system could therefore be used in many different situations. Of the two, IPA is the more general. In order to use Flanders' system, a teacher must be actively interacting in an instructional setting. Bales' system does not require a teacher or an instructional setting for its use. It could, however, be used in a small group instructional setting.

Both IPA and FSIA data can be collected live by one person. This leads one to assume that each system does

not require a high degree of inference. Both Bales and
Flanders explicitly state that their category systems are
designed to minimize difficulties of observation.

Some observer inference is required, however, in
order to use both systems. The use of each system requires
that the observer empathize with the interacting partici-
pants. An IPA observer must try to "empathize with the
other or group member as the group member perceives the
actor (Bales, 1951, p.39)," while categorizing interaction.
An FSIA observer, while classifying interaction, must ask
himself, "What does this behavior mean to the pupils as
far as restriction or expansion of their freedom is concern-
ed (Amidon & Flanders, 1967, p.25)?"

Both systems have ground rules to cover instances
when an observer is in doubt as to the classification of
interaction. These rules apply only when there is doubt.
The general effect of both Bales' and Flanders' ground rules
is to divert the classification of interaction that tends
to be most frequent into less frequently-used categories
that are of greater diagnostic interest.

The investigator has found that about thirty hours
of training is necessary to become a skilled Flanders
observer, once the categories and their descriptions have
been memorized. This training procedure involves working
in pairs categorizing from tape recordings of classroom
interaction, then categorizing in live classroom situations.
About one hundred hours of training is necessary to become

a skilled Bales observer. Again, this is after the categories and their descriptions have been memorized and again, the training procedure involves working in teams of two or more. Most of the training occurs while viewing live, small group interaction although the use of videotapes is recommended. Videotape recordings allow for playback and subsequent discussion. An experienced observer on hand is helpful while learning each system.

The longer time required to become a skilled IPA observer does not mean that more observer inference is required by an IPA observer than by an FSIA observer. The use of IPA requires that one constantly watch the group members interacting. This is necessary in order to attempt to capture all verbal and nonverbal acts by all members. It is necessary also to record the receiver of any act initiated by an actor. By categorizing this way, it is possible for a skilled IPA observer to record reliably twenty-five to thirty acts per minute. The rule is to record as many acts as possible and to attempt to miss none of the interaction.

An FSIA observer records verbal interaction only, and does not score who-to-whom. Seven of Flanders' ten categories are teacher categories; two are student categories attributed to the students in general, not to an individual; one category encompasses class silence or confusion. An FSIA observer need not therefore constantly scrutinize the individuals in the classroom. He need only record in

sequence a number representing one of the categories of verbal interaction at least once every three seconds. An IPA observer must memorize the placement of the categories on his score sheet, memorize numbers representing the small group participants, and then score who-to-whom in a particular category in sequence. It is for these technical reasons, rather than for problems of inference that it is more difficult to become skilled in IPA than in FSIA.

The category titles and descriptions of both systems are as self-explanatory as possible. An observer using either system can categorize every event in only one category, thus each system represents sets of mutually exclusive, all-inclusive behaviors at its own defined level of abstraction. The small unit of interaction recorded by either an IPA or FSIA observer is nonevaluative. Each system includes methods of collating these small bits of behavior so that an analysis of the total interaction can then be made. These methods of collating were used by this researcher in the analysis of small group data.

These methods of collating and the theoretical rationales of IPA and FSIA will be more closely examined in the next section of this investigation when the validity of each instrument is examined.

THE VALIDITY

Postulates by Cronbach and Kerlinger provided the major guidelines with which to assess and compare the

validation procedures of Bales and Flanders. Cronbach
(1970) stated that "construct validity is established through
a long-continued interplay between observation, reasoning,
and imagination (p.142)." Kerlinger (1964) stated that "if
the variables being measured . . . are imbedded in a theore-
tical framework, then certain relations should exist. Do
they indeed exist (p.507)?"

Bales' Interaction Process Analysis

Bales (1950) stressed that his category system
was based upon a theory which was necessarily incomplete.
He also emphasized that his empirical findings were tentative
and that more research was necessary. Data analyses from
several different types of small groups were reported. The
data were presented in the form of frequency polygons,
charts, and percentage figures. No inter-rater reliability
coefficients were reported.

In an exploratory study by Bales, IPA enabled the
differentiation of two different roles that a leader of
two similar training groups performed. The roles assigned
were "non-directive" and "democratically-directive." It
was found that the leader in his non-directive role accounted
for only fourteen per cent of the total interaction; in his
directive role he accounted for fifty-two per cent of the
total interaction. The quality of interaction differed as
well. The differences were in accord with the instructions
that the leader had been given for his two roles. The

interaction profiles of the non-directive and directive group members were found to be different as well, both in quantity and in quality. Bales suggested that these findings should be considered with caution as they were based on only two groups, and personality differences had become apparent between the matched members of the groups during the observations.

Four major sources of variation were posited: personality, social organization, culture, and type of problem and situation. Data from four different group situations which illustrated these sources of variations were presented. The group situations analyzed were these: pre-school children in a play situation, scored from a written protocol; five four-person discussion groups of ninth grade boys; five discussions of married couples who were not aware they were being observed; and a six-person thesis discussion group. The frequency polygons presented revealed marked differences in the type of interaction between the group situations. The quality of interaction of each group situation was as expected. For example, the rates of activity dealing with information and analysis were unusually high for the thesis discussion group. At the same time, the amount of negative social-emotional behavior was at a bare minimum for this group. Conversely, the proportion of the social-emotional behavior as compared with the task-oriented behavior of the pre-school children was much larger than in adult groups.

Even though Bales stressed the tentative nature of these findings and even though conclusions were drawn on the basis of descriptive comparisons, these findings do indicate that IPA can accurately record observed behaviors in a variety of situations and that differences in behavior can be revealed by the use of IPA.

Validation of the phase hypothesis. A major theoretical formulation of Bales was that interaction can be viewed as a problem-solving process distributed in time and between persons. This concept led particularly to the arrangement of the IPA categories. The validation of Bales' phase hypothesis thus becomes of crucial importance to the validity of the IPA category system.

Frequencies of category-to-category sequences were analyzed by Bales by considering IPA data collected from three group sessions previously discussed: the thesis group session, a non-directed group session, and a directed group session. The data were presented in tabular form showing prior and subsequent acts for the three groups combined. By this method, Bales found that for each of the twelve categories considered as prior acts, the most frequent subsequent act was either a repetition in the same category or a reversion to the two most frequently used categories--giving opinion or giving information. Ignoring repetitions, a number of expected tendencies according to the pairing of the categories were found. Category 7 led most frequently to

its answering category--category 6. Similarly, categories 8 and 9 led most frequently to their answering categories--categories 5 and 4, respectively. Categories 10, 11, and 12 however, led to their opposite categories--categories 1, 2, and 3--with less than their expected frequency.

These same data were grouped according to prior and subsequent IPA sections rather than categories: C, Questions; B, Attempted Answers; A, Positive Reactions; and D, Negative Reactions. Within-section sequences were eliminated. An index for each cell was then computed representing the difference between the expected, and the observed as a percentage of the expected. On the basis of these indices, Bales concluded that his general expectations regarding the nature of the sequences by sections was "roughly confirmed." Prior acts in section C (questions or initial acts) tended to be followed by subsequent acts in section B (attempted answers or medial acts). From section B, subsequent acts were evenly distributed between sections A, C, and D. Terminal acts represented by sections A and D both tended to be followed by section B (medial acts) but not section C (initial acts).

Positive and negative reactions tended to be mutually exclusive. Bales' thoughts on this finding are worth quoting in full for they illustrate the process of alternation between task and social-emotional problems that occurs in every small group, he postulates.

> Neither one tends to lead directly to the other, and this is in line with our general impressions about

interaction. Insofar as the two central sections C and
B can properly be designated as primarily concerned
with Instrumental-Adaptive functions, whereas the two
terminal sections can be said to be concerned with
Integrative-Expressive functions, the tendency toward
alternation between these two types of functions (rather
than indefinitely protracted sequences which stay
within one area or the other) may be said to appear
even on the act-to-act level. It is not known how
representative the results suggested by these data
may be, but the expectation is that this sort of
finding may be quite general and may hold within a
fairly wide range of conditions (Bales, 1950, p.13).

Theoretically, Bales' concept of the problem-solving
sequence involves at least an initial act, a medial act
and a terminal act. More crucial to a validation of the
phase hypothesis is the testing of his more complex concep-
tion of the problem-solving sequence. According to the
theoretical rationale, each of the pairs of categories is
concerned with the solution or lack of solution of a parti-
cular functional problem encountered in interaction systems.
It was posited that the pairs taken in order from the center
outward were interrelated, roughly forming a "nested hierar-
chy." That is, the solution to problems of communication,
represented by categories 7 and 6 was a functional prerequi-
site to the solution of problems of evaluation as represented
by categories 8 and 5, and so on.

It has been suggested that these functional problems
might appear in an order of "agenda topics" within a complete
meeting rather than act-to-act sequences. With this in mind,
Bales sub-divided the three-hour thesis discussion group into
eight sequential periods. IPA was then used to obtain rates
for pairs of categories for each period. The mean rate of

each pair for the total session was obtained and percentage deviations from the mean for each category pair for each period were presented. These deviations do not inform us whether a functional problem was solved. They do, however, tell the reader whether the problem received more or less than its usual amount of attention during a particular period of the session.

The results of the analysis of the thesis discussion group were striking. The peak rate of each pair of categories appeared within the meeting in the same order in which the pairs of categories are arranged in the category system. The arrangement of categories had been based on a priori assumptions about the interaction system. The conditions necessary for this problem-solving sequence were unknown, however, so this problem-solving sequence was presented as an ideal sequence that occurs under certain unknown conditions.

As a further test of the phase hypothesis, Bales derived a series of indices based on his task-oriented categories. These indices, it was hoped, would enable inferences to be made about the functioning of the interaction system in the social-emotional area. The indices derived from the task area were the following (numbers represent categories): (1) difficulty of communication (7/7+6); (2) difficulty of evaluation (8/8+5); (3) difficulty of control over situation (9/9+4); and (4) directiveness of control $\left[(4/4+6) + (5/5+6)\right] \div 2$. Each index was

assumed to be connected with a social-emotional index
labelled expressive-malintegrative behavior (10+11+12)/
(10+11+12+1+2+3) .

The above indices enabled the following prediction
to be tested: For a series of sub-periods within a complete
meeting, the following relationship between raw scores in
the designated categories will hold:

$$\frac{7}{7+6} + \frac{8}{8+5} + \frac{9}{9+4} + \frac{4}{4+6} + \frac{5}{5+6} = f \frac{(10+11+12)}{(10+11+12+1+2+3)}$$

Results were inconclusive. Correlations between these two
series over eight sub-periods for three different group
meetings were $^+.81$, $^+.43$, and $^+.29$. As a first trial,
however, these findings indicated that future empirical
research could be fruitful.

The relationships between the above indices do not
appear to have been investigated further by Bales. System
tendencies of interaction have been further researched
using more sophisticated research designs and statistical
techniques (Bales & Strodtbeck, 1951; Borgatta & Bales,
1953; Heinicke & Bales, 1953; and Psathas, 1960). The
findings of this research are not of direct concern to the
present inquiry. The fact that these studies have discover-
ed certain regularities or system tendencies in group inter-
action during one session or over several sessions by using
IPA is an indication that Bales' theoretical conceptualiza-
tion of the problem-solving process is a valid one. Thus,
the content and arrangement of his categories would appear
valid.

Validation of the concept role structure. In 1950, Bales proposed four indices on the basis of which a group member's role could be described. These indices are derived from the scoring of acts initiated and received by an individual in each of the twelve categories of IPA. The indices attempt to express certain aspects of the position of the individual in problem-solving sequences. The indices represent direct and indirect access to resources, degree of control, and generalized status.

Data from one five-member chess problem-solving group were presented as illustrative material. Indices for each individual were presented. These indices were compared with matrices of acts initiated and received by each member, member ratings of each other, and sociometric choices. The correspondence of the indices was found to be very close to expectations based on the interaction matrices, the member ratings, and the sociometric choices. Again, Bales made clear that little work had been done with the indices; again, it appears that the use of these indices has not been further researched by Bales; and again, these indices were used in the present study. Subsequent research (Bales, 1953; Borgatta & Bales, 1953; Borgatta, Couch & Bales, 1953; Slater, 1955; and Hare & Bales, 1963) making use of more sophisticated research designs and statistical techniques demonstrated that IPA can isolate and identify an individual's role performance in a small group. These findings further validate the category system.

Since 1950, Bales has revised the content of some of the categories. By the use of these categories, as well as sociometric data, questionnaire materials, and personality tests in Bales' Harvard laboratory, a systematic description of "directions of social-psychological movement" or personality types has evolved. Bales (1970) claims that individuals in a group can be classified by analysis of their interaction in terms of one or another of twenty-seven social-psychological directions (s.p.d.'s). These s.p.d.'s can then be used to predict member personality characteristics and to plot the group's role structure.

The main directions are to be thought of as three orthogonal axes which define a three-dimensional psychological space. Figure 1 illustrates Bales' concept of social-psychological directions. The axes represent three bipolar dimensions: power (upward-downward); affection (positive-negative); and task orientation (forward-backward). An s.p.d. is named by indicating its direction from the central point. The name so generated may consist of one, two, or three of the main directions.
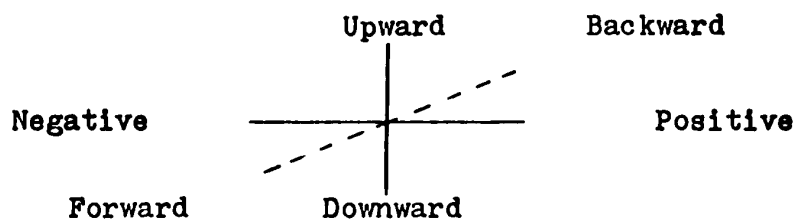
Figure 1

Bales' (1970) Three-Dimensional Concept of
Social-Psychological Directions

Most of the evidence correlating personality characteristics with an individual's s.p.d. comes from the comprehensive factor analytic study by Couch (1960). From this study, too, comes the evidence linking IPA with the s.p.d.'s. Other major contributions to Bales' work came from Slater (1955) and Kassebaum (1958).

The main study upon which Bales' concept of personality types is based is reported in detail by Couch (1960). Sixty randomly selected subjects were randomly placed in twelve groups of five for a series of five two-hour meetings. Each meeting consisted of a somewhat different task. The data for all five meetings were pooled for each individual. Among the data obtained were measurements of overt behavior, personality test scores, classification of value statements made by individuals during group meetings, and evaluations of other group members by individuals[1]. These data provide the basis for the personality and role types which characterize each s.p.d.

Of particular concern to the present investigation are the findings of Couch concerning the analysis of the IPA category system. Couch intercorrelated the rates initiated for the twelve categories and the total initiated. The resulting matrix was factor analyzed by Thurstone's

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[1]A complete list of the variables used in the descriptions of the personality and group role types with their directional indicators obtained by factor analysis and a report of the factor analytic study of value statements is found in Appendices 1 and 5 of Personality and Interpersonal Behavior by R. F. Bales, 1970.

Complete Centroid method. By this method, it was found that underlying dimensions of behavior exist within the domain of manifest actions as represented by the IPA category rates. Two of the major dimensions were interpreted as Interpersonal Dominance versus Submissiveness (labeled Upward-Downward by Bales) and Positivity versus Negativity (labeled Negative-Positive by Bales). A third dimension, not as reliably identified, was interpreted as Social Expressivity versus Task Seriousness (Bales' Backward-Forward dimension). Significant positive and negative loadings on individual IPA categories for each dimension indicate that IPA acts can be identified with these major dimensions.

Furthermore, the factor pattern of these underlying behavioral tendencies was found to appear with consistent similarity and stability over several sessions, regardless of variations in task problems and changes in group member- ship. The same pattern of factors emerged from an analysis of dyadic behavior as well as the analysis of five-person groups.

Couch's findings, data from four other factor analytic studies, and the massive amount of data analysis provide at least a tentative indication that Bales' concept of social-psychological directions is a valid one. However, due to the small number of subjects from which these find- ings were obtained, Bales (1970) stated: "No claims are made for the reliability or representativeness of the findings. These problems must be dealt with in the future.

The present study, for all its complications, is only exploratory (p.391)." At present, then, it appears that further validation must await future research. This research is being done[2].

Flanders' Interaction Analysis

Major precursors of Flanders' conception of indirect and direct influence appear to be the findings of Anderson and his classification of integrative and dominative behavior; the findings of Lippitt and his conception of democratic and authoritative behavior; and findings of Withall and his classification system of learner centered and teacher centered behavior. The validity of Flanders' System of Interaction Analysis will, to a large degree, be ascertained by assessing the validity of the above studies.

Anderson and his co-workers concluded their research on teachers' classroom personalities, classroom psychological atmosphere and the relationship of the pattern of teacher behaviors to pupil behavior by postulating the following (1946b, p.3):

(1) Within a given school and culture, the main direction of influence is from teacher to pupil.

(2) Integrative teacher behavior encourages

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[2]One of the purposes of W. Matheson's thesis, titled "The Structure of Small Learning Groups" is to assess Bales' concept of social-psychological directions. This study is underway at present and is briefly discussed in Appendix B.

integrative pupil behavior.

(3) Dominative teacher behavior not only provokes conflicts and misunderstandings but stifles spontaneity and social development in the children.

(4) A change in pupil personnel does not change significantly the pattern of individual teacher behavior.

(5) A change in teacher personnel results in changes in pupil behavior.

To measure objectively teacher and child integrative and dominant behavior, a category system of child behavior was developed and a twenty-six category system of teacher behavior was developed. By means of these categories, Anderson and his co-workers were able to determine the extent to which teacher behavior influenced the behavior of the pupils and the psychological atmosphere in the classroom. These category systems were revised on the basis of theoretical assumptions and on the basis of empirical trial. The reliability of observers was determined by computing percentages of agreement between observers.

The behavior of pre-school children was analyzed during preliminary studies. The earliest studies of teacher-student interaction occurred with kindergarten children. Later studies dealt with second, third, fourth, and sixth grade children. The category systems were applied largely to the second and third grade groups. Data from these groups provide the basis for the major findings, although the procedures, categorizations and conclusions

with respect to the other groups replicate the findings of
the second and third grade groups. All told, the inter-
action of thirteen teachers and over two hundred students
in several schools was studied over a period of three years.

The most significant study took place in 1939.
Four teachers and 129 different students were subjects.
In a previous study it had been found that the two grade
two teachers differed significantly in their classroom
personality patterns. One teacher was consistently more
integrative; the other teacher was consistently more
dominative. A significant difference between the behavior
of their students was also found. These differences were
in the directions that would be expected from the observed
behavior differences in the teachers. This study, however,
could not answer the question of causality, that is, were
the teachers different because of the children or were the
children different because of the teachers? The study
could not answer this, though the students had been assigned
to rooms by lot, came from the same socio-economic levels,
and were approximately similar in intelligence. Further-
more, no known selective factors accounted for the differ-
ences in the students' behavior. Therefore, the same
teachers were studied a second year with different students
and the same students were studied a second year with
different teachers. The behavior of the grade two teachers
during the second year was found to be similar to their

behavior during the previous year. No such similarities
·were found in the behavior of the students when their class-
room behavior with new teachers was compared to their
behavior during the previous year.

In order to test differences between mean frequen-
cies of teacher contacts or of types of child behavior, the
ratio between the obtained difference and the standard
error of the difference was computed. In order for a
difference to be considered significant, the obtained
difference had to be three or more times the standard
error of the difference. This conservative estimate of
significance lends more support to the validity of Ander-
son and his co-workers' findings. Their approach to the
development of the category systems and their ordered and
methodical research approach would appear to provide a
firm basis for the subsequent development of Flanders'
theories.

The investigation by Lippitt (1940) of the role
of the leader in a group has often been criticized, yet
at the same time his work has become a classic in the
field of small group dynamics. Lippitt's conclusions
have been questioned for the following reasons: (1) the
lack of random selection of his subjects--his subjects
were matched; (2) the size of his N--20; (3) his design--
all groups did not undergo similar treatments due to the
introduction of a third treatment variable; and (4) his
statistical procedures--subjective impressions and

nonstatistical procedures contributed to his conclusions.

However, Lippitt's findings were supported by other researchers. His findings confirmed two preliminary investigations, and his conclusions were based on a large and varied amount of data, not all of which were subjected to subjective evaluation only. Analysis of variance procedures were used whenever possible and the probability levels were reported. Four boys' clubs, each having five eleven year old members, were selected from two public schools. They were given experiences with "authoritarian leadership" consisting of dominative contacts, "democratic leadership" consisting of integrative contacts, and "laissez-faire leadership" consisting of infrequent integrative contacts coupled with attitudes of indifference. Each club met for a six-week period under one leader who utilized a specified style of leadership. Two successive six-week periods followed with other leaders who used different leadership styles. The styles of leadership among the four leaders were rotated in order to eliminate the problem of leadership personality as a biasing factor in the study. By giving each of the four clubs experiences with the two major leadership styles, democratic and autocratic, the variable of club personnel was controlled.

Data collected included (1) a quantitative running account of individual social interaction behavior in terms of ascendant, submissive, and objective behavior categories, (2) continuous stenographic records of the conversation,

(3) analyses of activity subgroups, and (4) interview material secured from each club member at the end of each six-week period. Much other data of diagnostic interest were also collected.

The conversation record compiled during the club meetings was analyzed in terms of leader-to-child behavior, child-to-leader behavior, and child-to-child behavior. This conversation analysis by categories of verbal behavior was compared to the other data in order to ascertain the validity of the categories. An inter-rater reliability coefficient of .80 was obtained by comparing the percentage of agreement of two investigators for five of the sessions. Findings pertinent to the present investigation were the following (pp.222-245)ı

(1) Conversation categories differentiated leader behavior techniques more adequately than social behavior categories.

(2) Different leadership styles, resulting from the implementation of predetermined criteria, produced the differences in group and individual behaviors in the clubs.

(3) Leader behavior styles were the primary factor in producing the climatological differences in the clubs, and club personnel was secondary to this major problem.

(4) Autocratic leadership elicited either an aggressive rebelliousness or an apathetic submission towards the leader.

(5) Group members in a democratic social climate

were friendly to each other, showed more group-mindedness, were more work-minded, showed greater initiative, and showed a higher level of frustration tolerance than members in laissez-faire or autocratic climates.

As the club members were rotated through the various styles of leadership, the major basis for ascertaining between-group differences was the conversation categories of leader-to-child, child-to-leader, and child-to-child. Analysis of variance procedures were used to test between-group differences and a probability level of .05 was considered significant. Many significant differences were found. These differences were supported by subjective data such as the written comments of the children, observations of the observers, and nonstatistical comparisons of the social behavior data. It would appear that the findings of Lippitt should not be considered invalid.

The t test was used to ascertain that conversation categories differentiated leader behavior better than social behavior categories. This is important due to the fact that FSIA is based on the assumption that verbal behavior is an adequate representation of a teacher's total behavior. Lippitt's finding supports Flanders' assumption.

The similarity between the findings of Anderson et al. and Lippitt aroused the interest of Withall. He wished to develop an objective technique for measuring classroom social-emotional climate. Their findings supported Withall's rationale.

Withall (1948, p.14) summarized his rationale by a statement of assumptions, and a hypothesis. He assumed that (1) social-emotional climate is a group phenomenon which tends to influence all members of a given group in a similar fashion; (2) the teacher's behavior in the classroom is the most important single factor in the creation and maintenance of this climate; and (3) the teacher's verbal behavior is representative of his total classroom behavior. The hypothesis tested was that a valid and reliable index of classroom social-emotional climate could be obtained by means of a categorization of teacher statements. The categorization was done from typescripts made from sound recordings of regular classroom sessions.

Seven categories for determining the pattern of teacher statements were developed and defined. A continuum from "learner centeredness" to "teacher centeredness" existed in the seven categories. The index was found to have objectivity, reliability, and validity (Withall, 1948, p.101). It was also concluded that "a valid measure of the social-emotional climate in groups is obtainable through a categorization of teacher statements (Withall, 1948, p.142)."

Objectivity was ascertained by comparing percentages of agreement by categories between four judges and Withall on the typescripts of classroom interaction. The mean percentage of agreement for all four judges with Withall on the three typescripts was 65. Tetrachoric correlations were also computed in order to ascertain the degree of association

between each of the five judges with one another on each category in turn. All correlations were positive except one. The median tetrachoric correlations for the type-scripts were respectively .84, .76, and .93.

In order to determine reliability, the size of an adequate sample was determined and the consistency of teacher behavior from one observation to another was ascertained.

