1981

A comparison of coaching behaviors of physical educators and non-physical educators

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A COMPARISON OF COACHING BEHAVIORS OF PHYSICAL EDUCATORS AND NON-PHYSICAL EDUCATORS

by

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An Abstract

of a project submitted in partial fulfillment
of the requirements for the degree of
Master of Science in the School
of Health, Physical Education
and Recreation at
Ithaca College

September 1981

Project Advisor: Dr. Victor Mancini

ABSTRACT

This investigation compared the behaviors of secondary school coaches trained to teach physical education and coaches trained to teach in other academic disciplines during team practice sessions. Subjects for this study were 30 secondary school coaches in the northeastern New York area. Subjects were divided into two groups: coaches trained to teach physical education, and coaches trained to teach in other academic disciplines. Two videotapes of team practice sessions were taken during the 1977-78 winter sports season. Each 30-minute videotape was then independently coded using CAFIAS. Behaviors were recorded in sequence on tally sheets before being placed on computer cards. Ratios and percentages for eight variables determined by CAFIAS were acquired by computer analysis. Variable mean scores for each coded coaching session were used to represent each coach. Groups were represented by the variable means of the coaches within each group. Multivariate analysis of variance was used to determine differences between the two groups. The null hypothesis that there will be no significant differences between coaches trained to teach physical education and coaches trained to teach in the classroom was rejected at the .05 level of significance. Univariate analysis of variance determined three out of eight CAFIAS variables were independently significant. The variables were pupil verbal initiation, teacher suggested; pupil nonverbal initiation, teacher suggested; and pupil nonverbal initiation, student suggested. The data in this study have shown that coaches with a physical education background exhibited more indirect teaching behaviors, which allowed for more varied athlete response. It can be concluded that there are differences in behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom.

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A Research Project Presented to the Faculty

of the School of Health, Physical

Education and Recreation

Ithaca College

In Partial Fulfillment of the

Requirements for the Degree

Master of Science

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by

Douglas L. Kenyon

September 1981

Ithaca College
School of Health, Physical Education and Recreation
Ithaca, New York

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE RESEARCH PROJECT

This is to certify that the Research Project of

Douglas L. Kenyon

submitted in partial fulfillment of the requirements for the degree of Master of Science in the School of Health, Physical Education, and Recreation at Ithaca College has been approved.

Research Project Advisor:

Candidate:

Chairman, Graduate Program in Physical Education:

Date: September 21, 1981

ACKNOWLEDGMENTS

The investigator would like to thank the following people for their assistance in the completion of this project:

1. Dr. Victor H. Mancini, my project advisor, for his guidance, direction, and patience which helped make this project possible.

2. Dr. Harold H. Morris, Dr. A. Craig Fisher, and Dr. Patricia Frye whose insights and suggestions helped to shape this project.

3. To all the high school coaches who allowed me to conduct this research.

4. To Diane and Mike who helped me a great deal in this undertaking.

5. To the Hudson Falls Central School District who allowed me to pursue my educational goals.

6. To Coach George Khoury who has been a tremendous inspiration to my career in teaching and coaching.

7. To my parents, whose love, inspiration and prayers helped to make this project a reality.

DEDICATION

This project is dedicated to my wife, Janet and children, Brian and Courtney, whose loving support I could not do without.

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Chapter 1

INTRODUCTION

The success or failure of a scholastic team often depends on the influence and leadership of the coach. Hughes, French, and Lehsten (1962) stated, "The quality of leadership in the coaching profession profoundly affects directly or indirectly the quality of the program developed" (p. 101).

School officials have been concerned that too many coaches of interscholastic athletic teams are not professionally prepared in some of the vital areas related to athletics (Hatlem, 1972). Very often the only qualification required of a coach is that he has played a specific sport. This type of preparation is not enough when one considers the tremendous responsibility the coach has; his behaviors and interactions with the student/athlete are very important (Kasson, 1974).

School administrators have recognized the need to have athletics administered by competent educators who conduct athletic programs according to educational principles (Bailey & Field, 1970). Coaching and teaching, although sometimes thought to be separate entities, are actually much the same. Klafs and Lyon (1973) supported this view in their writing by stating, "The coach is a highly skilled teacher and should be familiar with the principles involved in the process of learning" (p. 4). It is just as important to know if coaches are doing an effective job in the athletic setting as it is important to know if teachers are being effective in the classroom.

If athletics are indeed an important part of our educational program, it is important that they be administered by competent coaches. Coaches

must be trained effectively in order to improve the quality and efficiency of their profession. A teaching certificate should not be the sole criteria in the hiring of a coach. Bucher (1959) stated that a prospective coach should be qualified in certain phases of physical education. He should have a background in physical and biological science, skills, social sciences, education, humanities, and certain other physical education matter. George and Lehmann (1966) noted that physical education and athletics augment one another in the same manner as do music appreciation and school sponsored operas, bands, and choral groups. Thus preparation in physical education is necessary for the teaching of athletics.

A recent trend in high school athletics has been to hire coaches from teaching disciplines outside of physical education (Singer, 1976). As the difference between the number of coaches and the number of physical education teachers in a school system continues to move away from a balance, the need for certification requirements grows (Hatlem, 1972). Wilson (1977) stated that the preparation of coaches and the keeping of the right people in interscholastic coaching is a concern of modern professional preparation institutions.

It is important to understand what behaviors are occurring in the athletic setting if we are to determine which coaches are most effective (Avery, 1978). Traditional methods such as personality trait inventories and questionnaires, once thought to be an adequate means of recording coach-athlete behaviors, have been described as being inadequate (Cratty, 1973). Observer bias and lack of agreement in analyzing these procedures have been constant problems.

