To the Graduate Council:

I am submitting herewith a thesis written by Michael Lowell Crist entitled "Application of the PIT Model for Recording Teacher/Pupil Classroom Interaction in Two Schools for Adjudicated Youth." I recommend that it be accepted in partial fulfillment of the requirements for Specialist in Education, with a major in Educational Administration and Supervision.

C. M. Achilles

Charles M. Achilles, Major Professor

We have read this thesis
and recommend its acceptance:

Russell L. French

Lance M. Lewis

Accepted for the Council:

Hilton A. Smith

Vice Chancellor
Graduate Studies and Research

APPLICATION OF THE PIT MODEL FOR RECORDING TEACHER/PUPIL CLASSROOM INTERACTION IN TWO SCHOOLS FOR ADJUDICATED YOUTH

A Thesis

Presented for the

Specialist in Education

Degree

The University of Tennessee

Michael Lowell Crist

August 1975

1245660

ACKNOWLEDGEMENTS

The most gratifying aspect of this past year has been getting to know the persons in the College of Education at the University of Tennessee, Knoxville, particularly the Department of Educational Administration and Supervision.

Thanks to Dr. Francis M. Trusty for listening to me.

Thanks to Dr. Russell L. French for guiding me through this study.

Thanks to Dr. Charles M. Achilles (committee chairman) for a year's worth of encouragement.

The author also wishes to thank Dr. Harriet Crump for making the videotapes from her study available to him.

Finally, to his wife, Jane, who typed, proofread, and critiqued this study and who lived with him through its entirety, the author says . . . .

ABSTRACT

The study used the PIT model to measure classroom teacher/pupil interactions in two North Carolina schools for adjudicated youth. PIT is an acronym taken from the initial letters of the three basic categories of communication events in the model (i.e., personal, institutional, and task). Twelve hours of videotape recordings of teacher/pupil behavior were coded according to PIT in an effort to determine how teachers use their time in schools for delinquents. These tapes were originally made in 1973 as part of a comprehensive study of schools for adjudicated youth in North Carolina. A comparison was made between the data of this study and the data of a study done in Ohio in 1968 which used PIT to measure teacher/pupil behavior in public junior high schools.

The study found that teachers in the schools for delinquents engaged in the same number of institutional events as task events; it found that only a negligible portion of teacher/pupil communication events were personal events. Communication events in the schools for delinquents tended to be individual in nature, while those in the public junior highs tended to be group oriented. The study found that more communication events occurred per class period in the schools for delinquents than in the junior high schools. Lastly, it found a greater difference in the behaviors of teachers between the two school types than it found in the behaviors of groups of teachers (male and female) within the same type of school.

The study concluded that the schools for delinquents were "institutionally" oriented and this institutionalism mitigated against what might otherwise have been differential teacher behavior by male and female teachers. The sameness of behaviors between male and female teachers, between black and white teachers, and between academic and vocationally oriented teachers was attributed to the influence of role expectation on the behavior of all teachers.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Statement of the Problem	2
	Statement of the Purpose and Delimitations of the Study	3
	Limitations of the Study	5
	Definition of Terms	7
	Questions for Analysis	8
	Organization of the Study	12
II.	REVIEW OF RELATED LITERATURE	13
	Systems for Measuring Classroom Behavior	13
	Verbal and Nonverbal Communication	17
	Role Expectations and Teacher Behavior	19
	Juvenile Delinquency and Two Prior Studies	22
III.	PROCEDURES	28
	Subjects	29
	The PIT Model	31
	Interrater Reliability	35
	Treatment of the Data	40
IV.	PRESENTATION AND ANALYSIS OF DATA	41
V.	FINDINGS, CONCLUSIONS AND DISCUSSION, AND RECOMMENDATIONS	74
	Findings	74

CHAPTER PAGE

Conclusions and Discussion 77

Recommendations 82

BIBLIOGRAPHY 87

APPENDIX 89

VITA 107

LIST OF TABLES

TABLE PAGE

1. Demographic Data for the Teacher Population of the Study . . 30
2. Demographic Data for the Student Population of the Study . . 31
3. Number and Percentage of Communication Events in Each Category for All Subject Groups and Content Areas Combined (Crist Study) 43
4. Average Duration of Communication Events (in seconds) in Each Category for All Subject Groups and Content Areas Combined (Crist Study) 45
5. Number and Percentage of Communication Events in Each Category for All Subject Groups and Content Areas Combined (French Study) 46
6. Average Duration of Communication Events by Category (in seconds) for Each Subject Group (French Study) 48
7. Average Number of Communication Events for All Subject Groups and Content Areas Over a 40 Minute Span 50
8. Average Number of Communication Events for Each Subject Group Over a 40 Minute Span 51
9. Number and Percentage of Communication Events By Sex in Each Category for All Content Areas Combined (Crist Study) 53
10. Average Duration of Communication Events by Category (in seconds) for Each Subject Group (Crist Study) 54

TABLE PAGE

11. Number and Percentage of Communication Events By Sex in Each Category for All Content Areas Combined (French Study) 56

12. Number and Percentage of Communication Events By Race in Each Category for All Content Areas Combined (Crist Study) 59

13. Percentage of Communication Events in Academic and Vocationally Oriented Content Areas (Crist Study) 61

14. Average Duration of Communication Events in Academic and Vocationally Oriented Content Areas (Crist Study) . . . 62

15. Percentage of Communication Events in the Academic Content Areas in the Crist and French Studies 64

16. Average Duration of Communication Events in the Academic Content Areas in the Crist and French Studies 66

17. Summary of the Percentage of Communication Events for Each Subject Group (Crist and French) 70

18. Summary of the Duration of Communication Events for Each Subject Group (Crist and French) 72

19. Number and Percentage of Communication Events by Category in Each Subject Group (Crist Study) 90

20. Average Duration of Each Communication Category in Each Subject Group (Crist Study) 96

21. Average Duration of All Communication Events in Each Subject Group (Crist Study) 102

TABLE PAGE

22. Number and Percentage of Communication Events by Category and Content Area (Crist Study) 103

23. Duration of Communication Events by Category and Content Area (Crist Study) 104

24. Average Number of Communication Events for Each Subject Group Over a 40 Minute Span (Crist Study) 105

25. Average Number of Communication Events for the Two Content Areas Over a 40 Minute Span (Crist Study) 106

CHAPTER I

INTRODUCTION

In part, this study is a replication of a study done in 1968 at The Ohio State University by Russell L. French (8). This study utilizes the PIT model, developed by French, for observing classroom behavior, and consequently a major portion of this study is comprised of a comparison between its findings and those of the French study. PIT is an acronym derived from personal, institutional, and task (i.e., three of the four categories of communication events originally postulated by French). These three categories along with the fourth, mixed events, comprise the whole of classroom communication as conceived under the PIT model. PIT is sensitive to both verbal and nonverbal communication behaviors, and it requires the coder/observer to indicate the category and duration of each event by marking a tally every three seconds during a coding session. The PIT model was applied to this study's sample of teachers and classrooms in a manner similar to French's initial study. Alterations made in the model are appropriately noted and are seen as refinements in the system of coding. In no sense do these alterations represent conceptual changes, and in fact all terms and definitions connected with the PIT model have been preserved and presented intact in the current study. The fundamental difference, then, in the two studies relative to the PIT model was the selection of subjects studied. Whereas French studied the behavior of twelve teachers from urban junior high schools in Ohio, this study

examines the behavior of twenty-five teachers in two schools for adjudicated youth in North Carolina.

Additionally, this study generates interesting data in its own right. The unusual selection of subjects (i.e., teachers in schools for adjudicated youth) provokes stimulating and varied explanations of the data. Moreover since male and female, black and white, and academic and vocationally oriented teachers are studied, the potential for a broad range of explanations regarding behavioral (i.e., communicative) differences resides in the study.

Statement of the Problem

The ability to analyze classroom behavior is rudimentary at best. The multifarious interchanges which can and do occur between teacher(s) and students are complex both in their numbers and most assuredly in their substance. Complexity withstanding, however, it is through observation, analysis, and application that "good" teaching becomes an explicit endeavor. Currently, teaching resides more in the realm of art than science, and as such its best aspects are not easily transferred from expert to novice.

Historically, teaching has taken place behind closed doors. Teachers have taken a rather territorial view of "their" classrooms and an equally possessive hold of their students. "Outsiders" have been viewed as interlopers in the fullest sense by teachers who view intrusions as intrusiveness and objective observers as subjective evaluators. Teachers may be the "experts," but they are too often

unaware of their own classroom behavior as well as that of their students; classroom atmosphere is viewed as a reflection of student behavior rather than being (at least partially) attributable to the teacher and thus manageable; and a teaching method is frequently subjective trial and error rather than theoretical application capable of being tested for effectiveness. Indeed, untested premises surrounding teaching/learning abound, and the only certain way to discredit them lies in a rationalistic approach to classroom observation. The problem, then, to which this study addresses itself is the furtherance of the ability to observe and analyze classroom activity.

Statement of the Purpose and Delimitations of the Study

The essence of a classroom is the communication that goes on within it. This study is an attempt to quantify classroom behavior by measuring the numbers, durations, and kinds of communication events. Communication events are comprised of the behaviors of the teacher and students. Behaviors are explicit entities, both verbal and nonverbal. This report utilizes the PIT model for coding classroom communication. Though this study is basically a replication of the French study, it is not a replication in the sense of its being an effort to test those findings. Rather, it is a reapplication of the PIT model to another setting and another group of subjects in an effort to see if teacher behavior differs in schools for adjudicated youth when compared to teacher behavior in public junior high schools.

Specifically, the subjects of this study are twenty-five teachers in two schools for adjudicated youth in North Carolina. Among other things, the teachers are differentiated according to sex and race with respect to the data collected. However, no data were collected which differentiated between the students' sex and race. This is a descriptive study designed to summarize the quantity of communication events in a classroom. The results can be generalized to the extent that the reader sees a commonality between his teaching endeavors and the setting of this report.

This study is not concerned with the quality or the effects of single communication events. (Though there is to be speculation about the ramifications of certain categories of events.) The study attempts to discover how teachers spend their classroom time. We feel that any attempt to make teaching skills more explicit should begin with an explication of what goes on in classrooms in terms of the expenditure of time. The study is not primarily concerned with the mode of the message (though we acknowledge that communication occurs both verbally and nonverbally and the PIT model is sensitive to both) but with the recognition that a communication event has occurred and with classifying it in a particular category. Finally, this study is not interested in analyzing the substance of communication in order to improve it, but in categorizing it in an effort to describe in broad terms how teachers use their time in the classroom.

Limitations of the Study

Tests are reactive measures. That is, their use may change the event which is being measured (17:235). The use of videotape to record classroom activity may have had a noticeable effect on the behavior of teachers and students alike. Since no attempt was made to conceal the taping apparatus, it is reasonable to assume that it may have had a disruptive effect on what would have been normal behavior. In an effort to reduce this effect, the researchers met with the faculty of each of the two North Carolina schools to explain the taping procedures and the purpose of the study (6:48). The teachers were assured that neither they nor their students would be identified by name. At the beginning of the initial visit to each teacher's classroom, a short segment of videotape was recorded to let the teacher and students view themselves "on camera." The actual tapings were made during the middle of the class period after roll had been taken and the students had settled into their work routines. Neither the teacher nor the students knew when the video recorder was turned on or when it was not. Despite these efforts some teachers and students were obviously made self-conscious by the camera. A more subtle result of the apparatus' being present was what may have been a reduction of clerical or "desk" activity by the teacher. The observer perceived a negligible amount of activity by the teacher in which he was <u>not</u> interacting with students. Perhaps the presence of researchers and their equipment literally and figuratively "kept the teachers on

their toes"; the result may have been to cause more teacher/pupil interaction than would have normally been the case.

The quality of the tape recordings was a limiting factor of the study. Since the observer coded nonverbal as well as verbal event behaviors, the ability to see slight and rapidly occurring facial and body expressions was of prime importance. Undoubtedly, some behaviors were not recorded because of the resolution limits of the equipment employed. Another fundamental aspect of nonverbal communication is spatial positioning. In order to record this spatial component with accuracy, a second, wide-angle camera simultaneously recording the behaviors should have been utilized. That nonverbal behaviors were not recorded with extreme precision was a limitation of the study and as Galloway remarked, "Accuracy and fidelity in the observation of nonverbal information is the historic problem which has confronted researchers in all fields of behavioral analysis" (12:313). Lastly, the audio portion of the tapes was sometimes difficult to hear, and this may have had its effect on the reliability with which verbal event behaviors were coded.

The most apparent limitation of this study has to do with whether its conclusions can be generalized to other settings; this question must of course be reexamined each time the results are applied elsewhere. However, it would be curious to suggest that twenty-five teachers in two schools for adjudicated youth are representative of the "typical" public junior high school teacher.

Definition of Terms*

Behavior. Behavior in this study refers to observable, overt actions, expressions, and statements of pupils and teachers.

Communication. Communication in this study refers to the sending and receiving of verbal and nonverbal messages. This process has four minimum requirements: a sender, a channel (verbal or nonverbal behavior), a message (content), and a receiver.

Communication Event. Communication event in this study refers to a sequence of pupil/teacher communicative behaviors set off from preceding and succeeding events (sequences of behaviors) by naturally occurring boundaries. Galloway (11) defines these boundaries as 1) a variation or change in the direction of a teacher's communicative behavior; 2) a change in the teacher's behavior toward a new interaction; 3) the occurrence of a significant or potent act which appears influential; and 4) social intervention in which an interruption is instigated by either a pupil or the teacher. Events may be composed of either verbal or nonverbal behaviors or a combination of both. They may be of relatively long or short duration (author).

Institutional Event. Institutional event in this study refers to communication events which focus on managing the classroom and/or meeting the expectations of the educational institution.

Mixed Event. Mixed event in this study refers to a communication

---

*Unless noted otherwise, definitions were taken from French, pp. 10-11.

event containing elements of any two or more other types of communication event (i.e., personal, institutional, or task).