The typescript of one teacher who had previously been categorized was randomly selected. The 271 teacher statements were divided into successive blocks of fifty statements plus a final block of the remaining statements. The pattern of verbalization in terms of the percentage of statements falling into each category for the first block of statements and for each successive block was obtained. The influence on the stability of the pattern was noted as succeeding blocks were added. A test of significance was applied to the difference between blocks of statements in each category. To be significant, a difference had to be three times its standard error. Only three significant differences out of thirty-five were found. From this, Withall concluded that a sampling of 200 statements would be a reliable and representative sample of a given teacher's pattern of statements.

A Chi-square test was applied to the proportions of learner-centered statements in each of eight randomly selected typescripts for three teachers. For two

teachers, the differences in their statements over eight sessions were not significant. When one "unusual" session was removed from the analysis of the data for the third teacher, this teacher too exhibited no significant differences in learner-centered behavior over seven sessions.

Validity was determined by nonstatistical means, but three different procedures were used. These procedures provide sufficient evidence that Withall's index was categorizing what it was purported. Climate index data was positively related to (1) Anderson's teacher behavior categories; (2) data regarding pupils' behaviors and feelings; and (3) ratings of teachers' behaviors by independent judges using a Teacher-Characteristics Rating Scale. The positive relationship between Withall's categories and Anderson's categories is meaningful when assessing the validity of Flanders' assumptions, for Withall categorized only teacher verbal behavior; Anderson categorized both verbal and nonverbal teacher behavior.

When considered as a whole, the research of Anderson and his co-workers, Lippitt, and Withall provides a valid conceptual base for Flanders' System of Interaction Analysis. Flanders' indirect-direct dichotomy corresponds to Anderson's integrative-dominative dichotomy, Lippitt's democratic-authoritarian dichotomy and Withall's learner-centered-teacher-centered dichotomy. All three studies demonstrated the importance of a leader in creating a social-emotional group climate. All three studies illustrated that social-

emotional climate can be objectively described. Finally, Lippitt and Withall provided evidence that verbal behavior is an adequate sample of the total behavior of an individual.

Two further studies deserve consideration at this time. Using Withall's learner-centered and teacher-centered concept, Flanders (1955) created a laboratory situation in which two adults were trained to interact spontaneously with student subjects. The students' behavior was indicated by (1) a record of their verbal statements; (2) the use of a lever, hidden from the teacher's view, to indicate positive and negative feelings associated with achievement tasks; and (3) the student's pulse and palmar skin resistance. Among his findings were the following:

(1) "Teacher-centered" behavior elicited student behaviors of hostility toward self or the teacher, withdrawal, apathy, and aggressiveness.

(2) "Learner-centered" behavior elicited student behaviors of problem orientation, decreased interpersonal anxiety and integration (Flanders, 1951, p.110).

Mitzel and Rabinowitz (1953) made use of Withall's category system in order to observe four elementary school teachers in the school, separately, during eight occasions. It was demonstrated that Withall's system could be reliably used "live" in the classroom. It was further demonstrated that teacher behavior varied significantly between visits. This latter finding led to Flanders' hypotheses about teacher variation.

From the above studies and others (Perkins, 1951,
Cogan, 1956) as well as the work by Bales (1950) in the
development of interaction matrices, Flanders evolved his
system of interaction analysis. Four years of preliminary
studies enabled empirical testing and subsequent revisions
of Flanders' category system. These preliminary studies led
to his major study of teacher influence (Flanders, 1965).
The main purpose of the investigation was to study variation
in teaching behavior. How well did this study validate his
assumptions concerning classroom interaction, his system of
interaction analysis,and his procedures for collating the
interaction data?

For the study, pupils' perceptions of their teachers
were assessed by the short form of the Minnesota Student
Attitude Inventory, given to seventy-five social studies
and mathematics classes. The sixteen classes with the most
favorable attitudes toward their teachers and the sixteen
classes with the least favorable attitudes were studied.
Each of the thirty-two teachers, sixteen in mathematics
and sixteen in social studies, taught a two-week unit that
had been prepared by Flanders. He also had prepared
achievement tests. Pre- and posttests provided an adjusted
achievement score for each student. While the unit was
taught, each teacher was observed by research workers
using FSIA. These research workers had previously estab-
lished that their inter-rater reliability was adequate.
Student attitudes, student achievement and teacher verbal

behavior were then compared.

For purposes of analysis, the FSIA tabulations were placed on ten-by-ten matrices in such a way that the sequence of interaction was preserved as suggested by Bales (1950). In order to compare the teachers, a measure of teacher influence was calculated by dividing all the tabulations--matrix column totals--in categories 1, 2, and 3 by the tabulations in categories 6 and 7. This indirect-direct ratio (i/d ratio) was considered to be little influenced by the nature of the content being taught. A teacher's rank order according to this ratio was used to classify him as either indirect or direct. Grouped in this way, the interaction matrices of the indirect and direct social studies classes and of the indirect and direct mathematics classes were found to be significantly different (p < .01) by the use of a Darwin Chi-square test. This would indicate that the FSIA identifies variability in classroom behavior and that the i/d ratio can be used as an indicator of a teacher's influence pattern. Flanders did find that it was necessary to study the more minute aspects of the matrix in order to gain more detailed information describing an indirect or a direct teacher. Certain areas of the matrix as well as the i/d ratio were used to further divide the teachers into groups of "most indirect," "average," and "most direct."

Significant differences were found between students in the indirect classes and students in the direct classes in both social studies and mathematics when mean scores on

a revised and longer form of the Minnesota Student Attitude Inventory were compared. This finding would seem to indicate that Flanders' indirect-direct dichotomy is a valid conception that replicates previous findings concerning classroom social-emotional climate. It would also indicate that the ten category system of teacher and student verbal behavior is a valid indication of the classroom climate.

Flanders further found that when adjusted achievement scores were compared, the students of the indirect social studies and mathematics teachers achieved significantly more than the students of the direct social studies and mathematics teachers.

A critical ratio test was used to determine these differences. For those that would prefer that a t-test had been used, Flanders (1965, p.96) states that given the size of the N's (all over 90) and the magnitudes of the C. R.'s(all larger than 3.00) the comparisons would be significant well beyond the 0.01 level, regardless of the test of significance used. Both statistical and nonstatistical procedures were used to illustrate variations in teacher behavior. Teacher variation was discussed in two ways--types of activities and changes over time. Bar graphs were presented to indicate the various i/d ratios for indirect and direct teachers during different classroom activities (these activities consisted of routine administration, evaluation, discussion of new material, other class discussions, supervision of work, and teacher-pupil planning).

By this means it was concluded that the indirect teachers were more flexible in their behavior than the direct teachers. In both social studies and mathematics, the direct teachers exhibited a range of i/d ratios for each activity period from about 0.01 to just above 1.0, while the indirect teachers exhibited a range from about 0.01 to above 10.0.

Teacher behavior was classified according to "expanding" and "restricting" activities as well as by FSIA. During the first two days and the last two days of the unit, indirect teachers were significantly more expanding and less restricting in their behavior than direct teachers. During the middle two day period, the indirect teachers were not only significantly more expanding, but they were also significantly more restricting in their behavior than were the direct teachers. These findings supported Flanders' assumptions that when student perceptions of goals were unclear, direct teacher influences decrease learning and that when student perceptions of goals become clear, direct teacher influences increase learning. It was in the classes of the indirect teachers that the highest achievement occurred. It can thus be seen that the indirect teachers were more indirect at the beginning of a unit, presumably when the student perceptions of the learning goals were not clear. They became less indirect presumably when the student perceptions of the learning goals became clear.

Flanders believed that his most significant finding

was that students who achieved the most and who had the most favorable classroom attitudes were students who were exposed to flexible patterns of teacher influence. This study demonstrated that his category system was capable of identifying teacher flexibility in terms of variations over time and during different activity periods. His category system was also able to differentiate teachers in terms of predetermined criteria. FSIA would therefore appear to be valid when used for these purposes.

Summary Comparison

The validity of both Bales' and Flanders' interaction analysis systems rests on nonstatistical as well as statistical findings. Nevertheless, when all information is combined, both FSIA and IPA would appear to be valid instruments. Both authors subjected their instruments to several tests before they originally published their work. By viewing the most recent writings of each author, each appears willing to revise his instrument further in light of research making use of his system. Neither author wants his findings over-generalized.

Each instrument was used to analyze a wide variety of situations over a long period of time, indicating that a representative sample of behaviors was observed. Only skilled observers used the instruments, indicating that an accurate record of behaviors was obtained by both Bales and Flanders. Each instrument enabled the identification

of different behaviors when they were expected, indicating
that differences in behavior are reflected with the aid of
each instrument.

Bales found that IPA identified the group phases
and role structure that he had hypothesized would exist on
the basis of his theoretical framework. Flanders found
that FSIA identified relationships between types of teacher
behavior and student attitude and achievement. He had
hypothesized these relationships on the basis of his theore-
tical framework developed largely from the work of Anderson,
Lippitt and Withall.

On the basis of the above, it is reasoned that both
Bales and Flanders adequately demonstrated the construct
and content validity of their systems of interaction analy-
sis.

THE RELIABILITY

Inter-rater Reliability Techniques

Bales has identified the basic weakness of all
interaction analysis systems--They are essentially crude
tools of measurement. This fact must be kept in mind
constantly when conclusions drawn from interaction analysis
data are studied. The relatively large error factor
inherent in any system of interaction analysis must always
be considered. Flanders stresses that before statistical
tests of significance be applied to comparisons of a parti-
cular category, the combined errors by observers must be

small--two to three times as small--as compared with the
reported differences between the category. For these
reasons, the conventional rigorous tests of reliability
are not applicable when the inter-rater reliability of
observers is assessed. The unique problem that must be
considered when ascertaining the reliability of observers
is clearly explicated as follows:

> . . . conventional tests of significance at the .05
> level are not applicable, for although the scores will
> usually represent less than the number of acts that
> would have been recorded by an omniscient observer,
> there is no reason to believe that they were sampled
> at random. Acts which occur rapidly are probably
> under-represented in the score, very dramatic acts
> are probably over-represented and classification errors
> derive from states of information and different mental
> "sets" of the observer which are assuredly not random.
> In short, there is no question as to whether or not
> these observers are sampling from the same population.
> The question is, "Can they score according to the
> directions?" (Bales, 1950, pp.101-102).

The problem thus becomes one of finding the most rigorous
statistical tests possible within the limits prescribed by
the nature of interaction analysis systems.

Bales' Interaction Process Analysis. There are
three sources of variation between IPA observers. They
are (1) unitizing, the division of a period of interaction
into acts; (2) categorizing, the assignment of acts to
categories; and (3) attributing, the designation of an
originator and target for an act. Heinicke and Bales (1953)
considered the use of a Pearson correlation adequate in
order to ascertain inter-observer agreement for categori-
zation and for the designation of the direction of

interaction (who-to-whom). Coefficients obtained for each category ranged from .74 to .90 with a median of .86. Who-to-whom coefficients obtained in this manner ranged from .62 to .98 with a median of .91. Although this level of reliability was considered satisfactory it was felt that the figures could be improved with further training.

The above use of a Pearson correlation coefficient is surprising, for Bales (1950) specifically criticized the use of this method. Instead, he suggested the use of a modified form of Chi-square. Chi-square is suggested because it permits a concomitant test of both categorizing and unitizing, whereas r is insensitive to the number of acts within categories as long as the proportion of acts within categories to the total acts is constant. Chi-square can be easily extended to situations where there are more than two observers; Pearson's r cannot. Bales' most important criticism of r was that it tends to be relatively insensitive to variations in values with small densities.

Bales makes clear that Chi-square is used as an index of goodness of fit which is applied to a situation which does not represent random sampling. Thus, Chi-square at the .50 probability level is suggested to indicate acceptable agreement between observers. This probability level is purely arbitrary but the present investigator is aware of the many months of training necessary in order to achieve this level of inter-observer agreement. It is

possible for two skilled observers to achieve much higher probability levels.

In order to determine whether the Chi-square value for a particular A_1B_1 (two observers) has a probability of .50 or greater and is therefore acceptable, the following conventions are observed:

(1) The total scores of the A_1 and B_1 tabulation are shown by categories for a common interval of interaction:

Categories	A_1	B_1
1	.	.
.	.	.
.	.	.
12	.	.

(2) The average for A_1B_1 for the category in question is taken as the theoretical value.

(3) Any row in which either A_1 or B_1 has a cell with a frequency less than 5 will be collapsed and the sum of the respective A_1 and B_1 values will be accumulated in one row.

(4) r (c-1) degrees of freedom will be used where r is the number of rows, and c, the number of columns (Bales, 1950, pp.103-104).

The above is only phase one of six phases of a proposed reliability schema (Bales, 1950, p.105). The remaining phases involve rescoring from recordings, preparation of a written protocol with a third observer, consultation with other judges, and scoring and annotating the written protocol. Bales' proposed schema is admirable and it does provide a paradigm for reliability checks, but in practice his schema, with the possible exceptions of phases one or two, has not been followed. Bales himself states that "demands on the observers have been sufficiently great

that repeat scoring is ordinarily defined as a luxury item
(Borgatta & Bales, 1953, p.567)." In his schema, he makes
the very good point that any "private consensus" should be
detailed in order to enable meaningful comparison with
other studies. Unfortunately, lack of space in journal
articles usually prevents the describing of any supplementary
conventions for scoring.

A similar analysis of inter-observer agreement as
to the direction of interaction (who-to-whom) for each pair
of relations in the group can also be carried out. These
two reliability checks cover the three sources of variation
between IPA observers. The latter analysis is of particular
importance if group member coalitions are to be studied.

Flanders' Interaction Analysis. Mitchell (1969)
claimed that Flanders' reliability figures are based on an
incorrect application of Scott's (1955) coefficient. The
coefficient was developed specifically for standard survey
research coding operations but Scott continues to say the
following:

> . . . it can be used in a wide variety of research
> situations to measure the reliability of classifying
> a large number of responses into nominal scale cate-
> gories. The requirements are that the categories be
> mutually exclusive and that the observations be dupli-
> cated on a random sample of the total set of responses
> being studied (Scott, 1955, p.321).

From the above statement it would appear that Flanders has
not incorrectly applied Scott's coefficient. Flanders'
category system is a nominal scale. The categories are

mutually exclusive and the observations can be duplicated. Flanders (1965) suggests the use of Scott's method as opposed to Chi-square because it is unaffected by low frequencies, can be adapted to per cent figures, can be estimated more rapidly in the field, and is more sensitive at higher levels of reliability.

Scott calls his coefficient "pi" and it is determined by the two formulas below:

$$\text{Formula I: } \pi = \frac{P_o - P_e}{1 - P_e}$$

P_o is the proportion of agreement, and P_e is the proportion of agreement expected by chance, which is found by squaring the proportion of tallies in each category and summing these over all categories.

$$\text{Formula II: } P_e = \sum_{i=1}^{k} P_i^2$$

In Formula II there are k categories and P_i is the proportion of tallies falling into each category. π, in Formula I, can be expressed in words as the amount by which the tallies of two observers exceeded chance agreement, divided by the amount by which perfect agreement exceeds chance (Flanders, 1965, pp.25-26).

Flanders (1966) addmitted that error increases with decreasing frequency of a category and that Scott's coefficient as he uses it is quite arbitrary. Even with these admissions he has found that a Scott coefficient of .85 or higher is a reasonable level of performance. In practice, the investigator found that Scott coefficients of .95 or higher can be obtained by two skilled observers.

Coding Instructions

Bales' Interaction Analysis. Bales (1950) detailed

a step-by-step training program for observers. The key to
the training program is the understanding of the categories.
Observers are instructed to refer to Bales' definitions of
his categories when disagreements in categorizing arise.
Bales' definitions (pp.177-195) are very detailed and are
accompanied by many examples. By using his definitions,
IPA observers should be able to train themselves to cate-
gorize, thus enabling inter-investigation consistency.
Bales (1970) again explicitly described his categories
(pp.99-135). The reasons for his revisions are explained
succinctly and the expected differences these revisions
should make in norms established by past research are
detailed (pp.471-491).

Flanders' Interaction Analysis. Flanders (1965)
detailed a training program for observers that is similar
to Bales' program. Detailed definitions of the categories
are not provided nor are many examples given. Training
manuals have been published (Amidon & Flanders, 1963, 1967;
Flanders, 1966) but these manuals emphasize the use and
interpretation of the matrix more than the definitions and
descriptions of categories. Furthermore, descriptions of
categories are different from manual to manual. As Rosen-
shine (1970a) has pointed out,for example, in the Amidon
and Flanders manual (1963), a teacher's repetition of a
pupil's response is coded as category 3; in the revised
edition (1967), it is coded as category 2; and in Flanders'

most recent publication (1970), a repetition of a pupil's response is again coded as category 3.

The most detailed and most helpful description of FSIA categories is found in this most recent publication by Flanders (pp.40-53). No reasons for revised rules for scoring or for revised categorization of statements are provided. It would seem doubtful therefore that inter-investigation consistency has been achieved by researchers using FSIA. Conceivably, different researchers could be following quite different rules for coding, making comparisons tenuous at best.

Summary Comparison

Both Bales and Flanders suggest relatively crude techniques for establishing inter-rater reliability. Neither suggests a reliability technique that would compare the actual act-by-act sequence of coding by observers. The use of Chi-square by Bales and the use of Scott's coefficient by Flanders enables only the comparison of total categorizations by observers. Within any given period of observation there could be many inter-observer errors that would be cancelled out when the total categorizations by observers are checked. These errors are non-systematic, however. The possibility of these types of errors merely indicates that long periods of observation are necessary before reliable conclusions can be drawn. Inter-observer agreement based on total categorization either of acts or

of who-to-whom does indicate that observers are following
the same instructions and does indicate that their coding
can be considered reliable with some degree of confidence.
A probability level of .50 by Chi-square or a Scott coeffi-
cient of .85 requires a high degree of inter-rater agreement.
If these reliability levels are obtained then the results
of analysis by FSIA or IPA should be considered adequate.
They should be considered adequate always keeping in mind
that both Bales and Flanders stress that results obtained
by the use of their systems must be interpreted cautiously
due to the relatively large error factors inherent in their
systems.

With regard to the clarity of coding instructions,
IPA would seem more clear than FSIA. Problems of inter-
investigation consistency still arise with IPA. However,
they are not the fault of Bales. He intended that his
system be used live and that recordings or typescripts
be used for further tests of reliability. It has been
found (Waxler & Mishler, 1966) that whether an IPA observer
codes live, from a recording, or from a typescript and a
recording affects the total information scored and cate-
gories into which the scored information is placed. This
obviously would affect comparisons from one study to another
unless the method of coding was reported by the researchers.

FSIA inter-investigation consistency would be more
reliable if the researchers explicated their coding proced-
ures. The investigator has found that Flanders' (1970)

instructions are the most helpful and the most detailed of all the many sources for instructions concerning the coding of FSIA. This finding supports a thought-provoking statement by Flanders and Simon (1969) that should be followed by all those contemplating using any system of interaction analysis. They say the following:

> Many of the earlier as well as the more recent systems
> are undergoing fairly continuous modification through
> changes in categories and observation procedures so
> that most up-to-date information can best be secured
> by writing to the researchers (p.1425).

THE CONCEPTUALIZATION OF INSTRUCTION

Instruction is defined as one person's interaction with another, with the intention of influencing his learning.

Bales' Interaction Process Analysis

Bales does not comment on the use of IPA in a standard instructional setting. The following is the writer's interpretation--from the frame of reference of a classroom instructor--of Bales' theories.

Instruction is conceptualized with the aid of IPA as a process of interaction between the teacher and the students as individuals. The teacher is not the only controlling influence in the interaction. The interaction is also affected by the external environment and by each individual student. The teacher as leader would naturally have a great effect on the interaction. The student responses and acts of initiative toward the teacher and the other students

would also be influenced by the on-going situation around him. Thus, IPA is constructed so that all this individual verbal and nonverbal behavior can be recorded.

Successful instruction in any subject as conceptualized with the aid of Interaction Process Analysis would involve the group's solution in turn of a series of functional task and social-emotional problems arising from the external environment and from the relationships developing within the group. If during the process of instruction the problems of communication, evaluation, control or decision are not solved in turn, it would be assumed that tension reduction within the group did not occur. As well, the process of instruction would be interrupted and it would be likely that less student learning would occur than if the functional problems had been solved and tension reduction had occurred.

Successful instruction would also involve the teacher's attention to individual student differences. The teacher would have to be flexible in his behavior towards individuals. For example, a person characterized as Downward, Negative and Backward[3] by IPA would possibly be looking for affection and acceptance. A teacher would have to watch for this type of student, and attempt to integrate him within the group. Stating another example, a person

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[3]Cf., pp. 59 for a brief discussion of Bales' concept of social-psychological directions.

characterized as Upward might possibly tend to take up too
much of the group's time and might tend to move the group
away from satisfaction and interpersonal relations. The
teacher would likely have to try to prevent this type of
student from disrupting the instructional process. Finally,
successful instruction as conceptualized with the aid of IPA
would involve the prevention of cliques forming among the
students that might disrupt the problem-solving process in
the classroom.

If the problem-solving phases are not successfully
passed through in turn, if the teacher does not attend to
individual differences, and if the forming of cliques is
not prevented, tension is likely to be created, the student
attitudes towards the class and the instructor are likely
to be negative, and less learning is likely to occur.

Flanders' Interaction Analysis

Instruction is conceptualized with the aid of FSIA
as a process of interaction between the teacher and the
students as a group. The teacher, not the students, is
considered the controlling influence in the interaction.
Student learning in any subject would best occur in a
positive social-emotional climate--generalized attitudes
toward the teacher and the class that the pupils share in
common despite individual differences. Primarily respon-
sible for the creation of the classroom climate is the
affective behavior of the teacher. Verbal behavior is

considered representative of all teacher behaviors. It is therefore the verbal behavior of the teacher that Flanders' System of Interaction Analysis enables the conceptualization of in terms of teacher initiative with pupil compliance, and of teacher response with pupil initiative.

Instruction as conceptualized with the aid of FSIA should consist of flexible teacher behavior. That is, the teacher should above all make use of a variable pattern of teacher influence both during one class session and over a period of time. When the students' goal perception is believed to be unclear, instruction should consist of teacher behaviors that invite student initiative. When the students' goal perception becomes clearer, the teacher could assume more initiative. Instruction should consist of a high percentage of teacher statements that make use of student ideas and opinions. Of particular importance is the teacher's use of statements that accept and use pupil ideas.

If a teacher exhibits a flexible pattern of behavior, invites student initiative when the intended learning outcomes are not clear, makes use of a high percentage of statements that contain student ideas, the social-emotional climate of the classroom should be positive. Thus the students should have a positive attitude towards the teacher and towards the class. If a teacher does not do the above, the social-emotional climate of the classroom might be negative. Thus, negative classroom attitudes might develop and

less learning might occur than in a positive social-emotional climate.

Summary Comparison

Successful instruction conceptualized with the aid of both IPA and FSIA would seem to require a process of interaction that results in a positive classroom social-emotional climate. One way for this climate to result would be for the instructor to demonstrate a flexible pattern of behavior. An observer using FSIA would consider "flexibility" to be a variable pattern of teacher verbal behavior. An observer using IPA would consider the instructor's attention to individual student differences as "flexibility."

From the frame of reference of FSIA, the verbal behavior of the instructor is of primary importance to the instructional process. From the frame of reference of IPA, aspects of group dynamics such as the external environment and the verbal and nonverbal behavior of the students affect the instructional process as well as the verbal and nonverbal behavior of the instructor.

Conceptualized with the aid of IPA, successful instruction would result if the classroom interaction moved through certain problem-solving phases. Conceptualized with the aid of FSIA, successful instruction would result if the instructor encouraged student initiative when the intended learning outcomes were not clear and made use of a high percentage of statements that contained student ideas.

Neither system enables the conceptualization of instruction from a cognitive frame of reference. The use of both systems results in instruction being viewed from an affective frame of reference.

Chapter 5

THE OBSERVATION OF SMALL GROUP INSTRUCTION

The small group instructional process is analyzed in this chapter by the use of Flanders' System of Interaction Analysis and by the use of Bales' System of Interaction Process Analysis. The two instruments are then compared with the aid of three guiding questions. (1) Does each instrument enable the investigator to identify variability in classroom behavior? If so, how? (2) Does each instrument enable the investigator to compare the instructor's performance with pre-determined criteria? If so, how? (3) Does each instrument enable the investigator to describe the small group instructional process? If so, how?

ANALYSIS BY FSIA

Percentages of teacher and student talk are presented in Table 6, as are the I/D and i/d ratios. Data are shown for each session of each group and for the total fifteen sessions of each group.