Coaches have not had a true picture of the interaction patterns that

have existed between them and their athletes. Kasson (1974) stated that to fully understand teacher-pupil interaction, we must collect objective information in the actual teaching and coaching settings. Descriptive analytic techniques have been developed by researchers as a result of this. One such device which has been used quite frequently is interaction analysis (Amidon & Flanders, 1971). These systems have been used to record the actual happenings in the educational setting.

Learning the interaction patterns between teacher and pupil have helped many educators to become more effective. The Flanders Interaction Analysis System (FIAS) was developed by Flanders, who became a leader in the area of descriptive analytic research (Amidon & Flanders, 1971). Many researchers have used FIAS in their studies, and many others have adapted it in order to measure classroom verbal interaction. The use of FIAS and other systems have aided teachers in modifying their behavior to increase teacher effectiveness.

FIAS, although a valuable tool in the classroom, was found to be inadequate in the physical education setting because of its inability to describe nonverbal behavior. Systems were, therefore, developed and adapted from FIAS to include nonberbal behaviors. The Cheffers Adaptation of Flanders' Interaction Analysis System (CAFIAS) was adapted from FIAS and has recently become a popular coding system in the physical education setting for describing and analyzing teacher-student interaction (Cheffers, Amidon, & Rodgers, 1974).

Because of the effectiveness of analyzing teaching behavior, interaction analysis systems may be helpful in analyzing coaching behavior, although they have been rarely used in this area (Agnew, 1977). Objective, systematic observation in the coaching setting may give us a better

understanding of the interactions that occur between coach and athlete and give us a better insight into coaching behavior. With the aid of an interaction analysis system, Kasson (1974) concluded that the behaviors of the physical education teacher and the coach were different.

We should, as educators, be concerned with the improvement of coaches in their interactions with their student/athletes (Nixon & Locke, 1973). We must try to determine what type of teacher preparation is most effective in providing competent coaches. Observing, analyzing, and comparing demonstrated behaviors of coaches from various academic disciplines will improve the preparation of coaches.

Scope of Problem

The purpose of this study was to determine if any significant differences occurred in the coaching behavior of the teacher/coach trained to teach in the classroom and the teacher/coach trained to teach physical education. The subjects were 15 male secondary school coaches trained to teach physical education and 15 male secondary school coaches trained to teach in the classroom. The subjects were from the northeastern New York area. Two 30-minute coaching sessions were videotaped during a team practice. Observations were made during the schools' 1977-78 winter sports season. The taped sessions were coded using Cheffers' Adaptation of Flanders' Interaction Analysis System by a reliable coder. The raw data were placed on computer cards. By computer analysis, ratios of behavior occurrence were established and compared between the two groups.

Statement of Problem

The purpose of the study was to determine any significant differences in the coaching behavior of secondary school coaches trained to teach in the classroom and secondary school coaches trained to teach physical

education.

Hypothesis

There will be no significant differences in coaching behaviors between secondary school coaches trained to teach in the classroom and secondary school coaches trained to teach physical education.

Assumptions of Study

1. The subjects selected were representative of the population of secondary school coaches.

2. The coding of CAFIAS for two 30-minute sessions would yield valid data to test the hypothesis.

3. The use of a reliable coder was sufficient to obtain a valid description of the coaching sessions.

Definition of Terms

1. Interaction Analysis is an observational technique used to record the frequency of teacher-pupil behaviors.

2. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is an expansion of FIAS developed specifically to record both verbal and nonverbal teacher-pupil interactions in classes of physical activity.

3. Flanders' Interaction Analysis System (FIAS) is a well documented system designed to describe verbal interaction that occurs between the teacher and the pupil in the educational setting.

4. Verbal Behavior is observable, audible human interactions.

5. Nonverbal Behavior is observable human interactions which are not expressed verbally.

6. Classroom Teacher is a teacher who has been trained to teach in the academic area of education.

7. Physical Education Teacher is a teacher who has been trained to teach physical education classes.

8. Secondary School Coaches are coaches, either physical education teachers or classroom teachers, who coach varsity or junior varsity teams whose members are in grades 9 through 12.

Delimitations of Study

1. Only male subjects coaching at the secondary school level were used in the study.

2. CAFIAS was the only interaction analysis system used in the study.

3. Each subject was videotaped twice for a 30-minute period in each of two practice sessions.

4. Only subjects coaching during the 1977-78 winter sports season were used in the study.

Limitations of Study

1. The results of the study may only be applied to male secondary school coaches.

2. The results of the study may only be valid when CAFIAS is used.

Chapter 2

REVIEW OF RELATED LITERATURE

The focus of the review of related literature for this study is concentrated on literature related to the requirements and professional preparation of high school coaches, descriptive-analytic techniques in physical education, and analysis of coaching.

Literature Related to the Requirements and Professional Preparation of High School Coaches

The question as to whether high school athletic coaches should have professional preparation in physical education has long been a highly debated issue (Maetozo, 1965). Boydston and Merrick (1957) sought the opinion of men from coast to coast who were closely associated with both physical education and athletics and found the consensus to be that the delegation of coaching responsibility should be placed on those whose primary considerations are based on professional training.

Hughes, French and Lehsten (1962) concluded that where athletics are organized and conducted with a view toward developing desirable standards of health, fitness, skills, attitudes, and knowledges, the qualifications of the coach must include far more than the knowledge and technique of play. He should have professional training equivalent to at least a minor in physical education. He will need a broad training in educational philosophy and psychology, the biological sciences, child growth and development, athletic training practices, and methods of teaching physical education.

