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Teacher behavior directed toward individual students in physical education classes: the influence of student gender and class participation.

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TEACHER BEHAVIOR DIRECTED TOWARD INDIVIDUAL STUDENTS IN PHYSICAL EDUCATION CLASSES: THE INFLUENCE OF STUDENT GENDER AND CLASS PARTICIPATION

A Dissertation Presented
by
RAYMOND J. ALLARD

Submitted to the Graduate School of the University of Massachusetts in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION
May 1979
School of Education
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Raymond J. Allard

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Dr. Lawrence F. Locke, Chairperson of Committee

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Dedication

To the teachers whose friendship and support made it all worthwhile: Joyce, Maggie, Tim and Tunner.
ACKNOWLEDGMENTS

Many individuals contributed to the preparation and successful completion of this study. To Dr. Lawrence F. Locke, chairperson of the Dissertation Committee, appreciation is sincerely extended for his many hours of both direction and encouragement. Appreciation is also extended to members of the Dissertation Committee, Dr. Horace Reed and Dr. George T. Lewis, for their valuable contribution. To Ms. Janice Gifford for her expert statistical assistance, I extend my thanks.

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To Joyce and Tim, I owe a lifetime of thanks for their unwavering support and encouragement.

Finally, thanks to the teachers and students who served as subjects; without their cooperation this investigation would not have been possible.
ABSTRACT

Teacher Behavior Directed Toward Individual Students in Physical Education Classes: The Influence of Student Gender and Participation

(May, 1979)

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The purposes of this study were (1) to describe the pattern of teacher behavior directed toward individual students observed in selected junior high school physical education classes, and (2) to examine the relationship between the amount and types of such teacher and the following variables: student gender and teacher perception of student class participation.

The Individualized Teacher Behavior Analysis System (ITBAS), developed by Dr. George T. Lewis (University of Massachusetts), was employed to collect data concerning eight categories of teacher behavior directed toward individual students. These behaviors included: accepting students' feelings, praising and encouraging, accepting and using students' ideas, asking questions, lecturing, giving directions, criticizing or justifying authority,
and total individualized teacher behavior. Data were then analyzed in terms of their relationship to student gender and teacher perception of students' class participation.

The study was conducted in a regional junior high school consisting of 7th, 8th, and 9th grade classes. Subjects were 5 teachers and 316 students from 10 different classes--two classes for each teacher. All classes were coeducational and the total student group included 174 males and 169 females.

Individualized teacher behaviors (ITB) were collected during three on-site observation sessions with each class. Teachers wore a cordless microphone which transmitted to a VHF receiver permitting the investigators to listen without intruding. Students were identified by means of pre-coded uniforms. All ITB data and the identity of the student to whom each behavior was directed were recorded on a portable tape recorder. Data contained in these verbal records were later transferred to computer cards for subsequent analysis.

Information concerning teacher perception of the level of each student's participation was obtained through use of a standardized ranking procedure. Following completion of observations for the collection of ITBAS data, the Teacher Ranking Task was administered to the teachers on two occasions with a one week interval. Only data for
students ranked consistently on both occasions were retained for analysis.

The 2-Sample Median Test was used to determine the relationship between the eight ITBAS categories and the variables of student gender, and teacher perception of students' level of class participation. Results were presented in three different formats: data from the entire study, data for each teacher, and data for each class. Due to the exploratory nature of the study, the 2-Sample Median Test results were reported at three levels of significance (.01, .05 and .10).

Overwhelmingly, the largest portion of ITB fell into the lecturing category (61%). Praising, questioning, and directing students each accounted for approximately 11%; criticizing and justifying authority accounted for 5%; behaviors associated with accepting students' feelings and accepting and using students' ideas never exceeded 1% of total ITB.

Although teacher behavior patterns were inconsistent from class to class and from teacher to teacher, in instances where significant differences were found, boys often were targets for more total ITB, praise, lectures, directions and criticism than girls. These findings generally concur with results from other studies.
The results for class participation do not form a clear pattern because of variability among the five teachers and ten classes. There were, however, a number of cases in which students perceived by their teachers as high participants were targets for different amounts and types of teacher behavior than students from the low participant group.

The investigation demonstrated the general utility of ITBAS, provided a description of ITB in 10 junior high school classes, presented information concerning the relation of ITB to student gender and perceived class participation, and resolved a number of technical problems inherent in the use of observation systems in live physical education settings.
# TABLE OF CONTENTS

LIST OF TABLES ....................................................... xiii

LIST OF FIGURES ..................................................... xiv

Chapter
I. INTRODUCTION ....................................................... 1

Purpose ................................................................. 3
Programmatic Approach to Research ................................. 3
Need for the Study ................................................... 4
Definition of Terms .................................................. 7
Limitations .............................................................. 9
Delimitations .......................................................... 10

II. REVIEW OF LITERATURE .......................................... 11

Introduction .......................................................... 11
Students' Gender ...................................................... 12
Hypotheses--Student Gender ......................................... 20
Class Participation ................................................... 21
Hypotheses--Class Participation ................................... 25
Individualized Teacher Behavior Analysis System (ITBAS) .... 26
Flanders' Interaction Analysis System (FIAS) .................... 27
Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) .... 27

III. METHODOLOGY ...................................................... 29

Selecting the School ................................................ 29
Gaining Access to the School ....................................... 30
Sample ................................................................. 31
Briefing the Subjects ............................................... 33
Variables .............................................................. 36
Design ................................................................. 36
Measurement of Variables ........................................... 37
Data Collection ...................................................... 39
Data Analysis ......................................................... 40
Pilot Study ............................................................ 44
Inter-Observer Reliability .......................................... 45

xi
IV. RESULTS ..................................................... 50
   Introduction .............................................. 50
   Descriptive Data ......................................... 50
   Hypotheses--Student Gender ............................ 61
   Hypotheses--Teacher Perception of Class Participation ............................................ 65
V. DISCUSSION, SUMMARY AND CONCLUSION ............... 72
   Introduction .............................................. 72
   Descriptive Information ................................ 73
   Findings: Student Gender Hypotheses ................. 74
   Other Findings for the Student Gender Variable .................................................... 76
   Findings: Class Participation Hypotheses .......... 77
   Other Findings for the Class Participation Variable .................................................. 78
   Other Observations ....................................... 79
   Situational variables .................................... 79
   Isolates .................................................... 80
   Interactions between variables ........................ 81
   Summary ................................................... 81
   Conclusions ................................................. 83

BIBLIOGRAPHY .................................................. 88

APPENDIX ........................................................ 93
## LIST OF TABLES

1. The Sample .......................................................... 32
2. Impact of Targeting for Class Participation .................. 41
3. Students Targeted Into the Three Levels of Class Participation ............................................... 42
4. Inter-Recorder Reliability Checks ............................... 47
5. Student Gender--Median Test Comparisons--Entire Study ....................................................... 62
6. Student Gender--Median Test Comparisons by Individual Teacher ................................................. 63
7. Student Gender--Median Test Comparisons by Individual Class .................................................... 64
8. Class Participation--Median Test Comparisons--Entire Study ....................................................... 66
9. Class Participation--Median Test Comparisons--Individual Teacher ............................................... 68
10. Class Participation--Median Test Comparisons--Individual Class ................................................ 70
11. Appendix D--2 Sample Median Test Significant Differences--Student Gender .................................. 125
12. Appendix D--2 Sample Median Test Significant Differences--Class Participation .......................... 126
13. Sample Computer Program for Descriptive Statistical Analysis .................................................... 128
14. Sample Computer Program for 2 Sample-Median Analysis ............................................................. 129
LIST OF FIGURES

1. Distribution of ITB Category for all Observations . 52
2. Teacher A Distribution of ITB by Category . . . . . 54
3. Teacher B Distribution of ITB by Category . . . . . 55
4. Teacher C Distribution of ITB by Category . . . . . 56
5. Teacher D Distribution of ITB by Category . . . . . 57
6. Teacher E Distribution of ITB by Category . . . . . 58
7. Distribution of ITB Across the Student Population . 60
CHAPTER I
INTRODUCTION

There has been approximately a half century of research involving teaching and teacher education. Most of this research has occurred since 1940. Over the years, investigators have focused on a number of interest areas, beginning with early knowledge-building studies and progressing to others involving the design and evaluation of educational programs. By far the most popular area of research prior to the sixties focused on the effect of the teacher on student learning (Dunkin and Biddle, 1974).

Studies which sought to identify single teacher characteristics or teaching methods which affected student gains later gave way to naturalistic studies as the primary research focus. A precursor of the shift in emphasis to naturalistic studies was the development of interest in the systematic observation of classroom behaviors. Since the early works of Anderson (1939) and Withall (1949), literally hundreds of observational systems have been developed and employed by researchers. For example, a publication by Simon and Boyer (1970) describes 79 observation systems for observing and recording classroom behavior.
A good number of these observational systems were designed to record teacher-student interactions. Perhaps the best known system for reducing classroom interaction into suitable categories for tabulation and analysis is the Flanders Interactional Analysis System (FIAS). This system and modifications of it have provided researchers and practitioners with an abundance of information concerning classroom interactions between teachers and students.

Some investigators have found the strategy of FIAS to be too general to yield information about events which affect individual students, there being important differences in individual student behavior in classrooms. In response to this concern, some investigators have focused on teacher behavior directed toward individual students. One research team has developed the Teacher-Child Dyadic Interaction System to permit trained observers to focus data collection on individual children rather than the class as a group (Brophy and Good, 1970).

Interest in how teachers interact with individual students now is emerging in physical education. For approximately ten years, researchers in physical education have been employing observational instruments to systematically record and analyze events in the gymnasium. Many of these systems have been modified to permit investigators to examine specific aspects of teacher behavior. For example,
the Cheffers Adaptation of Flanders' Interactional Analysis System (CAFIAS) enables a trained observer to record non-verbal as well as verbal teacher and student behavior.

One area of inquiry which researchers in physical education are just beginning to recognize is that of analyzing teacher behavior directed toward individual students or sub-groups of students. Brophy and Good have pioneered this area of research in the classroom and the results of their studies provide a useful basis for extending this research to the world of the gymnasium.

**Purpose**

The purpose of this study was to describe the pattern of individualized behavior observed in selected junior high school physical education classes and to examine the relationship between the amount and types of teacher behavior directed toward individual students, considering the following variables: student gender and teachers' perception of student level of class participation.

**Programmatic Approach to Research**

The study involved two simultaneous, cooperative investigations that employed a recently developed observational system to explore individualized teacher behavior in
the gymnasium. The two studies investigated the relationship between sex of student, teachers' perception of certain student characteristics, and the amounts and types of teacher behaviors directed toward students. An observation instrument for this purpose (Individualized Teacher Behavior Analysis System--ITBAS) was designed and standardized as part of the preparation for these studies.

The two studies employed a sample of co-educational junior high school physical education classes taught by male and female teachers. In addition to sharing a sample population and some elements of investigative procedure and instrumentation, the variables treated in the two studies were arranged so that, when taken together, they produced a composite picture which greatly exceeded the scope of any single dissertation effort. Each dissertation, however, presents a complete review of literature only for the variables which served as its primary focus. Thus, the primary variables for this study were student gender and teacher perception of student participation in class activity. The comparison study focused on teacher perception of student personality and skill performance level.

Need for the Study

Researchers in education have demonstrated that teachers behave differently with students displaying different
characteristics (Brophy and Good, 1974). In physical education, however, there is little information concerning teacher behavior directed toward individual students. Whether the research methods and findings of classroom research can be generalized to physical education settings is as yet unknown. Certainly there are a number of reasons to be cautious about such transfer.

Perhaps the most important reason for caution is the environment in which physical education classes take place. Gymnasia, playing fields and swimming pools present constraints on the observation and recording of behavior which are different from those present in the classroom. A second complication is presented by the subject matter. Generally speaking, more time is dedicated to the psychomotor domain in physical education classes than in other classes, and non-verbal modes of communication may constitute a larger portion of all student-teacher exchanges. These factors have a profound effect on teacher-student interaction and make the generalization of findings from classroom research problematic.

A great deal of research dealing with teacher-student relationships has been conducted employing systems which record teacher behavior directed at the entire class. There are, however, some important problems with observational systems which gather information on the class as a whole.
One problem is that the strategy is too general to yield information about events which affect individual students. There are important differences in individual student behavior in classrooms. Some of these differences may be attributed to presage variables. Some of the differences, however, may be attributed to the treatment which individual students receive in school (Brophy and Good, 1974).

A better understanding of the patterns and associated factors in the distribution of teacher attention to individual students would have consequences in both theory and practice. For example, a concern that is shared by a large segment of the American population (teachers, parents, students and political leaders) is that schools provide equal opportunity for students. Many teachers realize that they probably do not provide all students with an equal amount of time and instruction. The teacher's sense of this discrepancy, however, is likely to be subjective and impressionistic at best. Data collected with instruments such as the one used in this study could provide teachers with objective information concerning the manner in which they react to individual students in physical education classes.

Many teachers believe that a substantial amount of their behavior should be directed toward individual students. Recent trends in instructional methods, such as
individualized instruction, modular instruction and learning centers may increase the total amount of teacher behavior directed toward individual students. It appears more important than ever to study patterns of individualized teacher behavior as a basis for understanding and improving current practices (Brophy and Good, 1974).

Definition of Terms

The Individualized Teacher Behavior Analysis System (ITBAS). The system is designed to record teacher behavior directed toward individual students in class populations. An adaptation of Flanders' Interaction Analysis System, ITBAS contains the following seven categories of behavior:

1. Accepts feelings
2. Praises or encourages
3. Accepts or uses ideas
4. Asks questions
5. Lectures
6. Gives directions
7. Criticizes or justifies authority

The ITBAS system permits the recording of verbal and non-verbal teacher behavior directed to individual students.