The total percentage of teacher talk for Group One was 33.9, with a range from 10.9 to 71.4. For Group Two, the total percentage of teacher talk was 38.3, with a range from 20.6 to 60.5. In both groups the most teacher talk occurred

Table 6

A Comparison of Selected Aspects of Verbal Behavior
Between Sessions for the Two Groups
--Teacher and Pupil Talk,
I/D and i/d Ratios

Ses-sion	% of Teacher Talk		% of Student Talk		I/D Ratio		i/d Ratio	
	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2
1	71.4	60.5	21.2	35.0	0.10	0.11	2.00	5.14
2	37.1	39.1	52.8	48.6	0.36	0.54	0.68	0.97
3	25.8	24.6	66.3	62.2	0.50	0.44	14.20	18.67
4	61.4	60.0	32.2	31.5	0.17	0.14	1.96	1.31
5	53.8	53.7	34.2	30.0	0.21	0.23	2.37	1.07
6	34.1	35.1	47.0	39.4	0.28	0.18	1.06	0.29
7	41.7	38.5	48.3	42.2	0.13	0.21	0.85	1.57
8	27.7	39.6	58.7	47.4	0.10	0.13	0.46	0.93
9	10.9	32.2	78.8	53.5	0.42	0.31	2.30	0.60
10	24.3	40.6	64.9	46.2	0.27	0.12	0.92	0.34
11	27.1	47.1	55.9	38.1	0.34	0.17	3.31	5.85
12[a]		31.8		43.3		0.14		2.50
13	21.0	20.6	65.3	59.4	0.56	0.24	5.10	0.74
14	25.2	23.0	62.6	51.4	0.15	0.19	11.00	4.20
15	25.1	30.4	61.1	48.3	0.10	0.12	0.83	0.89
Total	33.9	38.3	54.2	45.3	0.22	0.19	1.86	1.21

[a] No data available for Group One, Session 12

during the first session. The total percentage of student
talk for Group One was 54.2, with a range from 21.2 to 78.8.
For Group Two, the total percentage of student talk was 45.3,
with a range from 30.0 to 62.2. For both groups, there was
less teacher talk and more student talk than in regular
classroom situations--Flanders has claimed that about sixty-
six per cent of classroom verbal behavior is teacher talk--
but this was to be expected in the small group discussion
situation in which the instruction occurred.

The I/D ratio is an index of indirect-direct teaching
behavior (categories 1,2,3,4/5,6,7). The i/d ratio (cate-
gories 1,2,3/6,7) is a more acute index of indirect-direct
teaching behavior due to the elimination of categories 4 and
5. The total I/D ratio for Group One was 0.22, with a range
from 0.10 to 0.56. The total I/D ratio for Group Two was
0.19, with a range from 0.11 to 0.54. The total i/d ratio
for Group One was 1.86, with a between-session range from
0.46 to 14.20. For Group Two, the total i/d ratio was 1.21
with a range from 0.34 to 18.67. The very low I/D ratios
indicate that the instructor was very direct in his beha-
vior; that is, he limited the students' freedom of action.
Yet the i/d ratios which are extremely high indicate a very
indirect teacher; that is, a teacher who invites creative
participation. In order to explain these very different
interpretations of the teacher's behavior, Tables 9 and 10,
pp. 104 and 105 and Figure 2, p. 106 must be consulted. It
is the high percentage of lecturing as opposed to questioning

that resulted in the low I/D ratios. When these two categories are not considered as in the i/d ratio, the low usage of giving directions and criticizing resulted in high i/d ratios even though the percentage of behavior in categories 1,2, and 3 would be considered low. In order to ascertain which ratio is the more accurate index of teacher behavior in this instance, further analyses must be considered. The wide range of i/d ratios between sessions indicated a great deal of teacher flexibility.

The first major difference in instruction between the groups occurred during Session 8. In Group One, the instructor informed the students that they were to practice facilitative responses and that he wished to say little; he did not say this in Group Two. A comparison of the percentage of teacher talk between groups during Session 8 indicates this different procedure. The percentage of teacher talk was only 27.7 in Group One, but it was 39.6 in Group Two. This difference between groups continued for the next three sessions. It is interesting to note the I/D and i/d ratios for Session 8. The lowest ratios for Group One occurred during Session 8, 0.10 and 0.46 respectively. This would indicate that while the instructor participated relatively little in the verbal interaction, when he did participate, it was in a very direct manner.

A comparison of initiation and response ratios between sessions for the two groups is presented in Table 7. These ratios were proposed by Flanders (1970, pp.102-106) as

new ways of comparing the interaction classified as initiation with interaction classified as response. He also suggested expected norms for these ratios which are presented in the following pages.

The Teacher Response Ratio (TRR) is an index which corresponds to the teacher's tendency to react to the ideas and feelings of the pupils. The TRR is found by adding category frequencies 1, 2, and 3, multiplying by 100, and dividing by the sum of categories 1, 2, 3, 6, and 7. An average TRR would be about 42.0. For Group One, the total TRR was 65.1, with a range from 31.6 to 93.4. The total TRR for Group Two was 54.7, with a range from 22.4 to 94.9. These high TRR ratios indicate that the instructor responded often to student talk. This indication is similar to the indication obtained from the i/d ratio. Again, if categories 4 and 5 were considered, the TRR would not be as high. Again, it must be considered that the frequency of interaction classified as category 6 or 7 was very low.

The Teacher Question Ratio (TQR) is an index representing the tendency of a teacher to use questions when guiding the more content-oriented part of the discussion. The TQR is the per cent of all category 4 and 5 statements which are classified in category 5. It is calculated by multiplying the category 4 frequency by 100 and dividing by the sum of categories 4 and 5. An average TQR would be expected to be about 26.0. The total TQR for Group One was 8.6, with a range from 3.6 to 19.7. For Group Two, the

Table 7

A Comparison of Initiation and Response Ratios
Between Sessions for the Two Groups

Ses-sion	TRR		TQR		PIR		TRR89		TQR89	
	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2
1	66.7	83.7	3.6	2.9	62.8	73.3	85.7	96.3	26.7	16.7
2	40.7	49.2	19.7	24.1	83.1	74.4	80.6	89.3	40.0	35.7
3	93.4	94.9	6.9	8.7	95.1	96.8	95.1	97.4	23.3	14.3
4	66.3	56.7	6.0	6.0	87.5	77.7	79.2	77.5	2.0	12.2
5	70.3	51.7	8.9	13.9	85.9	90.3	94.7	76.0	11.1	20.4
6	51.5	22.4	14.3	13.7	91.5	90.8	67.6	63.6	12.2	32.4
7	45.8	61.1	5.8	12.1	98.9	96.7	69.2	66.7	13.6	30.0
8	31.6	48.3	7.6	5.2	95.4	95.2	50.0	45.8	17.6	8.5
9	69.7	37.5	10.3	18.0	96.3	64.8	76.5	53.1	18.2	11.1
10	47.9	25.5	13.5	8.5	97.3	91.4	50.0	46.7	24.1	22.6
11	76.8	85.4	10.5	5.8	95.5	97.8	85.7	95.7	19.4	16.7
12[a]		71.4		7.6		96.4		83.3		20.0
13	83.6	42.6	15.4	11.6	90.6	98.8	97.0	41.7	19.4	13.9
14	91.7	80.8	4.3	5.8	97.2	97.7	94.1	99.9	23.8	9.1
15	45.5	47.1	7.3	7.9	97.5	91.2	80.0	58.3	16.2	14.6
Total	65.1	54.7	8.6	9.0	93.0	89.5	81.7	75.6	17.5	17.8

[a] No data available for Group One, Session 12

total TQR was 9.0, with a range from 2.9 to 24.1. These ratios are low and indicate that the instructor questioned relatively little compared to his amount of lecturing.

The Pupil Initiation Ratio (PIR) indicates the proportion of student talk judged to be an act of initiation. The PIR is calculated by multiplying the category 9 frequency by 100 and dividing by the sum of all pupil talk. An average PIR would be close to 34.0. In the small group instruction under investigation, almost all student talk was student initiated talk. The total PIR for Group One was 93.0, with a range from 62.8 to 98.9. For Group Two, the total PIR was 89.5, with a range from 64.8 to 97.7.

The Instantaneous Teacher Response Ratio (TRR89) is defined as the tendency of the teacher to praise or to integrate pupil ideas and feelings into the discussion at the moment the pupil stops talking. It is calculated by adding the cell frequencies in rows 8 and 9, columns 1, 2, and 3, multiplying this sum by 100, and dividing the product by the total frequencies in rows 8 and 9, columns 1, 2, 3, 6, and 7.

The Instantaneous Teacher Question Ratio (TQR89) is defined as the tendency of the teacher to respond to pupil talk with questions based on his own ideas, compared to his tendency to lecture. To calculate this ratio, the frequencies in cells (8-4) and (9-4) are summed, multiplied by 100 and divided by the total interaction in the four cells (8-4) + (8-5) + (9-4) + (9-5). A normative expectation

for the TRR89 is about 60.0 and for the TQR89, it is about 44.0. The TRR89 for both groups was consistent with the trend identified by the TRR and i/d ratio. In both groups, the trend found in the TQR and the I/D ratio persisted when the TQR89 was calculated. The TRR89 ratios were high, indicating that the instructor reacted positively to student ideas, as opposed to giving directions or criticizing. The TQR89 ratios were low,indicating that the instructor was much more likely to lecture after a student idea than to move on to a new question.

The total TRR89 for Group One was 81.7, with a range from 50.0 to 97.0. For Group Two, the total TRR89 was 75.6, with a range from 41.7 to 99.9. For Group One, the total TQR89 was 17.5, with a range from 11.1 to 40.0. The total TQR89 was 17.8 for Group Two, with a range from 8.5 to 35.7.

Table 8 contains data that indicate roughly how much emphasis was given to content and how much sustained expression in the same category was exhibited in each group. Data are presented for each session as well as for each group.

The Content Cross Ratio (CCR) is found by calculating the percentage of all interaction found in the matrix that lies within the columns and rows of categories 4--questioning, and 5--lecturing. Several categories can be concerned with content as well, but the CCR does isolate those teacher statements which are least likely to be involved with process problems. An average CCR would be about

Table 8

A Comparison of Selected Aspects of Verbal Behavior Between
Sessions for the Two Groups--CCR, SSR, and PSSR

Session	CCR		SSR		PSSR	
	Gr 1	Gr 2	Gr 1	Gr 2	Gr 1	Gr 2
1	64.9	55.2	77.6	81.1	68.9	79.6
2	24.8	21.9	63.0	57.2	74.4	65.8
3	17.9	18.3	74.5	69.5	83.4	79.6
4	52.8	52.7	63.9	66.2	62.0	64.5
5	46.4	47.0	60.4	56.2	65.8	60.9
6	27.1	29.1	71.1	73.8	78.8	78.2
7	35.5	34.3	69.6	72.1	77.2	78.7
8	25.7	33.5	81.4	73.2	89.7	78.4
9	7.3	23.2	86.1	60.7	92.2	73.9
10	19.0	35.3	75.5	73.1	86.2	79.1
11	20.9	42.1	74.3	73.9	83.7	78.5
12[a]		29.6		75.6		80.8
13	14.7	15.6	73.2	72.8	82.2	83.1
14	22.6	19.9	79.9	78.0	85.9	86.2
15	23.9	28.4	76.5	67.9	84.1	74.0
Total	28.1	32.3	73.6	70.2	82.1	76.9

[a] No data available for Group One, Session 12.

55.0. An exceptionally high CCR would be an indication that the main focus of class discussion was on subject matter, that the teacher took a very active role in the discussion, and that problems of motivation and discipline were minimal.

The CCR for both groups was found to be low. For Group One, the total CCR was 28.1, and ranged over sessions between 7.3 and 64.9. The total CCR was 32.3 for Group Two, with a range from 15.6 to 55.2. For both groups, the highest CCR was found in the first session. Due to the particular nature of the subject matter--interpersonal communication--the CCR is probably a poor indication of the actual percentage of time used to emphasize subject matter[1]. As the percentages of teacher talk revealed, the CCR does indicate that the teacher did not take an overly active role in the discussions.

Indices of the rapidity of the interchange of interaction between teacher and students are provided by the Steady State Ratio (SSR) and the Pupil Steady State Ratio (PSSR). The SSR is determined by calculating the percentage of all interaction in the matrix found within the ten steady state cells. A steady state cell indicates talk in the same category for more than three seconds. This ratio therefore reflects the tendency of teacher and pupil talk to remain in the same category for periods longer than three seconds. The PSSR is calculated by

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[1]Cf., Appendix C

adding the frequencies of interaction in the (8-8) and (9-9) cells, multiplying by 100 and dividing by all pupil interaction. The SSR could be expected to average 50.0 and the PSSR, 40.0. The higher the ratio, the less rapid is the interchange between student and teacher.

Table 8 reveals that the interchange between the teacher and students of both groups was not rapid. The total SSR for Group One was 73.6, with a range from 60.3 to 86.1. For Group Two, the total SSR was 70.2 and the range was from 56.2 to 81.1. The total PSSR for Group One was 82.1 and for Group Two, it was 76.9. The range for Group One and Two was from 62.0 to 92.2, and from 60.9 to 86.2 respectively.

A more detailed analysis of the classroom verbal behavior is possible by considering the percentage of verbal behavior in each category and in individual matrix cells. The ratios and percentages so far discussed have all been obtained from the matrices.

The percentage of usage of each category of verbal behavior can be ascertained by consulting Tables 9 and 10. These tables also show how the usage of each category varied between sessions and between groups. Figure 2, derived from these tables, illustrates graphically the classroom interaction pattern for each group. In cases where the percentage of interaction was relatively small, categories of similar behavior were combined.

Tables 9 and 10 reveal **differences between sessions**

Table 9

Percentage Comparison of FSIA Column Totals
for all Matrices, Group One

Session[a]	Categories									
	1	2	3	4	5	6	7	8	9	10
1	0.1	1.2	3.1	2.3	62.5	2.1	0.1	7.9	13.3	7.4
2	0.1	1.1	3.8	4.9	19.9	7.2	0.1	8.9	43.9	10.0
3	0.3	1.3	5.7	1.2	16.7	0.1	0.4	2.9	63.4	7.9
4	0.0	2.0	3.7	3.2	49.6	2.4	0.5	4.0	28.2	6.5
5	0.0	1.4	3.8	4.1	42.3	1.5	0.7	4.8	29.4	12.0
6	0.0	0.4	3.1	3.9	23.3	3.4	0.0	4.0	43.0	19.0
7	0.0	0.8	2.0	2.0	33.5	3.3	0.0	0.5	47.8	10.0
8	0.0	0.0	0.6	2.0	23.8	1.2	0.1	2.7	56.1	13.6
9	0.3	0.1	2.0	0.8	6.6	1.1	0.0	2.9	75.9	10.3
10	0.4	0.3	1.8	2.6	16.4	2.3	0.4	1.8	63.2	10.8
11	0.6	0.1	4.1	2.2	18.7	1.4	0.0	2.5	53.4	17.1
13	0.7	0.0	4.5	2.3	12.4	1.0	0.0	6.2	59.1	13.8
14	0.0	0.4	2.0	1.0	21.6	0.1	0.1	1.7	60.9	12.1
15	0.0	0.1	0.5	1.7	22.1	0.7	0.0	1.5	59.6	13.8
Total	0.2	0.6	3.0	2.4	25.7	1.8	0.2	3.8	50.4	11.9

[a] No data available for Group One, Session 12

Table 10

Percentage Comparison of FSIA Column Totals
for all Matrices, Group Two

Sessions	Categories									
	1	2	3	4	5	6	7	8	9	10
1	0.2	1.1	3.1	1.6	53.6	0.7	0.1	9.3	25.6	4.5
2	0.4	2.4	5.7	5.3	16.6	8.6	0.1	12.4	36.2	12.3
3	0.3	2.2	3.4	1.6	16.8	0.2	0.1	2.0	60.2	13.1
4	0.0	1.3	2.9	3.2	49.5	2.6	0.5	7.0	24.5	8.5
5	0.1	1.0	2.3	6.5	40.5	2.4	0.8	2.9	27.1	16.3
6	0.0	0.2	1.1	4.0	25.2	4.4	0.2	3.6	35.8	25.5
7	0.2	0.0	2.3	4.1	30.2	1.6	0.0	1.4	40.8	19.4
8	0.0	0.0	3.0	1.7	31.7	2.7	0.5	2.3	45.2	12.9
9	0.0	0.5	2.9	4.2	19.0	4.5	1.1	18.8	34.7	14.3
10	0.0	0.2	1.1	3.0	32.3	3.6	0.3	4.0	42.2	13.2
11	0.2	0.3	3.8	2.4	39.6	0.7	0.0	0.8	37.2	14.8
12	0.1	0.5	0.9	2.3	27.3	0.5	0.1	1.5	41.7	25.0
13	0.0	0.0	2.1	1.8	13.8	0.8	2.0	0.7	58.7	20.0
14	0.1	0.1	2.2	1.2	18.8	0.6	0.0	1.2	50.2	25.6
15	0.0	0.1	0.8	2.2	26.2	0.9	0.1	4.3	44.0	21.3
Total	0.1	0.7	2.5	2.9	29.4	2.3	0.4	4.8	40.6	16.4
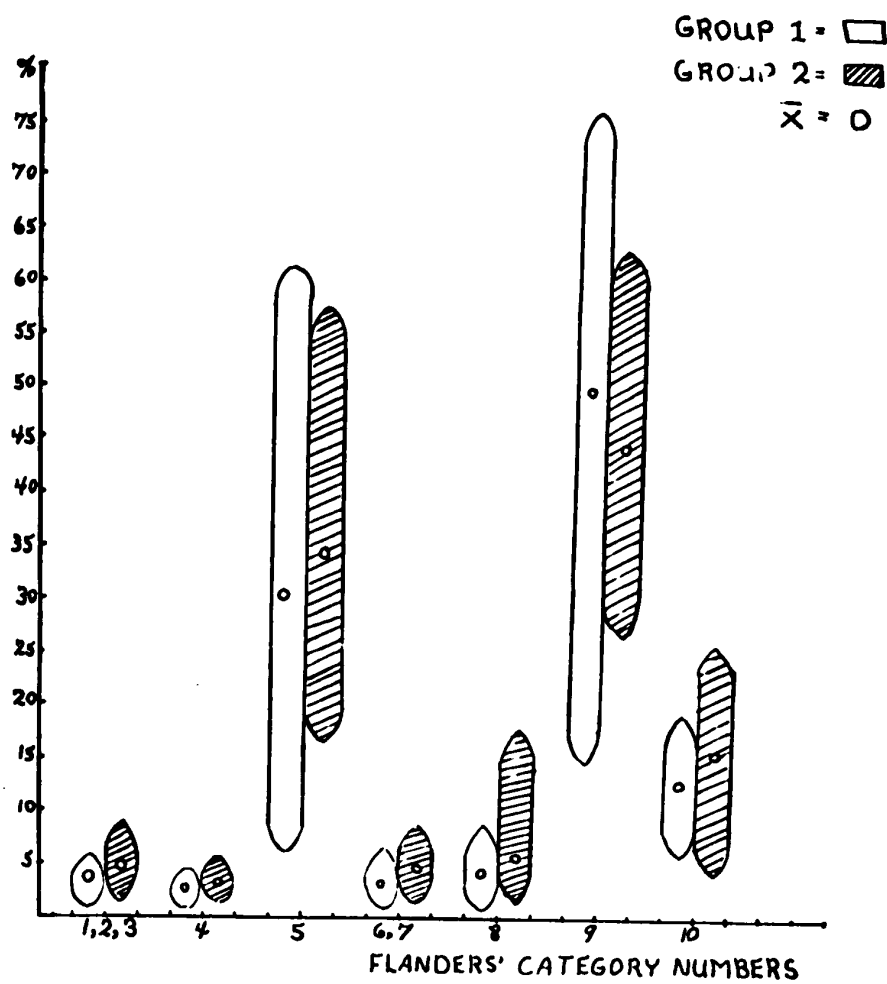
Figure 2

Range of Verbal Interaction over All Sessions

and between the two groups. The most meaningful interpreta-
tion of these tables, however, is revealed by viewing Figure
2. It is the similarity in the verbal interaction pattern
over all sessions and between groups that is noteworthy.
The most heavily used categories in both groups were cate-
gory 5--lecturing, category 9--student initiated talk, and
category 10--silence or confusion. These three categories
alone account for 88.0 per cent of the total interaction
for Group One and 86.4 per cent of the total interaction
for Group Two. With the exception of category 5, the use
of categories of teacher behavior was very small for each
group and varied relatively little between sessions. The
range for category 5 in Group One was 6.6 to 62.5. For
Group Two, the range between sessions was 13.8 to 53.6.
For both groups, the most lecturing occurred during the
first session.

The total percentage of accepting feeling--category
1--was 0.2 for Group One, with a range of 0.0 to 0.7. For
Group Two, the total percentage was 0.1, with a range of
0.0 to 0.4. For Group One, the total percentage of encour-
agement--category 2--was 0.6, with a range of 0.0 to 2.0.
The total percentage of encouragement for Group Two was
0.7, with a range of 0.0 to 2.4. The total percentage of
criticizing--category 7--was 0.2 with a range of 0.0 to
0.7 for Group One. For Group Two, the total percentage of
criticizing was 0.4, with a range of 0.0 to 1.1. The use of
these categories by the instructor is very low when it is

considered that the instructor was to instruct by demonstrating interpersonal communication. Empathy, in particular, was to be stressed, as well as respect, concreteness, genuineness, confrontation, and immediacy.

The total percentage of category 3--accepting and using student ideas--was 3.0 for Group One, with a range of 0.6 to 5.7. For Group Two, the total percentage was 2.5, with a range of 0.8 to 5.7. The total percentage of questioning--category 4--was 2.4 for Group One, with a range between 0.8 and 4.9. For Group Two, the total percentage was 2.9, with a range of 1.2 to 6.5. For Group One, the total percentage of category 6--giving directions--was 1.8, with a range between 0.1 and 7.2. The total percentage was 2.3 for Group Two, with a range of 0.5 to 8.6. The percentages for these "working" categories are low. It would appear that for the most part, the students in the small groups initiated their own ideas without guidance from the instructor, and that the instructor, too, initiated his own ideas rather than respond to the ideas of his students.

The preceding findings are supported by the total percentage matrices for each group for all sessions. These matrices are presented in Tables 11 and 12. The total of each column indicates the percentage of interaction recorded for that category. Percentages in cells (1-1), (2-2), (3-3) and so on, indicate the number of times a category is sustained for a period longer than three seconds. All other cells

Table 11

FSIA Percentage Interaction Matrix of Group One for all Sessions

Category of prior behavior	Category of Subsequent Behavior										Total
	1	2	3	4	5	6	7	8	9	10	
1. Accepts feeling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
2. Praise	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.5
3. Accepts or uses pupil ideas	0.0	0.0	0.9	0.1	0.5	0.0	0.0	0.4	0.8	0.2	3.0
4. Asks questions	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.9	0.4	0.6	2.4
5. Lecturing	0.0	0.0	0.1	0.7	20.5	0.3	0.0	0.2	2.7	1.3	25.7
6. Giving directions	0.0	0.0	0.0	0.1	0.3	0.7	0.0	0.1	0.2	0.4	1.8
7. Criticizing	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.2
8. Pupil talk -- response	0.0	0.1	0.3	0.2	0.2	0.1	0.0	1.8	0.7	0.3	3.8
9. Pupil talk -- initiation	0.1	0.5	1.4	0.4	2.6	0.3	0.1	0.1	42.7	2.2	50.4
10. Silence or confusion	0.0	0.0	0.1	0.6	1.1	0.3	0.0	0.3	2.6	6.7	11.9
Total	0.2	0.5	3.0	2.4	25.7	1.8	0.2	3.8	50.4	11.9	100.0

Table 12

FSIA Percentage Interaction Matrix of Group Two for all Sessions

Category of prior behavior	Category of Subsequent Behavior										Total
	1	2	3	4	5	6	7	8	9	10	
1. Accepts feeling	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
2. Praise	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.3	0.1	0.6
3. Accepts or uses pupil ideas	0.0	0.0	0.7	0.1	0.4	0.0	0.0	0.4	0.7	0.2	2.5
4. Asks questions	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.8	0.5	1.0	2.8
5. Lecturing	0.0	0.0	0.1	0.5	23.4	0.2	0.1	0.1	3.0	2.0	29.4
6. Giving directions	0.0	0.0	0.0	0.1	0.3	1.0	0.0	0.1	0.2	0.6	2.3
7. Criticizing	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.4
8. Pupil talk -- response	0.0	0.1	0.3	0.2	0.3	0.1	0.0	2.7	0.6	0.4	4.7
9. Pupil talk -- initiation	0.1	0.5	1.1	0.6	3.1	0.3	0.2	0.1	32.2	2.3	40.5
10. Silence or confusion	0.0	0.0	0.2	1.1	1.5	0.5	0.0	0.4	2.8	9.8	16.3
Total	0.1	0.7	2.5	2.9	29.4	2.3	0.4	4.8	40.6	16.4	100.0

indicate transitional behavior, that is, the number of times the verbal discourse changes from one category to another. The percentage in cell (9-2), for example, represents the number of times a category 9 statement was followed by a category 2 statement.