A joint committee representing the Society of State Directors of

Health, Physical Education, and Recreation (1952) recommended that, because of the great personal and social values occurring from a well-conducted athletic program, coaches should be bona fide members of the faculty and duly certified. They should have adequate professional preparation in physical education for coaching. Coaching is teaching.

Larson (1970) stressed that the educational objectives for physical education and athletics are the same since they both contribute to the development of the individual through activity. A professional preparation program was, therefore, the best training for a coach.

Hatlem (1972) recommended that all intersholastic coaches be prepared professionally through a special curriculum set up for that purpose. Bucher (1979) stated that coaching is only one phase of the physical education program and that coaching is teaching. Because of this close relationship with physical education and the educational field in general, the high school coach should be thoroughly qualified as a physical education person. Athletics is one part of the total physical education program--not an end in itself.

Bucher and Dupee (1965) stated that all coaches should be certified teachers of physical education because they are better prepared to teach athletics and are also more likely to achieve the cooperation needed between the athletic program and the physical education program. Havel and Seymour (1961) reported that the achievement of sound objectives in interscholastic athletics will come about only when the program is carefully planned and controlled by professionally prepared leaders since many problems result from the employment of persons unprepared professionally to take over the realm on interscholastic athletics. They also stated that it is desirable to have varsity teams instructed by

professionally qualified physical education personnel although this may not always be feasible. Obeck, (Boydston and Merrick, 1957) stated that majors in physical education for varsity coaches are just as important as majors in medicine for doctors.

Cowell and France (1963) believed that teacher education institutions have the responsibility in the preparation of high school coaches to see that, by whatever means necessary, they should attempt to produce dedicated and educated students of teaching in their professional preparation programs.

There is much evidence to support the idea that the coach of interscholastic athletics should have a sound background in physical education. However, in many schools today, this is very often not the case (Marsh, 1964). Marsh found that while the predominant major among coaches was physical education, there were also many coaches who had majors in other areas and a surprising number who had no training whatsoever in physical education. His study further indicated that there does not seem to be any consistent pattern of accepted standards beyond those recognized in ordinary teacher selection for the preparation of high school athletic coaches.

Maetozo (1965) stated that most of the research related to the professional preparation of coaches agree that the physical education major is usually considered as having the necessary qualifications to coach, and further implied that a number of coaches do not have these qualifications. Bucher (1959) commented that although coaching is generally recognized as being most important to student athletes, there does not seem to be any consistent pattern for preparing persons for such a position.

Shepard (1960) reported that sports are a medium for a learning

experience. The qualities of that experience vary with circumstances, administrative policies, and with the background, training, experience, and philosophy of the teacher and coach. To attain the high standards of learning in interscholastic athletics it is important that the coach of these activities be properly analyzed and trained.

Esslinger (1971) stated that coaches who lack professional preparation in physical education are handicapped in obtaining the values inherent in interscholastic athletics and are, in fact, not capable of protecting the health and well-being of the student athletes.

Descriptive-Analytic Techniques in Physical Education

Analysis of teaching behavior in the physical education setting has received a great deal of attention in recent years. As in other areas of education, it has been determined that teacher-student interaction analysis systems can be valuable tools in measuring teaching behavior. Mosston (1966) emphasized the importance of certain teaching behaviors and their effect on student learning in physical education. His work emphasized the need to reexamine the instructional design of present day physical education programs.

Locke (1977) stated that the teaching taking place in the physical education setting often differs from the teaching that occurs in the classroom. Cheffers (1972) believed that in analyzing teaching behavior in the physical education and coaching setting, three major differences existed from the regular classroom interaction: (a) the amount of time and type of nonverbal activity differ greatly from the regular classroom, (b) the setup and operational procedures are unique, and (c) pupil participation varies considerably from the classroom.

Many systems began to evolve which were designed to analyze teaching

behaviors in the physical education setting. Timer and Love were among the first physical educators to utilize descriptive research (Humphrey, Love, & Irwin, 1972). Their combined efforts comprised the Timer-Love Category System. Dougherty (1971) developed a system that added an eleventh category to FIAS which allowed for a more accurate classification of physical exercises or individual practice of motor skills. Fishman and Anderson (1971) developed a system involving augmented feedback by physical education teachers which was primarily concerned with recording physical education events. The Love-Roderick System (1971) expanded on FIAS to include nonverbal behavior categories to form an expanded system. Mancuso (1972) constructed a system designed specifically to observe interaction in the physical activity environment. He used FIAS to form the basis for the system and adapted categories of the Love-Roderick System to record nonverbal behavior. Other research using modifications of FIAS included Kurth (1969) and Melograno (1971).

Cheffers contributed to descriptive research in physical education by designing an instrument that expanded FIAS to describe nonverbal behaviors and differentiated varieties of teaching behavior (Cheffers, Amidon & Rodgers, 1974). Cheffers recognized the limitations of FIAS in describing physical activity and also believed that the teaching environment included the influences of student-to-student interaction and the physical environment as well. His expansion of FIAS is known as Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). Cheffers (1972) categorized three teaching influences: (a) the classroom teacher as the teacher, (b) the physical environment as the teacher, and (c) the students as teachers. He also expanded the matrix from 20 to 60 categories in order to record the three environments as teaching agents. Coding for nonverbal behavior was

adapted by creating a teen category that corresponded to FIAS. Cheffers (1972) compared his system to FIAS and concluded that observers were able to more accurately interpret physical activity from the CAFIAS matrix than from the FIAS matrix.