Teacher behavior. The seven teacher behavior categories of ITBAS.
Individualized teacher behavior. Verbal and non-verbal teacher behavior directed to one student.

Teacher ranking task. An instrument developed and field-tested by the investigators to measure teacher perception of student skill performance, student participation and student in-class personality. The instrument is designed to facilitate the task of ranking students into three divisions.

Teachers' perception. A teacher's impression or judgment of a specific student as expressed by the relative position assigned that student on the Teacher Ranking Task for each variable.

Student in-class personality. The relative position assigned to a student on a Teacher Ranking Task, using the teachers' perception of the student's characteristics, attitudes, and behaviors exhibited while attending class.

Student skill performance. The relative position assigned to a student on a Teacher Ranking Task using the teacher's perception of the individual student's present proficiency in executing skills in the activity being taught.

Student participation. The relative position assigned to a student on a Teacher Ranking Task using the teacher's
perception of the student's characteristic level of engagement in class activity.

**Limitations**

Since the ITBAS instrument divides all teacher behavior into seven discrete categories, it represents a global view of teacher behavior and prohibits distinguishing other features within the established categories. For example, teacher criticism is lumped into a single category whether it be "constructive" or otherwise.

Since this was a preliminary study dealing with individualized teacher behavior in physical education, questions relative to causality were not appropriate. The study focused first on providing a description of teacher behaviors and secondarily on relationships between these behaviors and selected student variables.

There also is a possibility that teacher-student behavior was influenced by the potentially reactive conditions required for gathering data. Since students were required to wear identifying numbers, the teachers required to wear a wireless microphone, and the investigators required to be present in the activity area with recording equipment, the subjects were fully aware that they were the objects of observation by individuals who were not regular members of the school society.
Delimitations

This investigation focused on only four variables in an attempt to deal with a manageable segment of life in physical education settings. Research indicates that teacher-student interactions may be influenced by numerous variables. Sex, race, socioeconomic status, student achievement, and personality are only a few of the factors cited in research reports (Brophy and Good, 1974). Therefore, only a small segment of the potentially significant elements in physical education classes was observed and recorded.

Selection of the variables was based on several criteria: presence of the variable within the proposed population sample, support for the variable in the literature, cost of measuring the variable, and interest of the investigators. The scope of the study was limited, therefore, in that potentially important variables were not included. The generalizability of results also was limited by sample size, the single level of public schools represented in the sample, and the particular activities being taught in the classes observed.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

As noted, this study involves two independent variables: student's gender and teachers' perception of student's level of class participation. The companion study focused on teachers' perception of in-class personality and skill performance level.

In the past decade researchers in education have begun to focus on teacher behaviors directed toward individual students or sub-groups of students. Research in this area has been pioneered by the team of Brophy and Good. In addition to their numerous research reports in the book Teacher-Student Relationships: Causes and Consequences (1974) Brophy and Good have provided researchers and practitioners with a summary of findings drawn from a wide range of sources.

Results from studies of teacher-student interactions have illustrated conclusively that teachers react differently to students because of variables that classify students into identifiable groups. Some of the more powerful variables are sex, race, and socioeconomic status.
Student's Gender

Sex is perhaps the most fundamental and pervasive of all the variables that could be employed to divide people into groups. This one variable (sex) has been the subject of more investigation than all other variables combined. For example, there have been studies investigating female teachers and male students, male teachers and female students, sex-role and stereotyping of male and female roles, discrimination against boys by female teachers and discrimination against girls by male teachers. Some of these studies, most notably those dealing with sex of students, have particular relevance to the current investigation.

In an investigation conducted by Jackson and Lahaderne (1967), data was collected from four sixth-grade classrooms. Two of the teachers were male and two female. A total of 36 hours of classroom observations focused on the transmission of information between teacher and individual students. The observers recorded the following information concerning the teacher-student interactions: the student involved, the initiator (student or teacher) and the content of the message (instructional, managerial or prohibitory).

Although the study employed very broad observational categories, the results indicated wide differences in teacher-student interactions. The teachers engaged in more interaction with the boys than with girls in all three behav-
ior categories. In the prohibitory category, however, boys received a much larger proportion of the teacher's comments than girls.

In a similar study by Appleford (1974) and associates, teachers were observed during a free play period. The behavior checklist employed divided the interactions between teachers and the pre-schoolers (kindergarten) children into three categories: instructional, social and discipline, and control contacts. The observation procedure allowed for recording the type of contact, initiator of contact, and the child contacted. Four teachers were observed for six hours each, during which time a total of 18 time samples of 20 minutes each were taken.

The results from this study generally are similar to those reported by Jackson and Lahaderne. Male students received a larger degree of disciplinary and control contacts than females. Females, on the other hand, did receive a higher proportion of social contacts with the teacher.

Sikes (1971) also discovered that boys received more total teacher contacts than did girls. These included not just negative contacts, but more academic contacts as well. The higher proportion of teacher behavior directed toward girls, however, was positive.

Results from a number of studies indicate that boys engage in more interactions of all kinds with their teachers
than do girls. This was found to be especially true in interactions that focused on control and criticism of the student by the teacher. Generally speaking, boys were found to be reprimanded, criticized, and warned more often than girls (Brophy and Good, 1970; Martin, 1972; Evertson, Brophy and Good, 1972).

Maccoby (1966) attributed the higher interaction rates for boys to the fact that boys were more assertive and aggressive than girls. Lahaderne and Jackson (1970) found girls to be less active than boys to the point that the boys dominated most of the classroom discussion and most of the teacher interaction.

Jackson (1968) has pointed out that teachers on the average may be expected to react to more than a thousand student-initiated stimuli daily. Teachers, therefore, are more likely to be reactive than preactive in their interactions with students. It also seems reasonable to assume that since boys are more active and assertive than girls in classrooms, there is a greater chance that teachers will react more frequently to boys than to girls.

Differences between groups of high achieving and low achieving boys may be as distinct as those between boys and girls (Brophy and Good, 1970). Low achieving boys did not raise their hands to respond to teachers' questions as often as did high achievers, but received twice as much teacher
criticism. High achieving boys were viewed by teachers as being well adjusted and successful as compared to the low achievers who were perceived as lazy, immature, maladjusted, or troublesome (Brophy and Good, 1970). In several studies in which boys were found to receive more praise than girls, a large portion of the praise was received by boys belonging to high achieving groups (Good, Sikes and Brophy, 1972).

Finally, according to Maccoby (1966), the fact that boys receive more teacher behaviors directed toward them than girls may be related in some measure to the fact that boys' behaviors are more variable than those of girls. This greater variability in boys is reflected in data from physiological, biological, and educational measures.

Many of the studies concerned with interactions between sex of students and the sex of the teacher involved elementary school children and the "plight" of male students in early childhood classrooms. Generally speaking, girls outperformed boys, especially in reading and related verbal skills. Although most writers agree that there are no sex differences in intelligence or ability between boys and girls at this level, the following factors are generally cited as reasons for differences in performance: (1) matur- ation rates favor girls, (2) young boys experience role-conflict between sex-role expectations appropriate for boys and student role expectations, and finally, females occupy a
greater proportion of elementary school teaching positions than males do (Brophy and Good, 1974).

These factors concerning early childhood education have served as stimulus for a substantial amount of research on teacher-student behavior. The fact that a good number of elementary school teachers are female, and the fact that girls generally outperform boys in early grades have led investigators to explore the relationship between the sex of both teachers and students on achievement and a variety of other classroom interactions. The central theme of these studies appeared to be whether males or females were more appropriate teachers of such skills as reading and mathematics to young children. Different combinations of sex of teacher and student were tested to determine which was more effective.

In summarizing a review of the research in this area, Brophy and Good (1974) made the following observations. There was no evidence to support the idea that males or females could be more effective teachers, that is, more capable of diagnosing or meeting students' needs, or more sympathetic to students. Male teachers were not found to be any more effective with young boys than were female teachers. The authors concluded that male teachers treat boys and girls differently, but in much the same manner that female teachers do. The results of these investigations also
concur with findings from previously reported studies, in that boys received more total teacher behaviors, much more criticism, and somewhat more praise than girls.

The final study to be discussed employed a unique approach and provides some interesting results. Since the appearance of *Pygmalion in the Classroom*, in which the authors concluded that teacher expectations for student achievement could very well become a self-fulfilling prophecy affecting student outcomes (Rosenthal and Jacobson, 1968), a number of researchers have focused on teachers' expectations and attitudes concerning their students. The Student Attribute Study, a two-year investigation undertaken to identify student characteristics and behaviors related to teacher expectations and attitudes, was grounded in the work of Rosenthal and Jacobson (Brophy and Evertson, 1976).

The study employed a sophisticated data-collection procedure. Six different sets of data indicated teachers' perceptions of student characteristics as expressed through ranking procedures. In addition, extensive data were gathered through classroom observations. On all the teacher perception variables, girls were viewed much more favorably than boys. For example, boys were viewed as less well suited for the student role than girls.

Although girls were viewed more favorably than boys, classroom observation data did not reveal a uniform pattern
which would favor girls. The results of this study agree with the findings of other studies reported. Boys were found to receive more criticism for poor work, whereas girls' work-related contacts generally involved seeking approval for finished work. In nonacademic private interactions, boys received many personal contacts. In most cases, these contacts consisted of teachers requesting boys to perform tasks that girls did without being asked. In general, these findings revealed that girls approached the teacher more often than boys, teachers approached boys for work contacts and girls for non-work contacts, and boys received more total contacts than girls, usually as a consequence of misbehavior.

In summarizing results from the studies cited, sex differences found included these:

(1) boys received more total teacher behaviors directed toward them than girls;

(2) boys received more interactions involving praise, behavioral criticism, and control of misbehavior;

(3) boys were found to be more salient (assertive and active) than girls;

(4) boys' behaviors were found to be more variable than those of girls.

The teachers' sex had no effect on the type of teaching behaviors directed at students. Both male and female teachers treated male and female students in much the same
manner. Although rankings of students suggest that teachers perceive girls much more favorably than boys, the classroom observation data revealed no clear pattern of teacher favoritism toward girls.

The results of the studies reviewed have some implications for the current investigation. The studies demonstrate that boys received more total teacher behavior, more praise, and more behavioral criticism. These findings were attributed at least in part to the fact that boys were more aggressive than girls and that boys violated class rules more often than girls. There is, however, reason to believe that interaction patterns in physical education settings may be different from those found in the classroom.

Both in absolute terms and relative to girls, boys may be even more active in the gymnasium. This assumption is based on the belief that boys will be more aggressive and competitive than girls as well as more skilled and physically stronger. Some of these factors will, of course, depend to a great extent upon the particular learning task. With the recent shift to co-educational activities, boys may occasionally find themselves in activities in which prior experience provides the girls with some initial advantage. Field hockey may be an example of such an activity.

Another reason that interaction patterns in physical education may differ from those of the classroom is that
society has different expectations for boys' and girls' behavior in sport and physical activity. The aggressive and competitive behavior of boys is more socially accepted in physical education than it appears to be in the classroom. The socially accepted behavior for girls, on the other hand, would appear to be in conflict with student-role expectations, a situation experienced by boys in early childhood classrooms.

**Hypotheses--Student Gender**

Based upon the review of literature and the assumptions discussed above, the following research hypotheses were formulated to guide investigation of the student gender variable to teacher behaviors.

Teachers will direct more:

-- praise and encouragement
-- lecturing
-- directions
-- criticism and justifications
-- total behavior
to boys than to girls. No differences are expected between boys and girls on teacher behavior that accepts student feelings, uses student ideas, or asks students questions.
Class Participation

Unlike the student gender variable, there were only a few research reports concerning class participation. In addition to being few in number, classroom research studies included class participation variables only as a secondary concern. The primary concerns of the studies were to develop a standardized observational instrument (Atkinson et al., 1975), to investigate student locus of control (Wolfgang and Potvin, 1974), and to develop self-monitoring techniques to increase appropriate student behavior (Risley, 1973).

Participation studies in physical education also are few in number. A review of the literature produced only three articles. One describes a step-by-step development of an individualized intramural basketball program which increased student participation (Moyer, 1977). The other two contain suggestions aimed at increasing student participation in physical education classes (Ziatz, 1977 and Clumpner, 1979).

The foregoing studies do not build a strong case supporting the need for investigating teacher perception of student participation. The physical education studies do, however, indicate that student participation in class activities is a pervasive concern for physical educators, a concern which may reflect a unique characteristic of the
physical education environment.

Conditions in physical education classes generally permit students a certain amount of autonomy concerning the degree to which they engage in the work of the class. As a consequence, there is considerable variation among students in the number of trial attempts, direct engagement with opponents in competitive activity, use of warm-ups, and duration of performance in assigned learning tasks.

It appears safe to assume that the majority of physical education teachers consider participation to be an important instructional goal (a desired state of student behavior), and there are a number of underlying reasons for this. The first and perhaps most important is that it is very difficult, if not impossible, to learn a psychomotor skill without directly engaging in some form of practice, and participation is necessary as an antecedent condition for practice. The second reason is that students who are engaging in activity are less prone to cause administrative or discipline problems for the teacher. Third, students who are participating in class activity may be contributing to the improvement of their organic fitness.

Teachers also view participation as an important educational goal (a desired outcome of the educational pro-
That is, they believe that physical activity is intrinsically a valuable and worthwhile experience. When the teacher is successful in creating an environment which causes students to participate, this is viewed as successful achievement of an educational intention, irrespective of the consequences of such engagement for either learning or physiological change.

Whether participation is viewed as a means (instructional goal) or an end (educational goal), there is little doubt that it is likely to be a variable in student behavior to which physical education teachers are particularly sensitive. This is reflected in grading practices in many school districts. It is not uncommon to find that participation represents a substantial portion of the overall grade assigned to students in physical education classes.