For Group One, 63.2 per cent of all interaction was found in two cells, the (5-5) and the (9-9) cells. These two cells contained 55.6 per cent of the interaction of Group Two. These figures indicate a large amount of extended teacher lecturing and extended student initiated talk.

For both groups, the percentage of extended acceptance of feeling and of extended praise was 0.0. Extended acceptance and use of pupil ideas occurred 0.9 per cent of the time for Group One and 0.7 per cent of the time for Group Two. These percentages are very low.

The percentages of extended teacher questioning were also very low--0.3 per cent for both groups. This is an indication that the teacher questions were narrow and not complex.

For both groups, the greatest percentage of teacher behavior after a student initiated idea was found in the (9-5) cell--2.6 and 3.1 per cent for Group One and Group Two, respectively. These are further indications of the major verbal interaction pattern exhibited by both groups, which was student initiated ideas--teacher lecture.

ANALYSIS BY IPA

Group Interaction

The percentage of usage of each category in each session for Group One is shown in Table 13. Figures 3 to 8 are derived from this table. These figures illustrate how the pairs of categories suggested by Bales vary in emphasis during the course of the fifteen sessions. In a like manner, Table 14 and Figures 9 to 14 present the IPA interaction pattern for Group Two[2].

A general picture of the interaction process can be obtained by viewing the total percentage of interaction for each category for both groups. For Group One, only 34 per cent of the interaction was classified in the task area. Of this percentage, only 4 per cent consisted of asking questions--categories 7, 8, and 9. The other 30 per cent consisted of giving suggestions, opinions and information--categories 4, 5, and 6. For Group Two, the percentage of interaction classified in the task area was 31 per cent, of which 3 per cent consisted of asking questions. The remainder of the interaction was classified in the social-emotional area. This interaction was classified as positive--categories 1, 2, and 3--29 per cent of

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[2]Most percentages in this section have been rounded off to whole numbers. Therefore, the percentages are only approximate and will likely not sum to 100.

Table 13

Percentage of Usage of Each IPA Category
in Each Session, Group One

Sessions	Category											
	1	2	3	4	5	6	7	8	9	10	11	12
1	9	7	5	17	15	20	4	0	0	2	17	3
2	19	13	5	9	9	12	7	0	0	2	20	4
3	6	20	5	11	13	4	2	1	0	4	20	14
4	6	9	6	16	19	7	2	2	0	4	18	11
5	5	9	5	10	16	8	2	3	0	3	21	17
6	12	12	6	9	13	5	3	4	1	2	21	13
7	5	16	8	14	12	4	1	3	0	4	17	17
8	8	13	3	13	13	7	1	2	0	1	23	16
9	9	4	5	10	10	4	1	2	0	3	24	28
10	9	15	5	11	12	3	1	0	1	4	20	19
11	11	6	5	12	11	5	1	1	1	3	23	20
12	8	22	5	12	9	3	1	1	1	2	28	8
13	12	14	8	10	9	5	1	1	0	2	23	16
14	9	18	7	15	7	4	1	0	0	3	23	13
15	12	26	9	13	9	4	2	0	0	3	16	6
Total	9	14	6	12	12	6	2	2	0	3	21	14
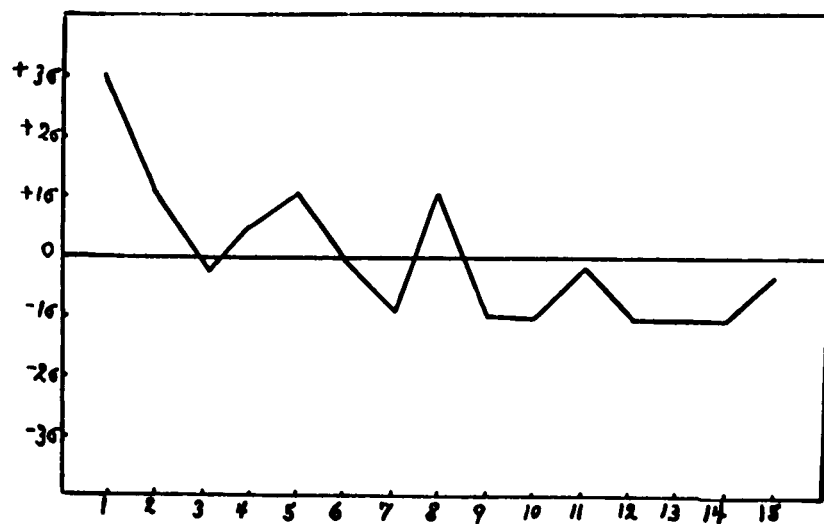
Figure 3

Deviations of Usage of IPA Category Pair 6-7
Over Sessions, Group One
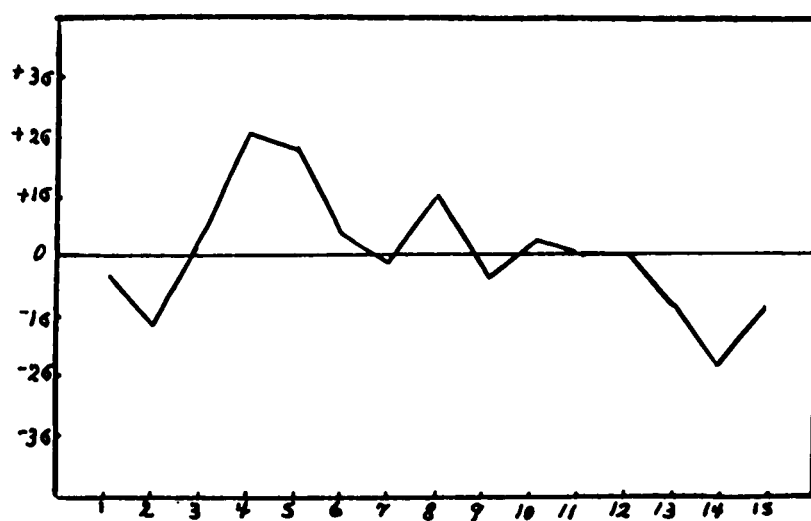
Figure 4

Deviations of Usage of IPA Category Pair 5-8
Over Sessions, Group One
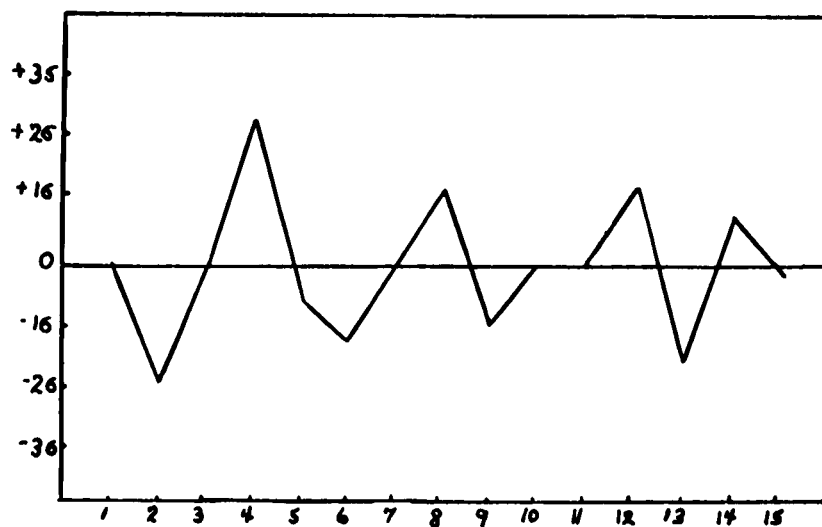
Figure 5

**Deviations of Usage of IPA Category Pair 4-9
Over Sessions, Group One**
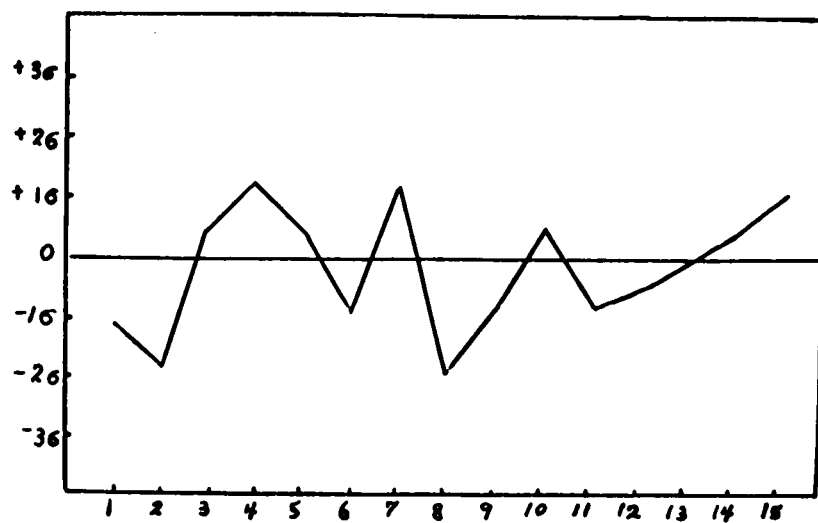
Figure 6

**Deviations of Usage of IPA Category Pair 3-10
Over Sessions, Group One**
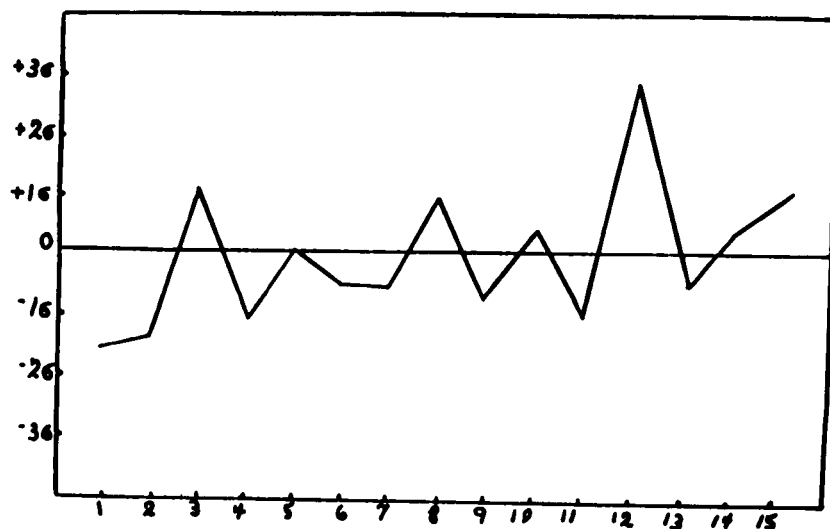
Figure 7

Deviations of Usage of IPA Category Pair 2-11
Over Sessions, Group One
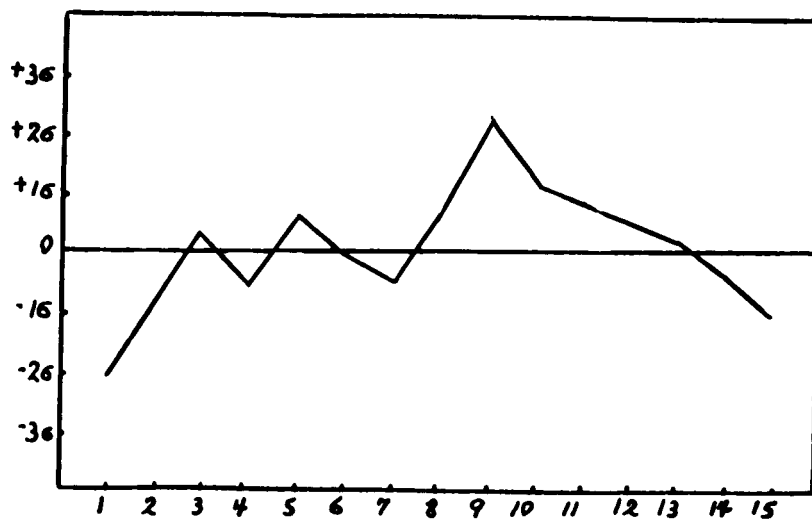
Figure 8

Deviations of Usage of IPA Category Pair 1-12
Over Sessions, Group One

Table 14

Percentage of Usage of Each IPA Category
in Each Session, Group Two

Session	Category											
	1	2	3	4	5	6	7	8	9	10	11	12
1	15	4	6	16	12	15	2	0	0	0	19	5
2	4	8	5	11	10	7	6	1	0	1	33	8
3	8	7	4	10	12	4	3	1	0	4	24	17
4	5	6	5	16	17	5	2	1	0	2	16	20
5	3	4	6	11	17	6	2	2	0	3	19	24
6	7	5	5	8	11	3	1	2	0	1	29	22
7	7	15	2	7	7	2	1	2	0	1	25	26
8	4	10	5	12	11	8	1	2	0	1	21	20
9	6	6	4	12	13	5	1	4	0	2	23	21
10	7	15	3	14	10	5	1	0	1	2	24	12
11	5	13	3	9	10	5	1	1	0	2	31	15
12	8	8	2	11	5	4	0	1	0	1	36	18
13	9	3	3	6	4	4	2	1	0	3	28	32
14	8	6	4	13	4	3	0	0	0	1	35	22
15	14	14	5	11	6	5	1	0	0	2	23	13
Total	7	8	4	12	10	6	2	1	0	2	27	20
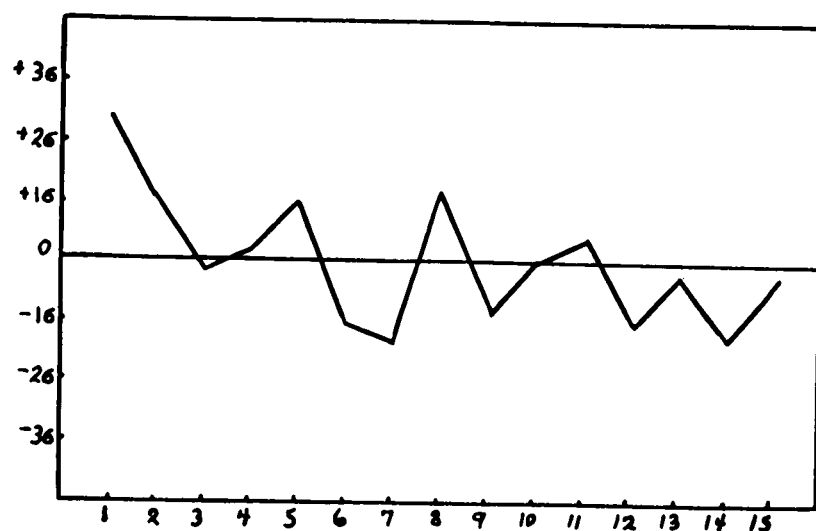
Figure 9

Deviations of Usage of IPA Category Pair 6-7
Over Sessions, Group Two
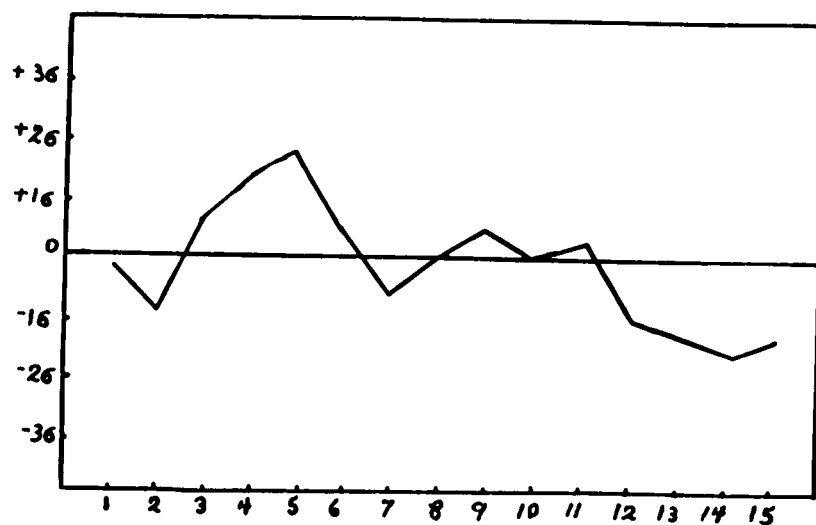
Figure 10

Deviations of Usage of IPA Category Pair 5-8
Over Sessions, Group Two
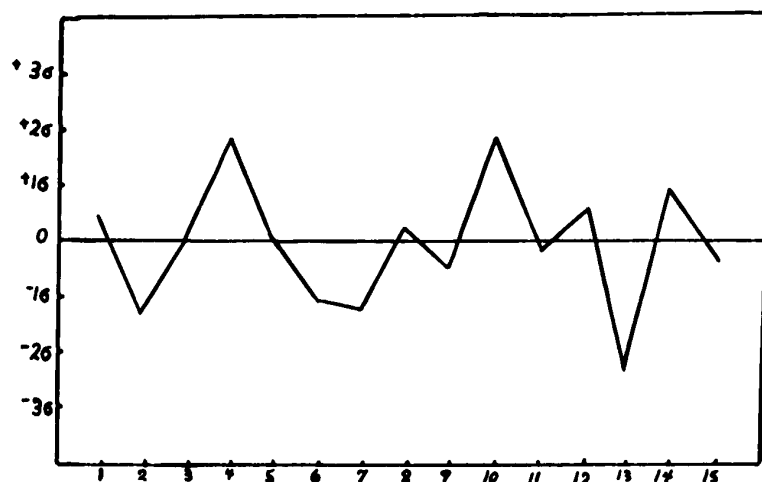
Figure 11

Deviations of Usage of IPA Category Pair 4-9
Over Sessions, Group Two
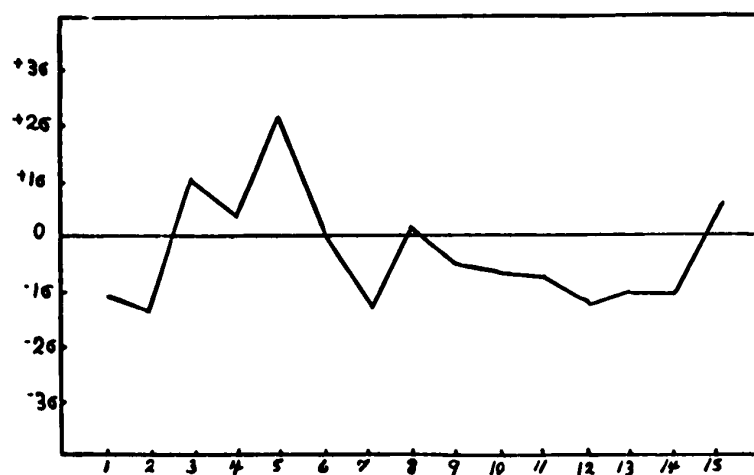
Figure 12

Deviations of Usage of IPA Category Pair 3-10
Over Sessions, Group Two
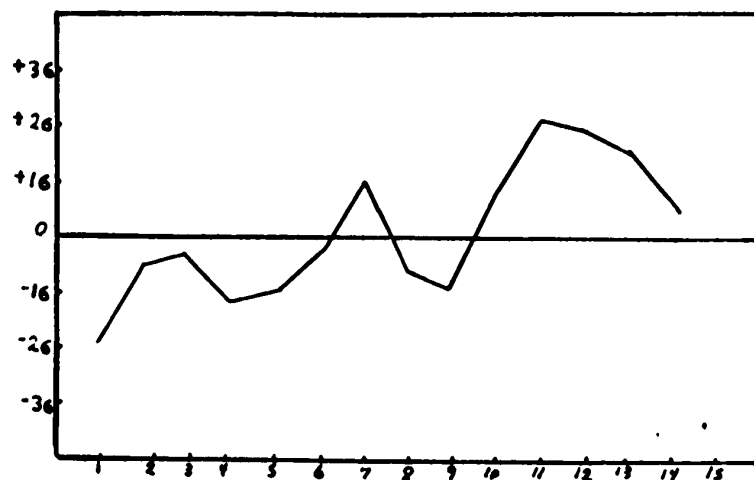
Figure 13

Deviations of Usage of IPA Category Pair 2-11
Over Sessions, Group Two
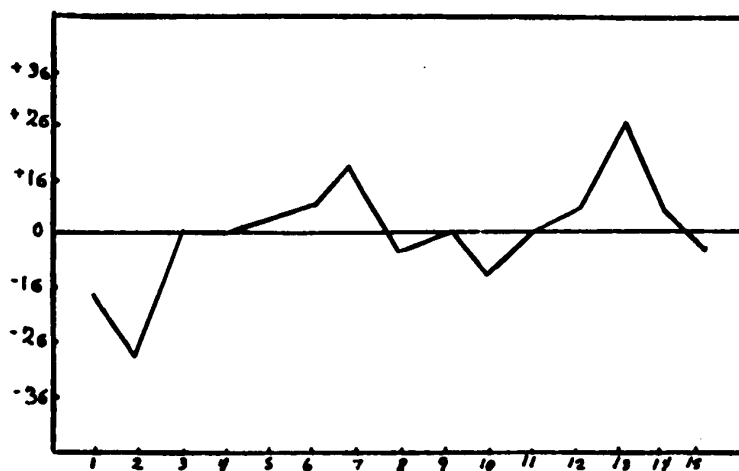
Figure 14

Deviations of Usage of IPA Category Pair 1-12
Over Sessions, Group Two

the time for Group One but only 19 per cent of the time for Group Two. Interaction classified as negative--categories 10, 11, and 12--occurred 38 per cent of the time for Group One and 49 per cent of the time for Group Two.

For both groups, the combined rate of the first pair of categories, 7 and 6, concerned with problems of information, showed its greatest preponderance in the first session and thereafter showed a declining trend. The emphasis during this peak for both groups was on the giving of information rather than the asking of information.

For Group One, the greatest preponderance of the second pair of categories, 5 and 8, concerned with problems of evaluation and of the third pair of categories, 4 and 9, concerned with problems of control, occurred in the same session, Session 4. For Group Two, the peak rate of category pair 5 and 8 occurred in Session 5, while two peak rates were found for category pair 4 and 9, Sessions 4 and 10. Again, for all pairs the emphasis was on the giving of opinions and suggestions rather than the asking of opinions and suggestions.

For Group Two, the peak rate of the fourth pair of categories, 3 and 10, concerned with problems of decision, occurred relatively early, in Session 5. The emphasis in this session was on agreement rather than disagreement. The peak rate of the fifth pair of categories, 2 and 11, concerned with problems of tension management, occurred in Session 11. For the final pair of categories, 1 and 12,

concerned with problems of integration, the greatest preponderance occurred in Session 13. The relative emphasis given to these latter two category pairs dropped sharply during the final two sessions. During their peak rates, the emphasis of the latter two category pairs was negative, rather than positive. This could possibly indicate that the various functional problems of interaction were not adequately solved.

For Group One no clear single peak rate of category pair 3 and 10 occurred. The greatest preponderance of this category pair occurred in Sessions 4, 7, and 15. In each case, the emphasis was on agreement rather than disagreement. The greatest preponderance of category pair 2 and 11 occurred in Session 12, with no clear negative or positive emphasis. However, the peak rate for category pair 1 and 12 occurred in Session 9 with a negative emphasis rather than a positive one. This lack of expected order of peak rates of interaction again could possibly indicate that the functional problems of interaction were not solved, adequately.

Indices of interaction[3] are presented in Table 15 for Group One and in Table 16 for Group Two. Data in these tables reveal similar findings for each group. The indices of difficulty of communication, difficulty of evaluation,

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[3]Cf., pp.56-57 for a discussion of the indices of group interaction.

Table 15

IPA Group Indices of Interaction, Group One

Session	Expressive Malintegrative Behavior	Communication Difficulty	Evaluation Difficulty	Difficulty of Control	Directiveness of Control
1	0.51	0.17	0.01	0.02	0.46
2	0.40	0.37	0.04	0.01	0.44
3	0.55	0.37	0.07	0.01	0.75
4	0.61	0.23	0.11	0.00	0.72
5	0.68	0.15	0.17	0.01	0.60
6	0.55	0.34	0.23	0.06	0.67
7	0.58	0.15	0.21	0.01	0.76
8	0.62	0.16	0.15	0.00	0.65
9	0.76	0.18	0.14	0.01	0.70
10	0.61	0.27	0.01	0.05	0.77
11	0.68	0.18	0.11	0.05	0.68
12	0.51	0.16	0.10	0.05	0.76
13	0.55	0.10	0.08	0.03	0.67
14	0.54	0.23	0.05	0.01	0.70
15	0.34	0.29	0.03	0.03	0.71
Total	0.57	0.23	0.11	0.02	0.66

Table 16

IPA Group Indices of Interaction, Group Two

Ses-sion	Expressive Malinte-grative Behavior	Communi-cation Difficulty	Evalu-ation Difficulty	Diffi-culty of Control	Directive-ness of Control
1	0.51	0.15	0.00	0.03	0.49
2	0.70	0.47	0.12	0.02	0.59
3	0.69	0.42	0.11	0.01	0.73
4	0.69	0.27	0.07	0.02	0.74
5	0.78	0.25	0.13	0.01	0.68
6	0.74	0.23	0.22	0.02	0.73
7	0.68	0.34	0.22	0.00	0.74
8	0.68	0.19	0.17	0.00	0.59
9	0.73	0.20	0.24	0.01	0.71
10	0.60	0.22	0.07	0.07	0.69
11	0.69	0.24	0.09	0.04	0.64
12	0.74	0.20	0.19	0.02	0.66
13	0.80	0.37	0.21	0.08	0.52
14	0.76	0.19	0.10	0.02	0.69
15	0.54	0.26	0.02	0.03	0.63
Total	0.69	0.27	0.13	0.02	0.66

and difficulty of control were relatively low when compared
with the indices of directiveness of control and of expres-
sive-malintegrative behavior. The low indices of communi-
cation, evaluation, and control difficulty are explained
by the previously described relatively low amount of asking
for information, opinions or suggestions by the group
members. A difficulty becomes apparent only when there is
a buildup of questions without attempted answers. This
did not occur in either group.