Various studies have been done using CAFIAS to analyze teacher-student interaction in the physical education setting. Mancini (1974) utilized CAFIAS to measure interaction patterns between elementary physical education students and their teachers. A more recent study completed at Boston University using CAFIAS was done by Keilty (1975) who analyzed the effects of instruction and supervision in interaction analysis on the behavior of student teachers.

Mancini has inspired other researchers to utilize CAFIAS as a means of analyzing teaching and coaching behavior. Chertok (1975) compared the guided discovery style of teaching to the command style of teaching utilizing CAFIAS to determine the performance levels of third grade elementary students on selected ball handling skills. Hendrickson (1975) used CAFIAS to study its effect on the pre-service teachers in relation to direct and indirect teaching behavior. Rochester (1976) analyzed the effects of CAFIAS on the total teaching behavior of pre-service teachers. The effects of instruction and supervision of CAFIAS on student-teacher behavior was studied by Vogel (1976). Faulkner (1976) utilized CAFIAS to compare the teaching behavior of male and female pre-service secondary physical education teachers in a descriptive study completed at Ithaca College. Batchelder (1975), Scriber (1977), and van der Mars (1979) conducted studies which compared the predictive estimates of classroom process behaviors in math, English, physical education and health classes. Other studies using CAFIAS in describing teacher-pupil interaction included

Cheffers and Mancini (1978), Devlin (1979), Hayes (1978), Lombardo (1979), Lydon (1978), and Martinek and Johnson (1979). These studies have helped to establish the credibility of CAFIAS as an adequate tool for coding the interactions and behavior patterns of teachers and students in the physical education setting.

Analysis of Coaching

Coaching and teaching, although sometimes thought to be separate entities, are actually much the same. Klafs and Lyon (1973) stated, "A coach is a highly skilled teacher and should be familiar with the principles involved in the process of learning" (p. 4). A valid reasoning for analyzing coaching behavior is expressed by Smith, Smoll, and Hunt (1976):

> Recent years have witnessed an increasing concern regarding the effects of organized athletics upon the psychosocial development of children. Existing data indicate that sport participation has neither a universally positive nor a uniformly negative effect. Rather, it is likely that the effects vary as a function of the way in which programs are structured, the kind of supervision that exists, and the personal characteristics of the child. Unfortunately, the manner in which these factors interact has not been empirically determined. Doing so will require methodological advances in the measurement of relevant factors. (p. 401)

A study analyzing coaching behavior was completed by LaGrand (1970). The purpose of the study was to investigate the range of response of athletes, utilizing a semantic differential analysis, to the behavioral characteristics of their coaches. He then compared the resulting profiles of behaviors of the individual sport coach. He found that each sport had

its own individuality and associated behavioral characteristics and that significant differences occurred across various sports.

Gilbert (1977) found that a consultative type of leadership rather than an authoritarian or participative style of leadership tended to maximize performance and satisfaction of players in a study of the productivity, efficiency, and satisfaction of high school basketball teams. This is in opposition to Penman, Hastad, and Cords' (1974) findings which indicated that the more authoritarian coaches were also more successful. Vanek and Cratty (1970) concluded that the more successful coaches are those who have adapted to a democratic approach and yet at the same time behave in a flexible manner, exerting authority when needed and extending advice when it is appropriate to the team members that need it. A personality inventory was administered to physical education teachers and coaches by Hendry (1974). The results showed that coaches were looked on to be more organized and more controlled individuals, although their ideas were more restricted. This led him to suggest that there is a need for coaches to be more flexible and less dominant in their coaching behavior.

Although the use of descriptive-analytic techniques have become more prevalent in analyzing teacher-student interactions in the physical education setting, until recently, very few have been used in studying coaching behavior. Direct observation has been advocated by researchers to be an effective means of analyzing coaches. It was recommended by Tharp and Gallimore (1976) that direct observation was the most effective way of evaluating coaching behavior. Smith et al. (1976) developed a system to measure what they considered a very important factor in sports--coaching behavior. Their Coaching Behavior Assessment System (CBAS)

included 12 categories to measure coaching behaviors in naturalistic settings. This system and similar systems seem to have considerable promise in analyzing coach-player interactions.

Kasson used the Mancuso Adaptation in a study to analyze teacher/coach direct and indirect behavior and verbal and nonverbal behavior. His findings showed that athletic coaches were not more direct in teaching physical education classes than in their coaching. Tharp and Gallimore (1976) created a descriptive analysis system to describe the unique and highly successful coaching style of John Wooden. It was found that over 75% of Wooden's coaching behaviors carried information; 8% was criticism followed by instruction on how to perform a skill correctly, and 7% were scolds or verbal criticisms. Tharp and Gallimore found the scold/reinstruction behavior to be particularly useful in other forms of teaching.

A number of studies were done at Ithaca College using CAFIAS as the instrument to analyze coaching behaviors. Barr (1978) analyzed the effects of instruction and supervision of CAFIAS on the coaching behaviors of secondary team sport coaches. The results showed that coaches who received instruction in CAFIAS exhibited more positive teaching behaviors. Agnew (1977) compared the behavior patterns of females while teaching and coaching. She concluded that interaction between student/athlete and teacher/coach used more praise and acceptance in the coaching setting and the student's use of questioning and self-initiated behavior were exhibited as the most prevalent behaviors.