Participation is a variable which has specific consequences for the amount and types of behavior teachers may direct to students they perceive as representing different levels of in-class participation. The best explanation of this situation may be obtained by examining students who do not participate. For the purpose of the present discussion, they may be divided into two categories: (1) students who are properly attired (appropriate uniform or clothing) for physical education, but who for various reasons avoid the activity, and (2) those not
properly attired, but who show up for class with or without reasons or excuses for not participating. Students belonging to these categories require specific forms of attention from teachers which will be distinct from that given to students who actively participate.

Students who are properly attired, but display avoidance behaviors, may receive several types of teacher behavior depending on the teacher's diagnosis of the cause for nonparticipation, whether the behavior is typical or atypical of that student, and the teacher's personal values concerning participation in class activity. The teacher may attempt to motivate the student by indirect actions such as encouragement or enticement, may elect to use direct behaviors such as compelling the student to engage in the activity, or may choose to ignore the student.

On the other hand, students not properly attired for activity, in many cases, require administrative procedures to sort out the reasons behind their actions and to decide upon the appropriate steps to be taken (punitive or procedural) in response to the student's decision not to participate. The behaviors a teacher would exhibit while interacting with students from these nonparticipating categories obviously would be different than those employed while dealing with an active participant. Appendix F contains a memorandum from the junior high school principal
from the school in which the study was conducted. The memorandum describes the school policy concerning nonparticipation in physical education classes.

In contrast, students who are actively involved in the class have more opportunity to receive other forms of teacher behavior directly related to their performance, such as praise, encouragement, criticism, or direction.

The discussion thus far has presented a case for participation as a powerful variable which may be related to individualized teacher behavior in physical education classes. For example, students perceived as displaying high levels of participation might be expected to receive more total teacher behaviors than students perceived as displaying lower levels of participation. There are no adequate grounds, however, to permit the investigators to make predictions as to the particular types of behaviors teachers will direct to students perceived as high or low participants.

**Hypotheses--Class Participation**

Teachers will direct more total behavior to students perceived as having high levels of class participation than to students perceived as having an average or low level of class participation.

No differences are predicted among high, average, and low class levels of perceived participation and teacher behav-
iors that accept student feelings, praise or encourage, use student ideas, question students, lecture, give student direction, criticize, or justify authority.

**Individualized Teacher Behavior Analysis System (ITBAS)**

For close to four decades, researchers in education have been developing observational systems to analyze and describe classroom behavior. Since the early works of Anderson (1939), and Withall (1949), literally hundreds of observational systems have been developed and employed in classroom research.

The Individualized Teacher Behavior Analysis System (ITBAS) employed in this investigation was developed by Dr. George T. Lewis at the University of Massachusetts. The following brief account places ITBAS in the context of other observational systems employed in educational research.

Anderson's original system of 23 categories which focused on contact of teachers with kindergarten children (Anderson, 1939) was condensed by Withall (1949) into a system of seven categories for analyzing teacher behavior. Unlike Anderson, who was concerned with both teacher and student verbal and non-verbal behavior, Withall focused exclusively on teacher verbal behavior. Although Withall's work was in itself an important contribution to classroom
research, it probably is better known for having served as the stimulus for Flanders' work.

The Flanders Interaction Analysis System (FIAS), easily the most popular observational system ever devised, was developed in the late fifties. Flanders intended to devise a system that would permit teachers to understand the quantity and quality of influences they exerted in classrooms. In developing the ten category system, for use when the teacher and student are engaged in verbal interaction, Flanders built on the earlier works of Withall and expanded his system to include categories for student talk. Of the ten FIAS categories, the first seven are concerned with teacher talk. Two of the remaining three categories are devoted to student talk, and the final category represents silence or confusion (Amidon, 1969).

Over the past two decades, many researchers have modified FIAS to meet their specific needs. For example, Cheffers' Adaptation of Flanders Interaction Analysis System (CAFIAS) is one such modification for research in physical education.

CAFIAS differs from FIAS in several important respects. CAFIAS was developed to allow recording of non-verbal behavior by teacher and student, and hence shows the same concern evidenced by Anderson for non-verbal behaviors. Furthermore, the teaching agent may be the class-
room teacher, other learners or students or environmental factors.

ITBAS, a recent addition to the many existing observational systems, is a modification of both FIAS and CAFIAS, containing features not found in either prior system. FIAS allows coding of both verbal and non-verbal teacher behavior into seven categories which correspond to the first seven FIAS categories. ITBAS differs from both FIAS and CAFIAS in that it permits a trained observer to record teacher behavior directed to individual students as opposed to the entire class.
CHAPTER III

METHODOLOGY

Selecting the School

While in the process of planning the investigation, discussions were held with a number of school principals in an attempt to assess the possibilities of undertaking the project in a public school. The information obtained from the principals proved to be valuable for a number of reasons. In addition to their input concerning items such as design of the study, potential variables to explore, and various methods of data collection, the principals also provided information concerning possible school sites and procedures necessary to gain access to public schools. Armed with this information, the investigators examined a number of junior high schools in search of a site at which to conduct the investigation.

The stringent criteria for selection of a study site made the final search process a short one. As at least four full-time teachers were necessary, and since a school was sought in which physical education classes met on a daily basis, only one school could be located which fully qualified.
Gaining Access to the School

Because the investigators were familiar with the proposed school site and, more importantly, were acquainted with the teachers, procedures for the proposed study were discussed at length (without revealing the primary research objectives of the study), and the teachers' support obtained prior to contacting the school principal and other school district administrators. The investigators believed the teachers would view this as a more personal approach than a letter or memorandum from a school administrator requesting or suggesting that they consider participating in the study. Although this violates the sequence of procedures normally employed for establishing access, the absolute demand for full teacher cooperation justified the risks inherent in modifying "chain of command" procedure. With the teachers' initial commitments in hand, the principal was then contacted.

The initial contact with the principal led to a request for background information (rationale for the investigation, the number of teachers required, the equipment to be employed, and the people to be involved in addition to the school personnel). A copy of the letter containing the requested information appears in Appendix C. At a subsequent meeting the principal approved the project in general
and provided the investigators with a set of guidelines. A few weeks later, the school principal informed the investigators that he had met with the teachers and that full permission was granted to conduct the investigation.

Sample

The study was conducted in a regional junior high school consisting of seventh, eighth, and ninth grades. The school has a staff of close to 80 teachers and aides, and an enrollment of approximately 1000 students. The school is located in a small town in western Massachusetts. The physical education facilities consist of a large gymnasium, two large exercise rooms, a 25 yard swimming pool, eight outdoor tennis courts, plus several large outdoor playing fields.

The physical education staff included five teachers, three male and two female, and the 333 students from their 10 classes made up the initial sample for the investigation. The original student number of 333 subsequently was reduced to 316, as 17 students were eliminated because they were absent for more than one observation period. Table 1 defines the sample population.

Five of the ten classes were engaged in fitness testing, three were involved in softball units, one was in a tennis unit, and one class involved a combination of tennis
### TABLE 1
THE SAMPLE

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Sex</th>
<th>Class</th>
<th>Activity</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M</td>
<td>A1</td>
<td>Fitness</td>
<td>19</td>
<td>19</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A2</td>
<td>Fitness</td>
<td>19</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>B</td>
<td>F</td>
<td>B1</td>
<td>Softball</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B2</td>
<td>Tennis/Softball</td>
<td>17</td>
<td>15</td>
<td>32</td>
</tr>
<tr>
<td>C</td>
<td>M</td>
<td>C1</td>
<td>Tennis</td>
<td>15</td>
<td>22</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C2</td>
<td>Fitness</td>
<td>17</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td>D</td>
<td>M</td>
<td>D1</td>
<td>Fitness</td>
<td>16</td>
<td>14</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D2</td>
<td>Softball</td>
<td>20</td>
<td>14</td>
<td>34</td>
</tr>
<tr>
<td>E</td>
<td>F</td>
<td>E1</td>
<td>Fitness</td>
<td>16</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E2</td>
<td>Softball</td>
<td>20</td>
<td>13</td>
<td>33</td>
</tr>
</tbody>
</table>

|         |     |       |                   | 174   | 159     | 333   |
and softball. The study was conducted during the first half of the final six-week unit for the school year. The classes observed were selected in collaboration with the teachers. In effect, the classes observed were those in which the teachers felt comfortable about being observed, which fitted into a reasonable schedule of observation, and which permitted the investigators an opportunity to collect the required data in a systematic manner.

Each of the five teachers had had at least nine years of teaching experience in physical education, and had been teaching co-educational classes since the beginning of the school year.

The largest class size was 38 students, with the smallest having 30 students. The average class size was 33.3 students with 17 males and 16 females. Of the 333 students making up the original sample, 174 were males and 159 females.

**Briefing the Subjects**

The classroom observations were conducted over a three week period from May 10 to May 31, 1978. Each of the ten classes were observed on five different occasions, the last three observations being recorded. Two days before observations began, all five teachers were given individual briefings and a schedule of the observation periods in which
the investigators would be in the classes. The teachers were informed that all of the variables involved in the investigation could not be revealed, but were assured that all of the information collected would be made available to them after completion of the study. It was explained that the general purpose of the study was to investigate teacher behavior in physical education classes.

During the briefing, teachers were introduced to the wireless microphone and familiarized with its use. It was explained that the recording equipment was not to record teacher talk, but to permit the investigators to "listen in" without intruding. Teachers also were informed that an additional two hours of their time would be needed following the completion of the observation periods.

To explain the purpose of the investigation, initial meetings were held with the students from each of the ten classes. The investigators were introduced by the teachers who explained that they would be present in the next five class meetings, collecting information for a research study.

The students also were informed that the purpose of the study was to explore teacher behaviors in physical education classes. They were requested to wear a pre-assigned number for the next five classes. The reason for the number, it was explained, was for identification purposes. The investigators then responded to any questions the students
asked, once again making clear that the exact details concerning all elements of the study could not be revealed at this time.

Following the question period, students were given a demonstration of how to put on, tie and wear the pre-coded uniform. They were then asked to obtain the uniform in the locker room prior to the next four classes and to leave them in a large box which would be placed outside the locker rooms after each class period.

Prior to the beginning of the first observation period (for all classes), the uniforms had been arranged in an orderly manner along the far wall of the exercise room. A chart containing the students' names and assigned numbers was posted on the wall above the uniforms. Students were requested to get their respective numbers and put them on. Any students experiencing difficulties were assisted, any missing students or numbers were noted, and the class began. The entire process took approximately ten minutes of class time.

For the other four observation periods (there were a total of five), students obtained the uniform in the locker rooms, with help from the investigative team. Uniforms were hung over a rope arranged to permit students to have easy access to the numbers, and class lists containing the students' names and numbers were posted next to the uni-
forms prior to the beginning of each class. An investigator always was present in the locker rooms prior to each class observation to assist and encourage students to wear their assigned numbers. After the locker rooms were vacated by the students, the remaining uniforms were collected and recorded as not having been used. Checks also were conducted to make sure students wore the correct numbers.

Variables

A review of the literature illustrates that there are numerous variables which could serve as potential stimuli for influencing teacher behavior toward individual students. Four of these variables which appear to have a strong affect on teacher behavior in the classroom were selected for this initial study in physical education. They are student gender and teachers' perceptions of students' in-class personality, skill performance, and participation. The latter three variables are based upon teachers' perception of student characteristics.

Design

In order to describe teacher behavior patterns in selected junior high school classes, the two companion dissertations employed an exploratory case-study design, com-
posed of four independent and eight dependent variables. The independent variables are nominal classification variables and are composed of student gender, teacher perception of student participation, in-class personality, and skill performance level. The dependent variables are the total amount of teacher behavior and the seven teacher behavior categories of ITBAS.

Measurement of Variables

Three teacher perception variables were measured through use of the Teacher Ranking Task. This instrument requires that teachers group students into high or low cohorts through the use of standardized procedures (see Appendix B). The instructions which identify the variable on which the teacher performs the ranking operation employ simple, highly generalized global constructs (personality, skill, and participation) rather than more sophisticated, specific and tightly defined constructs. The decision not to define the teacher perception variables was based upon premises drawn from the behavioral sciences.

For the purpose of the present studies, it appeared important that teachers be allowed to rank students on each variable without interference from an imposed set of specific definitions or descriptors provided by the inves-
tigators, the rationale being that such imposed criteria (definitions and descriptors) might be inconsistent with values the teacher actually employed in forming attitudes, impressions, and expectations about students. Further, there was no empirical base to suggest which definitions would provide a "best fit" for physical education teachers. At best, the investigators would only have been guessing at which descriptors and definitions generalize across the selected teacher population.

The associations examined in this study focus on teachers' perceptions in relation to their individualized teaching behaviors. The investigators deliberately chose not to provide descriptors or definitions for each variable, attempting by that decision to acquire the most accurate reflection of each teacher's perception as expressed through the process of student ranking. Given the present primitive state of knowledge about individualized behavior, such simple ranking procedures represent an appropriate measure of student variables.

The present study represents an exploratory investigation designed to identify general factors which are significantly related to differential teacher behavior in the gymnasium. The task of examining the relationships between more specifically defined variables and teacher behavior directed toward individual students is the work of future
Data Collection

All data were collected by observers trained in the use of ITBAS. See Appendix A for a detailed explanation of recording procedures.

Only teacher behaviors directed toward individual students were recorded. Teachers wore a cordless microphone which transmitted to a VHF receiver, thus permitting observers to hear the teacher at all times.

Each observation period began when the first student entered the gymnasium or playing area and ended when the last student left. Each teacher was observed in each of two classes on three different occasions. The observers employed a portable tape recorder to make a verbal record of each teacher behavior directed toward an individual student and to identify the recipient of that behavior.