The high indices of directiveness of control
indicate that there was more giving of suggestions and
giving of opinions than there was giving of information,
a relatively neutral category. This high index was matched
in both groups by a high index of expressive-malintegrative
behavior. This indicates that there was more negative
social-emotional interaction than there was positive
social-emotional interaction.

The indices of difficulty of communication,
evaluation and control indicate that each group moved
through the same phases in the same order at approximately
the same time. For each group, problems of communication
were the greatest and problems of control were the least of
the task oriented problems. Figures 15 and 16 illustrate
these movements graphically.

Problems of communication were greatest for each
group during the second and third sessions. Problems of
evaluation were greatest during the sixth session of Group
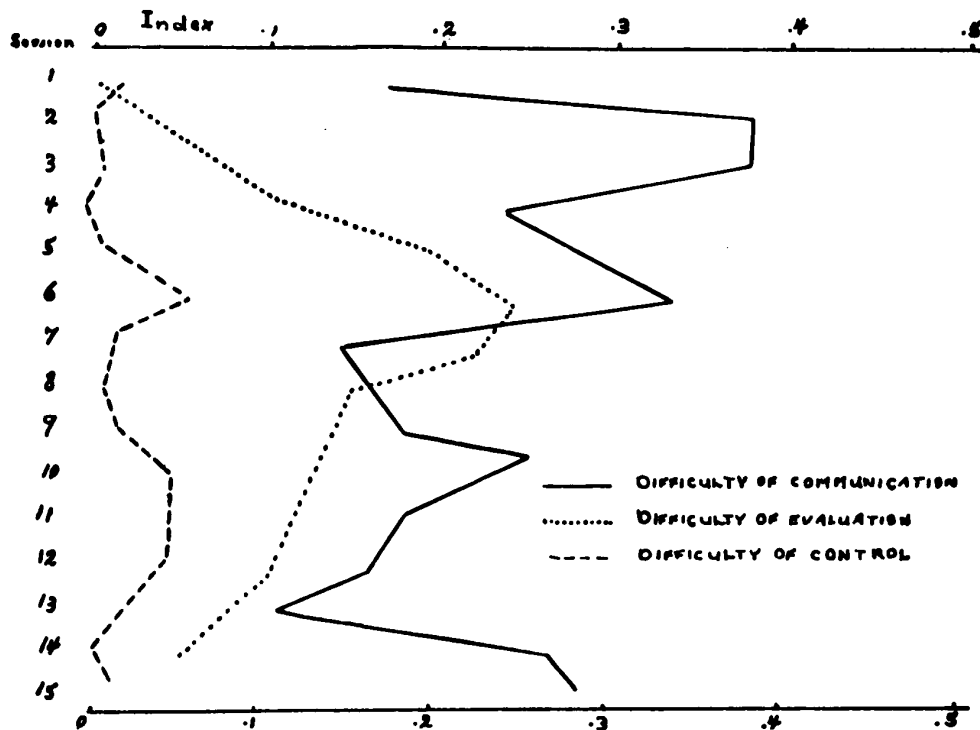
Figure 15

IPA Indices of Interaction, Group One
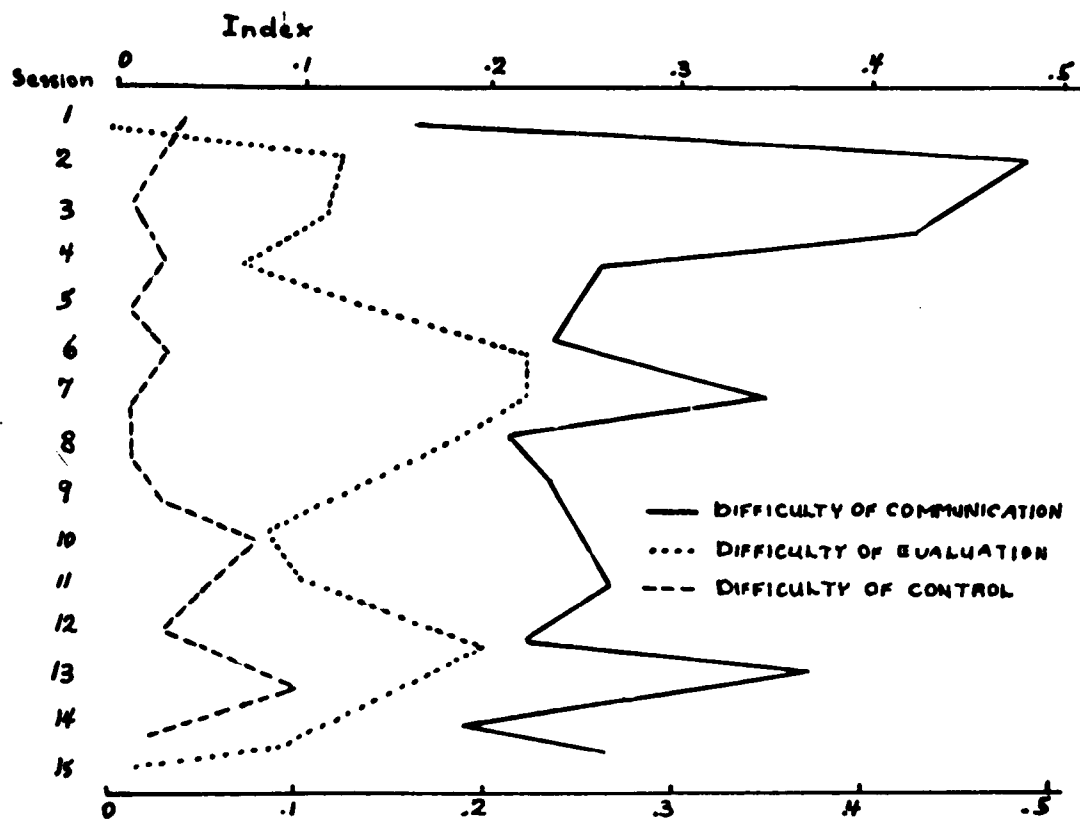
Figure 16

IPA Indices of Interaction, Group Two

One and during the sixth and seventh session of Group Two. Problems of control--what problems there were--were greatest for Group One during Sessions 10, 11, and 12; for Group Two, the greatest problems of control occurred during Session 13. These findings demonstrate that each group definitely moved through phases of interaction. They do not explain, however, why the indices of expressive-malintegrative behavior for both groups remained relatively high during all fifteen sessions of the instructional process.

The percentage matrices presented in Tables 17 and 18 provide further information concerning the total interaction pattern of each group. Compared with the FSIA matrices, the interaction presented in the IPA matrices was more widely distributed throughout the matrix cells. This is probably a result of recording each group member's behavior, both verbal and nonverbal.

The same three matrix cells in each group contain the greatest percentage of the interaction. They are the (11-11) cell--extended showing of tension, the (12-12) cell--extended seeming unfriendly, and the (2-2) cell-- extended dramatization. The (11-11) cell contained 12.0 per cent of the interaction for Group One and 15.0 per cent of the interaction for Group Two. The (12-12) cell contained 6.2 per cent of the interaction for Group One and 9.5 per cent of the interaction for Group Two. A large difference between groups was found in the (2-2) cell. The percentage of interaction in this cell for Group One was 8.8, but for

Table 17

IPA Percentage Interaction Matrix of Group One for all Sessions

Category of prior act		A 1	A 2	A 3	B 4	B 5	B 6	C 7	C 8	C 9	D 10	D 11	D 12	Total
A	1. Seems friendly	3.2	0.7	0.4	1.2	0.6	0.4	0.2	0.1	0.0	0.2	1.3	0.8	9.0
	2. Dramatizes	0.6	8.8	0.3	0.6	0.4	0.2	0.1	0.1	0.0	0.2	1.6	0.9	14.0
	3. Agrees	0.5	0.4	0.9	1.5	0.7	0.2	0.1	0.1	0.0	0.2	0.7	0.5	5.7
B	4. Gives suggestion	0.9	0.7	1.1	2.0	3.8	1.0	0.2	0.2	0.0	0.2	1.0	0.9	12.0
	5. Gives opinion	1.0	0.5	1.3	2.0	2.9	0.7	0.2	0.3	0.0	0.5	1.4	1.0	12.0
	6. Gives information	0.4	0.3	0.4	0.8	0.8	1.8	0.2	0.1	0.0	0.1	0.8	0.4	6.0
C	7. Asks information	0.1	0.0	0.1	0.2	0.1	0.7	0.2	0.1	0.0	0.1	0.1	0.1	1.8
	8. Asks opinion	0.1	0.0	0.1	0.2	0.4	0.1	0.2	0.1	0.0	0.1	0.1	0.1	1.5
	9. Asks suggestion	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
D	10. Disagrees	0.1	0.1	0.1	0.4	0.3	0.1	0.0	0.1	0.0	0.3	0.1	1.0	2.7
	11. Shows tension	1.1	1.4	0.3	1.8	1.1	0.4	0.2	0.2	0.1	0.3	12.0	2.2	21.0
	12. Seems unfriendly	1.0	0.7	0.7	1.4	0.7	0.4	0.1	0.2	0.0	0.7	2.0	6.2	14.0
	Total	9.0	14.0	5.7	12.0	12.0	6.1	1.8	1.5	0.3	2.7	21.0	14.0	100.0

Category of Subsequent Act

Table 18

IPA Percentage Interaction Matrix of Group Two for all Sessions

Category of prior act	A			B			C			D			Total
	1	2	3	4	5	6	7	8	9	10	11	12	
A 1. Seems friendly	3.0	0.4	0.2	0.9	0.4	0.4	0.2	0.1	0.1	0.1	1.1	0.8	7.6
2. Dramatizes	0.4	4.7	0.2	0.4	0.3	0.2	0.1	0.1	0.0	0.1	1.4	0.8	8.7
3. Agrees	0.3	0.2	0.7	1.2	0.5	0.1	0.1	0.1	0.0	0.2	0.6	0.5	4.5
B 4. Gives suggestion	0.6	0.5	0.9	2.2	3.5	1.0	0.2	0.2	0.0	0.3	1.4	0.9	12.0
5. Gives opinion	0.6	0.4	1.0	2.0	2.4	0.7	0.2	0.2	0.0	0.4	1.6	0.8	10.0
6. Gives information	0.4	0.2	0.2	0.8	0.7	1.6	0.2	0.1	0.0	0.1	0.9	0.5	5.7
C 7. Asks information	0.1	0.1	0.1	0.2	0.1	0.9	0.2	0.1	0.0	0.1	0.1	0.2	2.1
8. Asks opinion	0.1	0.0	0.1	0.2	0.4	0.2	0.1	0.1	0.0	0.1	0.2	0.2	1.5
9. Asks suggestion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3
10. Disagrees	0.1	0.1	0.1	0.3	0.3	0.1	0.1	0.0	0.0	0.1	0.2	0.9	2.2
D 11. Shows tension	1.1	1.2	0.4	2.0	1.0	0.4	0.4	0.3	0.1	0.2	15.0	4.1	26.0
12. Seems unfriendly	0.9	0.9	0.5	1.5	0.8	0.4	0.3	0.3	0.1	0.5	3.6	9.5	19.0
Total	7.6	8.7	4.5	12.0	10.0	5.7	2.1	1.5	0.3	2.2	26.0	19.0	100.0

Category of Subsequent Act

Group Two it was 4.7. It is thought provoking that these three cells are all located in the social-emotional area. The high percentages of showing tension--category 11, and seeming unfriendly--category 12, indicate a negative social-emotional climate. This suggestion coupled with the high percentage of category 2--dramatization, which is an indication that the discussion is off the topic, could lead one to suspect that the instructional process was inadequate.

It was previously found that most of the interaction classified as task oriented was in the form of giving suggestions, opinions, and information rather than in the form of asking questions. By viewing the matrix cells, it was found that when information was asked for, the subsequent act was most often the giving of information--the (7-6) cell--in both groups. Similarly, for both groups, the asking for an opinion most often resulted in an opinion being given--the (8-5) cell. For both groups, the percentage of interaction classified as asking for suggestions was too small to make any meaningful interpretation.

In both groups, a suggestion was most often followed by an opinion--the (4-5) cell. An opinion most often was followed by another opinion--the (5-5) cell, and the giving of information was most often followed by more giving of information--the (6-6) cell--in both groups.

These findings indicate that the group members were prone to make suggestions, give opinions and information, but were not prone to ask others for suggestions, opinions,

or information. This could possibly be the reason for the high percentage of tension and unfriendliness in each group.

Individual Behavior

Analysis by Bales' Interaction Process Analysis enabled the interaction of each group member to be isolated. The percentage of interaction of each individual during each session is shown in Tables 19 and 20. Data from these tables reveal that the instructor dominated the interaction in each group. He was most active during Session 1--58 per cent of the total interaction for Group One and 47 per cent of the total interaction for Group Two. He was the least active during Session 7--17 per cent of the total interaction for Group One and 19 per cent of the total interaction for Group Two. In this session, however, the instructor arrived one half hour late, therefore he participated for only twenty minutes of this session. IPA revealed, as did FSIA, that the instructor participated less in Group One than in Group Two during Sessions 8, 9, 10, and 11. Prior to Session 7, the instructor's participation was less in Group Two than in Group One. This seems to be explained by the presence of a few students in Group Two who were relatively more active than their fellow students.

The total number of acts initiated and received by each person in each of the four sections of interaction is shown in Tables 21 and 22, pages 136 and 137. It is interesting to compare the total acts of each group. There were

Table 19

Percentage of Act Initiation by Each Individual
in Each Session, Group One

Person	Session														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	7	9	10	9	8	8	3	9	19	6	13	8	11	3	6
2	4	5	3	12	6	5	0	7	7	14	1	6	5	6	8
3	3	7	8	1	2	6	11	8	11	7	14	3	9	13	5
4	4	6	3	4	4	1	3	7	4	4	0	10	2	1	3
5	2	5	6	1	4	3	1	2	2	0	1	4	3	4	6
6	3	3	7	3	3	5	12	5	13	8	9	7	10	8	11
7	1	2	3	1	2	4	0	3	3	3	2	2	1	1	4
8	1	2	3	1	4	4	0	3	1	3	0	2	3	1	0
9	2	8	10	10	8	12	16	9	5	13	9	13	8	12	6
10	5	4	5	2	4	3	19	3	2	6	4	5	4	1	4
11	5	3	11	6	12	7	11	14	10	8	12	0	13	19	13
12	5	5	4	5	5	2	6	5	2	8	3	4	3	3	4
Instructor	58	41	26	47	37	40	17	26	19	21	30	34	27	29	30

Table 20

Percentage of Act Initiation by Each Individual
in Each Session, Group Two

Person	Session														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	8	6	16	6	5	10	10	7	6	6	0	12	6	9	4
2	4	4	5	4	8	7	5	11	4	6	9	4	9	11	5
3	6	8	5	10	12	9	13	8	12	7	7	3	26	11	12
4	2	4	3	2	2	4	4	2	7	2	3	9	6	0	4
5	5	8	8	8	7	8	15	8	8	8	8	12	7	7	6
6	7	5	10	0	3	5	1	8	10	3	3	12	0	0	0
7	7	8	7	12	6	7	8	9	0	12	14	1	13	5	10
8	6	11	12	5	6	6	7	7	9	6	10	12	0	16	7
9	5	5	9	4	5	9	9	3	4	7	4	5	6	5	12
10	0	1	1	0	1	1	4	1	1	1	5	1	2	2	2
11	1	4	1	2	2	1	0	0	5	1	1	2	1	2	8
12	1	2	2	2	3	2	4	1	3	2	1	0	1	4	1
13	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
Instructor	47	33	21	44	39	31	19	33	31	36	37	26	23	27	28

1,542 more acts initiated in Group Two than in Group One,
yet the difference between groups concerning task oriented
acts was minimal: 6,136 acts in Group Two and 6,030 acts
in Group One. Furthermore, there were 1,035 fewer positive
and mixed social-emotional acts in Group Two than in Group
One. The differences in the total number of acts initiated
in each group was found in the negative and mixed social-
emotional area. There were 2,471 more acts of this type
in Group Two than in Group One. There were three students
in Group Two who each initiated over 1,000 acts of disagree-
ment, tension, or unfriendliness. In Group One, the great-
est number of negative acts initiated by any student was
727. In Group Two, the instructor received over twice as
many negative acts as he initiated. In Group One, this
difference was not so pronounced, although he again received
more negative acts than he initiated. A much more negative
social-emotional atmosphere would seem to have existed in
Group Two than in Group One.

The instructor's behavior in the remainder of the
sections was similar for each group. He initiated more
positive and mixed acts than he received; he initiated
about three times as many attempted answers as he received;
and he initiated about twice as many questions as he
received. Over half of the task oriented acts initiated in
each group were initiated by him.

Tables 23 and 24, pages 139 and 140, show indivi-
dual indices for each group member. The CR Index is an index

Table 21

Total Number of Acts Initiated and Received
by Each Person, Group One

Person	Section								Total	
	A Positive and mixed (re)actions		B Attempted answers		C Questions		D Negative and mixed (re)actions			
	I	R	I	R	I	R	I	R	I	R
1	487	333	292	208	34	40	727	497	1540	1078
2	335	230	180	227	34	22	555	409	1104	888
3	349	347	254	1o5	26	40	650	417	1279	969
4	212	148	141	107	23	8	305	218	681	481
5	144	121	88	44	o	14	288	229	528	408
6	363	358	290	248	37	23	610	458	1300	1087
7	130	68	55	29	10	7	205	174	400	278
8	113	60	37	18	2	5	188	154	340	237
9	510	484	599	209	31	33	582	522	1722	1248
10	205	158	196	138	41	16	398	384	840	696
11	615	372	374	276	44	34	702	521	1735	1203
12	211	123	65	40	18	4	482	441	776	608
Instructor	1424	1148	2821	1038	330	182	1100	1776	5675	4144

Table 22

Total Number of Acts Initiated and Received
by Each Person, Group Two

Person	A Positive and mixed (re)actions		B Attempted answers		C Questions		D Negative and mixed (re)actions		Total	
	I	R	I	R	I	R	I	R	I	R
1	343	264	332	211	50	52	682	544	1407	1071
2	314	264	294	200	35	26	652	474	1295	964
3	261	351	139	284	50	46	1394	969	1844	1650
4	172	136	40	46	10	9	567	400	789	591
5	254	179	96	92	18	17	1173	1022	1541	1310
6	163	160	260	149	30	23	451	352	904	684
7	205	326	299	202	36	25	1087	735	1627	1288
8	367	264	283	259	65	17	744	530	1459	1070
9	328	247	288	183	36	33	576	427	1228	890
10	114	93	62	74	5	7	252	1o5	433	359
11	101	81	78	46	8	17	270	216	457	360
12	122	99	56	44	6	15	275	172	459	330
13	11	10	8	4	0	3	25	1o	44	35
Instructor	1308	837	3140	1126	412	202	1115	2546	5975	4711

of Direct Access to Resources. It answers the question: Of
all acts in section C received by all individuals, what
proportion did individual "i" receive? An index of Indirect
Access to Resources is obtained by the BR Index. The BR
Index answers the question: To what extent were the questions
of individual "i" answered, as compared with the questions
of others in the group? The ADR Index is an index of Degree
of Control. It answers the question: To what extent were
the attempts of individual "i" answered positively instead
of negatively, as compared with the attempts of others in
the group? A Generalized Status Index (GS Index) is obtain-
ed by summing the above three indices and dividing by three.
The GS Index answers the question: How does the status of
individual "i" compare with that of other members of the
group? All indices yield a number between zero and one
hundred. These indices mean little by themselves; they
should be used to make comparisons.

As would be expected from previous findings, the
instructor in all instances received the highest index.
His CR Index was 29 for Group One and 26 for Group Two.
The next highest CR Index was 6 in each group. The BR Index
for the instructor was 15 in Group One and 15 in Group Two.
The next highest BR Index was 4 in each group. The instruc-
tor's ADR Index was 21 for Group One and 14 for Group Two.
The next highest ADR Index was 5 in Group One and 2 in Group
Two. The GS Index of the instructor was 22 in Group One and
18 in Group Two. The next highest GS Index was 4 in Group

Table 23

Average Indices of Direct (CR) and Indirect (BR) Access to
Resources, Degree of Control (ADR) and Generalized
Status (GS) for Each Member, Group One

Person	CR	BR	ADR	GS
1	6	3	2	4
2	3	4	1	3
3	6	3	2	4
4	1	2	1	1
5	2	1	1	1
6	4	4	2	3
7	1	0	0	0
8	1	0	0	0
9	5	3	5	4
10	3	2	1	2
11	5	4	3	4
12	1	1	0	1
Instructor	29	15	21	22

Table 24

Average Indices of Direct (CR) and Indirect (BR) Access to
Resources, Degree of Control (ADR) and Generalized
Status (GS) for Each Member, Group Two

Person	CR	BR	ADR	GS
1	6	3	2	3
2	3	3	1	2
3	6	4	0	3
4	1	0	0	0
5	2	1	0	1
6	3	2	1	2
7	3	3	1	2
8	2	3	1	2
9	4	2	1	2
10	0	1	0	0
11	2	0	0	0
12	1	0	0	0
13[a]	0	0	0	0
Instructor	26	15	14	18

[a] Person 13 attended only one session

One and 3 in Group Two. These indices would seem to indicate that the instructor controlled most aspects of the small group instruction. It would seem that the instructional process was such that it was assumed that the instructor, not the students, had both the most direct and indirect access to resources. His degree of control was also high compared to that of the students. Thus, a high GS Index resulted for the instructor.

All members of the two groups were plotted according to the direction they were moving towards in social-psychological space[4]. Each individual's acts in all sessions provided the data for these plots. The Simple Difference Method (Bales, n.d.) was used to ascertain the s.p.d.'s. This method excludes acts initiated by an individual to the group. The difference between acts initiated and acts received in each of the twelve categories of IPA is tabulated when this method is used. In this way, members can be placed along each of the three major dimensions of Bales' conception of social-psychological space, thus providing twenty-seven personality classifications. Members of Group One are shown placed along each of the dimensions in Figures 17, 18, and 19.

Figure 17 shows the position of members of Group One on a two-dimensional graph as seen from the Backward

[4]Cf., p.59 for a brief discussion of the social-psychological directions.

Figure 17

A Spatial Model of Group Structure, Group One,
Positive Upward Axes

Figure 18

A Spatial Model of Group Structure, Group One,
Forward Upward Axes

FIGURE 19

A Spatial Model of Group Structure, Group One
Forward Positive Axes

position looking Forward. This enables one to view the relations of members in the Upward-Downward and Positive-Negative dimensions. Figure 18 shows the space from the Positive position and Figure 19, from the Upward position. The three perspectives are assumed to be of equal importance. The missing dimension in each case should be visualized at the same time.

No members of Group One were classified in the Backward dimension. All were moving in a Forward direction. Only one member was classified in the Downward dimension; all others were in the Upward dimension. Just as many members were in the Positive space as in the Negative space. No cliques were evident, found as a result of plotting the s.p.d.'s of the group members. The only consistent isolate appeared to be member 13, the instructor, who was classified as Upward, Negative, Forward. These data provide a general picture of the structure of Group One.