Agnew (1977) compared the interaction patterns of effective and less effective coaches during practice sessions by using the Coaches' Performance Questionnaire to separate coaches into groups. CAFIAS was used to code two videotaped practice sessions. The results of the study showed that five

out of eight CAFIAS variables were independently significant. The variables were teacher use of acceptance and praise, verbal (TAPV); teacher use of acceptance and praise, nonverbal (TAPNV); pupil verbal initiation, teacher suggested (PVITS); pupil nonverbal initiation, teacher suggested (PNVITS); and pupil nonverbal initiation, student suggested (PNVISS). She concluded that (a) more pupil verbal and nonverbal behavior, teacher suggested were observed in the practices of the effective coaches; (b) practices of less effective coaches, although dominated by teacher suggested nonverbal rote and evaluative responses, also included more student initiated nonverbal activity than the practices of effective coaches; and (c) effective coaches were more indirect in their teaching behavior than less effective coaches.

Hirsch (1978) used CAFIAS and the Group Environment Scale (GES) by Moos, Insel, and Humphrey (1974) to analyze coaching behaviors from two separate environments. He concluded that more pupil initiated behavior and more praise were used by the coaches in the satisfied group. Proulx (1979) also used CAFIAS and the GES to compare the behaviors of coaches in two different athletic environments. Teams were classified as being either satisfied or less satisfied with their social climate according to how athletes responded to GES. The results of the study indicated that the satisfied environment contained more interaction between the coach and the athletes than the less satisfied environments. More pupil initiated behavior, teacher suggested both verbal and nonverbal, were observed in the satisfied environments. In looking at the interaction patterns of behaviors in regards to percent of occurrence, that of extended athletes' scrimmage or interpretive drills accounted for 41% of the time in the satisfied group while accounting for 29% of the time in the less satisfied

group. Extended information giving by the coach occurred 6% of the time in the satisfied group and 12% of the time in the less satisfied group.

Another study using both CAFIAS and the GES was conducted by Staurowsky (1979). This study analyzed and compared the behaviors which coaches exhibited in two distinct environments. Analysis of variance identified five variables that contributed independently to differences between the two groups. These were coach use of questioning, verbal; coach use of acceptance and praise, verbal, and nonverbal; and athlete verbal and nonverbal initiation, coach suggestion. The percentages of occurrence of the interaction patterns of behaviors in this study showed that extended athletes' scrimmage or interpretive drills accounted for 31% of the time in the satisfied group while accounting for 20% of the time in the less satisfied group. The findings indicated that the satisfied environment contained more interaction between the coach and athletes than the less satisfied environments. Satisfied teams were found to be characterized by high levels of leader support, order and organization, and independence.

Summary

The importance of describing and analyzing teacher-pupil behaviors has been widely recognized by modern educators. Researchers have come a long way in developing techniques by which to measure teaching behavior. FIAS, probably more than any one system has had the greatest impact on interaction analysis (Amidon & Flanders, 1971). It has been further developed in many systems to become applicable to the physical education setting. Cheffers' adaptation (CAFIAS) has been a very valuable instrument used in interaction analysis in physical education and more recently in analyzing coaching behavior.

The study of coaching behavior has become more prevalent in recent years. Descriptive-analytical techniques have been used by many researchers seeking a more empirical approach to the analysis of coaching. Studies done by Tharp and Gallimore (1976) and Kasson (1974) have provided information concerning the role of various behaviors exhibited in coaching. A series of studies using CAFIAS and other tools, Avery (1978), Barr (1978), Hirsch (1978), Proulx (1979), and Staurowsky (1979), have provided a great amount of information to researchers which should result in improved interaction in the coach-athlete relationship.

Chapter 3

METHODS AND PROCEDURES

This chapter describes the methods and procedures used in setting up this investigation. Included are the method of subject selection, the testing instrument, the method of data collection, the procedure for scoring the data, the treatment of the data, and the summary.

Selection of Subjects

The subjects for this study were 15 male secondary school coaches trained to teach physical education and 15 male secondary school coaches trained to teach in the classroom. The subjects were from northeastern New York high schools. Observations were made during the schools' 1977-78 winter sports season. The subjects were contacted by telephone, and with their permission an appointment was arranged to videotape a 30-minute segment of two of their team practice sessions.

Testing Instruments

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used to measure the coach-athlete verbal and nonverbal interactions and behaviors of the 30 coaches and their respective athletes. This interaction analysis system was designed to code behaviors in classes of physical activity. The behaviors classified by CAFIAS were recorded every 3 seconds or whenever the behavior changed. The specific variables of interaction measured by CAFIAS are included in Appendix A.

Coder Reliability

Coder reliability for this study was assessed by the use of the Spearman rank-order correlation procedure. The videotapes of four

randomly selected subjects were coded by Dr. Victor H. Mancini. The procedure used required rankings of two separate coaching sessions of the classroom teacher group and two separate coaching sessions of the physical education teacher group for each individual subject. Data of this analysis are included in Appendix B.

Method of Data Collection

The 30 subjects in this study were videotaped twice for a 30-minute period of a team practice session. The videotapes were than coded by Dr. Victor H. Mancini using CAFIAS. Numbers of designated behaviors were recorded on a tally sheet in sequence of occurrence and then totaled.

Scoring of Data

The scoring ot the data was done by computer analysis. The raw data were transposed onto computer data cards. The computer compiled the raw data into ratios and percentages for the eight variables measured. To determine a mean score for each subject the two coaching sessions filmed on different days were combined. Data for this analysis are included in Appendix C.

Treatment of Data

Multivariate analysis of variance was used to determine overall significant differences of the coaching behaviors of 15 male secondary school coaches trained to teach in the classroom with the coaching behaviors of 15 male secondary school coaches trained to teach physical education. Eight variables from CAFIAS were used in the final evaluation. The use of a univariate analysis of variance identified which of the eight CAFIAS variables contributed independently to differences between the two groups. Significance beyond the .05 level was used to test the hypothesis.