Nonverbal Behavior. Nonverbal behavior in this study refers to overt actions, gestures, postures, positions, and facial expressions by either teachers or pupils. The term also includes intonation, volume, and character of vocal expression as opposed to content of verbal message.

Personal Event. Personal event in this study refers to a communication event in which the personal needs, goals, and emotions of pupils and/or of the teacher are the central focus.

PIT Model. PIT model in this study refers to the conceptual model of classroom interactions as Personal, Institutional, Task, and mixed events.

Task Event. Task event in this study refers to a communication event which focuses on the teaching and learning of subject content whether cognitive, affective, or skill oriented.

Verbal Behavior. Verbal behavior in this study refers to the overt statements of pupils and teachers.

Questions for Analysis

Of the following twenty-two questions, the first thirteen are confined to this study alone. The final nine questions require comparisons between this study and the French study. The manner of stating the questions does not imply value; they exist simply to guide the study. The results of this study pertain to groups of

teachers, not individual teachers. The data have been tabulated with respect to the 1) number and percentage of group and individual personal, institutional, task, and mixed events and with respect to the 2) duration of each of these categories of events. Additionally, these overall totals are split along the variables of teacher sex, teacher race, and class content area (i.e., academic or vocationally oriented). In its broadest terms the comparison between this study and the French study queries, "Is there a basic systematic difference between teacher behavior in schools for adjudicated youth and public schools?" The comparisons are made with respect to the different categories of communication events and with respect to teacher sex. Since French dealt with white teachers only, comparisons between this study and the French study on the basis of teacher race cannot be made. Lastly, a comparison is made between the French study and the data of this study derived solely from academic areas. Since French dealt only with academic areas, no interstudy comparison of data with regard to vocational classes was possible.

Crist Study

1. Do teachers (all groups combined) engage in more individual events than group events?

2. Do teachers (all groups combined) engage in more task, institutional, or personal events?

3. Is the duration of communication events of teachers (all groups combined) longer for task, institutional, or personal events?

4. Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their task events?

5. Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their institutional events?

6. Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their personal events?

7. Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their task events?

8. Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their institutional events?

9. Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their personal events?

10. Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their task events?

11. Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their institutional events?

12. Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their personal events?

13. What is the relationship of mixed events in terms of 1) number and percentage and 2) duration to all other categories of events?

Crist Study Compared to French Study

14. Do teachers engage in more events per class period in the French study than in the Crist study, and are the average durations

of these events shorter in the French study than the Crist study?

15. Do teachers (all groups combined) in the French study engage in more individual events than group events?

16. Do teachers (all groups combined) in the French study differ from teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

17. Do male teachers in the French study differ from male teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

18. Do female teachers in the French study differ from female teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

19. Do academic teachers in the French study differ from academic teachers in the Crist study in the 1) number and percentage and 2) duration of their task, institutional, and personal events?

20. Do teachers (both male and female) engage in more task and institutional events per class period in the French study than in the Crist study?

21. What is the relationship of mixed events in the French study to the mixed events in the Crist study in terms of their 1) number and percentage and 2) duration?

22. Is there a basic difference between the classroom behavior of public junior high school teachers in the French study and teachers in schools for adjudicated youth in the Crist study?

Organization of the Study

Chapter I of this study consists of a brief introduction to the study, a statement of the problem, and the statement of the purpose and delimitations of the study. It also contains a discussion of the limitations of the study, definition of terms, questions for analysis, and this delineation of the study's parts.

Chapter II contains a review of related literature. The review consists of a discussion of various systems for measuring classroom behavior, a discussion of verbal and nonverbal communication, comments regarding role expectations and teacher behavior, and conclusions from two prior studies of teachers in schools for adjudicated youth.

Chapter III describes the procedures used in conducting this study. It details the subjects of the study, the PIT model for measuring classroom teacher/pupil interaction, the process whereby interrater reliability was established, and methods for treatment of the data.

Chapter IV presents the data analysis. It consists of answers to the questions for analysis which are posed in Chapter I.

Chapter V contains a summary of the findings listed in Chapter IV and a listing of conclusions derived from these findings. The chapter also contains a discussion of the conclusions and recommendations for additional research.

CHAPTER II

REVIEW OF RELATED LITERATURE

Though of comparatively recent origin, techniques for measuring teacher/pupil interaction are becoming rather sophisticated. One of the reasons for this is the recognition of the need to measure nonverbal interaction as well as verbal. Through their use, increasingly plausible and better tested explanations for teachers and pupils behaving as they do are being offered. Techniques for understanding (and thus improving) classroom activity are especially needed in educational endeavors which have not to this point received much attention. For example, if we are in actuality going to rehabilitate deviant youth, we need to employ the most enlightened teaching practices. Before we can say what ought to take place in these classrooms, however, we need to know what is taking place.

Systems for Measuring Classroom Behavior

"Observational techniques" or methods for measuring teacher/pupil interaction should not require the observer to rate or assess the value of the classroom communication. Observational techniques consist of "identifying a limited range of behavior relevant to the purpose of the study and of constructing categories or items to be used by the observer." The observer, then, makes a qualitative judgement as to which categories the various observed behaviors belong. He plays no role (while recording) in the assessment of behavior (21:251-252).

The earliest observational systems were generated by teacher supervisors immediately prior to World War I. Medley and Mitzel report that Horn in 1914 and Puckett in 1928 devised systems for measuring student participation. Wrightstone in 1934 developed a more sophisticated system comprising nine categories designed to denote teacher actions and reactions (i.e., "stimulations" and "responses") toward the students (21:254-255).

Two broad classifications into which many types of observational techniques fall are 1) systems for measuring effective teacher behavior and 2) systems for measuring classroom climate. Within the first group Medley and Mitzel list Barr in 1929, Jayne in 1945 and Morsh in 1956 (21:258-263). The second classification, climate, has probably received more attention from researchers attempting to measure classroom behavior than any other class of technique. Withall in 1949 conceived of classroom behavior as a continuum of activity from "learner-centeredness" to "teacher-centeredness." This continuum consisted of seven categories of behaviors, 1, 2, and 3 being learner-centered and 5, 6, and 7 teacher-centered. Manipulation of the data yielded what Withall termed the "Climate Index" (21:267). Mitzel and Medley in 1958 used The Observation Schedule and Record technique (OScAR) to "cast further light" on the reliability and validity of the Withall Climate Index. This study was significant in that it measured teachers' nonverbal behaviors as well as verbal. It found that the nonverbal behaviors of teachers could be classified into two general categories (i.e., "hostile" or "supportive") with more reliability than the verbal

statements (21:268-269).

Flanders "has developed the most sophisticated technique for observing climate thus far . . . " (21:271). Flanders first conceptualized his system of classroom observation while in New Zealand in the 1950's. Today, the Flanders System of Interaction Analysis has become a standard for other methods of classroom analysis. The Flanders System (2:6-13) dichotomizes all classroom talk ("talk" means verbal behavior only, "primarily because it can be observed with higher reliability than can nonverbal behavior") into either teacher talk or student talk. Teacher talk can be either direct or indirect. If the teacher is directive in his classroom communication, he restricts or minimizes the student's freedom to respond. On the other hand, indirect teacher talk maximizes the student's response freedoms. This indirect influence, as it is called, is divided into four categories: 1) accepts feeling, 2) praises or encourages, 3) accepts or uses ideas of students, and 4) asks questions. Direct influence is comprised of 5) lecturing, 6) giving directions, and 7) criticizing or justifying authority. Student talk consists of 8) responding to teacher and 9) initiating talk. For coding purposes, all categories are mutually exclusive. A final category, 10) silence or confusion, includes all classroom activity which cannot be included in one of the other categories.

Another system for observing and analyzing teacher/pupil contacts has been implemented by Bellack, et al. (3:3-6). In its broadest terms, the system identifies two general aspects of classroom

communication--its function and its content. The four major functions of classroom discourse, called "pedagogical moves," are structuring, soliciting, responding, and reacting. Recurring patterns of these "moves" are termed "teaching cycles." In order to analyze the content of messages, four different types of meanings have been identified: 1) "substantive" meanings (the specific subject matter and concepts of the class), 2) "substantive-logical" meanings (the necessary cognitive processes associated with the subject matter such as defining, interpreting, explaining, and fact-stating), 3) "instructional" meanings (class assignments, procedures, and requisite materials), and 4) "instructional-logical" meanings (didactic processes such as the process of explaining procedures and giving directions).

As has been indicated, the Flanders and Bellack systems are sensitive only to the verbal aspect of teacher/pupil interaction. Indeed, in the Flanders system, "the assumption is made that the verbal behavior of an individual is an adequate sample of his total behavior" (2:6). Galloway disagrees with assumptions of necessary congruence between the verbal and nonverbal. He suggests that twenty-five years ago educators understood little of the influence of verbalization on learning. "It was assumed, however, that the quantities of talk between teachers and students offered basic variables for research. Nonverbal behaviors, if they were thought of at all, were assumed to be consistent with verbal behaviors . . . " (12:310). The author feels that efforts to encapsulate classroom activity must include nonverbal behavior as well as verbal. The French study used a modified

version of the Flanders System of Interaction Analysis to simultaneously record verbal and nonverbal classroom activity (8:42-48). Called the IDER System and developed by French and Galloway (9), the system utilizes Flanders' ten verbal event categories. Numbers corresponding to the ten categories are recorded at three second intervals. If the nonverbal behavior which accompanies each of the verbal behaviors is encouraging, the numerical designation for the event has a slash (/) placed beside it. If the nonverbal behavior is restricting, the number designating the type of verbal behavior has a dash (-) placed beside it. The name of the system is an acronym, borrowing from Flanders' Indirect and Direct terminology and French and Galloway's Encouraging and Restricting terms. The IDER System uses Flanders' ten-by-ten matrix with the additional nonverbal information superimposed.

Observation systems must have some means of summarizing classroom activity so it can be measured and so patterns and trends can be recognized. It would make no sense to try to study behaviors without also trying to classify these behaviors into comprehensive categories. In the case of the PIT model, this comprehensive category is a communication event which can be either personal, institutional, task, or mixed in nature.

Verbal and Nonverbal Communication

Hennings (15:3-5) lists four components of communication: 1) verbal (the actual words spoken), 2) vocal (the manner in which the words are spoken), 3) physical expressions of the body, and 4) situational or environmental. The vocal component is comprised

of such factors as rate, tone, pitch, and inflections. The situational aspect relates to "the appearance of a speaker and to the setting a speaker designs for interaction . . . . It tells something about how that person views the situation and his role in the situation." Other factors in the situational aspect of communication are color, lighting, materials, and technological devices (15:29). Thus virtually everything about ourselves and our environment "speaks" to those capable of hearing. The spoken word is but a portion of our communicative behavior. Knapp (18:247) has observed the following regarding verbal and nonverbal behavior:

> [They are not] discrete categories; they work together. Nonverbal cues may reinforce, contradict, complement, substitute for, accent, or help to regulate the flow of verbal communication. A grossly distorted analysis of the total process of communication would result if one neglected either of the two major systems.

Presumably, too, grossly distorted communication (and poor teaching) takes place when the nonverbal component is either unrecognized or consciously denied. Galloway (12:310) has observed that . . .

> Educators are enamored with the eloquence and economy of their verbal influence on students. Telling students what to do and how to do it is too often viewed as the sine qua non of teaching.

Whether or not the verbal element is the more essential element of communication may be debatable, but that its meanings are more equivocal than nonverbal meanings is less in doubt. An interesting aspect of the nonverbal is that it is more difficult to deceive another person with it than with the verbal. Galloway notes (12:312), "Nonverbal cues in general are both less manageable and more revealing

than verbal cues." He goes on to say, "Nonverbal behavior provides a leakage channel which is difficult to censor or control. Nonverbal behaviors give one's true feelings away . . . . " A study done by Devin-Sheehan, Feldman, and Allen (7:5-6) in which tutors were cautioned against revealing negative feelings toward tutees shows that despite their intentions not to do so, the tutors revealed their feelings nonverbally. Pellegreno and Williams (22:270) refer to a study done in 1969 by M. L. Silberman (24) and later replicated and confirmed by Good and Brophy (13) which affirms the actuality of nonverbal leakages. They say, "Teacher attitudes were generally revealed in their actions in spite of the forces operating to limit their expressions." By utilizing the PIT model, which is sensitive to both verbal and nonverbal behaviors, the author hopes to record the actual, unmasked intentionalities of teachers toward their students. The nonverbal element of communication and the leakage of behavioral expressions of attitudes both suggest that teachers transmit values, attitudes, and personal characteristics along with their academics. Among other things, personality may be a function of one's sex. The question arises, then, is teacher behavior a function of the teacher's sex?

Role Expectations and Teacher Behavior

Good, Sikes, and Brophy (14) report that the question of differential teaching behavior between males and females remains virtually unexamined. They report having knowledge of only one "comprehensive" study regarding

this subject and it was reported after their study had been completed.* They note an unreplicated study done in 1952 by Carter** which reported that boy students were downgraded, especially by female teachers. In their own study, Good, Sikes, and Brophy found that "male and female teachers treat male and female students similarly" (14:83). This means that even though male teachers may have a teaching style different from female teachers, both sexes of teachers treat the male students the same and both sexes of teachers treat the female students the same. That male students receive treatment different from female students may be a function of the sex of the student, not the teacher. The study suggests (14:85-86) that teachers are merely reacting (italics added) to the differential behaviors of boys and girls. The differential treatment that boy students and girl students receive originates from the teacher's role as a socializing authority figure, not the teacher's sex. That is, teacher behavior is "largely controlled by the expectations of an institution." Boy students "receive more frequent teacher feedback and more intense teacher affect" because "institutional roles may cause teachers (of both sexes) to establish a set that makes them preoccupied with and excessively sensitive to the need to control 'disruptive' classroom behavior" (14:83-84).