To reduce the potential for reactive conditions, the data collection process began on the third day the observation team was present in class. During the field observations conducted to establish ITBAS reliability, the students of the classes observed initially appeared to be very curious about the investigators. After subsequent visits, however, the novelty seemed to wear off and students did
not appear to be concerned about the presence of the investigators.

Following completion of the observations, the Teacher Ranking Tasks were administered to the teachers on two different occasions (see Appendix B). Each teacher was given the Teacher Ranking Task for level of participation on the day of the last observation.

Data Analysis

As a first step, the total sample of 316 students was reduced by eliminating from analysis for a given variable all data derived from students for whom the teacher was unable to provide a stable test-retest rank on that variable (a procedure commonly called "targeting"). For example, students who were not ranked the same by a teacher on both applications of the Teacher Ranking Task for class participation were eliminated from the analysis for that variable. The students retained thus became "targets" for the investigation. Appendix B provides a complete rationale for this procedure and an account of how it was accomplished. Table 2 displays the impact of targeting for class participation on the sample from each class.

Table 3 displays the distribution of targeted students into each of three levels of class participation.
<table>
<thead>
<tr>
<th>Teacher</th>
<th>Sex</th>
<th>Class</th>
<th>Students Retained</th>
<th>Students Eliminated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>A</td>
<td>M</td>
<td>A1</td>
<td>16</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A2</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>B</td>
<td>F</td>
<td>B1</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B2</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>M</td>
<td>C1</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C2</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>M</td>
<td>D1</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D2</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>E</td>
<td>F</td>
<td>E1</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E2</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>139</td>
<td>115</td>
</tr>
</tbody>
</table>
### TABLE 3

**STUDENTS TARGETED INTO THE THREE LEVELS OF CLASS PARTICIPATION**

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Sex</th>
<th>Class</th>
<th>High Male</th>
<th>High Female</th>
<th>Medium Male</th>
<th>Medium Female</th>
<th>Low Male</th>
<th>Low Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>M</td>
<td>A1</td>
<td>15</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td></td>
<td>16</td>
<td>7</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>B</td>
<td>F</td>
<td>B1</td>
<td>10</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>B2</td>
<td></td>
<td></td>
<td>11</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>M</td>
<td>C1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C2</td>
<td></td>
<td></td>
<td>8</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>M</td>
<td>D1</td>
<td>5</td>
<td>1</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>D2</td>
<td></td>
<td></td>
<td>5</td>
<td>-</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>F</td>
<td>E1</td>
<td>4</td>
<td>2</td>
<td>8</td>
<td>9</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>E2</td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**TOTAL**

81 45 49 42 12 20/249
Inspection of Table 3 reveals that two teachers (A and B) were unable to follow the procedures for the Teacher Ranking Tasks (see Appendix B) and used two rather than three ranking categories. Both teachers deviated from the prescribed procedures, explaining that due to the relatively homogenous characteristics displayed by students in several classes being observed, they felt unable to make judgements beyond simple dichotomization. In several cases, teachers were very inconsistent in ranking students for participation.

The tape recorded ITBAS observations were transcribed to matrix work sheets. Specific behaviors for each student were coded separately with row totals representing the total number of teacher behaviors received by each student. Column totals represented the total frequency of each teacher behavior across all students. Observations for each teacher were transferred to computer cards for statistical analysis.

The Statistical Package for the Social Science Program (SPSS)--Version 7 was employed to analyze the data. Appendix E contains sample programs used to analyze the descriptive data and to test the hypotheses.

The hypotheses were tested by employing a 2-sample median test designed to measure differences in central tendency for two independent samples (one variables, two groups). The test is accomplished by combining the scores of the two groups to be compared. Once a contingency table
is established for scores that exceed the median versus those that do not, a test statistic is computed from the cell totals and marginals. Significance levels are computed by means of a chi-square statistic for comparisons in which the number of cases exceeds 30. In situations of fewer than 30 cases, the level of significance is computed by means of Fisher's Exact test. The output is displayed in a 2 x 2 contingency table representing the number of cases above and below the median for each group.

Pilot Study

During the Fall semester of 1977, the investigators in collaboration with Dr. George Lewis (a dissertation committee member and developer of ITBAS) visited a variety of physical education classes to determine the feasibility of employing ITBAS to collect data for the proposed investigations. ITBAS was field-tested in elementary, junior, and senior high schools as well as in university physical education classes. Suitable inter-observer reliability was established (see Appendix A) and the investigators demonstrated that ITBAS was effective in obtaining the data required.

After establishing the general effectiveness and reliability of ITBAS, a pilot study was conducted with one
male teacher and two Junior High school physical education classes. The pilot study was conducted in order to investigate the following concerns:

1. the amount of time the observer should be present prior to actual data collection, the concern being to reduce the potential reactive conditions created by the observers and equipment;

2. to explore different techniques for managing use of the precoded uniforms;

3. to test the performance of electronic hardware under various conditions.

The pilot study provided the following information on the areas of concern. Students and teachers seemed to require at least two days of observation in order to feel at ease with the presence of the investigators and recording equipment. By the third day there were very few questions or concerns about the equipment or observation process. Having the students put on the pre-coded uniforms prior to entering the activity area proved to be the only way that recorders could begin recording the class as soon as the first student entered the activity area. The equipment (tape recorder, cordless microphone, and VHF receiver) functioned as planned with only minor adjustments.

Inter-Observer Reliability

During the course of data collection, ITBAS inter-observer reliability checks were conducted on ten different
occasions. The checks were arranged to include each teacher, each class, and each of the observation periods (first, second, or third observation). Since one of the investigators (primary recorder) was recording the entire class period, the checks consisted of the second investigator (secondary recorder) recording a specific segment of the class (approximately 10 to 15 minutes). The investigators employed signals to indicate the beginning and end of the reliability checks. The primary recorder made notations on the tape to distinguish the reliability check from the remaining portion of the recorded class.

The data collected from these segments were subject to the following analysis. Each recorded teacher behavior was transcribed from the audio-tape to the appropriate cell of a summary chart. The following calculations were then performed. The total number of tallies was summed in each cell, the cell totals summed for each row (total of teacher behaviors received by each student), and the cell total summed for each column (total amount of teacher behavior in each category).

Reliability was calculated by employing the Pearson product moment correlation coefficient. Cell, column, and row totals for each observer were compared with totals from the other observer. Table 4 displays the results of the
<table>
<thead>
<tr>
<th>Class</th>
<th>Observation Period</th>
<th>Row Totals</th>
<th>Column Totals</th>
<th>Cell Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>3</td>
<td>.99</td>
<td>.99</td>
<td>.85</td>
</tr>
<tr>
<td>A2</td>
<td>1</td>
<td>.54</td>
<td>.99</td>
<td>.82</td>
</tr>
<tr>
<td>B1</td>
<td>2</td>
<td>.94</td>
<td>.99</td>
<td>.76</td>
</tr>
<tr>
<td>B2</td>
<td>1</td>
<td>.99</td>
<td>.99</td>
<td>.99</td>
</tr>
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<td>C1</td>
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<td>.51</td>
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<td>.99</td>
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<td>.99</td>
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<tr>
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<td>2</td>
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<td>.98</td>
<td>.88</td>
</tr>
<tr>
<td>E1</td>
<td>3</td>
<td>.97</td>
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<td>.98</td>
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<tr>
<td>E2</td>
<td>2</td>
<td>.95</td>
<td>.99</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>.82</strong></td>
<td><strong>.93</strong></td>
<td><strong>.77</strong></td>
</tr>
</tbody>
</table>
reliability checks.

Since it was necessary for the observer to identify the student as well as the behavior, a Pearson correlation coefficient of .80 or higher was considered acceptable. The selection of this figure was influenced by the level of agreement recommended by Flanders (1967), a correlation coefficient of .85. The reliability check for class 5 represents an extremely low figure compared to the figures for the other checks, and clearly indicates a problem peculiar to that occasion. In spite of check 5, the average reliability levels for row, column and cell totals were .82, .93, .77. If, however, check 5 is dropped from the average reliability level calculation the figure for row, column, and cell totals become .89, .98, and .96.

In an attempt to determine the cause for low inter-recorder reliability on check 5, the investigators reanalyzed the tapes produced by both observers for this particular session. A number of errors were made by the secondary observer during this check, a circumstance which accounted for the poor level of agreement. The secondary observer missed both the teacher behavior and the target of the behavior during a discussion on the rules of tennis between the teacher and four students. During the discussion the teacher made statements which were directed to a single student. Because of the physical vantage point of the sec-
ondary observer he was unable to pick up the teacher's eye contact with the student and assumed the behaviors were not directed to any one student, but rather to the group.

This does illustrate one limitation of the ITBAS instrument. The fact that the problem did occur only on one occasion in 10 trials suggests that it is not a disabling limitation, but rather one which calls for caution in interpretation of data gathered by a single observer during a single observation.
CHAPTER IV

RESULTS

Introduction

This chapter presents the results of the investigation, and is divided into two sections. The first section presents descriptive data dealing with the entire study population, individual teachers and individual classes. The second section focuses on the analysis of various segments of the data to test the research hypotheses. This particular study investigated hypotheses related to student gender and class participation, while the companion study dealt with class personality and skill performance level.

Descriptive Data

The results will be presented as they relate to the entire study, each individual teacher and each class. For example, Fig. 1 presents data for all teachers in all classes distributed into the seven categories of the Individualized Teacher Behavior Analysis System (ITBAS), whereas Figs. 2 through 6 display the individualized teacher behavior distribution for each teacher in each of the ten classes. In addition to presenting information in the for-
mat described above, the analysis of results will focus on eight dependent variables, total amount of teacher behavior and the seven teacher behavior categories of ITBAS, as they relate to the five teachers and the 316 students.

The following individualized teacher behaviors were observed, coded into categories and totaled for each student:

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1</td>
<td>Accepts Feelings</td>
</tr>
<tr>
<td>Behavior 2</td>
<td>Praises or Encourages</td>
</tr>
<tr>
<td>Behavior 3</td>
<td>Accepts or Uses Ideas</td>
</tr>
<tr>
<td>Behavior 4</td>
<td>Asks Questions</td>
</tr>
<tr>
<td>Behavior 5</td>
<td>Lectures</td>
</tr>
<tr>
<td>Behavior 6</td>
<td>Gives Directions</td>
</tr>
<tr>
<td>Behavior 7</td>
<td>Criticizes or Justifies Authority</td>
</tr>
</tbody>
</table>

There were a total of 4,539 teacher behaviors directed toward individual students in the 30 classes. Fig. 1 represents the behavior distribution over the seven teacher behavior categories of ITBAS, for the entire study. This figure shows that well over half (61%) of the teacher behavior directed toward individual students was in the form of lecturing or providing information.

The teachers gave directions, asked questions, and provided praise and encouragement with approximately the same frequency, each constituting 11% of the total individualized teacher behavior. Teachers criticizing or justify-
Fig. 1. Distribution of ITB by Category for all Observations (ITB N=4539)
ing authority accounted for roughly 5% of the individualized behavior. Accepting student feelings and accepting and using student ideas were the least frequent teacher behaviors, each accounting for less than 1% of the total individualized teacher behavior. The mean frequency of total behavior per class was 455 behaviors, while the mean frequency of total behavior per teacher over six observations was 908 behaviors.

Figs. 2 through 6 are graphic illustrations of the behavior distribution for the two observed classes taught by each teacher. These figures (2 through 6) indicate that the total individualized teacher behavior varied substantially from class to class, except for teacher A, a case in which the individualized teacher behavior pattern was rather consistent for the two different classes. Overall, teacher D emitted far fewer behaviors than his colleagues, falling below the mean of 455 per teacher by a margin of 108 instances of individual behaviors.

A display of the data for the two classes taught by each teacher illustrates some of the similarities and differences between the classes. One obvious difference reflected in Figs. 2 through 6 is that some ITBAS behaviors are emitted at different rates by the same teacher in different classes. Some examples of this difference are: lecturing (behavior 5) for teachers A, B, C and E; and
Fig. 2. Teacher A Distribution of ITB by Category

PERCENTAGE OF INDIVIDUALIZED TEACHER BEHAVIOR (ITB)

BEHAVIOR CATEGORIES

1. Accepts Feelings
2. Praises
3. Accepts & Uses Ideas
4. Questions
5. Lectures
6. Directs
7. Criticizes

Class A1
Class A2
Fig. 3. Teacher B Distribution of ITB by Category

- accepts feelings
- praises
- accepts & uses ideas
- questions
- lectures
- directs
- criticizes

PERCENTAGE OF INDIVIDUALIZED TEACHER BEHAVIOR (ITB)
Fig. 4. Teacher C Distribution of ITB by Category

PERCENTAGE OF INDIVIDUALIZED TEACHER BEHAVIOR (ITB)

<table>
<thead>
<tr>
<th>BEHAVIORS</th>
<th>Class C1</th>
<th>Class C2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepts Feelings</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Praises</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Accepts &amp; Uses Ideas</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Questions</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Lectures</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Directs</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criticizes</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Fig. 5. Teacher D Distribution of ITB by Category

PERCENTAGE OF INDIVIDUALIZED TEACHER BEHAVIOR (ITB)

<table>
<thead>
<tr>
<th>Category</th>
<th>Class D1</th>
<th>Class D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accepts Feelings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Praises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Accepts &amp; Uses Ideas</td>
<td>0 0</td>
<td></td>
</tr>
<tr>
<td>4. Questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Lectures</td>
<td></td>
<td>60%</td>
</tr>
<tr>
<td>6. Directs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Criticizes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BEHAVIORS
Fig. 6. Teacher E Distribution of ITB by Category

PERCENTAGE OF INDIVIDUALIZED TEACHER BEHAVIOR (ITB)

100

70

60

50

40

30

20

10

Accepts Feelings

Praises

Accepts & Uses Ideas

Questions

Lectures

Directs

Criticizes

BEHAVIORS

Class E1

Class E2
praise and encouragement (behavior 2) for teachers B, C and D.