In a like manner to Group One, the s.p.d.'s of the members of Group Two are plotted on Figures 20, 21, and 22. In contrast to the members of Group One, the members of Group Two were further apart from each other in social-psychological space. Also, more members were found in the Negative space than were found in Group One. Like the members of Group One, all the Group Two members were located in the Upward dimension and most were also located in the Forward dimension. There appeared to be no cliques and again, a consistent isolate was the instructor, member 14,
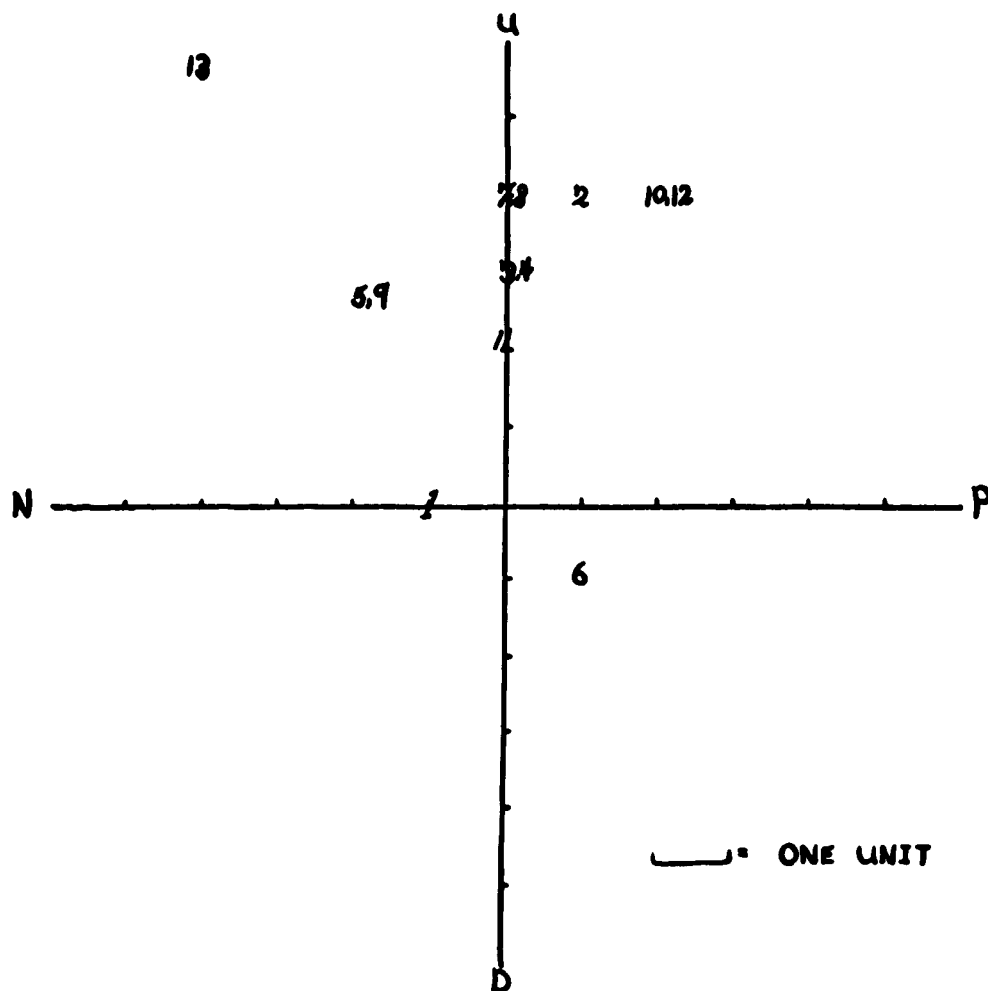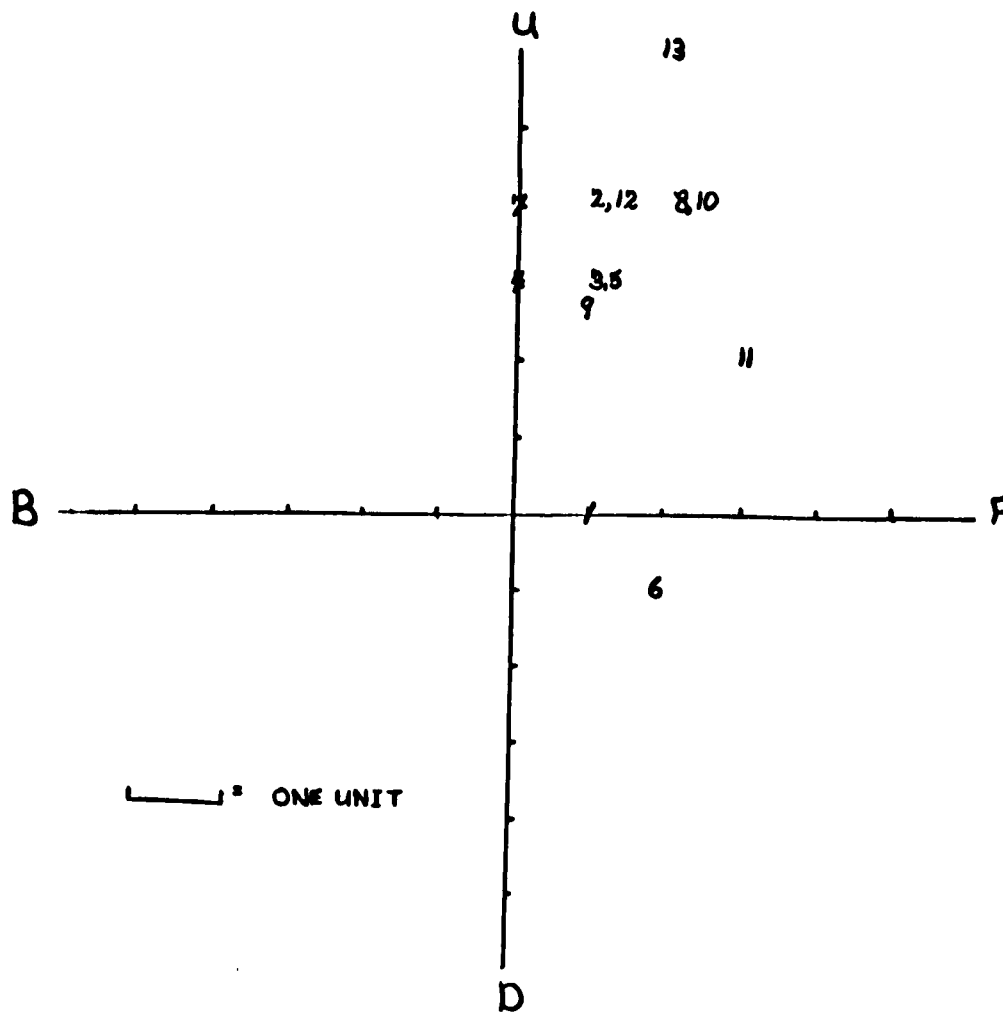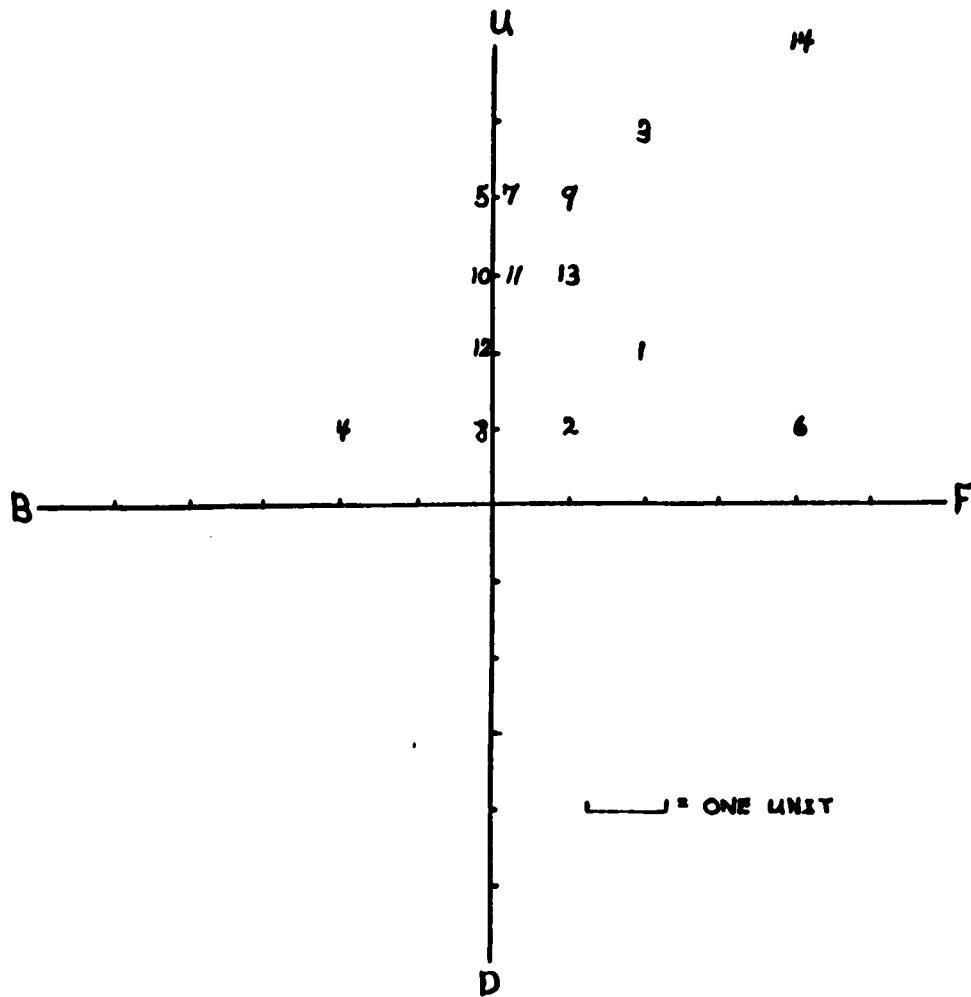
Figure 21

A Spatial Model of Group Structure, Group Two
Forward Upward Axes
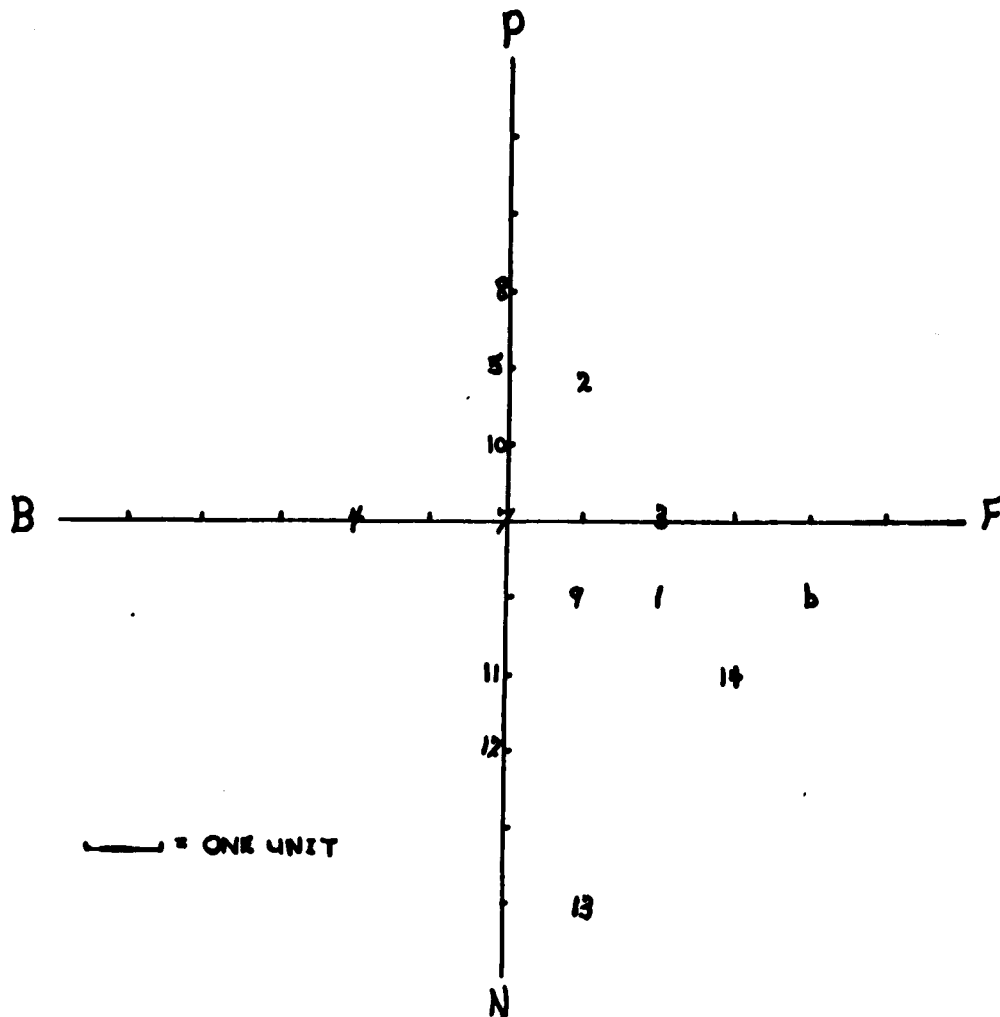
Figure 22

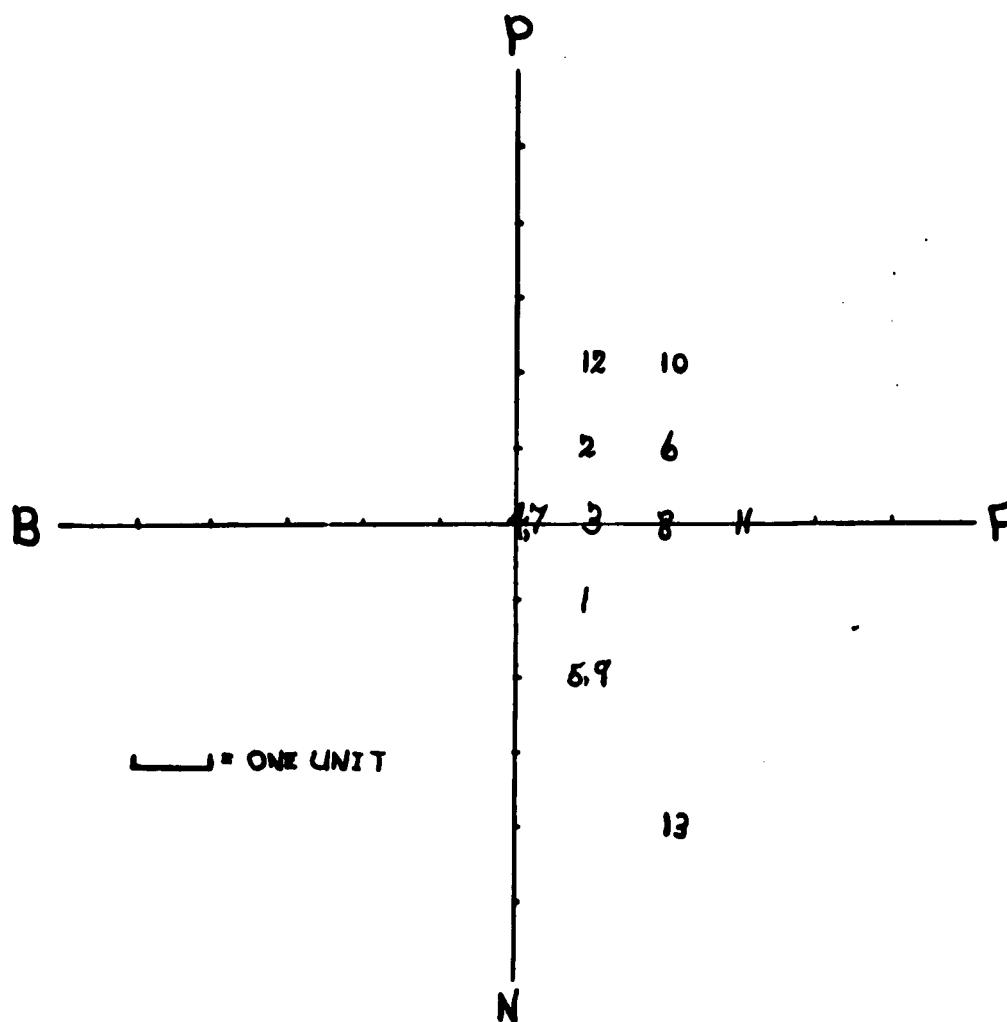A Spatial Model of Group Structure, Group Two
Forward Positive Axes

classified again as Upward, Negative, Forward. It should
be noted that the member lowest on the Positive-Negative
dimension attended only one of the fifteen sessions. Again,
a general picture of the group structure is provided by
plotting the members according to their position in social-
psychological space.

Instructor's Interaction

Each individual's interaction could have been
analyzed. However, as this investigation was concerned
with the analysis of instructional processes, it was the
instructor's behavior that was isolated for analysis. The
total percentage of the instructor's acts in each category
and the percentage of his acts in each session are presented
in Tables 25 and 26.

As these tables show, the instructor in both groups
was prone to give suggestions, opinions, and information--
Area B--as opposed to asking for information, opinions and
information--Area C. In both groups, he tended to give
suggestions and opinions more than he tended to give infor-
mation. For Group One, his total percentage of interaction
categorized in Area B was 48, with a range from 76 per cent
in Session 1 to 31 per cent in Session 14. His total
percentage of interaction categorized in Area C was 5, with
a range from 12 per cent in Session 6 to 2 per cent in
Session 14. For Group Two, his total percentage of inter-
action categorized in Area B was 52 per cent with a range

Table 25

Percentage of Instructor's Acts in Each Category during Each Session, Group One

Cate-gory	Session															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	3	26	11	5	3	9	4	7	4	2	11	11	17	5	8	8
2	9	5	8	11	10	6	21	4	1	6	4	21	11	22	22	11
3	6	7	5	6	8	9	4	5	2	6	2	5	7	10	10	6
4	28	16	19	26	20	17	17	25	15	18	22	20	19	19	17	20
5	22	11	24	29	27	19	21	19	13	21	22	15	8	9	18	19
6	26	14	7	11	11	8	9	7	6	10	7	5	6	3	7	9
7	3	10	5	2	2	4	0	1	3	4	2	0	1	1	2	2
8	0	1	3	2	7	7	3	4	3	1	2	2	3	1	0	2
9	0	0	0	0	0	1	0	0	0	3	2	1	1	0	1	1
10	1	2	4	2	3	0	2	1	1	4	1	1	0	1	2	2
11	3	8	5	3	5	14	5	16	32	13	10	13	18	25	10	12
12	0	1	9	4	5	6	13	11	20	13	15	5	10	5	4	8

Table 26

Percentage of Instructor's Acts in Each Category during Each Session, Group Two

Cate-gory	Session															Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1	5	6	15	4	3	8	1	3	7	7	6	8	5	5	8	6
2	4	3	5	7	4	3	26	10	3	11	19	13	3	8	16	9
3	6	8	6	7	8	8	3	7	3	4	4	5	5	8	10	6
4	31	24	23	30	23	20	18	25	23	23	20	23	14	28	23	23
5	22	13	22	28	31	22	17	18	18	16	19	13	9	10	15	18
6	24	16	7	10	14	10	9	12	10	12	9	6	4	8	11	11
7	3	12	6	5	4	1	3	1	2	2	2	1	3	0	2	3
8	0	3	1	1	4	6	7	3	8	0	1	2	1	0	0	2
9	0	0	0	0	0	0	0	0	0	3	1	0	2	0	1	1
10	1	1	2	2	2	3	0	1	1	2	1	1	3	0	2	2
11	3	11	8	2	4	9	9	5	11	11	10	19	26	24	8	11
12	0	2	5	3	3	9	6	14	13	9	7	8	25	9	4	8

of 77 per cent in Session 1 to 27 per cent in Session 13.
His total percentage of interaction categorized in Area C
was 6 with a range from 15 per cent in Session 2 to 0 per
cent in Session 14. For both groups, the instructor's
greatest percentage of giving suggestions and of giving
information was during the first session.

The total percentage of instructor's acts categor-
ized as seeming friendly was 8 per cent, with a range from
3 per cent to 26 per cent in Group One. In Group Two, the
total percentage of his acts categorized as seeming friendly
was 6, with a range from 1 per cent to 15 per cent. The
total percentage of his acts categorized as seeming unfriend-
ly was 8 per cent, with a range from 0 per cent to 20 per
cent for Group One. For Group Two, his total percentage of
acts categorized as seeming unfriendly was also 8, with a
range from 0 per cent to 25 per cent.

For both groups, the total percentage of instructor's
acts categorized as agreement and as disagreement was 6 and
2 per cent, respectively. For Group One, his range of acts
of agreement was from 2 per cent to 10 per cent. His range
of acts of disagreement was from 0 per cent to 4 per cent.
For Group Two, the respective ranges were from 3 per cent
to 10 per cent and from 0 per cent to 3 per cent.

The instructor initiated acts categorized as drama-
tization 11 per cent of the time for Group One and 9 per
cent of the time for Group Two. His between-session range
for Group One was from 1 per cent to 22 per cent; for Group

Two, the range was from 3 per cent to 26 per cent. Of his
total acts, 12 per cent were categorized as showing tension
in Group One and 11 per cent were categorized in this manner
in Group Two. The range for Group One was 3 per cent to 32
per cent. The range for Group Two was 2 per cent to 26 per
cent.

Tables 25 and 26 show the interaction pattern of
the instructor over all sessions. The tables do not reveal
how he interacted with individual students.

A summary of the instructor-student interaction is
presented in Tables 27 and 28. The total number of acts
initiated and received by the instructor to and from each
student is listed. The instructor's acts initiated to
himself and to the group are shown. The data in Tables
27 and 28 reveal that almost half of the instructor's acts
were addressed to the group, as opposed to individuals.
In Group One, 2,455 acts out of a total of 5,675 acts were
addressed to the group by the instructor. The corresponding
figures for Group Two were 2,693 and 5,975. In Group One,
605 of the instructor's acts were signs of tension. In
Group Two, 568 of his acts were classified as showing
tension.

In both groups, the instructor received more acts
from each student than he initiated to each student. Acts
categorized as seeming unfriendly accounted for the greatest
difference between acts initiated and received.

For Group One, acts initiated to individual students

Table 27

Total Acts Initiated and Received by the
Instructor to and from each Student
Group One

Cat	1 I	1 R	2 I	2 R	3 I	3 R	4 I	4 R	5 I	5 R	6 I	6 R	7 I	7 R	8 I	8 R	9 I	9 R	10 I	10 R	11 I	11 R	12 I	12 R	Self I	Self R	Group I	Group R
1	62	57	29	35	27	33	22	7	30	9	24	12	6	3	10	5	45	50	21	14	47	39	20	21	71	71	52	0
2	28	48	20	51	20	31	45	53	2	19	24	43	6	16	4	19	36	41	13	23	41	72	8	23	1	1	358	0
3	26	70	33	46	30	23	30	41	20	20	41	37	3	2	6	9	87	57	22	12	42	31	11	13	0	0	1	0
4	50	39	60	41	32	23	35	23	14	11	67	60	4	3	3	3	51	63	25	20	65	30	11	8	1	1	750	0
5	60	54	66	42	37	32	39	42	11	28	59	47	7	7	7	13	63	89	32	28	39	37	14	23	0	0	667	0
6	31	51	29	10	18	22	15	21	6	9	25	22	6	14	3	9	15	31	25	19	26	54	8	10	0	0	345	0
7	15	16	9	18	9	6	3	12	9	8	12	9	3	5	2	1	15	10	4	16	6	14	2	5	0	0	58	0
8	12	4	5	11	9	2	2	5	5	0	6	11	1	0	3	0	11	9	4	3	9	5	1	7	0	0	79	0
9	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	1	2	0	0	0	0	35	0
10	9	18	17	22	1	9	9	12	4	6	15	23	0	1	1	2	16	14	11	10	6	32	6	2	0	0	0	0
11	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	605	605	3	0
12	29	138	22	107	27	142	11	64	8	45	49	100	2	27	0	24	40	100	18	39	78	190	5	43	0	0	107	0
Total	322	536	290	383	210	323	211	280	109	155	322	366	38	77	39	84	380	465	175	184	360	507	86	155	678	678	2455	0

Table 28

Total Acts Initiated and Received by the Instructor

To and From Each Student

Group Two

Cat.	1 I	1 R	2 I	2 R	3 I	3 R	4 I	4 R	5 I	5 R	6 I	6 R	7 I	7 R	8 I	8 R	9 I	9 R	10 I	10 R	11 I	11 R	12 I	12 R	13 I	13 R	Self I	Self R	Group I	Group R
1	40	33	29	29	21	12	16	16	21	31	26	14	28	30	41	51	26	57	15	4	16	10	7	3	2	3	30	30	43	0
2	17	30	10	32	35	15	6	2	21	25	6	10	33	18	22	37	15	18	8	16	3	3	0	6	1	60	3	3	366	0
3	32	40	68	46	40	33	7	5	19	19	48	27	46	23	53	46	58	30	9	14	9	7	9	70	0	70	1	1	2	0
4	53	43	56	66	69	19	4	8	30	20	39	60	62	63	79	58	62	82	18	3	3	13	11	72	1	72	0	0	871	0
5	53	78	44	58	83	32	7	5	21	25	40	47	55	59	46	45	49	49	16	25	6	17	17	201	4	201	0	0	670	0
6	37	18	21	16	43	32	5	17	18	20	17	28	22	42	37	28	19	30	5	13	7	8	2	71	1	71	0	0	395	0
7	16	17	8	10	17	16	3	4	9	5	9	8	9	13	5	31	9	15	4	1	8	3	6	0	0	0	0	0	93	0
8	15	5	2	12	7	14	3	1	3	6	6	6	7	6	2	8	4	12	2	1	6	1	6	1	0	0	0	0	105	0
9	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	45	0
10	6	14	15	13	22	37	1	0	2	7	9	6	17	22	13	19	11	23	0	0	1	0	3	20	3	20	0	0	3	0
11	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	568	568	0	0
12	26	145	53	169	109	399	4	121	11	134	22	93	25	82	35	151	40	131	3	59	6	57	10	88	1	88	0	0	93	0
Total	269	423	316	451	453	612	64	171	155	292	222	300	304	359	333	476	293	447	90	122	80	111	65	142	29	136	602	602	2693	0

ranged from 38 to 380. Acts were initiated to Student 7 only 38 times and to Student 8 only 39 times. To Student 12, 86 acts were initiated and to Student 5, 109 acts were initiated. For the remaining eight students, the range of acts initiated by the instructor to them was from 175 to 380.