Subsequent to this study by Good, Sikes, and Brophy, which was

---

*H. Lahaderne and S. Cohen, "Freedom and Fairness--A Comparison of Male and Female Teachers in Elementary Classrooms." Paper presented to the annual meeting of the American Educational Research Association, Chicago, April 1972.

**R. Carter, "How Invalid Are Marks Assigned by Teachers?" Journal of Educational Psychology, 43 (1952), pp. 218-228.

done in 1971 and reported in 1973, Brophy and Good did a review of research in the area of the influence of teacher sex and student sex on classroom behavior (4:199-239). Most of the research they reported had been done in elementary schools. Additionally, the design of the experiments for the most part held the sex of the teacher (female) constant and compared student sex. Some of the research they reported indicated teacher favoritism toward girls, and one rather impressive study reported consistent (though ineffective) attempts by female teachers to "feminize" boys. In general, the studies showed boys to be more active in class and the recipients of significantly more teacher criticism. At the same time, boys tended to receive more teacher praise though the difference was not significant. On balance, their own review of research caused Brophy and Good to conclude that "differences between boys and girls in achievement and performance in the classroom cannot be attributed to female teachers' discrimination against boys or inability to handle them" (4:228-229). The relatively few studies which compared the behaviors of female teachers directly with those of male teachers did suggest some general differences between males and females in their approach to teaching and their teaching style. Nevertheless, Brophy and Good considered the existence of differential teaching behavior on the basis of teacher sex to have been marginal enough to have concluded that "individual differences in teachers, including sex differences, tend to be submerged within the teacher role when teachers are working in the classroom" (4:237).

This role expectation explanation of teacher behavior is

echoed by Lee (19:85-90), who says, "Apparently the school as an institution socializes teachers, irrespective of sex, to place a high premium on pupil control." Lee suggests that institutional constraints dominate sex-role constraints. "The more severe the institutional constraints on teacher behavior, the less manifest are sex-role constraints." He views the institutionalism of public schools as stemming primarily from compulsory education which gives neither school nor client a choice to attend and a chance to screen. He sees this institutionalism as being more harmful to boys than girls because "the school as an institution requires the boy to assume a passive and docile stance which is incompatible with his sex-role strivings." Thus even though the "leakages" cited by Galloway would lead us to expect differential teacher behavior along personal dimensions, the study by Good, Sikes, and Brophy and the study by Lee suggest that differential teacher behavior along the dimension of sex will be minimized, especially in a strongly institutional setting. One of the purposes of this study is to help determine whether schools for adjudicated youth are in fact more institutional than public junior high schools. If schools for delinquents are more institutional in nature and if Lee is correct regarding sex roles and institutionalism, then one would expect to find little difference between the behavior of male and female teachers in this study.

Juvenile Delinquency and Two Prior Studies

Since every state maintains its own statutes and provisions prohibiting specific behaviors by juveniles, it is not possible to

present a single, all inclusive definition of juvenile delinquency. However, Crump reports that delinquent conduct and delinquents fall under two broad categories:

> First, there are those children who have committed acts that would be crimes if committed by adults; and second, there are children who have violated specific ordinances only applicable to children such as curfew, truancy, or alcohol ordinances, or those who are designated "beyond control," "ungovernable," or "in need of supervision." With few exceptions, the same dispositions are permitted in the case of these children that are authorized for youngsters who have committed acts that would be crimes if committed by an adult (6:15).

Regarding the disposition of cases, almost fifty thousand children reside in three hundred forty-three public institutions for delinquents. Every state in the union maintains training schools for juveniles who have been judged delinquent. These institutions are usually administered by the same department in state government that is responsible for adult criminals (6:20). Crump reports that the relatively recent shift away from the search for individualistic causes of delinquency (i.e., the cause of the deviant behavior resides solely with the individual) to sociological explanations has resulted in a search for alternatives to the traditional custodial training school. The reality of community-based treatment and prevention programs operating throughout the country suggests that "delinquents" may be attending public schools in large numbers in the near future (6:28-29). Tennessee's Home/School Pilot Project for Indigent and Neglected Youth, which operated from late in calendar year 1973 through calendar 1974, placed youngsters from a state operated

indigent/neglected custodial institution in home-like "cottages." Assessment of the project was encouraging (1): Posttest data indicated positive changes in self-esteem measures and public school officials (the subjects were placed in public schools) reported favorable adjustment on the part of the subjects to the regular school setting. Of course, adjudicated youths themselves have a public school record. Perlman (as reported in Crump) says the "typical" juvenile delinquent is often retarded in his reading ability and school work in general and he has a history of truancy. Winslow says the delinquent has usually been unsuccessful in school, having below average grades and a tendency to drop out (6:17-18). Indeed, though a causal relationship between school maladaptation and delinquency has not been established, Crump says, "There is substantial empirical evidence showing that the school is important in the development of delinquent behavior" (6:32). Crump quotes Empey and Lubeck who, while reporting the inability of delinquents to compete with middle-class peers and function successfully in middle-class schools, say,

> Rather than become a place where deficiencies diminish, the school becomes a place in which they accumulate. Low expectations are established, failure is anticipated, and, true to the Mertonian self-fulfilling prophecy, failure occurs (6:33).

The Crump study, which dealt with two schools for adjudicated delinquents in North Carolina and used the French and Galloway IDER system for measuring classroom behavior, yielded several significant conclusions (6:101-105):

1. In nonconflict situations there was an inconsistency between

the verbal and nonverbal cues of teachers toward their students. When faced with this inconsistency, the students accepted the nonverbal cues as "correct."

2. In conflict situations (e.g., a threat to the teacher's authority), there was no inconsistency between verbal and nonverbal cues issued by the teachers. They were "quick to enforce school policies."

3. Six teachers (both male and female) did not interact at all with the black females in their class even though they had the opportunity. Four of the six were white.

4. The nineteen teachers who did interact with the black females displayed significantly more encouraging behavior (as opposed to restricting) toward them (black females) than any other student group.

5. Although the Encouraging/Restricting ratios were practically the same for this group of students from lower socioeconomic backgrounds as compared to the ratios of students from upper socioeconomic backgrounds,* the Indirect/Direct ratios dealing with verbal interactions were quite different for the two groups. Teachers of the upper socioeconomic students were more encouraging verbally.

6. Whereas Cosper (5) noted a difference in the communication patterns of public school teachers based on student sex, the Crump

---

*Cosper in 1970 used the IDER system to measure the behavior of upper socioeconomic, verbally gifted 5th and 6th grade students.

study noted no difference in these patterns based on student race and sex among teachers having prior experience in correctional institutions. However, among teachers with public school experience, the Crump study showed significant differences based on student race and sex in the communication patterns.

A companion investigation to the Crump study was done by London (20) who investigated interrater differences based on race. The Crump study (white female rater) served as baseline data for the London study (black female rater). London recoded the Crump tapes (although N was reduced from twenty-five to twenty) and used the IDER system as the measuring instrument. Several significant differences between the two studies were attained (20:140-141 and 150-152):

1. The between-rater differences were greater with respect to their perception of white teachers than black teachers.

2. Whereas Crump perceived white teachers to be more encouraging toward black students, London perceived white teachers to be more encouraging to white students and less encouraging toward blacks.

3. When teachers were grouped according to sex, rather than race, the two raters generally agreed. For example, both Crump and London found male teachers to be more encouraging than female teachers (toward both male and female students). However, London found male teachers to be more encouraging toward male students while Crump found males to be more encouraging to female students. (Crump also found female teachers to be more encouraging toward female students.)

4. Whereas Crump found black teachers to be less encouraging

than white teachers, London found that white male students received more encouraging behavior from black male teachers than any other student group.

5. Both raters found black teachers to be more consistent in the pattern of their verbal behaviors than white teachers.

6. Both raters perceived white teachers to be inconsistent in both their verbal and nonverbal behaviors.

7. London found that black female teachers accounted for approximately one-half of all restricting behaviors categorized (for all teachers). Crump found that black female teachers accounted for about two-thirds of all restricting behaviors recorded.

Obviously, the results of this study cannot be compared directly to the results of the Crump and London studies because a different measuring instrument was used. For example, the IDER system distinguishes between verbal and nonverbal behaviors, and the PIT model (though sensitive to both) does not. However, the degree to which this study tends to corroborate parts of one or both of the Crump and London studies serves to strengthen the belief that behavior is being measured and summarized accurately. Even those conclusions which are in fact contradictory have the value of reminding us of the limits of the measuring instruments.

CHAPTER III

PROCEDURES

Collection of the data for this study consisted of coding one-half inch, black and white videotape recordings of classroom interactions according to the PIT model for classifying classroom interactions. The tapes were originally made in 1973 as part of a comprehensive project directed toward the analysis of variables related to the teaching/learning process in schools for adjudicated delinquents.* The population for this study was comprised of teachers and students in two North Carolina schools for adjudicated youth. Crump (6) recorded the classroom activity of twenty-five teachers and two hundred fifty-four students in an attempt to determine

> 1) if there were differences in teacher verbal and nonverbal communication based on race and sex (of teachers and students); and 2) whether there were differences in the general behavior patterns between teachers of adjudicated delinquents in correctional institutions and teachers of students in public schools (6:4).

Crump used the French and Galloway (9) IDER system for measuring classroom behavior. Among her findings were the discovery of inconsistency in the verbal and nonverbal cues of teachers toward their students, the discovery that white teachers were more encouraging in their nonverbal behavior, and the discovery that black teachers displayed more consistency

---

*The author is grateful to persons connected with the project for access to the tapes.

in their nonverbal communications. Additionally Crump found that male teachers were more encouraging nonverbally than female teachers though both groups of teachers were more encouraging toward female students than male students. Among the student groups, black female students received more total teacher behaviors and these behaviors were quite encouraging (6:95-96).

Subjects

The subjects of this study are twenty-five teachers working in 1973 in two training schools for adjudicated youth in North Carolina. The academic areas represented are language arts (8 teachers), math (5 teachers), science (1 teacher), and social studies (1 teacher). Six teachers represent vocationally oriented classes (i.e., leatherwork, woodworking, small engine repair, home economics, and business education). Two instructors teach physical education, one teaches a GED class, and one is a counselor. Nine of the teachers are white males, three are black males, eight are white females, and five are black females. (See Table 1.) All teachers are certificated in their teaching areas. Teaching experience ranged from novice to teachers with many years experience. The two schools in the study are operated by the North Carolina Department of Youth Development. One school is a maximum security unit; students have been referred there from other North Carolina training schools. The second school maintains less security and offers more freedom of movement. With respect to the tapes, no attempt was made to identify which students attended which

TABLE 1

DEMOGRAPHIC DATA FOR THE TEACHER POPULATION OF THE STUDY

	Male	Female	Total
Race			
Black	3	5	8
White	9	8	17
Total	12	13	25
Content Area			
Academic[a]	5	10	15
Vocationally Oriented[b]	4	2	6
Other[c]	3	1	4
Total	12	13	25

[a]Comprised of language arts, math, science, and social studies.

[b]Comprised of leatherwork, woodworking, small engine repair, home economics, and business education.

[c]Comprised of physical education, a GED class, and counseling.

school, and no comparisons were made between schools. Furthermore, no attempt was made to gather the data of this study in such a way as to indicate student sex and race groupings. Hence the question of interaction in this study between teacher sex/race and student sex/race is open only to speculation. Students are predominately from lower socioeconomic backgrounds, and they range in age from ten to sixteen with the mean being approximately fourteen. (See Table 2.) Classes are composed of multi-age student groupings and range in size from eight to twenty students per class. The coder/author is a white male, twenty-nine years old.

TABLE 2

DEMOGRAPHIC DATA FOR THE STUDENT POPULATION OF THE STUDY

Race	Male	Female	Total
Black	71	30	101
White	110	43	153
Total	181	73	254

The PIT Model

The PIT model was developed by French (8) as a means of quantifying teacher/pupil interaction. In this study, the focus of the coder's attention was directed toward the actions and reactions of the teacher. PIT is an acronym derived from the initial letters of Personal, Institutional, and Task (i.e., three of the four categories

of communication events as originally defined by French). A personal event is one in which the personal needs, goals, and emotions of pupils and/or the teacher are the central focus. Examples (10:550) of personal events are the following:

1. Pupil expressions of frustration and teacher response to these (expressions).
2. Teacher expression of personal interest in or concern for a pupil or his problems.
3. Pupil expression of affection toward the teacher and teacher response, either verbal or nonverbal.
4. Angry dialogue between two pupils concerning actions on the playground.

An institutional event is one which focuses on managing the classroom and/or meeting the expectations of the educational institution. Examples (10:549) of institutional events are the following:

1. A verbal and/or nonverbal reprimand to a student for chewing gum. The reprimand stems from a school rule against it.
2. Teacher handing back quiz papers and explaining grading procedures.
3. Teacher calling roll and pupils responding verbally or nonverbally.
4. Pupils and teacher preparing for the viewing of a motion picture.
5. Teacher announcement and/or explanation of school events or activities.
6. Teacher calling for, signing, and discussing with pupils their absence excuses.
7. Teacher cueing pupils verbally and/or nonverbally in an attempt to maintain silence or order and pupils responding to the cues.
8. Teacher directing pupils to begin their homework; pupils feigning industrious activity.
9. Teacher verbal and/or nonverbal direction to pupils in how to leave the classroom for some particular purpose.

Task events focus on the teaching and learning of subject content whether cognitive, affective, or skill oriented. The following

are examples (10:549-550) of task events:

1. A teacher/pupil discussion of the functions of Congress.
2. A teacher demonstration of how to read a weather map.
3. Teacher explanation of the factors influencing the Battle of Gettysburg while pupils take notes.
4. Teacher aiding individual pupils during an independent study period.
5. A student report on inflation.
6. A laboratory exercise in which pupils with the aid of the teacher are using microscopes.