In addition to revealing some of the differences in teacher behaviors from class to class, the figures (2 through 6) illustrate another interesting feature of the study. Although the teacher behavior varied from class to class there are certain consistencies in the individualized teacher behavior pattern. All five teachers engaged in more lecturing (behavior 5) than any other type of behavior, irrespective of the class. They also accepted student feelings and used student ideas (behaviors 1 and 3) less frequently than all other behaviors.

Further results of interest were discovered when the teacher behavior data were displayed in conjunction with a tabulation of the students who were the targets for these behaviors. Fig. 7 illustrates the distribution of individualized teacher behaviors across the student population. One hundred and twenty-nine students (42% of the student population) had between 0 - 6 instances of individualized teacher behavior (ITB) directed toward them, accounting for only 8% of the total ITBs. At the other end of the distribution, 6 students (2% of the student population) had between 73 - 97 instances of ITB directed toward them, representing 6% of the total ITBs.
Fig. 7. Distribution of ITB Across the Student Population

FREQUENCY RANGE OF BEHAVIORS DIRECTED TO EACH STUDENT

NUMBER OF STUDENTS
Further examination of the data arranged in this manner indicates that of the 129 students who had between 0 - 6 instances of ITB directed toward them, 9 students or 3% of the student population were true isolates in that they never received a one-to-one behavior from their teacher.

**Hypotheses**

**Student gender.** This section will report results from analysis based upon hypotheses concerning the independent variables of student gender, and teacher perception of student level of class participation. Two-sample median tests were employed to analyze scores for total behavior, and the seven behavior categories of ITBAS. The following comparisons were performed:

- **Student Gender--Males to Females**
- **Teachers' Perception of Student Class Participation**
  - High to medium participants
  - High to low participants
  - Medium to low participants

Results from these analysis were reported in the following manner:

- Results of the entire study, including all data for the 10 different classes combined.
- Results for each individual teacher, a combination of data from both classes taught by the same teacher.
- Results for each class, data from each of the ten classes separately.
Student gender. Table 5 contains the results of the 2-sample median test conducted on the data from the entire study. In both cases boys were the targets for more of these behaviors (5 and 7) than were girls.

**TABLE 5**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>More Behavior Directed to</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturing</td>
<td>Males</td>
<td>.05</td>
</tr>
<tr>
<td>Criticizing and Justifying Authority</td>
<td>Males</td>
<td>.05</td>
</tr>
</tbody>
</table>

The results of the 2-sample median test conducted on the data arranged for each individual teacher (Table 6) revealed six differences significant at the .05 and .10 levels. Once again, in each of the instances reported in Table 6, boys were the target for the greater amounts of teacher behaviors. Significant differences also were found when 2-sample median tests were conducted on the data for each class individually. The results of these findings appear in Table 7.

The results obtained from analysis of the data arranged by individual class were similar to the results revealed in the data for the entire study and individual teachers, in
<table>
<thead>
<tr>
<th>Teacher</th>
<th>Behavior</th>
<th>More Behavior Directed to</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Criticizing and Justifying Authority (7)</td>
<td>Males</td>
<td>.05</td>
</tr>
<tr>
<td>B</td>
<td>Lecturing (5)</td>
<td>Males</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Total Behavior</td>
<td>Males</td>
<td>.05</td>
</tr>
<tr>
<td>E</td>
<td>Praise (2)</td>
<td>Males</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td>Criticizing and Justifying Authority (7)</td>
<td>Males</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td>Total Behavior</td>
<td>Males</td>
<td>.10</td>
</tr>
<tr>
<td>Class</td>
<td>Teacher</td>
<td>Behavior</td>
<td>More Behavior Directed to</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>-----------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>A1</td>
<td>A</td>
<td>Questioning (4)</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Criticizing and Justifying Authority (7)</td>
<td>Males</td>
</tr>
<tr>
<td>A2</td>
<td>A</td>
<td>Accepts Feelings (1)</td>
<td>Females</td>
</tr>
<tr>
<td>B1</td>
<td>B</td>
<td>Lectures (5)</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Behavior</td>
<td>Males</td>
</tr>
<tr>
<td>B2</td>
<td>B</td>
<td>Directing (6)</td>
<td>Males</td>
</tr>
<tr>
<td>C1</td>
<td>C</td>
<td>Questioning (4)</td>
<td>Females</td>
</tr>
<tr>
<td>D1</td>
<td>D</td>
<td>Questioning (4)</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Directing (6)</td>
<td>Males</td>
</tr>
<tr>
<td>D2</td>
<td>D</td>
<td>Praise (2)</td>
<td>Females</td>
</tr>
<tr>
<td>E2</td>
<td>E</td>
<td>Praise (2)</td>
<td>Males</td>
</tr>
</tbody>
</table>
that boys were the targets for significantly greater amounts of behavior than were the girls. The only exceptions occurred in class A2 (accepting feelings), class C1 (questioning) and in class D2 (praise). In these cases the girls were the targets for the significantly greater amounts of behaviors.

Summarizing the results of the 2-sample median test analysis on the student gender variable, boys were the targets for greater amounts and different types of teacher behavior than girls. This was true in 16 of the 19 cases in which significant differences were established at the .01, .05 and .10 levels. Appendix D contains further results from the analysis of the student gender variables.

Teacher Perception of Student Class Participation

For the class participation variable, the results of the 2-sample median test comparison conducted on the data arranged for the entire study revealed (Table 8) two significant differences at the .05 and .10 levels. Both cases were concerned with behavior 6 (giving students directions). The comparisons established that students perceived by their teachers as high participants were the targets of fewer directing behaviors than students from either the medium or low groups. Further, in the only high, medium, low comparison to yield significant results (see Appendix D), students
# TABLE 8

**CLASS PARTICIPATION--MEDIAN TEST COMPARISON--ENTIRE STUDY**

<table>
<thead>
<tr>
<th>Groups Compared</th>
<th>More Behavior Directed to</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-Medium</td>
<td>Medium</td>
<td>.10</td>
</tr>
<tr>
<td>High-Low</td>
<td>Low</td>
<td>.05</td>
</tr>
</tbody>
</table>
perceived by their teachers to be high participants were the targets of fewer directing behaviors than either the medium or low groups. The medium group in turn was the target of fewer behaviors than students perceived by their teachers to be low participants.

Four significant differences were found as a result of the median test comparisons conducted on the data for individual teachers. All four were significant at the .10 level. Table 9 displays the results of this analysis.

Teacher E is represented twice in these results. Ideas of the students perceived by this teacher to be high participants were used more often than those of students belonging to the medium group. Also students perceived by this teacher to be high participants were the targets of more total behavior than those of the low group. Students perceived by teacher D to be high participants were asked more questions than students belonging to the medium group. Finally, more behaviors associated with criticizing or justifying authority were directed at students in the low groups.

The results of the median test comparisons conducted on each individual class revealed 14 differences significant at .01, .05 and .10 levels. Of these four dealt with behavior 2 (praise and encouragement); two each with behavior 4 (questioning), behavior 5 (lecturing), behavior 7
### TABLE 9

CLASS PARTICIPATION--MEDIAN TEST COMPARISONS BY INDIVIDUAL TEACHER

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Behavior</th>
<th>Groups Compared</th>
<th>More Behavior Directed to</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Criticizing and justifying authority</td>
<td>High-Low</td>
<td>Low</td>
<td>.10</td>
</tr>
<tr>
<td>D</td>
<td>Questioning</td>
<td>High-Medium</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td>E</td>
<td>Accepting Feelings</td>
<td>High-Medium</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td>E</td>
<td>Total Behavior</td>
<td>High-Low</td>
<td>High</td>
<td>.10</td>
</tr>
</tbody>
</table>
(criticizing and justifying authority) and total behavior; and one case each for behavior 3 (accepting and using students' ideas) and behavior 6 (directing). The results of this analysis appear in Table 10.

The results indicate that students in the low participation group are not only the target of more directing behaviors; but within particular classes these students also were the targets for more contacts related to praise (2), lecturing (5), criticizing (7), questioning (4), and total behavior. Not surprisingly, students in the medium group are less likely to be the target of a significantly greater number of teacher contacts of any kind.

In summarizing the results of the comparisons conducted on high, medium and low participants, the following generalizations can be made. Students perceived as low participants by their teachers often were the target for more behaviors associated with directing, criticizing and justifying authority than students from the high or medium groups. If students perceived as medium participants are the targets of any form of different treatment, it also is likely to be teacher behaviors associated with directing and criticizing (categories 6 and 7). Students perceived as high participants had their ideas accepted and used more often than students from the medium group. Significant differences also were found for comparisons of the three groups
<table>
<thead>
<tr>
<th>Class</th>
<th>Teacher</th>
<th>Behavior</th>
<th>Groups Compared</th>
<th>More Behavior Directed to</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>A</td>
<td>Praise (2)</td>
<td>High-Low</td>
<td>Low</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lecturing (5)</td>
<td>High-Low</td>
<td>Low</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Behavior</td>
<td>High-Low</td>
<td>Low</td>
<td>.10</td>
</tr>
<tr>
<td>A2</td>
<td>A</td>
<td>Criticizing and Justifying Authority (7)</td>
<td>High-Low</td>
<td>Low</td>
<td>.05</td>
</tr>
<tr>
<td>B1</td>
<td>B</td>
<td>Questioning (4)</td>
<td>High-Low</td>
<td>Low</td>
<td>.05</td>
</tr>
<tr>
<td>C2</td>
<td>C</td>
<td>Criticizing and Justifying Authority (7)</td>
<td>High-Medium</td>
<td>Medium</td>
<td>.10</td>
</tr>
<tr>
<td>D1</td>
<td>D</td>
<td>Questioning (4)</td>
<td>High-Medium</td>
<td>High</td>
<td>.05</td>
</tr>
<tr>
<td>D2</td>
<td>D</td>
<td>Directing (6)</td>
<td>High-Low</td>
<td>Low</td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Praise (2)</td>
<td>High-Medium</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td>E1</td>
<td>E</td>
<td>Accepting Ideas (3)</td>
<td>High-Medium</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td>E2</td>
<td>E</td>
<td>Lecturing (5)</td>
<td>High-Low</td>
<td>Low</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Praise (2)</td>
<td>High-Low</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Praise (2)</td>
<td>High-Medium</td>
<td>High</td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total Behavior</td>
<td>High-Low</td>
<td>High</td>
<td>.01</td>
</tr>
</tbody>
</table>
(high, medium and low) on behaviors 2, 4 and 5, however, these results do not form a clear pattern because of the degree to which they varied among the five teachers and over the 10 classes.
CHAPTER V

DISCUSSION, SUMMARY AND CONCLUSIONS

Introduction

This study was designed to describe the nature of teacher behavior directed toward individual students in physical education classes in terms of student gender and teachers' perception of students' level of class participation. Hypotheses were generated to: (1) help guide data collection and analysis, and (2) to identify potentially valuable areas for further investigation.

Because of the exploratory nature of the study and the concern with identifying areas for further investigation, the hypotheses were not treated as experimental hypotheses to be subject to acceptance or rejection. For example, the results of the 2-sample median test were presented at three different levels of significance (.01, .05 and .10). Given a thorough understanding of the procedures used in the study, readers can use their own judgement in determining whether any given statistic constitutes a reasonable basis for further inquiry.

The discussion will focus first on the descriptive information and then the results associated with student
gender and level of class participation.

**Descriptive Information**

The most obvious finding of the descriptive analysis deals with the manner in which the five teachers used the seven behavior categories of ITBAS.

Overwhelmingly, the largest number of teacher behaviors directed toward individual students fell into category 5. In at least 61% of the instances in which teachers interacted with students on a one-to-one basis, the teachers were engaged in lecturing or providing information. This was found to be true for all five teachers, in all ten classes. In addition, in nine of the ten classes the total teacher behaviors in category 5 exceeded the combined totals for all other categories.

Praising, questioning, and directing students represented approximately 11% of the total individualized teacher behavior. Criticizing behaviors accounted for roughly 5% of the individualized total behavior; whereas behaviors associated with accepting student feelings, and accepting and using student ideas never exceeded 1% of the total individualized teacher behavior in any of the ten classes.

The distribution of individualized teacher behavior in this study is congruent with results from studies reported
in the review of literature. Studies employing both FIAS and CAFIAS indicated that teachers use more lecturing behaviors and fewer behaviors associated with using student ideas and accepting students' feelings. The distributions of the other behaviors (categories 2, 4, 6, 7) are also similar to those reported in previous research.

Although the five teachers were found to emit similar amounts of behavior for each of the seven categories, their individual patterns of communication with students often varied for the two classes observed. For example, teacher D employed only 11 behaviors from category 2 for class D1, but 89 from the same category for class D2. The D2 class was the target for approximately 100 more directing behaviors, plus 200 more total teacher behaviors than the D1 class. Except for behavior 5, students in class D2 were the targets of more behaviors in all 7 categories than students from the D1 class.

Findings: Student Gender Hypotheses

Based upon the information presented in the review of literature, the following hypotheses concerning the student gender variable were formulated.

Teachers will direct more:

-- praise or encouragement
-- lecturing
directions
-- criticism or justification
-- total behavior
to boys than to girls.

The analysis of data for teacher behaviors associated with: praising, lecturing, directing, criticizing and total teacher behavior lends some support to the student gender hypotheses. For example, in the analysis of data for the entire study, boys were the targets for more lecturing and criticizing behaviors than girls. Boys were not, however, the targets for any more praise, directions or total behavior than girls. Thus, the directional hypotheses of differential treatment based on gender received only partial support.