For Group Two, acts initiated to individual students ranged from 64 to 453, excluding Student 13 who attended only one session. Relatively few acts were initiated to four students. Student 4 received 64 acts, Student 12 received 65 acts, Student 11 received 80 acts, and Student 10 received 90 acts. Student 3 received 453 acts from the instructor, but 109 of these acts were categorized as seeming unfriendly. Student 3, in turn, initiated 612 acts to the instructor, 399 of them categorized as seeming unfriendly. The range of acts initiated by the instructor to the remaining seven students was from 155 to 333.

COMPARISON OF FSIA AND IPA ANALYSES

Data have been presented which analyze the small group instructional process according to Flanders' System of Interaction Analysis and according to Bales' System of Interaction Process Analysis. These data can now provide the basis for a comparison of the two systems of inter-action analysis. This comparison is aided by three guiding questions.

Variability of Classroom Behavior

Did each instrument enable the investigator to identify variability in classroom behavior? If so, how? Different aspects of variability were identified with the aid of each of the two instruments. As well, different procedures for analyzing the coded interaction were used.

Bales' instrument enabled variability in classroom behavior to be studied from several different frames of reference. First, variability in group behavior could be identified. Second, variability in the behavior of each individual could be identified. Third, variability in the quantity and quality of the verbal and nonverbal interaction between the instructor and each student could be identified.

Flanders' instrument adequately enabled variability in classroom behavior to be studied from only one frame of reference--the instructor's verbal behavior. Only two of Flanders' categories are concerned with pupil verbal behavior. Furthermore, individual student behavior cannot be identified with the aid of FSIA.

In order to collate FSIA data, it was first necessary to combine coded interaction in a ten-by-ten matrix. This was done for each session. A total matrix for each group was also compiled. The matrix yields 100 cells representing the sequence of interaction. These matrix cells can be individually compared in order to identify variability. The total group matrices were presented in Table 17, p. 129 and Table 18, p. 130. Variability in the use of each

category or in combinations of categories can also be analyzed. A percentage comparison of the usage of each category in each session was presented in Table 9, p. 104 and Table 10, p. 105. Once the matrix is compiled, various ratios of teacher and pupil verbal behavior can be calculated. The majority of these ratios stress the relationship between teacher initiation and response to his pupils. The ratios for each session in each group were presented in Table 6, p. 94, Table 7, p. 98, and Table 8, p. 101. Wide ranges of between-session interaction were revealed by studying the matrices and the ratios. Between-group differences were revealed in the same manner. These differences reveal that Flanders' ten category instrument was able to identify variability in small group instructional behavior, using as a frame of reference the instructor's verbal behavior.

In order to collate IPA data, it is not necessary to first combine the data in the form of a matrix although matrices could be compiled and compared in a manner similar to that of FSIA matrices. Percentage matrices of the total interaction of each group were presented in Table 17, p. 129 and Table 18, p. 130.

The percentage of usage of each of the twelve categories of IPA during each session for each group was studied. These percentages were presented in Table 13, p. 113 and Table 14, p. 117. Figures 3 to 8, pages 114 to 116, and Figures 9 to 14, pages 118 to 120, derived from data presented in these tables, illustrated the deviation of the usage

of pairs of categories over sessions for each group. These
tables and figures revealed differences in the amount of
usage of each category between sessions and between the two
groups.

Indices of group interaction which were presented
in Tables 15 and 16, pages 123 and 124, again were able to
identify variability in the small group instructional
process. These indices indicated that each group passed
through phases of interaction during the fifteen sessions.

Analysis by IPA enabled the behavior of each indivi-
dual to be analyzed. The percentages of acts initiated in
each session by each student, as well as by the instructor,
were presented in Tables 19 and 20, pages 133 and 134.
These percentages revealed large differences between the
proportion of interaction of the individuals in the instruc-
tional setting as well as differences in the proportion of
interaction between sessions of the individuals. Data
presented in Table 21, p. 136 and Table 22, p. 137 revealed
differences between individuals concerning the quantity and
quality of the interaction that they initiated and received.

Individual indices were compiled which indicated
the role that each group member performed during the instruc-
tional process. The indices derived from the interaction
of all fifteen sessions were presented in Tables 23 and 24,
pages 139 and 140. These indices indicated that there was
a wide range of individual behavior in each group. Indices
derived from each session could also have been presented

in order to demonstrate the variability of the individual roles between sessions. The positions of each individual in social-psychological space presented in Figures 17 to 19, pages 142 to 144, and in Figures 20 to 22, pages 146 to 148, provided further evidence that there was variable individual behavior in each group.

Statistical analyses of the FSIA and IPA matrices, ratios and indices would be possible in order to compare variability in classroom behavior. No such analyses were reported in this investigation although some were conducted. They were not reported as the purpose of the present investigation was to gain an indication as to how small group interaction might be analyzed with the aid of each instrument. If one were comparing different instructors or if one were comparing different methods of instruction, statistical analyses would be suitable; indeed, they would be necessary. The present investigation made use of the same instructor using similar methods in each of the instructional settings in order to study the use of FSIA and IPA. Meaningful descriptive interpretations were possible without the use of statistics. For example, when a Darwin Chi-square was used to test the null hypothesis that the total Flanders' interaction matrix for Group One was no different from the total Flanders' interaction matrix for Group Two, the null hypothesis was rejected at a level of probability of 0.000000. Yet, it was not the difference between the interaction patterns of the two groups that was meaningful; it

was the similarity. Meaningful was the finding that the instructor's use of categories 1, 2, 3, 4, 6, and 7 was low in both groups and that his use of category 5 was high in both groups. A similar level of probability was obtained when a Darwin Chi-square was used to test the differences between the total Bales' interaction matrices.

The Darwin Chi-square statistic considers the sequence of each of the matrix cells as well as the proportion of interaction within each cell. Thus, as each matrix contained approximately fifteen hours of interaction, it would have been highly unlikely for significantly statistical differences between the group matrices not to have occurred. Similarly, it would be likely that when between-session differences were compared, significant statistical differences would be found due to the fact that differences between a large number of sessions--fifteen--were compared.

Instructor's Performance Compared with Pre-determined Criteria

Did each instrument enable the investigator to compare the instructor's performance with pre-determined criteria? If so, how?

It was intended that the instruction in each of the Direct Communication Training groups be similar. The instructor wished to participate actively in the early sessions and to gradually decrease his rate of participation as the instruction progressed. The improvement of interpersonal skills of direct communication was the

intended learning outcome. The demonstration of empathic communication was the interpersonal skill to be stressed. Respect, concreteness, genuineness, confrontation, and immediacy were other skills to be taught. During the instructional process, the instructor was to be a model of these interpersonal skills. Lastly, he desired that his instruction occur in a positive social-emotional climate.

The FSIA interaction matrices shown in Tables 11 and 12, pages 109 and 110, revealed interaction patterns that were generally similar for Groups One and Two. The IPA interaction matrices presented in Tables 17 and 18, pages 129 and 130, indicated similar patterns of interaction between groups. These matrices indicated that the instruction in each group was similar. When the amount of the instructor's interaction between sessions was studied, both FSIA and IPA indicated a difference between groups beginning in Session 8 and extending over the next three sessions. In Group One, the instructor participated much less during the four sessions than in Group Two. The similarity in the amount of his interaction in each group then resumed. This divergence in procedure, as well as any difference found between the matrices of the two groups, was probably due to the differences between the behavior of the students in the two groups. Differences were evident even though the students had been randomly assigned to the groups.

Analyses by FSIA and IPA revealed that the instructor

did decrease his rate of participation as the instruction progressed. FSIA data in Table 6, p. 94 showed that the greatest percentage of teacher verbal behavior was during Session 1 and thereafter, the percentage of teacher verbal behavior tended to decline. IPA data in Tables 19 and 20, pages 133 and 134, revealed similar findings. The declining trend was not as pronounced when the IPA data were studied, due to the inclusion of the instructor's nonverbal behavior. Whether the instructor actively participated or not, an IPA observer would record his nonverbal behavior, such as the showing of tension, at all times.

FSIA data would indicate that the instructor did not act as a model for interpersonal communication skills. He was to demonstrate empathy, yet only 0.2 per cent of his verbal behavior in Group One and 0.1 per cent of his verbal behavior in Group Two was categorized as accepting feeling. These are extremely low percentages considering the criteria for instructional behavior. Tables 9 and 10, pages 104 and 105, showed that the instructor's use of praise or encouragement, acceptance or use of student ideas, questions and criticism was also minimal. This would seem to indicate that his actual behavior did not correspond to his expected behavior. He was not the model for the direct communication skills that he intended to be, according to the analysis of his behavior by Flanders' instrument.

IPA data are not as clear as the FSIA data concerning the comparison of the criteria for the instructor's

performance and his actual performance. Findings based on
IPA data do, however, support the findings based on FSIA
data. These IPA data were presented in Tables 25 and 26,
pages 150 and 151. In Group One, 8 per cent and in Group
Two, 6 per cent of his behavior was categorized as agree-
ment. These are larger percentages of positive social-
emotional activity than Flanders' instrument revealed,
but they are still relatively small percentages when compared
to his percentages of giving suggestions, opinions, and
information--48 per cent in Group One and 52 per cent in
Group Two. In Group One, only 5 per cent and in Group Two,
only 6 per cent of his interaction was classified as asking
questions. In both groups, only 2 per cent of his inter-
action was categorized as disagreement. Again, the indica-
tion is present that the instructor did not stress the
modeling of interpersonal skills. Empathic communication
was to be stressed by him. Yet, as much or more of his
interaction was categorized as seeming unfriendly as
seeming friendly. Too, Tables 27 and 28, pages 154 and 155,
show that almost half of his total acts initiated were
addressed to the group rather than to individuals. This
would seem to indicate that the instructor was not practic-
ing interpersonal communication skills as these types of
communication would probably best be demonstrated while
interacting with individuals.

Flanders' instrument could not explicitly identify
the social-emotional climate; Bales' instrument could.

The high IPA indices of total expressive-malintegrative
behavior--0.57 in Group One and 0.69 in Group Two--indicated
a negative social-emotional climate. So did the high total
percentages of acts categorized as showing tension--21 per
cent in Group One and 26 per cent in Group Two. Further
evidence was provided in Tables 27 and 28, pages 154 and 155.
These tables showed that a large number of acts categorized
as seeming unfriendly were received by the instructor from
every student. No such analyses of the FSIA data were
possible.

Description of the Small Group Instructional Process

Did each instrument enable the investigator to
describe the small group instructional process? If so,
how?

Each of the instruments enabled the identification
of a distinct pattern of behavior which succinctly described
the observed instructional process in both groups. Verbal
behavior was studied in order to describe the instructional
process with the aid of FSIA. In order to describe the
instructional process with the aid of IPA, nonverbal as
well as verbal behavior was studied. IPA indicated that
certain phases of interaction were passed through during
the course of the fifteen sessions; FSIA could not indicate
phase movements during the instructional process.

The pattern of verbal behavior identified by FSIA
which succinctly described the observed instructional

process in both groups was a (9-5) pattern, that is, student initiated ideas followed by teacher lecturing. The students expressed their own ideas and the teacher, in turn, expressed his own ideas. He rarely responded to his students' ideas. This pattern was revealed in Tables 11 and 12, pages 109 and 110. The high Steady State Ratios shown in Table 8, p. 101, indicated that the interchange of verbal interaction between the teacher and the students was not rapid. This indication was supported by the relatively low percentages of teacher questions shown in Tables 9 and 10, pages 104 and 105.

The highest percentage of teacher talk was during the first session for both groups. Thereafter, the percentage of teacher talk tended to decline. Student participation was high. The total percentage of student talk for Group One was 54.2; for Group Two, the percentage was 45.3. These high percentages of student talk, in particular the high percentages of student initiated ideas, despite the relative lack of teacher questions or of teacher responses, might be a result of a lack of negative teacher behavior. It would appear that the students were allowed to say what they wished. Ratios comparing the teacher's use of accepting feelings, of praise and of using pupil ideas to his use of giving directions and of criticizing indicated that the teacher responded in a positive manner to his students much more than he gave directions to, or criticized his students. The wide range of these ratios shown in Table 6,p. 94 and Table 7, p. 98 indicated flexible teacher behavior; that is,

his behavior varied from session to session.

In sum, there was a large amount of talk categorized as student ideas during the instructional process. The teacher rarely reacted to these ideas, although when he did, his reaction was more likely to be positive than negative. His reactions varied from session to session, indicating flexible instructional behavior. The method of instruction observed consisted of few questions and a large amount of talk, categorized as lecturing.

The instructional process identified by the use of Bales' instrument was most succinctly described as a process of giving suggestions and opinions in a group atmosphere categorized as negative. During the course of the instruction in both groups, the groups appeared to pass through phases of communication difficulty, evaluation difficulty, and difficulty of control, as shown in Figures 15 and 16, pages 126 and 127. However, the index of expressive-malintegrative behavior, an index representing difficulties of decision, of tension-management, and of integration as shown in Tables 15 and 16, pages 123 and 124 remained relatively high throughout all sessions for both groups. This indicated that these difficulties were not solved. It also indicated that more negative social-emotional interaction occurred than did positive social-emotional interaction. Tables 21 and 22, pages 136 and 137, showed that both the instructor and the students were more prone to give suggestions and opinions than to ask questions. The total

percentages of interaction shown in Tables 13 and 14, pages
113 and 117, provided further support for this finding.
These tables revealed also that there was a relatively
large percentage of interaction categorized as showing
tension during all sessions in both groups.

The instructor was the predominant member of the
small groups during the instructional process as the indices
shown in Tables 23 and 24, pages 139 and 140, revealed. He
tended to address more of his interaction to the whole group
than to individual students, as Tables 27 and 28, pages 154
and 155, showed. These two tables also showed that a few
students in each group initiated relatively few acts towards
the instructor. He, in turn, initiated relatively little
interaction towards them. FSIA did not enable such a
study of the instructional process.

When the group role structure that evolved was
studied with the aid of IPA, either by the analysis of
who-to-whom matrices or by the placement of the group
members in social-psychological space, no evidence of
cliques could be found, nor was it evident that there were
students characterized as group isolated. Again, FSIA
did not enable such a study of the instructional process.

Chapter 6

SUMMARY, CONCLUSIONS, AND SUGGESTIONS
FOR FURTHER RESEARCH

SUMMARY

Review of the Investigation

This investigation was designed to answer the
question: What does a comparison of Flanders' System of
Interaction Analysis and Bales' System of Interaction
Process Analysis reveal about the value of each as a research
tool? In order to answer this question, the following
problems were investigated: (1) What does a theoretical
comparison of FSIA and IPA reveal about the relative merits
of each as a tool for interaction analysis? (2) What does
a comparison of FSIA and IPA data obtained from the same
small group instructional process reveal about the relative
merits of each system as a tool for the analysis of small
group instruction?

The purpose of the investigation was twofold.
First, the investigator wished to assess the theoretical
rationale, validity, and reliability of each observation
instrument. Second, the investigator was interested in
discovering if the study of small group instruction using
Bales' system would generate a conception of instruction
that would be fruitful for further research. How, or if,

Flanders' system would aid in the conceptualization of small group instruction was also of interest.

Guidelines for the theoretical comparison were provided by Medley and Mitzel (1963), Kerlinger (1964), Flanders and Simon (1969), Cronbach (1970), Simon and Boyer (1970), and Rosenshine (1970a). The theories of these writers enabled questions to be formulated with which to examine and then compare the theoretical rationale, validity and reliability of both instruments. How each instrument might aid in the conceptualization of instruction was described and compared. The theoretical framework of each instrument was utilized for this description and comparison.

Guidelines for the comparison of data obtained from the observation of small group instruction were provided by Rosenshine (1970b). His postulates enabled questions to be formulated with which to examine and then compare the two instruments.

Skilled Bales observers and skilled Flanders observers collected data from fifteen, fifty-minute sessions with each of two small groups of university undergraduates. The same instructor taught both groups. The analysis of the FSIA and IPA data obtained from the small group instructional process enabled the guiding questions to be answered.

Findings of the Theoretical Comparison

The main findings of the theoretical comparison may be stated as follows:

(1) (a) The two systems of interaction analysis were developed by different methods and for different purposes. Bales desired to develop a category system that could be used to analyze the interaction of many different kinds of small groups. He began the development of his category system at an ad hoc level, subsequently revising it to make use of theoretical formulations developed concurrently with the categories. The theoretical formulations were drawn from knowledge and impressions generally current in sociological, social-anthropological, social-psychological, and psychological theories.

Flanders developed his category system in order to use it as a specific tool in the investigation of certain hypotheses concerning the effect of teacher classroom behavior on student attitude and achievement. The development of Flanders' category system was not begun at an ad hoc level. The categories of FSIA and the theoretical formulation of FSIA emerged from social-psychological research into the social-emotional climate of the classroom.

The two systems are similar in that they each were revised several times after empirical trial over a period of several years.

(b) Both systems would be considered general observation systems. A person using each system deliberately ignores the content of the ongoing interaction in order to record the process of the interaction. Each system could therefore be used in many different situations. Of the

two, IPA is more general. In order to use Flanders' system, a teacher must be actively interacting in an instructional setting. Bales' system does not require a teacher or an instructional setting for its use.

(c) Each system requires some observer inference, but neither requires a high degree of inference. The small units of behavior recorded by an IPA or an FSIA observer are descriptive rather than evaluative. They are as nonevaluative as is possible, given the assumption that systems of interaction analysis are relatively crude tools of measurement.

(d) Each system represents sets of mutually exclusive, all-inclusive behaviors at its own precisely and unambiguously defined universe of behaviors. The universe of behaviors that the twelve categories of IPA are designed to analyze are the task problems and the social-emotional problems that arise in any small group. The verbal and nonverbal interaction between an individual "actor" and the "situation" is what is categorized. The universe of behaviors that the ten categories of FSIA are designed to analyze is nontopical classroom verbal interaction in terms that refer to the expansion and restriction of students' freedom of action. Teacher and student behavior is what is categorized.

(2) Both Bales and Flanders adequately demonstrated the validity of their systems of interaction analysis. Nonstatistical, as well as statistical , procedures were

used to validate each instrument. However, each instrument
was used to analyze a wide variety of situations over a long
period of time, indicating that a representative sample of
behaviors was observed. Only skilled observers used the
instruments, indicating that an accurate record of behaviors
was obtained by both Bales' and Flanders' systems. Each
instrument enabled the identification of different behaviors
when they were expected, indicating that differences in
behavior are reflected by each instrument.

Bales found that IPA identified the group phases
and role structure that he had hypothesized would exist
on the basis of his theoretical framework. Flanders
found that FSIA identified relationships between types of
teacher behavior and student attitude and achievement. He
had hypothesized these relationships on the basis of his
theoretical framework developed largely from the work of
Anderson et al. (1945, 1946a, 1946b), Lippitt (1940), and
Withall (1948). The above research was critically examined
and found to be valid.

(3) (a) Both Bales and Flanders suggest relatively
crude techniques for establishing inter-rater reliability.
It was postulated, however, that these techniques are the
results of the nature of interaction analysis systems them-
selves. They are essentially crude tools of measurement.
Bales suggests the use of Chi-square to assess inter-obser-
ver agreement. Flanders suggests the use of Scott's coef-
ficient. If a Chi-square probability level of .50 or a

Scott coefficient of .85 is achieved by two or more investigators, then the results of analysis by IPA or FSIA should be considered adequate.

(b) A comparison of published instructions revealed that Bales' coding instructions are more clear and more detailed than Flanders' coding instructions. Comparisons between different investigations are likely, therefore, to be more reliable when research using IPA is compared than when research using FSIA is compared.

(4) The theoretical framework of each system enabled both IPA and FSIA to be used as a frame of reference for the conceptualization of instruction. If IPA is used as a frame of reference, instruction would be conceptualized as a process of problem solving. This process involves group members solving, alternatively, certain task problems arising from the outer situation and certain social-emotional problems arising from within-group interaction. If FSIA is used as a frame of reference, instruction would be conceptualized as a process of verbal interaction between the instructor and the students as a group.

Each system enables an investigator to conceptualize instruction as an affective process. Neither system enables the cognitive aspects of instruction to be studied.

Findings of the Comparison of Data Obtained from
    the Small Group Instructional Process

The main findings of the comparison of FSIA and IPA data obtained from the Direct Communication Training classes

may be stated as follows:

(1) Different aspects of variability in classroom behavior were identified by the investigator with the aid of each of the two instruments. IPA enabled variability to be studied from more frames of reference than did FSIA.

Flanders' instrument adequately enabled the identification of variability in the instructor's verbal behavior. This was done by comparing individual cells, groups of cells, or column totals of percentage matrices. Ratios of teacher and student verbal behavior, calculated from matrices, also enabled the identification of variable classroom verbal behavior. Most of these ratios stress the relationship between verbal behavior classified as teacher initiation and teacher response.

Bales' instrument enabled the identification of variability in group behavior. Indices of group verbal and nonverbal interaction indicated phases of interaction that each group passed through during the fifteen sessions. IPA enabled the identification of variability in individual behavior. Indices of individual verbal and nonverbal behavior which indicated the role that each group member performed during the instructional process identified a wide range of individual behavior in each group. Variability in individual behavior and in group behavior could also be studied with the aid of IPA by identifying the amount of usage of each category by each individual and by all the group members during each session. In this manner, variability in

interaction could be identified in the following ways:
(1) between-individual differences during a single session;
(2) between-session differences of an individual; and (3)
between-session differences of the group. IPA also revealed
differences concerning the quantity and quality of the
interaction initiated and received by each individual. This
enabled an identification of the instructor's behavior
towards each student and of each student's behavior towards
the instructor.

(2) Each instrument enabled the investigator to
compare the instructor's performance with pre-determined
criteria. The comparison enabled by each instrument reveal-
ed relatively similar findings.

Interaction matrices can be compiled from both
FSIA and IPA data. FSIA and IPA matrices that included all
the sessions for each group revealed that the interaction
patterns for the two groups were similar. This was as the
instructor intended. It was also intended that the instruct-
or decrease his rate of participation as the instruction
progressed. Analysis of the instructor's behavior during
each of the fifteen sessions by both FSIA and IPA revealed
that this was what actually occurred. Unlike FSIA data,
IPA data also revealed that his total rate of participation ·
declined but his nonverbal participation did not decline.

When the instructor's use of certain of Flanders'
categories was studied, it was revealed that the instructor
was not the model of interpersonal skills that he had

intended to be. His use of certain of Bales' categories revealed a similar, but less precise, finding. IPA revealed that less than half of the instructor's acts were addressed to individual students. This is a further indication that the instructor was not practicing what he had intended. It could not be determined by FSIA whether the instructor addressed himself to the group or to individuals.

A positive social-emotional climate was desired during the small group instructional process. IPA provided explicit information revealing that a positive social-emotional climate was not created in either group. FSIA could not provide this information explicitly although a negative social-emotional climate could be hypothesized after ascertaining the interaction pattern identified by Flanders' instrument.

(3) Each instrument enabled a description of the small group instructional process. A more detailed description was possible with the aid of IPA than with the aid of FSIA.

The instructional process identified by the use of FSIA was described as an interaction pattern of student initiated ideas followed by teacher lecturing. The teacher rarely reacted to the student ideas, although when he did, his reaction was more likely to be positive than negative. Flanders' instrument showed that the instructor's reactions varied from session to session, indicating flexible instructional behavior. The method of instruction observed with

the aid of FSIA consisted of a few questions and a large amount of talk, categorized as lecturing.

The instructional process identified by the use of IPA was described as a process of giving suggestions and opinions in a group atmosphere categorized as negative. IPA, unlike FSIA, is designed to study group phase movements and role structure. Therefore, IPA enabled the instructional process to be further described in the following manner. The groups appeared to move through phases of communication difficulty, evaluation difficulty, and difficulty of control. The instructor was identified as the predominant member of the group. He tended to address more of his interaction to the group rather than to individual students. A few students in each group interacted relatively little with the instructor. IPA revealed that no cliques formed among the students, nor were there any student isolates.