Simply stated, task events have to do with teaching and learning subject matter. Institutional events relate to "housekeeping" or "playing school" activities. Personal events are concerned with activities not directly associated with school. Personal events also refer to expressions of values or emotions by the teacher or students once they have dissociated themselves, consciously or otherwise, from the role of teacher or student. Personal events are by definition accompanied by either positive or negative affect. That is, once the coder becomes aware of a positive or negative element in the event, it is or has become a personal event. An event may begin as an institutional event (e.g., teacher explaining to the student why he [the student] should remain in his seat working), but if the teacher's action becomes disproportionate to the situation, if it becomes clearly affect oriented, then the event has become personal.

Whereas the original French study did not differentiate between positive and negative personal events, this study does. For coding purposes the distinction is indicated by P^+ and P^-. Task events and institutional events are coded as they were in the French study

(i.e., by T and I respectively). All events can be either individually oriented or group oriented. If the event includes only the teacher and one student, it is an individual event and is designated by P_i^+, P_i^-, T_i, or I_i. If the event involves the teacher with two or more students, it is a group event. Coding a P^+, P^-, T, or I indicates a group event; no further designation is necessary. If two or more communication events become confounded, the combination is called a mixed event and an M is coded. Mixed events are not to be considered as a "throwaway" category as is 10) in the Flanders system. The PIT model requires the coder to decide if an event is personal, institutional, or task. Only if it contains elements of two of these or all three, can it be categorized as a mixed event. Mixed events can themselves be designated as either individual or group and are coded accordingly (i.e., either M_i or M).

Unlike the French study, it was decided in this study to make a distinction between two different categories of mixed events. Those mixed events in which the confounding is attributable to confusion stemming from neither the teacher nor the student's knowing what is supposed to be happening are designated by the usual M or M_i. However, in those cases where the teacher has made his intentions clear that a specific type of event is supposed to be taking place, but in which the student for whatever reason is engaging in another type of activity, the mixed event is designated by either an M_d or an M_{di}. For example, when the teacher intends for the students to be engaged in a task event, but the students' wishes and behavior are otherwise, the two

differing types of activities would be categorized as M_d if two or more students are involved and M_{di} if only one student is acting contrary to the teacher's wishes. The array, then, of possible communication events is P^+, P_i^+, P^-, P_i^-, T, T_i, I, I_i, M, M_i, M_d, and M_{di}.

Concerning the actual coding process, the appropriate letter designating the communication event category is placed on a coding sheet at the initiation of the event. At three second intervals, dots are placed below this letter for as long as the event persists. Communication events are viewed holistically, and a particular event continues as long as the same focus or contact between the involved parties continues without interruption; communication events do not begin and end each time a person speaks. The author found it convenient to lay out coding sheets before beginning an observation session. Since the span of time between each tally is three seconds, it is reasonable to construct coding sheets with columns of twenty tallies (i.e., sixty seconds). An individual institutional event occupying fifteen seconds of time followed by a group task event would be coded as I_i · · · · T. Note that T marks the beginning of a new event.

Interrater Reliability

The question of reliability is an intriguing one. For instance, when an expert observer sets out to train a neophyte in the observation technique, for what degree of agreement between himself and the neophyte does he strive? If he (the expert) seeks perfect agreement, then theoretically he may as well do the observing and coding himself. Of course perfect agreement between two observers is neither possible nor

desirable, and the degree to which the elements of error in their observations differ and the degree to which their absolute perspectives differ is the degree to which their ratings of classroom interactions will differ. Herbert and Attridge (16:2) have commented on the problems associated with observation systems:

> Techniques for testing the significance of findings have outstripped in sophistication techniques for testing the validity of the means of data collection . . . . Unfortunately the work which has been done to identify and solve the methodological problems of observation is as yet inadequate to ensure accuracy of the findings, and few of these problems or their possible solutions have been reported.

They take the "traditional" view of reliability. Namely, that reliability "is a property of measures obtained through the application of a system, not a property of an instrument, nor of a system, nor of a record, nor of observers" even though each of these factors delimits reliability (16:14). They point out that a single instrument can produce reliable and unreliable data. Hopefully, successive reapplications of the PIT model will establish its overall reliability.

One of the problems associated with observation systems is the choice of which behaviors to observe and code. Galloway observes, "All nonverbal phenomena cannot be observed at once. An observer must make choices about when, what, and how to observe" (12:313). This requirement for observer inference or observer decision making is inevitable (to try to eliminate it is to risk inanity), and it is also the origin of disparity between two observers. That two separate coders may differ in their observations is one problem associated with rating systems. Another problem is that the perspective of a single observer may change from one observing session to another. Herbert and Attridge term this element of

a coding system its "objectivity": "Objectivity pertains to the extent to which the instrument lends itself to change by the observer due to his own preferences, expectations, needs, feelings, and biases . . . " (16:6). Presumably, decisions as to which categories various behaviors or events belong vary in part according to the succession of expectations and feelings of the coder.

Interrater reliability or agreement and consistency between coders was established by the Kendall Rank Correlation Coefficient: τ. This nonparametric technique and its application are described by Siegel (23:214-219). After preliminary instruction in how to code with the PIT model, the author (designated "neophyte") and the "expert" were able to reach statistical reliability. This initial confirmation of the neophyte's ability to code accurately with the PIT model was done prior to any actual data collection. Four 10 minute segments of the same tapes which would eventually serve as the source of data for this study were arbitrarily chosen for the reliability check. The expert coded 135 total communication events, and the neophyte coded 145 events. After the initial interrater reliability had been attained, the author coded the twelve plus hours of videotape in spring, 1975. When the data had all been collected, a final, precautionary reliability check was made. This second check was performed on the same four segments of tapes as had been used for the first check. The expert coded 131 total communication events, and the neophyte coded 110 events. A $+.91$ correlation coefficient was obtained on each of the two checks. A presentation of the statistical treatments of the two checks follows.

Initial Reliability Check

Each of the four 10 minute segments of tapes was coded simultaneously by expert and neophyte. After these four "trials," the "observers" totaled the number of task events (both group and individual) only. The number of T and T_i events served as the raw data for the statistical analysis.

	x--expert	y--neophyte
A	*9 $T + T_i$ events	18
B	34	36
C	33	28
D	*9	12

observers	trials B	C	A	D
x	1	2	3.5	3.5
y	1	2	3	4

$$* \quad \tau = \frac{S}{\sqrt{\tfrac{1}{2}N(N-1) - Tx}\ \sqrt{\tfrac{1}{2}N(N-1) - Ty}}$$

$S = 3 + 2 = 5$
$Tx = \frac{1}{2}\sum t(t-1) = \frac{1}{2}[2(2-1)] = 1$
t = the number of tied observations in each group of ties = 2
$Ty = 0$ (no tied observations on the y variable)
N = the number of trials ranked on both x and y = 4

$$\tau = \frac{5}{\sqrt{\tfrac{1}{2} \cdot 4(4-1) - 1}\ \sqrt{\tfrac{1}{2} \cdot 4(4-1) - 0}}$$

$$\tau = +.91$$

*Since there were tied observations, it was necessary to use Kendall's Rank Correlation Coefficient formula for tied observations.

Second (Final) Reliability Check

	x--expert	y--neophyte
A	14 T + T_i events	*7
B	37	23
C	33	21
D	10	*7

observers

	trials			
	B	C	A	D
x	1	2	3	4
y	1	2	3.5	3.5

$$* \tau = \frac{S}{\sqrt{\frac{1}{2}N(N-1) - Tx}\ \sqrt{\frac{1}{2}N(N-1) - Ty}}$$

S = 3 + 2 = 5
Tx = 0 (no tied observations on the x variable)
Ty = $\frac{1}{2}\sum t(t-1) = \frac{1}{2}[2(2-1)] = 1$
t = the number of tied observations in each group of ties = 2
N = the number of trials ranked on both x and y = 4

$$\tau = \frac{5}{\sqrt{\frac{1}{2} \cdot 4(4-1) - 0}\ \sqrt{\frac{1}{2} \cdot 4(4-1) - 1}}$$

$$\tau = +.91$$

---

*Tied observations

Treatment of the Data

The techniques applied to the raw data of the reliability checks are the only "sophisticated" statistical procedures used in this study. However, a rather extensive arithmetical compilation of percentages and averages has been performed on the twelve plus hours of coded material. Additionally, those percentages and averages from the French study which correspond to the data of this investigation have been extracted and presented in table form.

Numbers, percentages, and durations of all categories of communication events for all subject groups combined (i.e., male/female and black/white) have been compiled. Also, percentages and durations of communication categories with respect to the various academic content areas (i.e., social studies, math, science, and language arts) have been derived from the raw data. The combined statistics for the academic areas are compared in table form to the percentages and durations for the vocationally oriented content areas. A comparison of the average duration and number of communication events by category and sex is made, as well, between the French study and this study. Finally, with respect to the data of this study, a four way split is made between race and sex of subject for the number, percentage, and average duration of each of the twelve categories of communication events.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

In chapter I, the author itemized twenty-two "questions for analysis." In this chapter, the totals and averages of the collected data are brought to bear on these questions in an effort to answer them. Whereas earlier the questions were divided into those which dealt solely with the results of this study and those which required a comparison with the French study, the author chose to reorder and juxtapose questions to facilitate their analyses.

Question 14

Do teachers engage in more events per class period in the French study than in the Crist study, and are the average durations of these events shorter in the French study than the Crist study?

French recorded 50.4 events per forty minute class period. Crist recorded 88.4 events per forty minute period or some 75% more events in a given span of time than did French. The duration of events in French averaged 47.9 seconds, whereas events in Crist averaged 27.1 seconds. In schools for delinquents, the frequency of events was greater and their duration shorter than in public junior high schools.

Questions 1 and 15

Do teachers (all groups combined) in the French and Crist studies engage in more individual events than group events?

French reported that 65.0% of all events recorded were group events. This study found that 67.5% of all events recorded were individual events.* Thus teachers in the schools for delinquents engaged in approximately twice as many individual communication events as did the teachers in the Ohio junior high schools. In schools where the teaching "style" is more individually oriented, it is reasonable to expect more events per class period (i.e., teachers in an effort to make contact with all students must engage in more events in a given span of time).

Question 2

Do teachers (all groups combined) engage in more task, institutional, or personal events?

Reference to Table 3 indicates that teachers in the schools for delinquents engaged in more task events than institutional events. However, teacher behavior was rather evenly divided (in number of events) between task and institutional events. The preponderance of individual task (T_i) and individual institutional (I_i) events over their group counterparts is a noticeable difference. In both cases, approximately

---

*These figures were derived from Tables 3 and 5 by adding the percentages for group events and/or individual events. Also, since events are either group or individually oriented, 35.0% of all events in French were individual and 32.5% of all events in this study were group.

TABLE 3

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS IN EACH CATEGORY FOR ALL SUBJECT GROUPS AND CONTENT AREAS COMBINED (CRIST STUDY[a])

Communication Event	Number of Events	Percentage of Total
Group Task (T)	285	17.5%
Individual Task (T_i)	565	34.8%
T plus T_i	850	52.3%
Group Institution (I)	219	13.5%
Individual Institution (I_i)	450	27.7%
I plus I_i	669	41.2%
Group Positive Personal (P+)	3	0.2%
Individual Positive Personal (P_i+)	63	3.9%
P+ plus P_i+	66	4.1%
Group Negative Personal (P^-)	1	0.1%
Individual Negative Personal (P_i-)	12	0.7%
P^- plus P_i^-	13	0.8%
Group Mixed (M)	7	0.4%
Individual Mixed (M_i)	0	0.0%
M plus M_i	7	0.4%
Group Differentiated Mixed (M_d)	12	0.7%
Individual Differentiated Mixed (M_{di})	7	0.4%
M_d plus M_{di}	19	1.1%
Total	1624	99.9%

[a]Tables 3 and 5 indicate number and percentage of total communication events. Tables 4 and 6 indicate duration of total communication events. Subsequent tables divide the data with respect to the subject group variables.

twice as many individual events occurred as group events. The small number of personal events (4.9%) and mixed events (1.5%) is apparent.

Question 3

Is the duration of communication events of teachers (all groups combined) longer for task, institutional, or personal events?

Group task (T) events averaged 49.0 seconds, the longest of any category of event. (See Table 4.) This was approximately two and one-third times as long as group institution (I) events and three and three-fourth times as long as individual institution (I_i) events. Apparently, explaining and enforcing school rules required contacts of shorter duration than did the teaching activity. Positive personal events averaged 8.6 seconds and negative personal events averaged 6.0 seconds in duration.

Question 16

Do teachers (all groups combined) in the French study differ from teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

A comparison between Tables 3 and 5 reveals that almost 70% of the events which occurred in French were task events, while only slightly over 50% of all the events in Crist were task. This proportionate*

*When comparing percentages, it is necessary to speak of proportionate differences. For example, if the same number of events in a particular category occurred in both Crist and French and if French recorded only one-fourth as many total events in all categories, then "proportionately" four times as many events of the category in question would have occurred in French as in Crist.