Support for the student gender hypotheses in the data arranged for teachers is even more fragmented. Once again, there are specific cases of support; however, teachers C and D did not differ in their treatment of boys and girls. The cases in which the hypotheses were supported are as follows: teacher E for total behavior, praising and criticizing, teacher B for lecturing and total behavior, and teacher C for criticizing behavior.

Fragmented support for the student gender hypotheses also was found in the data analysis for individual classes. Teacher behaviors associated with praising, lecturing, directing, criticizing and total behavior were found to differ
for males and females in a number of specific cases. Support for the hypotheses were found for: praising behaviors in classes D2 and E2, lecturing behaviors in class C1, directing behaviors in classes C2 and D1, criticizing behaviors in class A1, and for total behavior in classes A2, B1, and E1.

**Other Findings for the Student Gender Variable**

Several cases of significant sex-based differences were found with regard to questioning behaviors and accepting student feeling behaviors, for which the literature had provided no directional indication. Males were the targets for more questions than females in classes A1, C1 and D1, and feelings of females were accepted more frequently than males in class A2. The results were found only for the data arranged for each teacher or for the entire study.

Accepting and using student ideas was the only ITBAS category for which consistent results were found on all three levels of analysis (entire study, each teacher and individual classes). No differences were found in the treatment of boys and girls for this category, which is consistent with the findings reported in the literature.

There were remarkably few cases in which girls were the targets for more behaviors than boys in any of the ITBAS
categories. Although teacher behavior patterns were not consistent from teacher to teacher, or in class to class, in instances where differences were found, the majority took the direction predicted in the hypotheses. Boys often received more teacher behavior than girls, a finding which concurs with previous research.

**Findings: Class Participation Hypotheses**

The hypothesis related to teachers' perception of student level of class participation also was subject to the 2-sample median test. The hypothesis was stated as follows:

Teachers will direct more total behavior to students perceived as having high levels of class participation than to students perceived as having an average or low level of class participation.

The results for the data arranged for the entire study did not support this hypothesis. Within one ITBAS category, the reverse relationship was observed. Students perceived as high participants by their teachers were the targets of fewer directing behaviors than those from medium or low groups.

When data were arranged by individual teacher, the total behavior of teacher E supported the hypothesis by being directed predominantly to students in the high participation group. When data were organized by individual
class, classes A1 and E2 also supported the hypothesis with students in the high group serving as targets for more total behavior than those in the low group. In all, there were only 3 instances of support for the total behavior hypothesis concerning student participation.

Other Findings for the Class Participation Variable

Because the literature provided no basis for a directional prediction, hypotheses were not formulated for the relationship of class participation to the seven ITBAS categories. Results from the two sample median test, however, revealed 20 cases of differences involving all categories except category 1. This may indicate that students are treated differently in physical education classes based upon the teacher's perception of students' level of class participation.

In the data arranged for individual teachers, four cases of differences were found involving four different categories. Students belonging to the low group were the targets for more criticizing behaviors than their high group counterparts. Students from the high group, however, were the targets for more total behavior than those from the lower group. Students from the high groups were also the targets of more questioning behaviors and behaviors associated with accepting student feelings.
Analysis of the data from each class revealed that students in low participation groups were the targets for more directing behaviors, more praise, lecturing, criticism, questions and total behaviors than students from the other groups.

Other Observations

Situational variables. There are a number of factors which may have contributed to the different patterns of interaction for the same teacher in different classes. Situational variables, such as activity engaged in, environment, proximity of student to teacher, the teacher's physical vantage point and the number of students in a given class, may all play a role in forming a teacher's behavior pattern. The investigators, for example, recognized a considerable difference in teacher interaction behavior between a class working on the 50 yard dash and another focusing on the 600 yard run. Students working on the 50 yard dash were the targets for more praise and encouragement than students in the 600 yard run class. The teacher's proximity to students appears to affect the amount of individualized behavior. In the 50 yard dash the teacher was closer and in hearing distance most of the time. This was not generally the case in the 600 yard run. Such factors seem to provide straightforward explanations for differences in teacher behavior.
Nevertheless, the multidimensionality of factors present in any given class make it difficult to determine the precise cause of the different patterns of teacher behavior from class to class.

**Isolates.** Discovered in the data analysis was the fact that there were a small number of students who did not interact on an individual basis with their teachers. Nine students of the 316 involved in the study may be considered total isolates. Other than the fact that 8 of the 9 students were female, there does not seem to be anything else unique or peculiar about these students. For example, they do not belong to any particular participation category, nor are they associated with any specific teacher or individual class.

The fact that 8 of the 9 students were female might indicate that females are easier to overlook than males in physical education classes. This would concur with the concept of saliency discussed in the review of literature. Boys may receive more classroom behaviors of all types because of their salient behaviors which compel teachers to react. The fact, however, that only 9 cases out of 316 students were true isolates make it difficult to draw any firm conclusions concerning the nature of this particular teacher behavior.
Interactions between variables. The male students in this study were the targets for different amounts and different types of teacher behavior than females. Students perceived as belonging to the high participation category also were targets for different amounts and types of teacher behavior. By combining data from the two variables (participation and student gender) it would be possible to determine if girls from low participation categories were targets for different amounts and types of teacher behavior than girls or boys from the high categories. Combining variables in this way may prove to be a powerful and fruitful procedure, but one which remains outside the scope of the present investigation.

Summary

The following is a brief summary based upon the findings for the student gender and class participation variables.

The findings with regard to differential teacher behavior patterns by student gender and teacher's perception of student level of class participation appear to be situation specific and cannot be generalized across all teachers or all classes.

In some classes taught by certain teachers boys were the targets for more: praise, questions, lectures, directions, criticism or justifications than were girls, as predicted in the hypotheses based upon existing research.
In some classes taught by certain teachers, students perceived by their teachers as belonging to the high group of participants were the targets for differing amounts and types of teacher behavior than those students belonging to either the medium or low participation group.

The findings associated with the descriptive information also revealed the uniqueness of teacher behavior in particular classes with regard to rates and kinds of individual interaction. The findings clearly illustrated that teachers in this study differed in their pattern of communication (when interacting on a one-to-one basis) with students in particular classes. This was found to be true for category 5 as well as categories 2, 4 and 6. In each of these four categories, teachers appeared to behave differently in different classes.

These findings suggest that a certain social chemistry is formed as a consequence of the peculiar make-up (students, teacher, subject matter, environment) in each class. Teachers do often refer to the fact that certain techniques or methods work well in one class but are ineffective in others. The different behavior patterns may indicate that teachers respond consciously or unconsciously to their perception of the unique social chemistry present in each class.
Conclusions

Reflecting on both the results and procedures employed in this investigation, two points stand out above all others: the difference in teacher behavior patterns from class to class, and the differential treatment of boys and girls.

The investigation has demonstrated that physical education teachers may behave differently toward students displaying different characteristics. Analysis of the ITBAS data collected in this study provides a better understanding of some patterns and associated factors in the distribution of teacher attention to individual students in physical education classes. The understanding thus gained leads to several possible conclusions: (1) either consciously or unconsciously a prejudicial Pygmalion factor is at work, or (2) teachers recognize that "equal" is not necessarily "fair" and that individual students need differential treatment. Whatever the case, the differences in individual teacher behavior reported in this study are substantial enough to warrant both our concern and further investigation.

Teacher behavior patterns concerning student gender in these physical education classes appear to be similar to patterns found in classroom studies (Brophy and Good, 1974).
Teachers were found to direct more of their attention to boys than to girls. Assuming that individualized teacher-student interactions are an important factor contributing to student growth, then it would appear as though boys may have a distinct advantage over girls in these physical education classes. Although this may be more commonly true for behaviors such as praise and lecturing, it may also exist for directions and criticism. One could argue that it may be more beneficial to be criticized than to be ignored.

Investigations in classroom studies attributed the fact that boys received more teacher attention to the concept of saliency. It is difficult, however, to determine if boys are salient because of the attention they get, or get the attention they do because they are salient. Positioning the cart and the horse is difficult in this case. In addition, it is difficult to estimate the consequences of teacher behavior patterns. For example, what kinds of covert messages do girls receive from the obvious fact that teachers pay much more attention to boys as individuals in physical education classes?

These findings concerning teacher behavior patterns and the differential treatment of boys and girls are important discoveries and reflect the general utility of ITBAS as a valuable instrument for research of this nature. In
addition to the findings emerging from data analysis, other important discoveries were made as a result of the experience of conducting the investigation.

Using observational systems in live physical education settings tends to reveal much more than just the target behaviors. The investigators observed, for example, that the five teachers followed a single basic pattern for organizing and conducting their classes. They began with roll call, a brief introduction, occasionally a demonstration followed by practice time or recreational play. Based upon the 50 hours of observation in the ten Junior High School classes, it appears that the attention given to alternative teaching styles and instructional methods in teacher training programs and professional literature may be completely ignored by physical education teachers.

In investigations of this nature, when large pools of data are being manipulated and examined for hidden points of significance, it is easy to overlook findings which are so obvious that their familiar nature does not attract the attention they deserve. Behind all the data presented in this report, there is a fundamental fact which has that characteristic of obviousness, and in consequence has attracted little attention. Individualized teacher behavior in this study accounted for less than three out of 30 hours of ITBAS recordings. Physical education as observed in this study
proceeds by teachers working with large groups or the entire class, with only minor attempts to deal with students as individuals. This observation also is in direct conflict with the rhetoric associated with teacher training programs and professional literature. Although teachers appear to be familiar with this rhetoric, for reasons yet to be determined, they prefer to continue in more traditional methods of teaching.

In addition to being one of the first efforts to explore the concept of individualized teacher behavior in physical education classes, this study has a second aspect which is unusual. Two doctoral candidates were involved in interlocking and simultaneous investigations. In addition to resolving some of the difficult technical problems associated with the use of ITBAS, there were definite advantages to having a colleague who was completely familiar with the study, albeit from the vantage point of quite different dependent variables. Having two (often contrasting) points of view on such concerns as design, procedures, data collection, analysis and interpretation of results, afforded a much richer intellectual environment than exists in solitary research efforts. Presence of a colleague also made it much easier to sustain motivation during the inevitable periods of difficulty.
The only possible disadvantage of such interlocking investigations (which are neither team research nor simply parallel studies) is that the sense of complete ownership of the final product is denied to both participants. Doctoral dissertations often are criticized by practitioners and researchers alike for their lack of vision, clarity and inadequacy with regards to design and interpretation. Companion dissertations will not necessarily solve all the problems facing neophyte researchers, but they appear to be a step both toward creating a more supportive environment for the anxious novice and providing a helpful method of improving the quality of research training.

In conclusion, the investigation has demonstrated the general utility of ITBAS, presented preliminary information concerning student gender and class participation, produced significant findings associated with individualized teacher behavior and discussed some of the problems inherent in the use of observation systems with live physical education classes.

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APPENDIX A

INDIVIDUALIZED TEACHER BEHAVIOR ANALYSIS SYSTEM (ITBAS)
Individualized Teacher Behavior Analysis System

(ITBAS)

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Introduction

ITBAS is a seven (7) category observation instrument designed to quantify and categorize verbal and non-verbal teaching behaviors directed to individual students. The seven (7) categories of teaching behavior are derived from Flanders' Interaction Analysis System (FIAS) and Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). While mutually exclusive, together the seven (7) categories are inclusive of all of the verbal and non-verbal behaviors which can be exhibited by teachers. ITBAS does not record teaching behaviors which are directed to the entire class or groups of students.

Data is summarized in a chart form which provides the following types of information:

1. amount (raw total and percentage) of teacher behavior directed to each student.
2. amount (raw total and percentage) of individualized teacher behavior in behavioral category.
3. amount (raw total and percentage) of individualized teacher behavior directed to each student in each behavior category.
4. amount (percentage) of individualized teacher behavior in each behavioral category directed to each student.

ITBAS is designed to provide pre-service and in-service teachers with descriptive data regarding their individualized teaching behavior. In addition to its feedback function, it also has application to teacher education as a means of expanding teachers' observational skills and their awareness of the significance of individualized teaching behavior.

As a descriptive research instrument, ITBAS may be applied to the identification and analysis of those interacting variables which affect individualized teacher behavior.

The use of ITBAS should be limited to environments where a significant amount of individualized teacher behavior takes place or is desired.

The following setting requirements must exist in order for the instruments to be used reliably:

1. The teacher's voice must be clearly audible to an observer. It is often necessary for the teacher to wear a wireless microphone which transmits to a receiver and earphone unit operated by the observer.

2. The observer must be able to accurately identify all students by name or some other symbol. Situations where the observer is unfamiliar with the students' names, students must wear numbered vests in order for the observer to record to whom individualized teacher behaviors are directed.

3. Since individualized teacher behavior is recorded by the observer speaking into an audio tape recorder, the observer must be far enough away from
the teacher and students, so that the observer's voice cannot be heard by others.

**Description of Categories**

The ITBAS classifies all verbal and non-verbal individualized teacher behavior into seven mutually exclusive categories. The category descriptions have been adopted from Flanders' Interaction Analysis System (FIAS) and Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS).

**Coding Procedures**

1. A procedure for the systematic identification of each student must be established prior to the class to be observed. The system of student identification may vary depending on specific circumstances. Regardless of the system used, the observer must use a separate identifying symbol for each student.

The following are alternative procedures for student identification:

a. Student names (observer must know the names of all students).

b. Row and seat numbers (only appropriate when students are positioned in stationary seats. For repeated observations students must always sit in the same seat in an identical seating arrangement. A record of the seating arrangement must be kept).

c. Numbered vests worn by each student (for repeated observations students must always wear the same numbered vest. A record of each student's name and
number must be kept). When vests are used, situational factors determine the most efficient (least descriptive means to distribute and record each student's name and vest number. In elementary two individuals who are trained in the procedures to be followed. Under no circumstances should the teacher whose class is to be observed have any part in this procedure.