Summary

Male secondary school coaches trained to teach in the classroom and male secondary school coaches trained to teach physical education from northeastern New York area high schools were the subjects observed to determine if there were any significant differences in coaching behavior between the two groups. The 15 coach/classroom teachers and 15 coach/physical education teachers were videotaped twice for a 30-minute period of a practice session during the 1977-78 winter sports season. The tapes were then coded by Dr. Victor H. Mancini using CAFIAS. The raw data were transposed onto computer cards for data analysis. The mean scores of the eight variables investigated were then compared between the two groups by using multivariate analysis of variance to determine significant differences between the behavioral patterns of coaches trained to teach physical education and coaches trained to teach in the classroom. The use of a univariate analysis of variance identified which of the eight CAFIAS variables contributed independently to differences between the two groups. The .05 level of significance was used to test the statistical hypothesis.

Chapter 4

ANALYSIS OF DATA

This chapter presents and interprets the results of the statistical analysis of data from this study on the coaching behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom. The results of the study are presented in terms of the reliability of the coder, the analysis of coaching behavior data, and a summary.

Reliability of Coder

Coder reliability was established by having the coder view and code the coaching tapes of two randomly selected subjects from each group on two separate days. The top 10 cells for each coding session were compared by using a Spearman rank-order correlation. A mean score correlation of .987 was established which was adequate to indicate reliability. The data from the comparison of observations are shown in Table 1.

Analysis of Coaching Behavior Data

A multivariate analysis of variance was performed on eight CAFIAS variables of coaches trained to teach physical education and coaches trained to teach in the classroom. The mean scores and standard deviations for the eight CAFIAS variables resulting from the coding of practice sessions of coaches trained to teach physical education and coaches trained to teach in the classroom are presented in Table 2. Mean scores show that coaches trained to teach physical education scored higher than coaches trained to teach in the classroom on five variables.

The multivariate analysis of these variables resulted in a Wilks'

Table 1

Coder Reliability

Subject	r_s	M
202 Physical Education Teacher/Coach	.990	
209 Physical Education Teacher/Coach	.984	.987
104 Classroom Teacher/Coach	.990	
110 Classroom Teacher/Coach	.984	

Note. Coder reliability was determined by a Spearman rho comparison of the coding of coaching behaviors for two independent observations of the same practice tape.

Table 2

Means and Standard Deviations of Eight CAFIAS Variables

CAFIAS Variables	Physical Education teachers/coaches		Classroom teachers/coaches	
	M	SD	M	SD
1. Teacher Questions, Verbal	12.33	7.33	9.43	6.88
2. Teacher Questions, Nonverbal	1.45	2.00	2.16	2.16
3. Teacher Acceptance and Praise, Verbal	44.60	14.82	41.40	21.16
4. Teacher Acceptance and Praise, Nonverbal	43.69	24.88	38.48	24.47
5. Pupil Verbal Initiation, Teacher Suggested	89.64	7.55	74.01	20.68
6. Pupil Nonverbal Initiation, Teacher Suggested	63.08	26.01	35.78	27.26
7. Pupil Verbal Initiation, Student Suggested	10.76	11.48	13.50	10.78
8. Pupil Nonverbal Initiation, Student Suggested	4.23	5.11	9.69	8.91

Lambda value of .5225 with 1 and 28 degrees of freedom. These findings are significant at the .05 level and lead to a rejection of the null hypothesis that there will be no statistically significant differences in coaching behaviors between coaches trained to teach physical education and coaches trained to teach in the classroom.

Univariate analysis of variance, used to determine those statistically significant variables that contributed to group differences are shown in Table 3. Using univariate F-ratios three variables were found to be statistically significant. These significant variables included pupil verbal initiation, teacher suggested F (1,28) = 7.5484, pupil nonverbal initiation, teacher suggested F (1,28) = 7.8432; and pupil nonverbal initiation, student suggested F (1,28) = 4.2312. A comparison of means showed the first two significant variables favored the coaches trained to teach physical education while the last favored the coaches trained to teach in the classroom.

Figure 1 further illustrates the behavioral differences of this study. Mean percentages of the CAFIAS variables in the coaches trained to teach physical education and the coaches trained to teach in the classroom groups were compared on a bar graph. Coaches trained to teach physical education used more verbal and nonverbal praise, verbal acceptance, verbal questions, verbal directions, verbal criticism, and less nonverbal acceptance, nonverbal questions, verbal and nonverbal information giving, nonverbal directions, and nonverbal criticism. Students in the coaches trained to teach physical education group had a greater amount of verbal and nonverbal interpretive response, student to student verbal interaction, less verbal and nonverbal predictable response, and verbal and nonverbal pupil initiative.