TABLE 4

AVERAGE DURATION OF COMMUNICATION EVENTS (IN SECONDS) IN EACH CATEGORY FOR ALL SUBJECT GROUPS AND CONTENT AREAS COMBINED (CRIST STUDY)

Communication Event	Number of Events	Duration of Events	Average Duration of Event
Group Task (T)	285	13959"	49.0"
Individual Task (T_i)	565	18369"	32.5"
T plus T_i	850	32328"	38.0"
Group Institution (I)	219	4548"	20.8"
Individual Institution (I_i)	450	5955"	13.2"
I plus I_i	669	10503"	15.7"
Group Positive Personal (P^+)	3	33"	11.0"
Individual Positive Personal (P_i^+)	63	534"	8.5"
P plus P_i^+	66	567"	8.6"
Group Negative Personal (P^-)	1	6"	6.0"
Individual Negative Personal (P_i^-)	12	72"	6.0"
P^- plus P_i^-	13	78"	6.0"
Group Mixed (M)	7	228"	32.6"
Individual Mixed (M_i)	0	0"	0.0"
M plus M_i	7	228"	32.6"
Group Differentiated Mixed (M_d)	12	198"	16.5"
Individual Differentiated Mixed (M_{di})	7	33"	4.7"
M_d plus M_{di}	19	231"	12.2"
Total	1624	43935"	-

TABLE 5

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS IN EACH CATEGORY FOR ALL SUBJECT GROUPS AND CONTENT AREAS COMBINED (FRENCH STUDY[a])

Communication Event	Number of Events	Percentage of Total
Group Task (T)	794	46.6%
Individual Task (T_i)	379	22.2%
T plus T_i	1173	68.8%
Group Institution (I)	249	14.6%
Individual Institution (I_i)	171	10.0%
I plus I_i	420	24.6%
Group Personal (P)	21	1.2%
Individual Personal (P_i)	44	2.6%
P plus P_i	65	3.8%
Group Mixed (M)	45	2.6%
Individual Mixed (M_i)	2	0.1%
M plus M_i	47	2.7%
Total	1705	99.9%

[a]Data taken from French, p. 68.

difference is reflected in the difference in the proportion of institutional events. Institutional events comprised only one-fourth of all events in French, whereas they comprised 40% of the total in Crist. The relative proportions of group institution (I) events were almost identical in the two studies. However, the proportion of individual institution (I_i) events was almost three times higher in the schools for delinquents than in the public junior high schools of the French study. (See Tables 3 and 5.) It would appear that teachers in the schools for delinquents had a propensity for individual events and institutional events. Both groups manifested a small proportion of personal contacts (i.e., 3.8% in French and 4.9% in Crist).

With respect to duration, group task (T) events in French averaged 73.9 seconds in length (see Table 6) and 49.0 seconds or two-thirds as long in Crist (see Table 4). These durations are perhaps reflective of both the nature of the event (i.e., since teachers are "supposed" to teach it is reasonable to expect them to spend more time teaching) and the propensity for more (and longer) group events on the part of the public junior high school teachers. The durations of the individual task (T_i) and institutional (I_i) events were practically the same. French did show a noticeable longer duration for group personal (P) events than Crist (30.5 seconds as opposed to 11.0 seconds and 6.0 seconds in Crist), but since the gross number of personal events was so small in both studies, there is the possibility that the figures are misleading.

TABLE 6

AVERAGE DURATION OF COMMUNICATION EVENTS BY CATEGORY (IN SECONDS) FOR EACH SUBJECT GROUP (FRENCH STUDY[a])

Communication Events	Male	Female	All Groups Combined
Group Task (T)	70.0"	79.7"	73.9"
Individual Task (T_i)	43.8"	29.0"	37.6"
Group Institution (I)	28.6"	32.8"	30.3"
Individual Institution (I_i)	12.7"	10.6"	11.8"
Group Personal (P)	36.8"	20.0"	30.5"
Individual Personal (P_i)	14.1"	18.3"	16.1"
Group Mixed (M)	Not Available	Not Available	Not Available
Individual Mixed (M_i)	Not Available	Not Available	Not Available

[a]Data taken from French, p. 97.

Question 20

Do teachers (both male and female) engage in more task and institutional events per class period in the French study than in the Crist study?

Regarding the frequency of events, Crist recorded 88.4 events per forty minute class period and French recorded 50.4. Table 7 indicates that 46.2 task oriented events per class were recorded by Crist as opposed to 34.5 for French despite the fact that task events in French accounted for a greater proportion of the whole than they did in Crist. The obvious difference in the two studies is in the frequency of institutional events. Almost three times as many institutional events occurred per forty minute period in the schools for delinquents as occurred in the junior high schools. Even though over twice as many personal events occurred per class period in the North Carolina schools, the proportion of personal events was small in both types of schools.

Table 8 indicates the relative frequencies of events for male teachers and female teachers. French reported an almost even split between male and female. Crist reported that female teachers participated in 17% more events per forty minute period. Females in both studies had more institutional events each class period than did males (i.e., 39% more in Crist and 56% more in French).

Question 4

Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their task events?

Proportionately, male teachers engaged in 60% more group task (T)

TABLE 7

AVERAGE NUMBER OF COMMUNICATION EVENTS FOR ALL SUBJECT GROUPS AND CONTENT AREAS OVER A 40 MINUTE SPAN

	Crist Study[a]	French Study[b]
All Event Categories	88.4 events	50.4 events
T plus T_i	46.2 events (52.3%)[c]	34.5 events (68.8%)
I plus I_i	36.4 events (41.2%)	12.6 events (24.6%)
P plus P_i	4.3 events (4.9%)	1.9 events (3.8%)
M plus M_i	1.3 events (1.5%)	1.4 events (2.7%)

[a]Since no taped classroom activity was as long as 40', the events belonging to the first 10' of each tape were averaged and this average was multiplied by 4. It was necessary to omit a math class and the GED class since less than 10' of each was recorded.

[b]Data regarding the number of events were taken from French, Table 12, page 92. Percentages were derived from the data presented in French, Table 2, page 68.

[c]Figures in parentheses indicate the number of events recorded in the respective categories as a percentage of the gross number of events recorded in all categories.

TABLE 8

AVERAGE NUMBER OF COMMUNICATION EVENTS FOR EACH SUBJECT GROUP OVER A 40 MINUTE SPAN

	Crist Study[a]		French Study[b]	
	Male	Female	Male	Female
All Event Categories	82.1 events	96.0 events	50.4 events	50.2 events
T plus T_i	46.9 events (57.1%)[c]	45.3 events (47.2%)	37.1 events (73.6%)	31.2 events (62.2%)
I plus I_i	31.0 events (37.8%)	43.0 events (44.8%)	10.1 events (20.0%)	15.8 events (31.5%)

[a]Since no taped classroom activity was as long as 40', the events belonging to the first 10' of each tape were averaged and this average was multiplied by 4. It was necessary to omit a math class and the GED class since less than 10' of each was recorded.

[b]Data regarding the number of events per lesson were taken from French, Table 12, page 92.

[c]Figures in parentheses indicate the number of events recorded in the respective categories as a percentage of the gross number of events recorded in all categories.

events than did females. (See Table 9.) Both groups had practically the same proportion of individual task (T_i) events. Group task events for male teachers were 32% longer in average duration than T events for females. (See Table 10.) T_i events averaged almost the same length for males and females.

Question 5

Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their institutional events?

Table 9 indicates practically no difference between males and females with regard to their respective percentages of group institutional (I) events. However, females engaged in 40% more individual institutional (I_i) events than males. Total I plus I_i events indicates that females engaged in 19% more institutional events than males. Table 10 indicates no noticeable difference in the durations of I and I_i events for males and females.

Question 6

Do male teachers differ from female teachers in 1) number and percentage and 2) duration of their personal events?

The legitimacy of analyzing personal event data is suspect because of the small number of personal events recorded. For example, Table 9 indicates that only two group personal (P) events were recorded for males and only two for females. Female teachers did engage in twice as many individual personal (P_i) events. Table 10 indicates virtually the same average durations for P_i events among males and females. The durations for P events may not be legitimate since they

TABLE 9

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS BY SEX IN EACH CATEGORY FOR ALL CONTENT AREAS COMBINED (CRIST STUDY)

Communication Event	Male Number	Male %	Female Number	Female %
Group Task (T)	181	21.5%	104	13.3%
Individual Task (T_i)	300	35.6%	265	33.9%
T plus T_i	481	57.1%	369	47.2%
Group Institution (I)	124	14.7%	95	12.2%
Individual Institution (I_i)	195	23.1%	255	32.7%
I plus I_i	319	37.8%	350	44.9%
Group Personal (P)	2	0.2%	2	0.3%
Individual Personal (P_i)	26	3.1%	49	6.3%
P plus P_i	28	3.3%	51	6.6%
Group Mixed (M)	14	1.7%	5	0.6%
Individual Mixed (M_i)	1	0.1%	6	0.8%
M plus M_i	15	1.8%	11	1.4%
Total	843	100.0%	781	100.1%

TABLE 10

AVERAGE DURATION OF COMMUNICATION EVENTS BY CATEGORY (IN SECONDS) FOR EACH SUBJECT GROUP (CRIST STUDY)

Communication Event	Male	Female	Black	White	All Groups Combined
Group Task (T)	53.7"	40.8"	46.2"	51.1"	49.0"
Individual Task (T_i)	30.4"	34.9"	27.0"	36.5"	32.5"
Group Institution (I)	20.2"	21.5"	16.8"	22.6"	20.8"
Individual Institution (I_i)	13.8"	12.8"	10.2"	14.5"	13.2"
Group Personal (P)	16.5"	3.0"	3.0"	16.5"	9.8"
Individual Personal (P_i)	9.8"	7.2"	6.7"	9.6"	8.1"
Group Mixed (M)	25.3"	14.4"	6.0"	26.8"	22.4"
Individual Mixed (M_i)	15.0"	3.0"	0.0"	4.7"	4.7"

were based on only two events each.

Question 17

Do male teachers in the French study differ from male teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

A comparison of Tables 9 and 11 shows that male teachers in public junior high schools engaged proportionately in over twice as many group task (T) events as did the male teachers in the schools for delinquents.* The male teachers in the public junior highs engaged in only one-third (proportionately) as many individual institutional (I_i) events as did the male teachers in the schools for delinquents. (The figures for I_i events are 6.9%, French, and 23.1%, Crist.) Thus the tendency for junior high school teachers to be task and group oriented, when compared to teachers in schools for delinquents, continues when data from male teachers are examined in isolation from female teacher data. Male teachers from both types of schools displayed a small proportion of personal events. However, males in the public schools engaged in noticeably more group personal (P) events.

Table 6 (p. 48) and Table 10 reveal the tendency for male teachers in public schools to engage in longer communication events than male

---

*Of all the events in French, 45.6% of them were T events. (See Table 11.) Of all the events in Crist, 21.5% were T events. (See Table 9.) The figure for French is over twice as large as the figure for Crist, thus the male teachers in French engaged in over twice as many, proportionately, T events as did the male teachers in Crist.

TABLE 11

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS BY SEX IN EACH CATEGORY FOR ALL CONTENT AREAS COMBINED (FRENCH STUDY[a])

Communication Event	Male Number	Male %	Female Number	Female %
Group Task (T)	434	45.6%	360	47.7%
Individual Task (T_i)	271	28.5%	108	14.3%
T plus T_i	705	74.1%	468	62.0%
Group Institution (I)	117	12.3%	132	17.5%
Individual Institution (I_i)	66	6.9%	105	13.9%
I plus I_i	183	19.2%	237	31.4%
Group Personal (P)	17	1.8%	4	0.5%
Individual Personal (P_i)	21	2.2%	23	3.1%
P plus P_i	38	4.0%	27	3.6%
Group Mixed (M)	23	2.4%	22	2.9%
Individual Mixed (M_i)	2	0.2%	0	0.0%
M plus M_i	25	2.6%	22	2.9%
Total	951	99.9%	754	99.9%

[a]Data taken from French, p. 68.

teachers in schools for adjudicated youth. This pattern was true for both group and individual events.

Question 18

Do female teachers in the French study differ from female teachers in the Crist study in 1) number and percentage and 2) duration of their task, institutional, and personal events?

A review of Table 9 (p. 53) and Table 11 with respect to female teachers reveals the same tendencies indicated for males. That is, the incidence of group task (T) events was proportionately higher (three and one-half times) for female teachers in the junior high schools than for female teachers in the schools for adjudicated youth. This same group also engaged in proportionately fewer (about 60%) individual institutional (I_i) events. The incidence of personal events was small for both groups, but the proportionate occurrence was approximately twice as great for female teachers in the schools for delinquents as it was for females in the junior high schools, the primary difference being the percentage of individual personal events. Female teachers in the schools for delinquents engaged in approximately two and one-half times (proportionately) as many individual task (T_i) events as did the other group of females. This tendency though apparent did not appear to be as strong among the male teachers in the two types of schools.

Regarding the duration of events, females in the public junior highs (as did the males) tended to engage in communication events equal in length or longer than the events of female teachers in the schools for delinquents. (See Table 6, p. 48, and Table 10, p. 54.) Notably, the

duration of group task (T) events was twice as long for females in the junior highs as it was for females in the schools for delinquents.

Question 7

Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their task events?

Examination of Table 12 indicates that black teachers engaged in proportionately (23%) more group and individual task events than did white teachers. With respect to the duration of events, black teachers tended to engage in shorter task oriented communication events. (See Table 10, p. 54.) Notably, individual task (T_i) events of blacks were only three-fourths as long as those of whites.

Question 8

Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their institutional events?

Black teachers engaged in proportionately 27% fewer institutional events than did white teachers. (See Table 12.) Table 10 shows that these events were shorter in duration for blacks than whites.

Question 9

Do black teachers differ from white teachers in 1) number and percentage and 2) duration of their personal events?

Table 12 shows that both blacks and whites engaged in a proportionately small number of personal events. However, blacks did engage in 83% more individual personal (P_i) events and 81% more P plus P_i events.

TABLE 12

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS BY RACE IN EACH CATEGORY FOR ALL CONTENT AREAS COMBINED (CRIST STUDY)

Communication Event	Black		White	
	Number	%	Number	%
Group Task (T)	123	20.3%	162	15.9%
Individual Task (T_i)	236	38.9%	329	32.3%
T plus T_i	359	59.2%	491	48.2%
Group Institution (I)	69	11.4%	150	14.7%
Individual Institution (I_i)	133	21.9%	317	31.1%
I plus I_i	202	33.3%	467	45.8%
Group Personal (P)	2	0.3%	2	0.2%
Individual Personal (P_i)	39	6.4%	36	3.5%
P plus P_i	41	6.7%	38	3.7%
Group Mixed (M)	4	0.7%	15	1.5%
Individual Mixed (M_i)	0	0.0%	7	0.7%
M plus M_i	4	0.7%	22	2.2%
Total	606	99.9%	1018	99.9%

Individual personal events were accorded approximately the same length of time by both groups. (See Table 10, p. 54.) The most apparent characteristic of the durations of P_i events was their brevity. Only two group personal (P) events were recorded for blacks and only two for whites.