CONCLUSIONS AND IMPLICATIONS

Systems of interaction analysis are inherently crude research tools. Given that this is a limitation, a comparison of Flanders' and Bales' systems of interaction analysis has revealed that each category system has value as a research tool. A theoretical comparison of the two instruments as tools for interaction analysis has revealed that FSIA has demonstrated its worth as a classroom research tool; IPA has demonstrated its worth as a small group research tool. A comparison of FSIA and IPA as tools for

the analysis of small group instruction has revealed that IPA provides more varied and detailed information than FSIA. The findings of FSIA and IPA supported each other, however. There were no conflicting findings. An investigator must therefore consider whether the more varied and detailed information revealed by IPA is worth the extra effort required to become a skilled IPA observer. It must be remembered that it takes at least one hundred hours of practice to become a skilled IPA observer, whereas it takes only about thirty hours of practice to become a skilled FSIA observer.

Each system was evolved on the basis of a firm theoretical rationale. The theoretical rationale was explicated by each author. Authors of other interaction analysis systems would be well advised to make public the pattern of development of their systems, as did Bales and Flanders. Each author demonstrated the validity of his system by subjecting it to several years of empirical trial before publication. These empirical trials resulted in each category system's revision several times.

Adequate inter-rater reliability techniques have been suggested by each author. If these techniques are adopted by investigators, the findings of research that makes use of IPA or FSIA can be considered reliable. It must be remembered that each category system is a relatively crude research instrument and thus subject to error. Thus, findings reported by IPA and FSIA observers would have to

be replicated many times before the findings could be
considered conclusive. Findings generally have not been
conflicting.

There is a danger, however, that inter-investiga-
tion consistency has not been achieved by Bales and Flanders
researchers. The danger is more likely in the case of
researchers using FSIA. Coding instructions detailing the
use of FSIA have been changed since the first publication
of the instrument. Flanders' coding instructions could be
more detailed, as well. Consequently, different investi-
gators using FSIA could have possibly used different coding
procedures. This could result in different findings,
making comparison difficult. Bales' coding instructions
seem more clear and detailed than Flanders' coding instruc-
tions. Unlike Flanders, Bales has also adjusted category
norms based on his system as a result of revisions in his
coding procedures. However, different findings could result
depending on whether researchers using IPA code from written
transcripts and tape recordings, from tape recordings, or in
a live situation. IPA was designed to be used in a live
situation. If the coding is done in this manner, it is
likely that findings from different investigators can be
reliably compared. If the coding is not done in a live
situation, the mode of coding should be reported in order
to facilitate inter-investigation comparisons.

Each system identifies the process of interaction
from an affective frame of reference. If the content of the

interaction is to be analyzed or if the cognitive aspects
of the interaction are to be analyzed, then neither system
would be a suitable tool. If it is the process of inter-
action from an affective frame of reference that is to be
analyzed, then FSIA and IPA are suitable tools for inter-
action analysis.

The two instruments were designed for different
purposes. These purposes should be considered if a decision
is to be made concerning the use of one or the other of the
instruments. FSIA reliably identifies a teacher's verbal
behavior and enables valid implications to be drawn concern-
ing the classroom social-emotional climate. This is the
purpose of FSIA. It does not identify individual student
behavior. IPA reliably identifies the verbal and nonverbal
behavior of every member of a small group and enables valid
implications to be drawn concerning the role structure of
the group and the phases that a group passes through. This
is the purpose of IPA.

Results of the comparison of FSIA and IPA data
obtained from the small group instructional setting were
encouraging.

The conceptualization of instruction made possible
by FSIA in standard classroom settings was found to apply
equally well in a small group instructional setting. Even
though much information was lost due to the large percentage
of interaction coded as "student initiated ideas", enough
information was available from the coding of teacher verbal

behavior to enable a conceptualization of the observed small
group instructional process. Flanders' ten category instru-
ment enabled an identification of variable teacher behavior
and enabled the investigator to compare the instructor's
performance with pre-determined criteria.

It would appear as a result of this investigation
that IPA could be a valuable tool for the analysis of class-
room behavior. IPA provided a more varied and detailed
description of the small group instructional process than
did FSIA. Student behavior coded as "student response"
or "student initiated idea" by Flanders' system could be
subdivided into twelve categories by Bales' system.
Furthermore, the behavior of each student could be analyzed.
Behavior coded as "silence or confusion" by Flanders' system
could be more accurately described by Bales' system due to
the coding of nonverbal behavior and to the scoring of
who-to-whom. The use of IPA enabled the explicit identifi-
cation of the classroom social-emotional climate; the use
of FSIA did not.

Teacher behavior coded as "lecturing" by Flanders'
system was subdivided into "giving suggestions," "giving
opinions," "giving information," or "dramatizing" by Bales'
system. This subdivision enabled a more accurate descrip-
tion of the teacher's behavior. Teacher behavior coded as
"questioning" by Flanders' system was subdivided by Bales'
system into "asking for suggestions, opinions, or informa-
tion." This too enabled a more clear description of teacher

behavior.

Most of the verbal behavior in the groups observed was student verbal behavior. The coding of nonverbal behavior of individuals enabled a constant identification of the teacher's reactions as well as the identifications of the reactions of the other students. The nonverbal behavior of the teacher did not always correspond with his verbal behavior. This aspect of IPA would therefore seem of value when attempting to analyze instructional behavior.

The use of IPA did enable a conceptualization of the observed small group instructional setting. Bales' concept of social-psychological directions and his concept of phase movements were not as valuable in the conceptualization as were the use of the categories themselves and the scoring of who-to-whom to describe the interaction. Of particular value was the comparison of the number and type of acts addressed to the group by the instructor with the number and type of acts he addressed to individuals. Perhaps in a leaderless group, the concept of group phase movements or the concept of social-psychological directions might prove of value to instructional theory.

Bales' twelve category instrument enabled an identification of variable classroom behavior from three frames of reference. They were (1) group behavior, (2) individual behavior, and (3) interaction between the instructor and each student. It also enabled the investigator to compare the instructor's performance with pre-determined criteria.

Even though IPA provided a more varied and detailed
description of the small group instructional process than
did FSIA, this does not necessarily mean that IPA should be
used instead of FSIA to analyze small group instruction.
IPA is a much more difficult category system to master than
FSIA. If one wishes to identify the verbal and nonverbal
interaction between an instructor and individual students
or if one wishes to identify between-student interaction
specifically, then IPA should be utilized. If one wishes
to identify problem solving phases or group role structure,
then IPA again should be utilized.

The IPA coding of nonverbal teacher behavior, the
scoring of who-to-whom, or the more detailed identification
of interaction coded as "questioning" or "lecturing" did
not conflict with the FSIA identification of teacher beha-
vior. As well, the explicit identification of the social-
emotional climate enabled by IPA served to verify the
nature of the social-emotional climate that would be
hypothesized as a result of coding by FSIA. It would appear,
therefore, that FSIA would be the more practical category
system to utilize if an investigator wished to study teacher
behavior and its effect on the social-emotional climate of
small groups.

SUGGESTIONS FOR FURTHER RESEARCH

The present study has answered several questions
but it has also revealed several areas which need further

research. A few of them are presented in the following paragraphs.

The writer is not aware of any research reporting inter-investigation reliability coefficients for any observation instrument. There is, therefore, a definite need for teams of researchers using the same observation instrument to obtain inter-investigation reliability coefficients. In this manner, the question--How consistent are findings from different investigations?--could be answered.

Neither FSIA nor IPA is classified as a cognitive or a content interaction analysis system. How much more information, if any, concerning instructional behavior would be obtained by the use of an instrument that analyzes cognitive or content aspects of interaction? A study comparing a cognitive or content instrument to Flanders' or Bales' instrument might provide valuable information concerning the instructional process.

Flanders' basic ten category instrument was assessed in this study. The ten categories were found to be valid and reliable indicators of classroom verbal behavior. Yet, much information was lost when FSIA was used to observe small group instruction. There are expanded versions of Flanders' basic system. A study should ascertain if these expanded versions of FSIA are also valid and reliable and if they would provide more meaningful information than does the present ten category system.

Bales' system was found to be a helpful instrument for the analysis of small group instruction. The small group instruction occurred in an experimental setting, however. As well, the students were university undergraduates. To the writer's knowledge, this is the first study which has used Bales' system to analyze the process of instruction. Therefore, replication is needed. A field study would now be valuable. IPA should be used to analyze small group instruction in a school setting with secondary or elementary school students.

The interaction of small classroom groups of students with no teacher as a member should be identified by IPA. Perhaps the role structure that would evolve in the absence of a teacher and the interaction phases that would occur might be of greater significance than in the present study.

Little research has been done relating observed classroom behavior with outcome measures. This investigation was unable to compare observed behavior with outcome measures, but this type of comparison should be undertaken. A study which used FSIA or IPA to analyze the instruction of several teachers and then compared their observed behavior to outcome measures of attitude and achievement would provide further needed information concerning the usefulness of FSIA or IPA in the field of instruction.

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APPENDICES

APPENDIX A

SOCRATES' TEACHING OF THE SLAVE BOY,
AS ANALYZED WITH THE AID OF
FSIA AND IPA

> Meno to Socrates . . . But what do you mean when you say that we don't learn anything, but that what we call learning is recollection?

Socrates then teaches the slave boy.

> Socrates. What do you think, Meno? Has he answered with any opinions that were not his own?

> Meno. No, they were all his.

> Socrates. Yet he did not know, as we agreed a few minutes ago.

> Meno. True.

SELECTED VARIABLES USED TO INTERPRET FSIA DATA

Dialectical self-examination is considered to be characteristic of Socratic teaching (Broudy, 1963). In this episode, the per cent of teacher talk was 64.1; the per cent of student talk was 32.7. These percentages illustrate that the student was given relatively little chance to participate in the logical argumentation.

Teacher response ratio (TRR). The TRR was 16.7. This ratio is an index which corresponds to the teacher's tendency to react to the ideas and feelings of the pupils (1+2+3x100/1+2+3+6+7). The norm for this ratio is about 42. Socrates has responded very little to his pupil's talk.

Teacher question ratio (TQR). The TQR was 58.0. This ratio is an index representing the teacher's tendency to use questions when guiding the more content-oriented part

of the class discussion (4x100/4+5). The norm for this ratio is about 26.0. According to this norm, Socrates has used an excessive amount of questioning.

Pupil initiation ratio (PIR). The PIR was 5.9. This ratio indicates what proportion of pupil talk was considered an act of initiation by the pupil (9x100/8+9). The norm for this ratio is about 34.0. The slave boy has initiated very few student ideas.

Instantaneous teacher response ratio (TRR89). The TRR89 was 40.0. This ratio indicates the tendency of the teacher to praise or to integrate pupil ideas and feelings into the discussion at the moment when the pupil stops talking. [cells (8-1)+(8-2)+(8-3)+(9-1)+(9-2)+(9-3) x100/cells (8-1)+(8-2)+(8-3)+(8-6)+(8-7)+(9-1)+(9-2)+(9-3) +(9-6)+(9-7)] The norm for this ratio is about 60.0. Socrates therefore has shown a reluctance to praise or to integrate pupil ideas and feelings into the discussion.

Instantaneous teacher question ratio (TQR89). The TQR89 was 58.0. This ratio indicates the tendency of the teacher to respond to pupil talk with questions based on his own ideas, compared to his tendency to lecture [cells (8-4)+(9-4)x100/cells (8-4)+(8-5)+(9-4) +(9-5)] The norm for this ratio is about 44.0. We again see Socrates' high use of questioning as a teaching technique.

<u>Steady state ratio (SSR) and pupil steady state</u>

<u>ratio(PSSR)</u>. The interaction was very rapid as is indicated by the SSR and the PSSR. A steady state cell indicates talk in the same category for more than three seconds. The SSR was 13.5 (norm about 50.0) and the PSSR was 0.0 (norm about 35.0 to 40.0). This extremely low PSSR would indicate that the slave boy had little chance to verbalize his own thoughts.

SELECTED VARIABLES USED TO INTERPRET IPA DATA

Group Indices

The higher the index, the greater the problem. The indices themselves mean little unless used comparatively. The indices are provided for purpose of illustration.

Index	Categories	Slave Boy Episode
Difficulty of Information	$\dfrac{7}{7+6}$	.37
Expressive-Malintegrative Behavior	$\dfrac{10+11+12}{10+11+12+1+2+3}$	.19
Difficulty of Evaluation and Inference	$\dfrac{8}{8+5}$	.51
Difficulty of Control over Situation	$\dfrac{9}{9+4}$	0
Directiveness of Control	$\dfrac{4}{4+6} + \dfrac{5}{5+6} \div 2$	.45

Individual Indices

These indices provide an indication of the role structure of a group. In this study, the group consists of only two persons. Thus, the indices are again provided for purpose of illustration.

Index	Slave Boy	Socrates
CR (Of all acts in section C received by all individuals, what proportion did individual "i" receive?)	100	0
BR (To what extent were the questions of individual "i" answered as compared with others in the group?)	79.5	8.6
ADR (To what extent were the attempts of individual "i" answered positively instead of negatively as compared with others in the group?)	12	75.2
GS (How does the status of individual "i" compare with that of other members of the group?)	65	28

The low group indices indicate that few problems occurred during Socrates' lesson. The CR and GS indices illustrate Socrates' theory of teaching. The CR index is an indication that a given individual is regarded by others as having command of the resources needed in discussion. This is exactly Socrates' theory of teaching--the individual already possesses the needed knowledge, his memory merely needs prodding. It is the slave boy's high CR index (100) that accounts for his high GS index (65). The BR and

the ADR indices provide us with an enlightening view of Socrates as a teacher. He responded to his pupil in a very negative manner (ADR index--75.2). Socrates' questions were not answered (BR index--8.6).

COMPARISON OF FSIA AND IPA ANALYSES

Analysis by FSIA reveals a narrow question-student response (4-8) pattern. Table 29 reveals that Socrates is prone to lecture (23.7%) and to give directions (6.4%). Socrates would be described as a "direct" teacher, that is, a teacher who restricts a student's freedom of action. There is almost no student-initiated talk (1.0%).

Analysis by IPA places Socrates in the Upward-Forward (UF) social-psychological direction (SPD). An UF person takes the initiative in giving suggestions, seems ascendant, seems value- and task-oriented, but at the same time strictly impersonal (Bales, 1970, p.213). The similarity between "UF" and "direct" is striking. According to IPA, as shown in Table 30, Socrates initiated 72% of all acts and the slave boy initiated only 28% of all acts. Again, this is strikingly close to the FSIA assessment. Socrates spoke 64% of the time and the slave boy,only 33% of the time.

The greatest proportion of interaction in the Flanders matrix presented in Table 29 is found in the 4-8 cell (40 of 156). The greatest proportion of interaction

Table 29

FSIA Percentage Matrix for the Slave Boy Episode

Category	1	2	3	4	5	6	7	8	9	10
1	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0
2	00.0	00.0	00.0	00.0	00.0	00.6	00.6	00.0	00.0	00.0
3	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0
4	00.0	00.0	00.0	2.6	2.6	1.3	00.0	25.6	00.6	00.0
5	00.0	00.0	00.0	11.5	8.3	00.6	00.0	2.6	00.0	00.6
6	00.0	00.0	00.0	1.9	00.6	1.3	00.0	1.9	00.6	00.0
7	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0	00.0
8	00.0	1.3	00.0	16.0	10.3	1.9	00.0	00.0	00.6	00.6
9	00.0	00.0	00.0	00.0	1.3	00.0	00.0	00.0	00.0	00.6
10	00.0	00.0	00.0	00.6	00.0	00.6	00.0	00.6	00.0	1.3
Total	00.0	1.3	00.0	32.7	23.7	6.4	00.0	30.8	1.9	3.2

Table 30

IPA Acts Initiated by Socrates and Slave Boy

Section	Category	Socrates to Slave Boy	Slave Boy to Socrates	Total
A	1	3	3	6
	2	0	0	0
	3	0	27	27
B	4	59	0	59
	5	0	7	7
	6	15	12	27
C	7	16	0	16
	8	9	0	9
	9	0	0	0
D	10	0	0	0
	11	0	4	4
	12	2	2	4
	Total SPD	104 (72%) UF	55 (28%) AVE	199

in the Bales matrix presented in Table 31 is found in the 4-3 cell (29 of 218). This would indicate that a great deal of the question-answer FSIA pattern could be interpreted as teacher suggestion-student agreement, by the use of IPA. The Bales and Flanders tables and matrices can be further compared, as desired.

Analysis by either instrument reveals that Socrates was very likely incorrect when he informed Meno that the slave boy had expressed his own opinions. The slave boy said little. When he did speak, he usually agreed with a suggestion of Socrates. The slave boy did not use his own ideas. It was unlikely that Socrates achieved his goal as the slave boy did not answer with his own opinions. Socrates' teaching appears to have been unsuccessful when it is analyzed by either FSIA or IPA.

Table 31

Frequency with which Each IPA Act Follows Each Act (Acts
Initiated and Received by Meno Included)

Section	Prior Act	A			B				C			D		Total
		1	2	3	4	5	6	7	8	9	10	11	12	
A	1	1	0	0	4	0	0	0	3	0	0	0	1	9
	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	3	3	0	0	19	1	1	6	3	0	0	0	0	33
B	4	2	0	29	21	6	8	2	6	0	0	1	2	77
	5	0	0	2	11	7	2	2	0	0	0	0	0	24
	6	1	0	2	12	3	7	6	2	0	0	0	0	33
C	7	0	0	0	4	0	11	0	0	0	0	0	1	16
	8	1	0	1	1	7	3	0	4	0	0	1	0	18
	9	0	0	0	0	0	0	0	0	0	0	0	0	0
D	10	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	1	0	1	0	0	0	0	2	0	4
	12	1	0	0	3	0	0	0	0	0	0	0	0	4
	Total	9	0	33	77	24	33	16	18	0	0	4	4	218

APPENDIX B

SUMMARY OF THE EXPERIMENT FROM WHICH

THIS INVESTIGATION ARISES

The research design illustrated in Figure 23 was under the supervision of Dr. J. McLeish. The major part of the study in learning outcomes was the concern of J. Park, while the major part of the study on small group processes was the concern of W. Matheson. The subjects were undergraduates in Educational Psychology 421, and this experiment served as their course in personal and social dynamics.

Treatment 1 (N=20)

Self-Analytic Training
(Based on the Tavistock model)

Trainer A   Trainer A
N=10   N=10

Treatment 2 (N=20)

Direct Communication
Training
(Based on the Carkhuff model)

Trainer B   Trainer B
N=10   N=10

- - - - - - - - - - - - - - - One-way mirror - - - - - - - - - - - - - -

10   10   10   10
Observers   Observers   Observers   Observers

5   5   5   5   5   5   5   5
Bales No   Bales No   Bales No   Bales No
       Bales   Bales   Bales   Bales
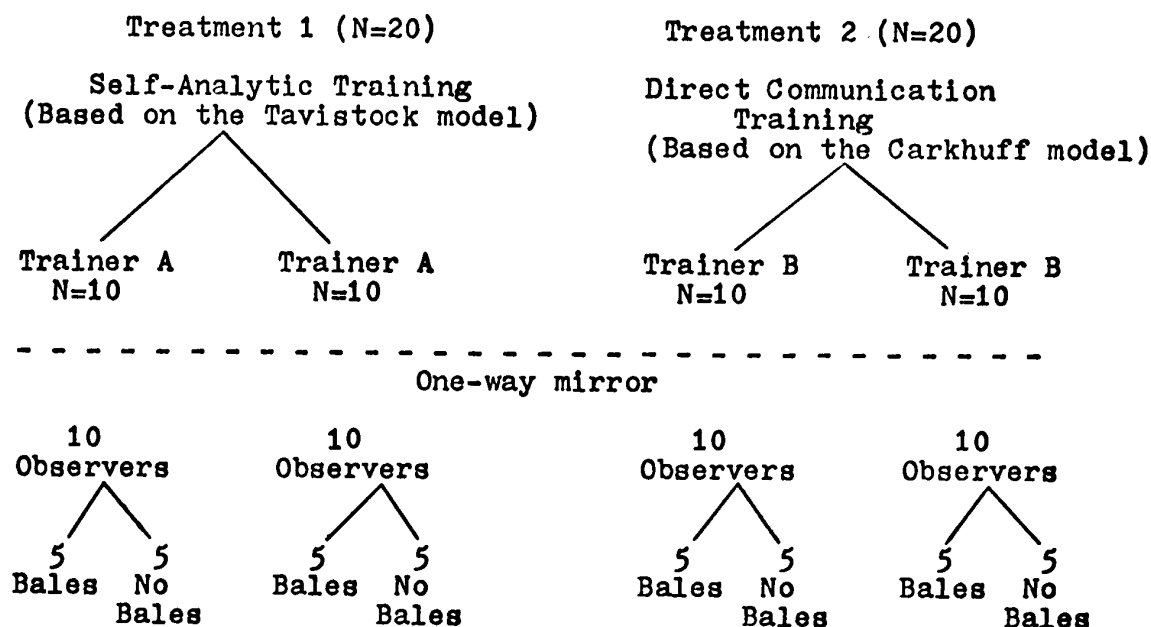
Figure 23

Model of the Major Experimental Design

The Self-Analytic Training involved the trainer who employed a role which has been used extensively for training and psychotherapy purposes at the Tavistock Institute of

Human Relations in England. The trainer's function was to interpret, in a neutral manner, what he perceived of the group process with emphasis on "latent" content. He was not to respond to questions from group members, or otherwise participate as a group member. He was to act in an impersonal manner; interpreting was his defined function. The rationale underlying the use of this role has its roots in psychoanalytic theory and practice.

In contrast to the Self-Analytic Training, the Direct Communication Training involved the trainer in a much more direct role in the instructional setting. He was to participate as an active member of the group. He was expected to act in a personal manner.

The major intended learning outcome of the Self-Analytic Training was the demonstration of an understanding of group processes. The demonstration of interpersonal skills of communication, empathy in particular, was the major intended learning outcome of the Direct Communication Training.

Park examined three major questions. They were:
(1) Are there any differences in behavioral and personality measures (e.g. self-disclosure, empathic accuracy, perceptual accuracy) between group participants who are given either indirect training (such as training based on the Tavistock model) or direct training (such as training in various communication skills based on the Carkhuff model)?

(2) What, if any, effect does observation of either a
Self-Analytic or Direct Communication Training group have
on observers? (3) Would observers trained by means of a
systematic method of observing behavior (IPA) be more
"sensitive" to various cues than observers who have not
received systematic training in observation?

Matheson compared the phase movements and role
developments in the two different instructional settings.
In order to make this comparison, he made use of Bales'
System of Interaction Process Analysis. Also, Matheson
assessed Bales' concept of social-psychological directions.
To aid in this assessment, Bales' Interpersonal Rating
Form was administered to the group participants and to
the group observers.

APPENDIX C

DESCRIPTION OF THE DIRECT COMMUNICATION TRAINING

The intended learning outcome of the Direct
Communication Training was the improvement of interpersonal
skills of direct communication. It was intended that
students particularly gain experience in the demonstration
of empathic communication. It was intended also that the
interpersonal skills of respect, concreteness, genuineness,
confrontation, and immediacy be learned. Students were
expected to be able to demonstrate these skills and to
recognize these forms of communication in other people.

The course was based on a manual developed by
Eberlein and Park (1970). Techniques suggested in the
manual include role playing, paraphrasing exercises,
discussion about common problems,and various other communi-
cation skill exercises. It was intended that various
exercises suggested in the manual be employed.

In addition, several sessions involved didactic
and experiential training in the Carkhuff model of facili-
tative levels of communication. Emphasis was to be put on
discussion of the use of interpersonal skills in classroom
settings. Training in the Carkhuff model involves teaching
students to recognize the various levels of interaction in
communication, and encouraging them to express themselves
at a higher level.

Several scales for the assessment of interpersonal
communication have been developed by Carkhuff. The five

levels of one of the scales--empathic response--are described
by Carkhuff (1969, vol.2, pp.315-317) as follows:

(1) A level wherein verbal and behavioral expres-
sions of the first person do not attend to or detract signi-
ficantly from verbal and behavioral expressions of the
second person(s).

(2) A level wherein the first person responds to
the expressed feelings of the second person(s) but subtracts
noticeably from the affect of the second person(s) communi-
cations.

(3) A level wherein the expressions of the first
person in response to the expressed feelings of the second
person(s) are essentially interchangeable with those of the
second person(s) in that they express the same effect and
meaning.

(4) A level wherein the responses of the first
person add noticeably to the expressions of the second
person(s) in such a way as to express feelings a level
deeper than the second person(s) was able to express
himself.

(5) A level wherein the first person's responses
add significantly to the affect and meaning of the second
person(s) expressions which encourages deep self-explora-
tion by the second person(s).