2. All transition and recording equipment should be positioned and tested well in advance of the student's entrance to the observation setting (classroom). If the teacher is to wear a wireless microphone, that fitting should take place prior to students' entrance.

3. The observation and recording period begins as soon as the teacher and one or more students are present in the teaching-learning environment. The first entry on the observer's audio-tape is the teacher's name, school, date, grade level, subject matter and the time of day the observation period began.

4. When the teacher directs behavior to one student, the identification symbol and the number of the appropriate behavioral category (Examples: "Sally Rogers, number 4"; "row 3, seat 2, number 5"; Student 16, number 7"). Specifics of recording procedures are included under the heading - Ground Rules.

5. The observation period ends when all of the students and/or the teacher have left the setting. The last entry made by the observer is the time of day the observation period ended.
Post Observation Procedures

1. Following the conclusion of the observed class, data is transferred to a summary chart in the following sequence:
   a. identification information at the bottom of the form is completed (this may be filled out prior to the start of the observation period).
   b. in the extreme left-hand column record each student's identification symbol in logical sequence.
   c. rewind and play back the observer's audio-tape of the class.

2. Each behavior recorded on the audio-tape is represented on the summary chart with a heavy dot (•) in the appropriate cell.

3. After every behavior on the audio-tape has been transferred to the summary form, the number of tallies in each cell are totaled and written in large numbers over the tally dots.

4. The total behaviors directed to each student are computed by summing the cell totals in each column. These totals are recorded in the space provided at the end of each row in the column entitled row totals.

5. The total tallies in each behavioral category are computed by summing the cell totals in each column. These totals are recorded in the space provided at the end of each column in the row entitled column totals.
6. Summing the row totals provides a figure which represents the total number of individualized teaching behaviors exhibited during the period of observation. Summing the column totals provides a check on the accuracy of computation as this total should equal the sum of the row totals.

If a discrepancy is found between the sum of the row totals and the sum of the column totals, each row and column total should be re-computed until the error(s) is (are) found.

7. Row and column percentages are computed by dividing each row and column total by the total number of behaviors. The resulting decimal numbers are multiplied by 100 and recorded in the space provided at the end of each row and column. The sum of these percentages should approximate 100% (+ - ).

8. Individual cell percentages are computed by dividing each cell total by the total number of behaviors. The resulting decimal numbers are multiplied by 100 and recorded in the lower right hand corner of each cell.

9. To determine the percentage of behavior each student received in each behavioral category, divide each cell total by the row total. The resulting decimal numbers are multiplied by 100 and recorded in the upper right hand corner of the cell.
10. To determine the percentage distribution of each behavioral category across students, divide each cell total by the appropriate column total. The resulting decimal numbers are multiplied by 100 and recorded in the lower left hand corner of the cell.
Ground Rules

Ground Rule #1
Only teacher behaviors directed to one student are recorded. When unsure whether a behavior is directed to one student or a group of students assume that the behavior was directed to the group. Eye contact between teacher and students will assist in making such determinations.

Ground Rule #2
When teacher behavior directed to the same student continues in the same category for more than 3 seconds that behavior is recorded at 3 second intervals until the behavior switches categories; or the behavior is directed toward another student; or the behavior stops.

Ground Rule #3
If more than one category of teacher behavior is directed to one student within a 3 second interval all categories exhibited during that interval are recorded. Example: "That's incorrect, John (7), but a good try" (2).

Ground Rule #4
Disregard the three second rule if the same behavioral category is directed to more than one individual student in the same 3 second interval. In such instances record the appropriate behavior for each student. Example: "John, write the answer on the board" (6). "Sue, repeat your idea" (6).

Ground Rule #5
The observer must disregard his/her own biases and impressions of teacher intent. "What does this behavior mean to the student?", should be the criteria in determining the correct behavior category.

Ground Rule #6
When verbal behavior is inaudible to the observer, code the non-verbal behavior. When unable to categorize either the verbal or non-verbal behavior record the behavior as category 5.

Ground Rule #7
When simultaneous verbal and non-verbal teacher behavior are in different categories code the verbal behavior.

Ground Rule #8
When the teacher repeats a student idea and communicates only that the idea will be considered or accepted as something to be discussed, a 3 is recorded.
Ground Rule #9
When the teacher repeats a student answer and the answer is correct a 2 is recorded. The correctness is usually indicated by simultaneous approving non-verbal behaviors.

Ground Rule #10
When the teacher repeats an incorrect statement or mirrors an incorrect behavior back to the student a 7 is recorded. Adhere to this ground rule even if the teacher does not use evaluative (critical) adjectives or adverbs. For example: "Your arm is bent at a 45° angle" (could have said "Your arm is bent 20° too much"). The assumption in the first statement is that the student knows what the correct angle is.

Ground Rule #11
Directions (category 6) are statements that result in immediate observable student behavior. Informational statements (orientation) which may precede the actual direction are categorized as 5's.

Ground Rule #12
Do not record individualized teacher behavior when every student in the class gets exactly the same behavior. For example, calling the class attendance sheet, assigning all students to groups. "Betty, go to group #1; Mary, go to group #2; Hector, go to group #3, etc., etc."

Ground Rule #13
Using one student to demonstrate for other students is considered individualized behavior only when the teacher behavior is directed exclusively to the demonstrating student. Explaining to other students what the demonstrator is doing (or did) is not considered individualized behavior.
Inter-Recorder Reliability

Inter-recorder reliability was established by correlating the scores of the three recorders trained in the use of ITBAS. The data were collected from college and public school physical education classes which varied in size and lesson content. Each recorded teacher behavior was transcribed from the audio-tape to the appropriate cell of a summary chart. The following calculations were then performed: the total number of tallies in each cell, the cell totals in each row (total behavior received by each student) and the cell total in each column (total amount of teacher behavior in each category).

Reliability was calculated by employing the Pearson product moment correlation coefficient. Cell, column and row totals for each recorder were paired successively with the other two recorders. The following results were obtained:

-- Cell Total Range .88 to .93
-- Row Total Range .82 to .96
-- Column Total Range .91 to .96
### Chart I

**Summary of the Categories of the Individualized Teacher Behavior Analysis System**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
<th>Verbal</th>
<th>Non-Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accepts Feeling</td>
<td>Accepts or clarifies the feeling tone of students in a nonthreatening manner. Predicting or recalling feelings, sighs empathetically</td>
<td>Embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, tilts head in empathetic reflection</td>
</tr>
<tr>
<td>2</td>
<td>Praises or encourages</td>
<td>Praises, commends, encourages, jokes (not at the expense of students), laughs to encourage</td>
<td>Smiles, nods with smiles, claps hands, pats on shoulder, embraces joyfully, shakes hand as to congratulate, spots in gymnastics</td>
</tr>
<tr>
<td>3</td>
<td>Accepts or uses ideas</td>
<td>Clarifying, building or developing ideas of students</td>
<td>Nods without smiling, receives an implement thrown or kicked by a student</td>
</tr>
<tr>
<td>4</td>
<td>Asks questions</td>
<td>Asks questions requiring a student answer</td>
<td>Wrinkles brow, opens mouth, turns head with quizzical look, places hands in air, cups hand to ear</td>
</tr>
<tr>
<td>5</td>
<td>Lecturing</td>
<td>Gives facts, opinions, expresses ideas, asks rhetorical questions</td>
<td>Demonstrates, points, writes, draws</td>
</tr>
<tr>
<td>6</td>
<td>Giving directions</td>
<td>Directions, commands, or orders with which a student is expected to comply</td>
<td>Beckons with head or hands, points finger, pushes student through a movement, pushes student in a direction</td>
</tr>
<tr>
<td>Symbol</td>
<td>Definition</td>
<td>Verbal</td>
<td>Non-Verbal</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Criticizing or</td>
<td>Statements intended to change student behavior from unacceptable to</td>
<td>Grimaces, shakes head, frowns, rolls eyes, drops head, hits</td>
</tr>
<tr>
<td></td>
<td>Justifying Authority</td>
<td>acceptable, criticizes, expresses anger or distrust, sarcasm, extreme</td>
<td>head with hand, drops hands in disgust, hits, pushes, pinches</td>
</tr>
<tr>
<td></td>
<td></td>
<td>self-reference</td>
<td>or grapples with students</td>
</tr>
</tbody>
</table>
APPENDIX B

TEACHER RANKING TASKS
APPENDIX B

Teacher Ranking Scales

The Teacher Ranking Scales are instruments designed to measure teacher perceptions of:

1. Student skill performance
2. Student in-class personality
3. Student class participation

Teachers were asked to rank students using a specified set of procedures (see attached copies). Final rankings then were divided into high, medium and low groups. These groups were then employed in the analysis of the data on individualized teacher behavior. All teachers were requested to perform the ranking tasks twice.

The purpose of the rank/re-rank procedure was to identify those students (called "target students") who were consistently ranked at the same level. Data collected during a pilot study of this instrument revealed that not all teachers could maintain high levels of reliability when ranking all students. Examination of the data did suggest, however, that all teachers do consistently identify certain students as being high, average or low on the scales. By choosing only those students who were consistently ranked, a more reliable measure of the teacher's
perception was obtained for further analysis.

This particular process of "targeting" students has been employed successfully in previous teacher effectiveness studies (Brophy and Evertson, 1976). The process demands consistency over time as a criterion for identification of subjects from an original sample population. Targeting permits investigators to focus on students who are perceived consistently by their teachers on two or more rankings. This, in turn, greatly increases the likelihood that teachers' perceptions of the subjects selected are accurate (Brophy, Evertson, Anderson, Baum and Crawford, 1976).
ADMINISTRATION OF SCALES:

The Teacher Ranking Scales were administered following the completion of all in-class observations. The following procedures were used:

1. The subjects were seated and had table space on which to spread the ranking cards. The environment was controlled to prevent interruptions or distractions due to noise.

2. Only one ranking task was administered at each session.

3. The subject was given a copy of the general ranking instructions. After the subject had completed reading the instructions, an opportunity was provided for questions and clarifications.

4. The subject was given a class roster, cards with the student names written on them and a copy of the specific instructions for the ranking task. The subject was then instructed to read the instruction sheet first, allowing time after reading to ask questions. The subjects were not provided with definitive information concerning the variables, but rather encouraged to use their own interpretation of the variable.

5. The subject was then requested to rank one class. After the completion of the ranking, the subject was asked to review the final order of cards. Next, the subject ranked the second class, followed by a review of the final card order.

CODING:

Immediately following the completion of the ranking task, the investigator transferred the teacher rankings onto a code sheet. This was done in order to protect teacher and student anonymity. A separate coding sheet was used for
each class, a code number assigned to each class, to each teacher and to each student. An example would be: Bob Smith's Volleyball class: 1 for Bob Smith and 04 for volleyball, resulting in a code of 104. Each student in the class also received a code number. An example of this would be: Bill Anderson, 08, the total code for Bill Anderson, if he were in Bob Smith's volleyball class would be 10408.
INSTRUCTIONS FOR RANKING STUDENTS

For this ranking task, think of the whole class and rank all of your students using the procedures provided. Do not worry about making fine discriminations between students, but work through the task fairly rapidly. Your first impressions are the ones we are concerned with.

You will be given a deck of 3x5 cards (each card having a student's name printed on it), and an alphabetical list of students in your class (the list is provided as a reference). If you so desire, feel free to spread the cards out over the table before starting the ranking task.
PERCEIVED STUDENT LEVEL OF PARTICIPATION

Use the following procedures to rank students according to your judgment of their participation.

1. Select the three students which you think have the highest level of participation and the three students you think have the lowest level of participation. Place these cards so that the students you think have the highest level of participation are at the top of the deck and the students you think have the lowest level of participation are at the bottom of the deck.

2. Select, from the remaining cards, the next four students which you think have the highest level of participation and the next four students you think have the lowest level of participation. Place these cards in the next highest and lowest positions in the deck.

3. Place all remaining cards in the middle section of the deck.

The final order of cards should have students which you think have the highest level of participation at the top, progressing to students which you think have the lowest level of participation at the bottom of the deck. Students within each of these sections will be considered as having the same ranking; therefore, there is no need to spend time making fine discriminations within each section.
PERCEIVED STUDENT SKILL PERFORMANCE LEVEL

Use the following procedure to rank students according to your judgment of their skill performance level.

1. Select the three students which you think have the highest skill performance level and the three students which you think have the lowest skill performance level. Place these cards so that the students with the highest skill performance level are at the top of the deck and so that the students with the lowest skill level are at the bottom of the deck.

2. Select from the remaining cards, the next four students which you think have the highest skill performance level and the next four students which you think have the lowest skill performance level. Place these cards in the next highest and lowest positions in the deck.

3. Put all remaining cards in the middle section.

The final order of cards should have students which you think have the highest skill performance level at the top, progressing to the students which you think have the lowest skill performance level at the bottom of the deck. The students within each of these sections will be considered as having the same ranking; therefore, there is no need to spend time making fine discriminations within each section.
PERCEIVED STUDENT IN-CLASS PERSONALITY

Use the following procedures to rank students according to your judgment of their in-class personality.

1. Select the three students which you think have the most desirable in-class personalities, and the three students which you think have the least desirable in-class personalities. Place these cards so that the student with the most desirable in-class personalities are at the top of the deck and so that the students with the least desirable in-class personalities are at the bottom of the deck.

2. Select from the remaining cards, the next four students which you think have the most desirable in-class personalities and the next four students which you think have the least desirable in-class personalities. Place these cards in the next highest and lowest positions in the deck.