Question 10

Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their task events?

Interestingly, there was no apparent difference between academic and vocational teachers with respect to their proportionate numbers of group task (T) and individual task (T_i) events. (See Table 13.) Table 14 shows no apparent difference in the durations of task events of academic and vocational teachers.

Question 11

Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their institutional events?

Table 13 indicates that vocationally oriented teachers engaged in approximately twice as many group institutional (I) events as did academic teachers. On the other hand, they engaged in only 68% as many individual institutional (I_i) events. These differences were not reflected in the durations of institutional events. Table 14 shows that no difference existed between the durations of the I and I_i events with respect to academic and vocational teachers. It does indicate that group institutional events lasted longer than individual institutional

TABLE 13

PERCENTAGE OF COMMUNICATION EVENTS IN ACADEMIC AND VOCATIONALLY ORIENTED CONTENT AREAS (CRIST STUDY)

	Total Number of Events in Each of the Two Content Areas	Categories of Events Expressed as a Percentage of the Total Number of Events in Each Content Area							
		T	T_i	I	I_i	P	P_i	M	M_i
Academic[a]	937	10.2%	35.5%	11.6%	35.1%	0.3%	5.1%	1.3%	0.7%
Vocationally Oriented	359	12.0%	36.5%	21.2%	23.7%	0.0%	5.8%	0.8%	0.0%

[a]Represents the totals for social studies, math, science, and language arts.

TABLE 14

AVERAGE DURATION OF COMMUNICATION EVENTS IN ACADEMIC AND VOCATIONALLY ORIENTED CONTENT AREAS (CRIST STUDY)

	Total Duration of Events in Each of the Two Content Areas	Average Duration of Events (in Seconds) in Each Communication Category							
		T	Ti	I	I_i	P	P_i	M	Mi
Academic[a]	23820"	44.8"	36.5"	21.2"	13.1"	12.0"	7.4"	26.5"	4.7"
Vocationally Oriented	9672"	38.4"	36.3"	22.4"	15.6"	0.0"	8.3"	22.0"	0.0"

[a]Represents the totals for social studies, math, science, and language arts.

events. The same pattern was also true for task events.

Question 12

Do academic teachers differ from vocational teachers in 1) number and percentage and 2) duration of their personal events?

Academic and vocational teachers engaged in a negligible number of group personal (P) events. The proportionate number of individual personal (P_i) events was small for both groups, and no intergroup difference was apparent. The average durations of P_i events for the two groups were brief and practically the same. Since vocational teachers engaged in no group personal events, a comparison with respect to duration with the academic teachers was not possible.

Question 19

Do academic teachers in the French study differ from academic teachers in the Crist study in the 1) percentage and 2) duration of their task, institutional, and personal events?

The proportionate number of group task (T) events was over four times greater for the public junior high school teachers than for the teachers in the schools for delinquents. (See Table 15.) At the same time, only 60% (proportionately) as many individual task (T_i) events took place in the public junior highs. Over three and one-half times as many individual institutional (I_i) events occurred in the schools for delinquents. Among academic teachers in the Crist study, 46.7% of all the events which occurred were institutional while 45.7% were task oriented. Among the teachers in the French study, only 24.6% of their

TABLE 15

PERCENTAGE OF COMMUNICATION EVENTS IN THE ACADEMIC CONTENT AREAS IN THE CRIST AND FRENCH STUDIES

	Total Number of Events in the Academic Areas	Categories of Events Expressed as a Percentage of the Total Number of Events in Each Content Area							
		T	Ti	I	Ii	P	Pi	M	Mi
Crist[a]	937	10.2%	35.5%	11.6%	35.1%	0.3%	5.1%	1.3%	0.7%
French	1705	46.6%	22.2%	14.6%	10.0%	1.2%	2.6%	2.6%	0.1%

[a]Represents the totals for social studies, math, science, and language arts.

events were institutional and 68.8% were task. These data comparing only the academic teachers in the Crist study with the teachers in the French study manifested the same patterns as they did when all the teachers in the Crist study were compared to the teachers in the French study. That is, with respect to the academic teachers, the junior highs tended to be group and task oriented, and the schools for delinquents tended to be individually oriented and evenly divided in their task and institutional orientations. Both types of schools had a small percentage of personal events. The teachers in the schools for delinquents engaged in twice as many (proportionately) individual personal (P_i) events as did the teachers in the junior high schools. The data for the group personal (P) events in the Crist study were based on only three events.

The average durations of group task and institutional events of the academic teachers were much longer in the junior highs than in the schools for delinquents. (See Table 16.) Little durational difference was manifested with regard to individual task and institutional events between the two studies. Academic teachers in the public junior highs apparently spent longer in personal events than did the teachers in the schools for delinquents. However, the data regarding personal events should be interpreted cautiously because of the small number of events on which they were based.

Question 13

What is the relationship of mixed events in terms of 1) number and percentage and 2) duration to all other categories of events?

TABLE 16

AVERAGE DURATION OF COMMUNICATION EVENTS IN THE ACADEMIC CONTENT AREAS IN THE CRIST AND FRENCH STUDIES

	Total Duration of Events in the Academic Areas	Average Duration of Events (in Seconds) in Each Communication Category							
		T	T_i	I	Ii	P	Pi	M	M_i
Crist[a]	23820"	44.8"	36.5"	21.2"	13.1"	12.0"	7.4"	26.5"	4.7"
French	81600"	73.9"	37.6"	30.3"	11.8"	30.5"	16.1"	Not Avail-able	Not Avail-able

[a]Represents the totals for social studies, math, science, and language arts.

Only one and one-half out of every one hundred events was recorded as a mixed event. The distinction which was made between two different types of mixed events (see p. 34), though seemingly useful, may have proved to be unnecessary because of this rather small number of mixed events of any kind. It is to be noted, however, that "differentiated" mixed events occurred almost three times as often as those events designated by the usual M or M_i. (See Table 3, p. 43.) When the data for mixed events were totaled in the same manner as they were in the French study (i.e., when no distinction was made between the two types of mixed events), it was apparent that male teachers engaged in many more group mixed (M) events than individual mixed (M_i). It would also appear that no practical difference existed between male and female teachers with respect to the occurrence of M plus M_i events. (See Table 9, p. 53.)

Table 12 (p. 59) indicates that white teachers engaged in three times (proportionately) as many mixed events as did black teachers. This difference could indicate that white teachers were less well understood by their students than black teachers. It could indicate that white teachers were not as sure themselves precisely what was to transpire throughout the entire class period, or the difference could indicate that white teachers were less well obeyed by their students than black teachers. However, because of the small number of mixed events recorded, caution in analyzing these data should be exercised. Regarding the durations of group mixed (M) and individual mixed (M_i) events, the chance for misleading averages exists because of the small number of

occurrences. Suffice it to say that among male and female teachers and black and white teachers group mixed events tended to last longer than did individual mixed events. (See Table 10, p. 54.)

Question 21

What is the relationship of mixed events in the French study to the mixed events in the Crist study in terms of their 1) percentage and 2) duration?

Reference to Table 7 (p. 50) indicates that while mixed events proportionately occurred almost twice as much in French as they did in Crist (2.7% and 1.5% respectively) they occurred at almost the same rate per forty minute class period. (This situation arises from the fact that more events of all types occurred per class period in Crist than French.) No data are available for the French study regarding the average durations of mixed events.

Question 22

Is there a basic difference between the classroom behavior of public school teachers in the French study and teachers in schools for adjudicated youth in the Crist study?

A comparison between the teaching behavior in the public junior high schools and the teaching behavior in the schools for adjudicated youth does yield some noticeable and interesting differences. Tables 6, 7, and 10 (pp. 48, 50, and 54) indicate that more communication events occurred per class period in the schools for delinquents and the average duration of these contacts was less than in the junior high

schools. Moreover, whereas the junior highs were oriented toward group events, the schools for delinquents manifested an equally strong propensity for individual events. Additionally, the junior high schools were overwhelmingly task oriented, while the schools for delinquents showed a rather even split between the number of task and institutional events. (See Tables 3 and 5, pp. 43 and 46.) Thus the public junior highs tended to be group and task oriented, and the schools for delinquents tended to be individually oriented and at least as institutional in their orientation as task. This finding was true when all the teachers in the Crist study were compared to the teachers in the French study; it was also true when only the academic teachers in the Crist study were compared to the teachers in the French study. (See Table 15, p. 64.) These same patterns remained true when the subjects were divided on the basis of sex, the only noticeable difference being that female teachers in the schools for delinquents tended to be even more individually oriented (especially with respect to task and personal events) than did the male teachers in the schools for delinquents. (See Tables 9 and 11, pp. 53 and 56.) Tables 17 and 18 summarize the data from the schools for adjudicated youth and the public junior high schools.

TABLE 17

SUMMARY OF THE PERCENTAGE OF COMMUNICATION EVENTS FOR EACH SUBJECT GROUP (CRIST AND FRENCH)

Communication Event	Male	Female	Black	White	Academic	Vocationally Oriented	All Groups Combined
Group Task (T)	21.5%[a]	13.3%	20.3%	15.9%	10.2%	12.0%	17.5%
	45.6%[b]	47.7%	———[c]	46.6%	46.6%	———[d]	46.6%
Individual Task (T_i)	35.6%	33.9%	38.9%	32.3%	35.5%	36.5%	34.8%
	28.5%	14.3%	———	22.2%	22.2%	———	22.2%
Group Institution (I)	14.7%	12.2%	11.4%	14.7%	11.6%	21.2%	13.5%
	12.3%	17.5%	———	14.6%	14.6%	———	14.6%
Individual Institution (I_i)	23.1%	32.7%	21.9%	31.1%	35.1%	23.7%	27.7%
	6.9%	13.9%	———	10.0%	10.0%	———	10.0%
Group Personal (P)	0.2%	0.3%	0.3%	0.2%	0.3%	0.0%	0.2%
	1.8%	0.5%	———	1.2%	1.2%	———	1.2%

TABLE 17 (Continued)

Communication Event	Male	Female	Black	White	Academic	Vocationally Oriented	All Groups Combined
Individual Personal (P_i)	3.1%	6.3%	6.4%	3.5%	5.1%	5.8%	4.6%
	2.2%	3.1%	——	2.6%	2.6%	——	2.6%
Group Mixed (M)	1.7%	0.6%	0.7%	1.5%	1.3%	0.8%	1.2%
	2.4%	2.9%	——	2.6%	2.6%	——	2.6%
Individual Mixed (M_i)	0.1%	0.8%	0.0%	0.7%	0.7%	0.0%	0.4%
	0.2%	0.0%	——	0.1%	0.1%	——	0.1%

[a]Data from Crist.

[b]Data from French.

[c]All subjects in French were white.

[d]All subjects in French taught in academic areas.

TABLE 18

SUMMARY OF THE DURATION OF COMMUNICATION EVENTS FOR EACH SUBJECT GROUP (CRIST AND FRENCH)

Communication Event	Male	Female	Black	White	Academic	Vocationally Oriented	All Groups Combined
Group Task (T)	53.7"[a]	40.8"	46.2"	51.1"	44.8"	38.4"	49.0"
	70.0"[b]	79.7"	———[d]	73.9"	73.9"	———[e]	73.9"
Individual Task (T_i)	30.4"	34.9"	27.0"	36.5"	36.5"	36.3"	32.5"
	43.8"	29.0"	———	37.6"	37.6"	———	37.6"
Group Institution (I)	20.2"	21.5"	16.8"	22.6"	21.2"	22.4"	20.8"
	28.6"	32.8"	———	30.3"	30.3"	———	30.3"
Individual Institution (I_i)	13.8"	12.8"	10.2"	14.5"	13.1"	15.6"	13.2"
	12.7"	10.6"	———	11.8"	11.8"	———	11.8"
Group Personal (P)	16.5"	3.0"	3.0"	16.5"	12.0"	0.0"	9.8"
	36.8"	20.0"	———	30.5"	30.5"	———	30.5"

TABLE 18 (Continued)

Communication Event	Male	Female	Black	White	Academic	Vocationally Oriented	All Groups Combined
Individual Personal (P_i)	9.8"	7.2"	6.7"	9.6"	7.4"	8.3"	8.1"
	14.1"	18.3"	——	16.1"	16.1"	——	16.1"
Group Mixed (M)	25.3"	14.4"	6.0"	26.8"	26.5"	22.0"	22.4"
	N.A.[c]	N.A.	——	N.A.	N.A.	——	N.A.
Individual Mixed (M_I)	15.0"	3.0"	0.0"	4.7"	4.7"	0.0"	4.7"
	N.A.	N.A.	——	N.A.	N.A.	——	N.A.

[a]Data from Crist.

[b]Data from French.

[c]Data not available.

[d]All subjects in French were white.

[e]All subjects in French taught in academic areas.

CHAPTER V

FINDINGS, CONCLUSIONS AND DISCUSSION, AND RECOMMENDATIONS

In this study the PIT model was used to categorize teacher/pupil verbal and nonverbal behaviors in two schools for adjudicated youth. Among primary purposes of this study was the attempt to gain an understanding of how teachers use their class time in schools for delinquents. Additionally, results of this study were compared to findings of the French study which dealt with teacher/pupil behaviors in public junior high schools. The intrastudy analysis and the interstudy comparison were conducted to describe what is occurring in schools so that we might speculate as to what ought to be occurring and to try to identify basic similarities and differences.

Findings

Major findings of this study were as follows:

1. Teacher behavior within the schools for delinquents was relatively evenly divided (in number of events) between task and institutional events. Teachers engaged in very few personal events.

2. Variations between the behaviors of male and female teachers in one type of school were not as great as the variations between these groups and their male and female counterparts in the other type of school. That is, the differences in teacher behavior occurred between the two types of schools and not between different types (groups) of teachers.