Table 3

Univariate Analyses of Variance Contrasting Coaches Trained to Teach Physical Education and Coaches Trained to Teach in the Classroom Using CAFIAS Variables

CAFIAS Variable	df	F
1. Teacher Questions, Verbal	1,28	1.249
2. Teacher Questions, Nonverbal	1,28	.8748
3. Teacher Acceptance and Praise, Verbal	1,28	.2300
4. Teacher Acceptance and Praise, Nonverbal	1,28	.3338
5. Pupil Verbal Initiation, Teacher Suggested	1,28	7.549*
6. Pupil Nonverbal Initiation, Teacher Suggested	1,28	7.843*
7. Pupil Verbal Initiation, Student Suggested	1,28	.4548
8. Pupil Nonverbal Initiation, Student Suggested	1,28	4.231*

*$p < .05$

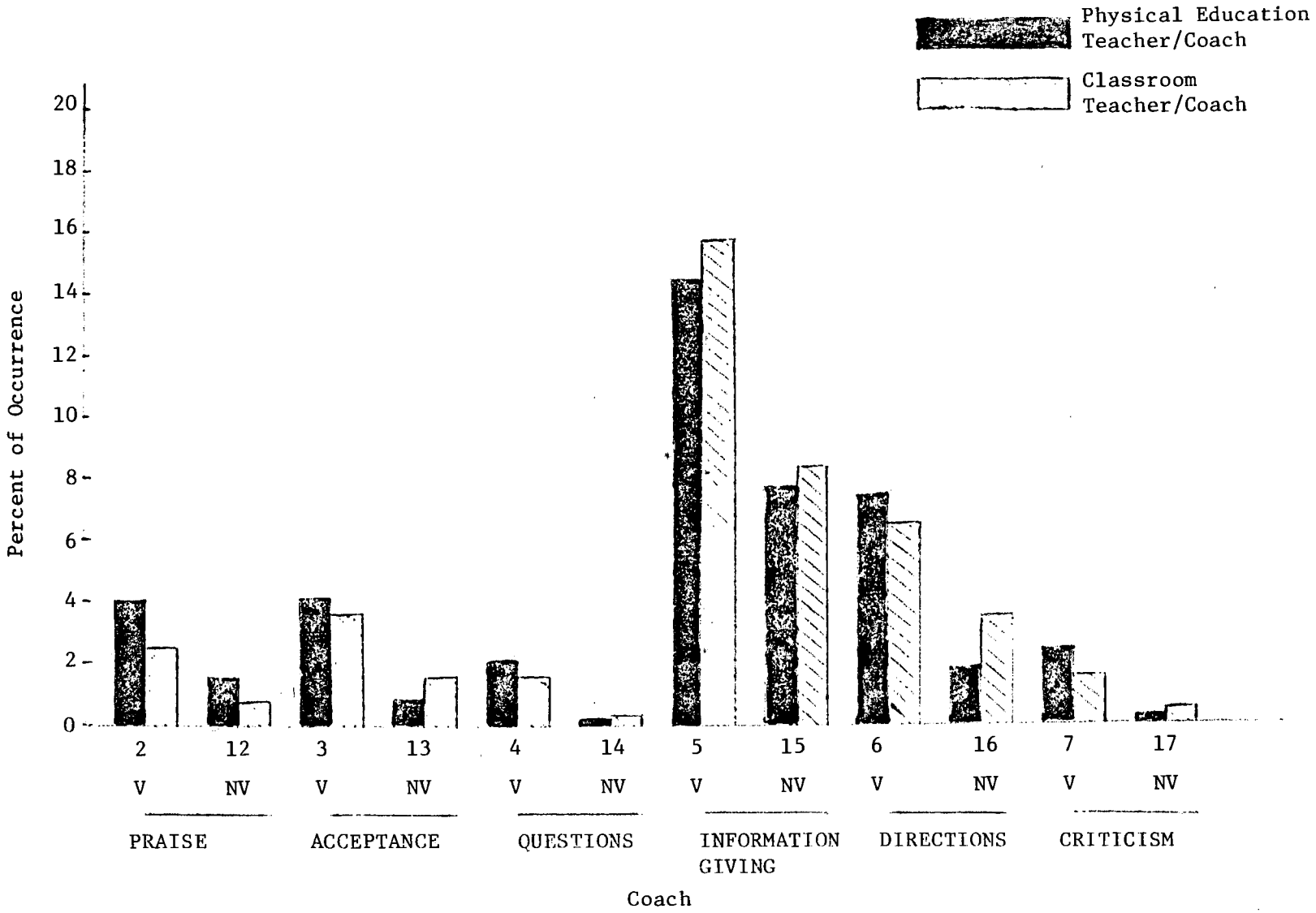

Figure 1. Mean percentages for the CAFIAS variables

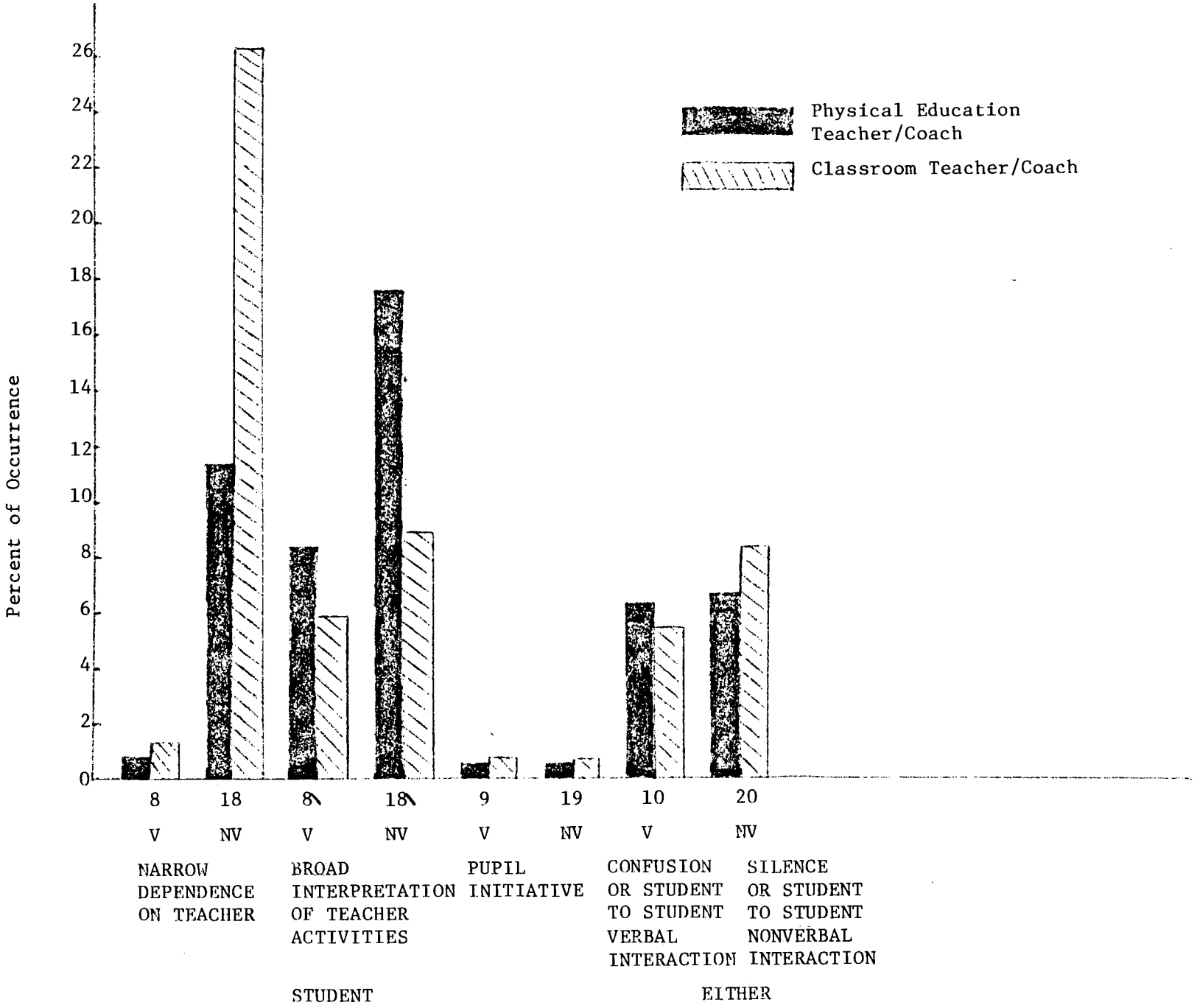

Figure 1. (continued)

Table 4 contains the top 10 ranked cell frequencies and their percentage of occurrence for the coaches trained to teach physical education and the coaches trained to teach in the classroom groups. The density of the tallies in the cells determined not only predominant coaches' and athletes' behaviors but also the sequence of those behaviors. The use of a matrix permits the determination of patterns of interaction which in turn permits objective descriptions of the patterns of interaction in each group. The patterns observed in the coaches trained to teach physical education group were extended information giving (5-5); extended athletes' scrimmage or interpretive drills (10-8\-10); coaches' directions followed by athletes' predictable response (6-8); athletes' predictable response followed by coaches' information (8-5); athletes' interpretive response followed by coaches' acceptance (8\-3); athletes' interpretive response followed by coaches' information giving (8\-5); coaches' information giving followed by coaches' directions (5-6); athletes' interpretive response followed by coaches' directions (8\-6); and extended athletes' drills (8-10). The coaches trained to teach in the classroom were characterized by extended information giving (5-5); coaches' directions followed by athletes' predictable response, followed by extended information giving, followed by coaches' directions (6-8-5-6); extended athletes' drills (8-10-8); extended athletes' scrimmage or interpretive drills (10-8\-10); and coaches' information giving followed by athletes' predictable response, followed by coaches' directions (5-8-6).