3. Put all remaining cards in the middle section of the deck.

The final order of cards should have students which you think have the most desirable in-class personalities at the top, progressing to students which you think have the least desirable in-class personalities at the bottom of the deck. The students within each of these sections will be considered as having the same ranking; therefore, there is no need to spend time making fine discriminations within each section.
APPENDIX C

CORRESPONDENCE WITH SCHOOL
Doctoral candidates in the Physical Education/Teacher Education Program at the University of Massachusetts are conducting a study on teacher behaviors directed toward individual students in physical education classes.

The study is being conducted to investigate the degree to which selected junior high school physical education teachers behave differently toward students based on the following student variables: sex, skill level performance and personality.

The purposes of this letter are to provide you with information concerning the study, and to request an opportunity to meet with you to discuss the possibility of conducting the study at Junior High School.

Junior High School would be an ideal setting in which to conduct the investigation for the following reasons: the proximity of the school to U. Mass, the number of male and female physical education teachers, the number of class meetings per week, the established lines of communication between the junior high teachers and chief investigators of the study.

Please see the attached documents for further information concerning the investigation. We will call you early in the week of April 17th concerning the possibility of a meeting to discuss the proposed research.

Sincerely,

Ray Allard

Fred M. Oien
In our previous conversation on Wednesday, April 19, 1978, we briefly discussed the need to provide only certain information to the physical education staff. The concern is not to provide the teachers with information concerning the nature of the observations (behaviors directed to individual students) or the nature of the ranking tasks. If given this information, teacher behaviors may be affected, altering the natural behavior patterns being sought for the purposes of the study.

We prefer that the teachers be informed that teacher and student behaviors are being recorded. Additional information would alter the results of the study.

Your cooperation on this matter will be greatly appreciated. If you have further questions, we will be most happy to visit with you about them.

Sincerely,

Ray Allard

Fred Oien
PROPOSED OVERVIEW

OBJECTIVES OF PROPOSED RESEARCH:

The Individualized Teacher Behavior Study is an exploratory case study designed to establish to what degree teachers react differently to students based on the following variables:

a) Sex of student
b) Teacher's perception of student's in-class personality
c) Teacher's perception of student's level of skill performance
d) Teacher's perception of student's level of class participation

POTENTIAL SIGNIFICANCE OF PROJECT:

1. Provide teachers with objective data concerning behaviors they direct toward individual students.
2. The data collected may serve as a potential base from which individual teachers may choose to develop or improve their instructional practices.

INVESTIGATORS' COMMITMENT TO PARTICIPANTS, STUDENTS AND SCHOOL DISTRICT:

The investigators recognize the service that volunteering teachers would be making on behalf of our research. We also understand that the results could prove to be both interesting and beneficial to the participating instructors. Therefore, we would be more than pleased to offer, in whatever format best meets the teachers' needs, an inservice
program focusing on the pilot study. The program could take the form of workshops designed to assist teachers in understanding the observational system, analysis of the data, interpreting of results and the implications for instructional procedures.

The investigators are sensitive to the concerns shared by administrators, parents, and teachers dealing with data collected from classroom observations. In an attempt to deal with these concerns the following steps will be taken:

1. Only teachers volunteering their services will be observed.

2. All data will be coded prior to leaving the junior high to insure that both teacher and student anonymity will be guaranteed.

3. All procedures would be designed to reduce intrusion into the educational process to an absolute minimum. Student instructional time would be unaffected by the research process and the non-class time involvement of teachers would be limited to no more than 2 hours. One requisite for successful execution of the study is the complete unobtrusive behavior of the investigator while at the school site.
RATIONALE

The individualized Teacher Behavior Study is an explanatory, case study designed to establish to what degree teachers of different sex react differently to students based on perceived student characteristics.

Theoretical support for such a study is found in educational research which has demonstrated that teachers respond to and they interact differently with different types of students. A review of the literature indicates that variables such as sex, race, social class, physical attractiveness and physical ability serve as stimuli for differential teacher-student interactions.

Another important factor which has been established in educational research relates to teachers' desires and abilities to alter their behavior when provided with feedback information they considered important. Since teachers sometimes are unaware of the entire range of their influential behaviors in the classroom, especially the qualitative aspects of their interactions with students, this study has the potential to contribute to the improvement of instructional practice.

The study is concerned with two sets of data: teacher perceptions of selected student characteristics and actual class observations concerning teacher behavior. To obtain
the first set of data teachers will be requested to rank each student on certain variables such as skill level performance and class participation.

For the class observation, a team of investigators will gather information from selected physical education classes for approximately one or two weeks. Classes will be selected from the existing schedule with the cooperation of teachers to be observed. All teachers volunteering for the study will be requested to wear a small portable, wireless microphone which will be received on a small FM receiver, permitting the observers to hear the teacher at all times. Students will be requested to wear a precoded uniform, to be supplied, for identification purpose.

The data will be collected by observers trained in the use of the Individualized Teacher Behavior Analysis System (ITBAS). The system is designed to record teacher behavior directed toward individual students or sub-groups of students in class population, and is capable of recording both verbal and non-verbal teacher behavior directed toward individual students.

The investigators are sensitive to the concerns shared by administrators, parents, and teachers dealing with data collected from classroom observations. In an attempt to deal with these concerns the following steps will be taken:
1. Only teachers volunteering their services will be observed.

2. All data will be coded prior to leaving the junior high to insure that both teacher and student anonymity will be guaranteed.

3. All procedures would be designed to reduce intrusion into the educational process to an absolute minimum. Student instructional time would be unaffected by the research process and the non-class time involvement of teachers would be limited to no more than 2 hours. One requisite for successful execution of the study is the complete unobtrusive behavior of the investigator while at the school site.

The investigators recognize the service that volunteering teachers would be making on behalf of our research. We also understand that the results could prove to be both interesting and beneficial to the participating instructors. Therefore, we would be more than pleased to offer, in whatever format best meets the teacher's needs, an inservice program focusing on the pilot study. The program could take the form of workshops designed to assist teachers in understanding the observational system, analysis of the data, interpreting of results and the implications for instructional procedures.
During the last three weeks in May of this year, a research project was conducted with the physical education teachers at your Junior High School. The purpose of the project was to investigate teacher behavior directed toward individual students, in physical education classes. Five teachers voluntarily participated in the project.

The investigators are greatly indebted to these teachers for their contribution to the project. In addition to serving as subjects for the investigation, the teachers were very cooperative in all aspects of conducting the investigation: such, selecting appropriate classes to observe, arranging the observation schedule, wearing the necessary equipment, encouraging student cooperation and providing valuable and insightful comments concerning the results obtained. The efforts of the teachers greatly contributed to the success of the investigation.

We would like to take this opportunity to express our appreciation to the school district, and particularly to the teachers involved. The fine professional colleagueship we found at the Junior High is a model of the positive relationship which can exist between university and public school communities. We hope that other graduate students from the Physical Education/Teacher Education (PETE) program will have the good fortune to work with professional staff in the school district. The present study might well mark the opening of a mutual beneficial relationship between the schools and this new university program.

Sincerely,

Ray Allard

Fred M. Oien
Doctoral Candidates
APPENDIX D

2 SAMPLE MEDIAN TEST SIGNIFICANT DIFFERENCES
# APPENDIX D

## TABLE 11

2-SAMPLE MEDIAN TEST

SIGNIFICANT DIFFERENCES (.10) FOR STUDENT GENDER

<table>
<thead>
<tr>
<th>Behavior Category</th>
<th>Level of Analysis</th>
<th>Median</th>
<th>No. of Cases</th>
<th>Males Above</th>
<th>Males Below</th>
<th>Females Above</th>
<th>Females Below</th>
<th>Level of Significance</th>
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<td>11</td>
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*T.B. denotes Total Behavior.
### APPENDIX D

#### TABLE 12

**2-SAMPLE MEDIAN TEST**

**SIGNIFICANT DIFFERENCE (.10) FOR STUDENT PARTICIPATION**

<table>
<thead>
<tr>
<th>Behavior Category</th>
<th>Level of Analysis</th>
<th>Median</th>
<th>No. of Cases</th>
<th>High Above</th>
<th>High Below</th>
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<td>2</td>
<td>7</td>
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<td>18</td>
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<td>0</td>
<td>5</td>
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</tr>
</tbody>
</table>

*T.B. denotes Total Behavior.*
APPENDIX E

SAMPLE PROGRAMS
TABLE 13

SAMPLE COMPUTER PROGRAM FOR DESCRIPTIVE STATISTICAL ANALYSIS

<table>
<thead>
<tr>
<th>RUN NAME</th>
<th>VARIABLE LIST</th>
<th>INPUT FORMAT</th>
<th>INPUT MEDIUM</th>
<th>N OF CASES</th>
<th>SUBFILE LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>DESCRIPTIVE STATISTICS</td>
<td>CLASS, TEACHER, STUDENT, SEX, SKILL, PERSON, PARENT, ONEBEH1, ONEBEH2, ONEBEH3, ONEBEH4, ONEBEH5, ONEBEH6, ONEBEH7, ONEWTOT, TWOBEH1, TWOBEH2, TWOBEH3, TWOBEH4, TWOBEH5, TWOBEH6, TWOBEH7, TWOWTOT, THRBEH1, THRBEH2, THRBEH3, THRBEH4, THRBEH5, THRBEH6, THRWTOT, ATTEND1, ATTEND2, ATTEND3</td>
<td>FIXED (F2.0, F1.0, F2.0, 4F1.0, 24F2.0, 3F1.0)</td>
<td>CASOS</td>
<td>316</td>
<td>CL01(37), CL02(29), CL03(28), CL04(29), CL05(34), CL06(31), CL07(29), CL08(33), CL09(35), CL10(31)</td>
</tr>
<tr>
<td>RECORD</td>
<td>COMPUTE</td>
<td>BEHAV1 = ONEBEH1 + TWOBfH1 + THRBEH1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV2 = ONEBEH2 + TWOBfH2 + THRBEH2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV3 = ONEBEH3 + TWOBfH3 + THRBEH3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV4 = ONEBEH4 + TWOBfH4 + THRBEH4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV5 = ONEBEH5 + TWOBfH5 + THRBEH5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV6 = ONEBEH6 + TWOBfH6 + THRBEH6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPUTE</td>
<td>BEHAV7 = ONEBEH7 + TWOBfH7 + THRBEH7</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

ASSIGN MISSING BEHAV1 TO ROWNOT (99)

SELECT IF (ATTEND1 EQ 1 AND ATTEND2 EQ 1) OR (ATTEND1 EQ 1 AND ATTEND3 EQ 1) OR (ATTEND2 EQ 1 AND ATTEND3 EQ 1)

RUN SUBFILES EACH

FREQUENCIES GENERAL = BEHAV1 TO ROWNOT

OPTIONS 046, 8

STATISTICS ALL

READ INPUT DATA
**TABLE 14**

**SAMPLE COMPUTER PROGRAM FOR 2 SAMPLE-MEDIAN ANALYSIS**

<table>
<thead>
<tr>
<th>RUN NAME</th>
<th>VAR aribale LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>N OF CASES</td>
<td>CL01(37), CL02(29), CL03(28), CL04(29), CL05(34), CL06(31), CL07(29), CL08(33), CL09(35), CL10(31)</td>
</tr>
<tr>
<td>READ</td>
<td>BEHAV1=ONE BEH1 + TWOBH1 + THRBEH1, BEHAV2=ONE BEH2 + TWOBH2 + THRBEH2, BEHAV3=ONE BEH3 + TWOBH3 + THRBEH3, BEHAV4=ONE BEH4 + TWOBH4 + THRBEH4, BEHAV5=ONE BEH5 + TWOBH5 + THRBEH5, BEHAV6=ONE BEH6 + TWOBH6 + THRBEH6, BEHAV7=ONE BEH7 + TWOBH7 + THRBEH7, ROWTOT BEHAV1 + BEHAV2 + BEHAV3 + BEHAV4 + BEHAV5 + BEHAV6 + BEHAV7</td>
</tr>
<tr>
<td>SELECT</td>
<td>BEHAV1 TO ROWTOT (99)</td>
</tr>
<tr>
<td>THEN IF</td>
<td>(ATTEND1 EQ 1 AND ATTEND2 EQ 1) OR (ATTEND1 EQ 1 AND ATTEND3 EQ 1) OR (ATTEND2 EQ 1 AND ATTEND3 EQ 1)</td>
</tr>
</tbody>
</table>

**RUN SUBFILES**

**NPAR TESTS**

**READ INPUT DATA**
APPENDIX F

JUNIOR HIGH SCHOOL POLICY CONCERNING PARTICIPATION IN P.E. CLASSES
APPENDIX F

TO: All P. E. Faculty

RE: Jr. High Students Who Refuse To Participate In P. E. Classes.

I feel its time to work on the problem of kids who, despite all encouragement, refuse to participate in P. E., in a more systematic fashion. There is little reason why P. E. should be considered any different, in these matters, from English, math, or any subject area.

This memo is in two parts. This section will deal with definitions, criteria, grades, and consequences. The second part outlines the information required as disciplinary action is taken against kids who will not dress or participate.

1. A student will be considered uncooperative if he/she
   a) does not dress regularly;
   b) will not regularly participate if and when dressed;
   c) does not have known, extraordinary physical or affective problems which require special attention and deferral of disciplinary action;
   d) does not respond in reasonable time to expectations regarding P. E. garb;
   e) is consistently tardy to P. E. (using tardiness as excuse).

2. In all such cases, students will be required to attend after school detentions in the P. E. area (guidelines for detention in student handbook).

3. In all such cases, parents will be informed early through comment appraisal forms, mailed early by my office, and follow-through phone calls by P. E. teachers.

4. Cases brought to my attention for disciplinary action, including suspension will be documented as indicated in the attached forms.

From a Junior High School Principal

131