3. Male teachers within the schools for delinquents engaged in more group task events than did female teachers. Males engaged in fewer institutional events than females. Males engaged in fewer personal events, though the overall number of personal events for both groups was very small.

4. Black teachers within the schools for delinquents engaged in more task events than did white teachers. Black teachers engaged in fewer institutional events than whites. Blacks engaged in more personal events than whites, though the overall number of personal events for both groups was very small.

5. Academic and vocational teachers in the schools for delinquents engaged (relatively) in the same number of task events. They manifested no difference in the relative numbers of institutional events. Both groups had a small number of personal events. The durations of the various categories of events showed no variation with respect to academic and vocational teachers.

6. White teachers in the schools for delinquents engaged in more mixed events than black teachers in these same schools.

7. Teachers in the schools for delinquents engaged in more communication events per class period than did the teachers in the junior high schools. These events were shorter in duration, on the average, than the events in the public junior highs. This was true for both male teachers and female teachers.

8. Teacher behavior in schools for delinquents was oriented toward individual events; teacher behavior in public junior highs

was oriented toward group events. On the whole, group events were longer in duration than individual events. These tendencies were true for both male and female teachers. Female teachers in the schools for delinquents tended to be even more individually oriented than their male counterparts in the same schools.

9. Teacher behavior in schools for delinquents was evenly divided (in number of events) between task and institutional events; teacher behavior in junior highs was oriented toward task events. These tendencies were true for both male and female teachers, though males tended to be somewhat more task oriented in the schools for delinquents than were females.

10. Teacher behavior in both types of schools included a small number of personal events. The average durations of these events tended to be short. This was true for both male and female teachers; both groups in both types of schools were more individually personal than group personal.

11. Academic teachers in the schools for delinquents tended to be individually oriented. Their behavior was evenly divided (in number of events) between task and institutional events. Academic teachers in the junior high schools were group and task oriented. Behaviors manifested by academic teachers were no different from the behaviors of academic and vocational teachers when considered in combination.

Conclusions and Discussion

An examination of the findings permits several inferences regarding students and teachers in schools for adjudicated youth. Additionally, some salient features of the schools themselves begin to emerge when these schools are compared to public junior high schools.

1. In the schools for adjudicated youth, a major emphasis was apparently placed on the explication of what was to be and was not to be acceptable classroom and school (institutional) behavior. The relatively larger number of institutional events in schools for delinquents suggested their greater emphasis on teaching students how to behave in school than was the case in public junior highs. Interestingly, only infrequently did the author observe any process of what might be called traditional, overt discipline. Moreover, only infrequently did the author observe overt discipline problems. Crump reported (6:101) that when conflict situations arose they were dealt with by restricting nonverbal cues and direct verbal cues on the part of teachers. It is not clear whether few discipline problems occurred because no overt, punishment centered prohibitions were employed or whether these prohibitions were not employed because of the rather small incidence of discipline problems. (The meaning of "discipline problem" in schools for delinquents should be different from the meaning in public schools. To a large extent, students in schools for delinquents have been placed there because their behavior in public schools was deviant and unacceptable. That is, a large portion of the students in schools for delinquents have been

identified as "discipline problems"; their public school behavior did not satisfy expected norms. The difficulty with applying a traditional definition of discipline problem to students that have been judged delinquent is that most of them may well fit the definition even before they have a chance to display classroom behavior of any kind; in such cases, the definition would prove to be not useful and even harmful by virtue of its inability to make distinctions. For this reason, a redefinition or a rethinking of what the term "discipline problem" means seems in order.) However, it is clear that it is possible to be "institutionally" oriented without being discipline oriented. Institutional events in the schools for delinquents took the form of remonstrations rather than threats. It is possible that because the schools for delinquents had custodial capacities and essentially remained dominant over the students twenty-four hours a day, other means for controlling behavior existed which were beyond the scope of this study to observe. Nevertheless, students conducted their study tasks without harassment or harassing. Also noteworthy was the rather short duration of institutional events. When classroom management was needed, the events did not consume as much time as task events. (See Table 4, p. 45.) The suggestion for public schools is that acceptable classroom and school behavior can be maintained without punishment and discipline centered prohibitions. Perhaps the key lies in the frequency of the management behaviors of the teachers. Perhaps more institutional events of short duration are more effective than fewer and longer events. Might it be that teachers in schools for delinquents are more cognizant of the attention (and retention)

span of their students than are teachers in public schools? Possibly, the shortness of institutional events in schools for delinquents is an example of teachers matching their behavior with the capabilities of their students.

2. The small number of personal events taking place in all schools would suggest that this phenomenon had a cause which transcended the variables of school type, teacher sex and race, and content (subject matter) area. No combination of variables (i.e., school type, subject group, or content area) yielded anything but a negligible amount of personal events in comparison to the numbers of task and institutional events. One factor which may transcend the variables mentioned is that of role expectation. Teachers may feel that to be personal is to be "nonprofessional." As teachers, they are expected to teach subject matter, and to teach presupposes that they maintain a traditional teacher's role. As the roles are presently understood, it is contradictory to ask a teacher to be "personal" for to be personal requires him to divest himself of his teacher's role. In short, to be personal and simultaneously a teacher is paradoxical. In the schools for adjudicated youth, it is difficult to understand how teachers could have helped rehabilitate deviant behavior without relating personally to the students. In the public schools, it is difficult to understand how teachers can prevent deviant behavior if they do not relate personally to the students. The teaching profession in public schools may be encouraging discipline problems by assuming the role of pedagogue rather than mentor. Teachers may be forgoing opportunities to teach their students how to relate to,

work with, and show affection for others by not engaging in personal events.

3. The use of a greater number of individual events in the schools for adjudicated youth and the use of events of shorter duration may have resulted in the maintenance of student attention and the reduction of discipline problems. Teacher behavior in schools for delinquents was decidedly individual and the durations of communication events relatively short; these teachers engaged in more individual and more total events per class period than teachers in public junior highs. The nearly continuous movements of the teacher from one location of the room to another, the shifting of attention from one student to another and back to the original student may have served to divide the class period into smaller segments thus more nearly matching classroom structure with student attention span. Also, the proxemity of the teacher and student during the communication events and the seated or crouched position which the teacher often assumed by the side of the student may have signaled less threatening intentions on the part of the teacher. This "heads at the same level" stance that the teachers in the schools for delinquents often took may have helped reduce student misbehavior, and as importantly, it may have encouraged student participation. If as Crump reported (6:101) the students "believed" the nonverbal behaviors of their teacher and tended to ignore conflicting verbal messages, then nonthreatening body positions by the teachers might well have helped reduce discipline problems. If public schools are primarily group oriented (as they were in the French study), it may be that teachers use

the lecture technique primarily. Speaking from this "head higher than thy head" position or from behind a desk or lectern may be provoking student misconduct.

4. The similarities in the classroom behaviors of male and female teachers, of black and white teachers, and of academic and vocationally oriented teachers in the schools for adjudicated youth perhaps stemmed from the role expectations held for all teachers. No large differences were found in classroom behaviors between or among any groups of teachers in the schools for delinquents. Though teacher differences were found, differences between groups of teachers in the same type of school were not as great as differences between the teachers in the two different types of schools. Indeed, differential teacher behavior seemed to be predicated on differential school type (i.e., schools for delinquents and public junior high schools). Good, Sikes, and Brophy (14:85-86) reported that teacher behavior may not be a function of teacher sex but a function of institutional expectations. Lee (19:85-90) suggested that influential institutional constraints would mitigate against differential behavior based on the variable of teacher sex. This study confirms that which these prior studies would lead one to expect. That is, in the schools for delinquents, which were more institutionally oriented than the public junior highs, no apparent difference in the behaviors of teachers on the basis of sex was observed. Cosper (5) noted a difference in teacher behavior on the basis of student sex in the public schools. Crump (6:105) also noted this difference among teachers with public school experience. Crump,

however, did not find a difference in teacher behavior on the basis of student sex among teachers who had had experience teaching in correctional institutions. Thus the results of Cosper and Crump may be dependent on the relative strength of the institutional element in the types of schools they observed, and the results of this study may be indicative of the strength of the institutional element in the two schools for adjudicated youth. The sameness of the role expectations for teachers of different races and teachers in different content areas would also appear to have been confirmed by this study since no apparent differences were found in the classroom behaviors of black and white teachers and academic and vocational teachers in the schools for delinquents.

Recommendations

This study has raised several questions which invite further research:

1. What is the antecedent-subsequent relationship between punishment centered classroom management techniques and the incidence of student misconduct? That is, can one be said to be a cause of the other?

2. Is there a relationship between the frequency of classroom management behaviors on the part of the teacher and the effectiveness of teacher control?

3. Would an increase in the amount of personal (as defined in the PIT model) teacher behaviors result in a consequent increase in the amount of personal student behaviors?

4. Is the classroom attention span of juvenile delinquents in

schools for adjudicated youth shorter than the attention span of the average public school student? Is there a relationship between length of attention span and socioeconomic level?

5. What portion of student misconduct in the classroom can be attributed to rebellion (reaction) by the student toward the verbal and nonverbal behaviors of the teacher?

6. What is the relationship between the degree of institutionalism of a school and the diversity of teacher behavior? Does institutionalism serve to constrain teacher behavior? How does a high degree of institutionalism affect student behavior?

The whole area of differential teacher behavior on the variable of sex needs the attention of more researchers. Do male and female teachers teach differently, and do they favor one sex of student over the other? What are the interactions between teacher sex and race and student sex and race? Would it be possible to identify a teacher's sex and race merely by examining his interactions with a student of a particular sex and race?

Regarding the PIT model, its value lies in its simplicity. The three basic categories (i.e., personal, institutional, and task) are broad enough to be inclusive of most types of classroom activity, yet they are definitive enough to be mutually exclusive. Before a number of alterations are made on PIT, the author recommends that a pool of data be accumulated through the application of PIT to other settings. For instance, how does the information gleaned from the French and Crist studies relate to PIT applications in public high

schools and elementary schools? Are adult education programs more task oriented than institutional, and is the incidence of personal events greater in them than in other types of schools? Do personal events comprise a larger portion of all the events when teacher and student are more nearly the same age?

The definition of personal event which appeared on page 8 (i.e., a communication event in which the personal needs, goals, and emotions of pupils and/or of the teacher are the central focus) is stated inferentially rather than observationally. As a result of defining personal in terms of needs, a coder is forced to make judgements as to what a set of behaviors means to the person being observed. Thus the coder has to infer meaning. Had "personal event" been defined in more explicit and self-evident terms, a greater number of events might have been categorized as personal in this study. In the future, personal events might be defined as ones which focus on activities beyond the immediate and probable concern of schools and teachers as they (teachers) engage in classroom management and teaching subject matter. To be sure, the element of judgement remains, but a coder utilizing the proposed definition would be at liberty to assign a set of behaviors to a particular event category without first having to guess what the behaviors meant to the person(s) being observed.

PIT can be altered to make it more useful. The author feels that the refinements which were made with respect to personal and mixed events in this study proved to be superfluous because of the small number of personal and mixed events which occurred. It might prove useful to

alter PIT in a fashion similar to French and Galloway's modification of the Flanders system (i.e., add the capacity to record nonverbal behaviors). PIT is already sensitive to verbal and nonverbal behaviors because it records all behavior. However, it does not distinguish between the two kinds of events. It would be possible at the conclusion of a communication event to indicate, perhaps with a "v" or "n," whether the event was primarily verbal or nonverbal in nature. It might also be useful to alter PIT so that it becomes possible to indicate whether an event was initiated by teacher or student(s). Finally, as students become part of the focus of the observer's attention, it might be advantageous to record the student's sex and/or race. The value of PIT rests in its simplicity, and it might be counterproductive to make numerous changes all at the same time. However, it is well within the capacity of PIT to absorb one or two alterations and still remain an uncomplicated device for measuring classroom teacher/pupil interaction.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Achilles, C. M. Tennessee's Home/School Pilot Project for Indigent and Neglected Youth: Preliminary Assessment (1974). College of Education, The University of Tennessee: Bureau of Educational Research and Service, 1975.

2. Amidon, Edmund J. and Ned A. Flanders. The Role of the Teacher in the Classroom. Revised edition. Minneapolis: Association for Productive Teaching, Inc., 1967.

3. Bellack, Arno A., Herbert M. Kliebard, Ronald T. Hyman, Frank L. Smith, Jr. The Language of the Classroom. Teachers College, Columbia University: Teachers College Press, 1966.

4. Brophy, Jere E. and Thomas L. Good. Teacher-Student Relationships: Causes and Consequences. New York: Holt, Rinehart, and Winston, 1974.

5. Cosper, Wilma Baker. "An Analysis of Sex Differences in Teacher-Student Interaction as Manifest in Verbal and Nonverbal Behavior Cues." Unpublished doctoral dissertation. The University of Tennessee, Knoxville, 1970.

6. Crump, Harriet Barnes. "An Analysis of the Verbal and Nonverbal Behaviors of Teachers Toward Adjudicated Delinquents." Unpublished doctoral dissertation. The University of Tennessee, Knoxville, 1974.

7. Feldman, Robert S. "Nonverbal Behavior in Tutoring Interactions." Paper presented at the annual meeting of the American Educational Research Association. Washington, D. C., April 1974.

8. French, Russell L. "A Study of Communication Events and Teacher Behavior: Verbal and Nonverbal." Unpublished doctoral dissertation. The Ohio State University, Columbus, 1968.

9. French, Russell L. and Charles M. Galloway. "A Description of Teacher Behavior: Verbal and Nonverbal." Unpublished paper. The Ohio State University, Columbus, 1968.

10. French, Russell L. and Charles M. Galloway. "Communication Events: A New Look at Classroom Interactions." Educational Leadership, No. 6 (March 1970), pp. 548-552.

11. Galloway, Charles M. "An Exploratory Study of Observational Procedures for Determining Teacher Nonverbal Communication." Unpublished doctoral dissertation. The University of Florida, Gainesville, 1962.

12. Galloway, Charles M. "The Challenge of Nonverbal Research." Theory Into Practice, No. 4 (October 1971), pp. 310-314.

13. Good, Thomas L. and Jere E. Brophy. "Behavioral Expression of Teacher Attitudes." Journal of Educational Psychology, No. 6 (December 1972), pp. 617-624.

14. Good, Thomas L., J. Neville Sikes, and Jere E. Brophy. "Effects of Teacher Sex and Student Sex on Classroom Interaction." Journal of Educational Psychology, No. 1 (August 1973), pp. 74-87.

15. Hennings, Dorothy Grant. Mastering Classroom Communication. Pacific Palisades, California: Goodyear Publishing Co., 1975.

16. Herbert, John and Carol Attridge. "A Guide for Developers and Users of Observation Systems and Manuals." American Educational Research Journal, No. 1 (Winter 1975), pp. 1-20.

17. Huck, Schuyler W., William H. Cormier, and William G. Bounds, Jr. Reading Statistics and Research. New York: Harper and Row, 1974.

18. Knapp, Mark L. "The Role of Nonverbal Communication in the Classroom." Theory Into Practice, No. 4 (October 1971), pp. 243-249.

19. Lee, Patrick C. "Male and Female Teachers in Elementary Schools: An Ecological Analysis." Teachers College Record, No. 1 (September 1973), pp. 79-98.

20. London, Forestene L. "A Comparative Study of Black and White Observer Perceptions of Videotaped Verbal and Nonverbal Behaviors of Black and White (Male-Female) Teachers in Schools for Adjudicated Delinquents." Unpublished doctoral dissertation. The University of Tennessee, Knoxville, 1975.

21. Medley, Donald M. and Harold E. Mitzel. "Measuring Classroom Behavior by Systematic Observation." Handbook of Research on Teaching. Ed. N. L. Gage. Chicago: Rand McNally, 1963, 247-328.

22. Pellegreno, Dominick D. and Wendell C. Williams. "Teacher Perception and Classroom Verbal Interaction." Elementary School Guidance and Counseling, No. 4 (May 1973), pp. 270-275.

23. Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw Hill, 1956.

24. Silberman, M. L. "Behavioral Expression of Teachers' Attitudes Toward Elementary School Students." Journal of Educational Psychology, 60 (1969), pp. 402-407.

APPENDIX

TABLE 19

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS BY CATEGORY IN EACH SUBJECT GROUP (CRIST STUDY)

Group Task Events (T)

	Male	Female
Black	39[a] 24.7% 158[b]	84 18.8% 448
White	142 20.7% 685	20 6.0% 333

285 Total T Events

Individual Task Events (T_i)

	Male	Female
Black	75 47.5% 158	161 35.9% 448
White	225 32.8% 685	104 31.2% 333

565 Total T_i Events

TABLE 19 (Continued)

Group Institution Events (I)

	Male	Female
Black	17 10.8% 158	52 11.6% 448
White	107 15.6% 685	43 12.9% 333

219 Total I Events

Individual Institution Events (I_i)

	Male	Female
Black	26 16.5% 158	107 23.9% 448
White	169 24.7% 685	148 44.4% 333

450 Total I_i Events

TABLE 19 (Continued)

Group Positive Personal Events (P^+)

	Male	Female
Black	0 0.0% 158	2 0.4% 448
White	1 0.1% 685	0 0.0% 333

3 Total P^+ Events

Individual Positive Personal Events (P_i^+)

	Male	Female
Black	1 0.6% 158	34 7.6% 448
White	18 2.6% 685	10 3.0% 333

63 Total P_i^+ Events

TABLE 19 (Continued)

Group Negative Personal Events (P^-)

	Male	Female
Black	0 0.0% 158	0 0.0% 448
White	1 0.1% 685	0 0.0% 333

1 Total P^- Event

Individual Negative Personal Events (P_i^-)

	Male	Female
Black	0 0.0% 158	4 0.9% 448
White	7 1.0% 685	1 0.3% 333

12 Total P_i^- Events

TABLE 19 (Continued)

Group Mixed Events (M)

	Male	Female
Black	0 0.0% 158	3 0.7% 448
White	3 0.4% 685	1 0.3% 333

7 Total M Events

Individual Mixed Events (M_i)

	Male	Female
Black	0 0.0% 158	0 0.0% 448
White	0 0.0% 685	0 0.0% 333

0 Total M_i Events

TABLE 19 (Continued)

Group Differentiated Mixed Events (M_d)

	Male	Female
Black	0 0.0% 158	1 0.2% 448
White	11 1.6% 685	0 0.0% 333

12 Total M_d Events

Individual Differentiated Mixed Events (M_{di})

	Male	Female
Black	0 0.0% 158	0 0.0% 448
White	1 0.1% 685	6 1.8% 333

7 Total M_{di} Events

[a]Number in upper left-hand corner of each quadrant indicates the number of events in each group.

[b]Number in lower left-hand corner of each quadrant indicates the total number of events recorded for each subject group.

TABLE 20

AVERAGE DURATION OF EACH COMMUNICATION CATEGORY IN EACH SUBJECT GROUP (CRIST STUDY)

Group Task Events (T)

	Male	Female
Black	2508"[a] 64.3" 39[b]	3180" 37.9" 84
White	7206" 50.7" 142	1065" 53.3" 20

Individual Task Events (T_i)

	Male	Female
Black	2595" 34.6" 75	3771" 23.4" 161
White	6534" 29.0" 225	5469" 52.6" 104

TABLE 20 (Continued)

Group Institution Event (I)

	Male	Female
Black	189" 11.1" 17	972" 18.7" 52
White	2313" 21.6" 107	1074" 25.0" 43

Individual Institution Event (I_i)

	Male	Female
Black	303" 11.7" 26	1053" 9.8" 107
White	2397" 14.2" 169	2202" 14.9" 148

TABLE 20 (Continued)

Group Positive Personal Events (P^+)

	Male	Female
Black	0" 0.0" 0	6" 3.0" 2
White	27" 27.0" 1	0" 0.0" 0

Individual Positive Personal Events (P_i^+)

	Male	Female
Black	6" 6.0" 1	237" 7.0" 34
White	198" 11.0" 18	93" 9.3" 10

TABLE 20 (Continued)

Group Negative Personal Events (P^-)

	Male	Female
Black	0" 0.0" 0	0" 0.0" 0
White	6" 6.0" 1	0" 0.0" 0

Individual Negative Personal Events (P_i^-)

	Male	Female
Black	0" 0.0" 0	18" 4.5" 4
White	51" 7.3" 7	3" 3.0" 1

TABLE 20 (Continued)

Group Mixed Events (M)

	Male	Female
Black	0" 0.0" 0	21" 7.0" 3
White	159" 53.0" 3	48" 48.0" 1

Individual Mixed Events (M_i)

	Male	Female
Black	0" 0.0" 0	0" 0.0" 0
White	0" 0.0" 0	0" 0.0" 0

TABLE 20 (Continued)

Group Differentiated Mixed Events (M_d)

	Male	Female
Black	0" 0.0" 0	3" 3.0" 1
White	195" 17.7" 11	0" 0.0" 0

Individual Differentiated Mixed Events (M_{di})

	Male	Female
Black	0" 0.0" 0	0" 0.0" 0
White	15" 15.0" 1	18" 3.0" 6

[a]Number in upper left-hand corner of each quadrant indicates the total duration of events in each group.

[b]Number in lower left-hand corner of each quadrant indicates the number of communication events by category in each subject group.

TABLE 21

AVERAGE DURATION OF ALL COMMUNICATION EVENTS IN EACH SUBJECT GROUP (CRIST STUDY)

	Male	Female
Black	5601"[a] 35.4" 158[b]	9261" 20.7" 448
White	19101" 27.9" 685	9972" 29.9" 333

[a]Number in upper left-hand corner of each quadrant indicates the total duration of communication events for each subject group.

[b]Number in lower left-hand corner of each quadrant indicates the total number of communication events recorded for each subject group.

TABLE 22

NUMBER AND PERCENTAGE OF COMMUNICATION EVENTS BY CATEGORY AND CONTENT AREA (CRIST STUDY)

	Total Events in Each Content Area[a]	Categories of Events Expressed as a Percentage of the Total Number of Events in Each Content Area											
		T	T_i	I	I_i	P^+	P_i^+	P^-	P_i^-	M	Mi	M_d	M_{di}
Social Studies[b]	80	29[d] 36.3%	13 16.3%	21 26.3%	8 10.0%	1 1.3%	0 0.0%	1 1.3%	0 0.0%	0 0.0%	0 0.0%	7 8.8%	0 0.0%
Math	274	14 5.1%	104 38.0%	29 10.6%	104 38.0%	0 0.0%	17 6.2%	0 0.0%	5 1.8%	1 0.4%	0 0.0%	0 0.0%	0 0.0%
Science[c]	26	12 46.2%	10 38.5%	4 15.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Language Arts	557	41 7.4%	206 37.0%	55 9.9%	217 39.0%	1 0.2%	26 4.7%	0 0.0%	0 0.0%	2 0.4%	0 0.0%	2 0.4%	7 1.3%
Vocationally Oriented	359	43 12.0%	131 36.5%	76 21.2%	85 23.7%	0 0.0%	14 3.9%	0 0.0%	7 1.9%	2 0.6%	0 0.0%	1 0.3%	0 0.0%

[a]Physical education, counseling, and GED were omitted since they could not be assigned a content area.

[b]One "social studies" tape omitted since teacher was engaged in counseling behavior.

[c]Represents the total for one class; one was eliminated since it contained some math instruction.

[d]Indicates the total number of communication events in each category.

TABLE 23

DURATION OF COMMUNICATION EVENTS BY CATEGORY AND CONTENT AREA (CRIST STUDY)

	Total Event Duration in Each Content Area[a]	Average Duration of Events (in Seconds) in Each Communication Category											
		T	T_i	I	I_i	P^+	P_i^+	P^-	P_i^-	M	M_i	M_d	M_{di}
Social Studies[b]	2610"	1644"[d]	252"	429"	123"	27"	0"	6"	0"	0"	0"	129"	0"
		56.7"	19.4"	20.4"	15.4"	27.0"	0.0"	6.0"	0.0"	0.0"	0.0"	18.4"	0.0"
Math	7206"	333"	4398"	633"	1683"	0"	129"	0"	21"	9"	0"	0"	0"
		23.8"	42.3"	21.8"	16.2"	0.0"	7.6"	0.0"	4.2"	9.0"	0.0"	0.0"	0.0"
Science[c]	738"	540"	108"	90"	0"	0"	0"	0"	0"	0"	0"	0"	0"
		45.0"	10.8"	22.5"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"	0.0"
Language Arts	13266"	1779"	7410"	1164"	2493"	3"	204"	0"	0"	153"	0"	27"	33"
		43.4"	36.0"	21.2"	11.5"	3.0"	7.8"	0.0"	0.0"	76.5"	0.0"	13.5"	4.7"
Vocationally Oriented	9672"	1650"	4752"	1704"	1326"	0"	123"	0"	51"	54"	0"	12"	0"
		38.4"	36.3"	22.4"	15.6"	0.0"	8.8"	0.0"	7.3"	27.0"	0.0"	12.0"	0.0"

[a]Physical education, counseling, and GED were omitted since they could not be assigned a content area.

[b]One "social studies" tape omitted since teacher was engaged in counseling behavior.

[c]Represents the totals for one class; one was eliminated since it contained some math instruction.

[d]Indicates the total duration of communication events in each category.

TABLE 24

AVERAGE NUMBER OF COMMUNICATION EVENTS FOR EACH SUBJECT GROUP OVER A 40 MINUTE SPAN[a] (CRIST STUDY)

	White Male	Black Male	White Female	Black Female
All Events	88.6 events	64.0 events	81.0 events	113.1 events
T plus T_i	47.4 events (53.5%)[b]	46.2 events (72.2%)	30.1 events (37.2%)	61.9 events (54.7%)
I plus I_i	35.7 events (40.3%)	17.5 events (27.3%)	46.4 events (57.3%)	40.2 events (35.5%)

[a]Since no taped classroom activity was as long as 40', the events belonging to the first 10' of each tape were averaged and this average was multiplied by 4. It was necessary to omit a math class and the GED class since less than 10' of each was recorded.

[b]Figures in parentheses indicate the number of events recorded in the respective categories as a percentage of the gross number of events recorded in all categories.

TABLE 25

AVERAGE NUMBER OF COMMUNICATION EVENTS FOR THE TWO CONTENT AREAS OVER A 40 MINUTE SPAN[a] (CRIST STUDY)

	Academic[b]	Vocationally Oriented
All Event Categories	86.9 events	91.5 events
T plus T_i	39.7 events (45.7%)	44.4 events (48.5%)
I plus I_i	40.6 events (46.7%)	41.1 events (44.9%)

[a]Two math classes, the GED class, a "social studies" class, counseling sessions, and physical education classes have been excluded from these totals.

[b]Represents the totals for social studies, math, science, and language arts.

VITA

Michael Lowell Crist was born in Little Rock, Arkansas, on December 16, 1945. He attended the Little Rock public schools until his graduation in 1963. He received his Bachelor of Arts degree from the University of Arkansas at Little Rock in 1968. He moved with his wife to Nashville, Tennessee, and in 1969 began his employment with the Metropolitan-Nashville Public Schools. Granted a professional development leave from the system in 1974, he became a full-time resident student in the Department of Educational Administration and Supervision at the University of Tennessee, Knoxville. He received his Specialist in Education degree in 1975.

Mr. Crist is listed in Who's Who Among Students in American Colleges and Universities (1967-1968). He is a member of the honor societies of Phi Kappa Phi and Phi Delta Kappa. Among his pastimes are astronomy, photography, and aviation. He lives with his wife the former Jane Finger, daughter Amanda Leah, and collie dogs Ladybug Thyme and Gandalf Stormcrow outside Burns, Tennessee.