Even though some of the behavior patterns were similar in the two groups, their percentages of occurrence were different. Extended athletes' drills occurred 19% of the time in the group of coaches trained

Table 4

Summary of Most Frequent Interaction Patterns among the Top 10 Cells of Coaches Trained to Teach Physical Education and Coaches Trained to Teach in the Classroom

Physical Education teachers/coaches			Classroom teachers/coaches		
Interaction Patterns	Number of Times	Percent of Occurrence	Interaction Patterns	Number of Times	Percent of Occurrence
5-5	14	12.94	5-5	13	15.95
10-8\	12	12.65	6-8	13	8.25
8\-10	12	11.76	8-5	12	6.43
6-8	11	6.08	5-6	11	4.51
8-5	9	4.68	8-10	10	9.51
8\-3	9	4.32	10-8	10	9.12
8\-5	8	5.63	10-8\	10	10.79
5-6	8	4.08	8\-10	9	10.22
8\-6	6	5.02	5-8	8	5.66
8-10	6	5.23	8-6	6	5.21

5-5 extended information giving

10-8\ extended athletes' scrimmage or interpretive drills

8\-10 extended athletes' scrimmage or interpretive drills

6-8 coaches' directions followed by athletes' predictable response

8-5 athletes' predictable response followed by coaches' information

8\-3 athletes' interpretive response followed by coaches' acceptance

Table 4 (continued)

8\-5	athletes' interpretive response followed by coaches' information
5-6	extended information giving followed by coaches' directions
8\-6	athletes' interpretive response followed by coaches' directions
8-10	extended athletes' drills
10-8	extended athletes' drills
5-8	coaches' information followed by athletes' predictable response
8-6	athletes' predictable response followed by coaches' directions.

as classroom teachers compared to 5% in the group of coaches trained as physical education teachers. Extended information was given by the coaches trained in physical education group 13% while those coaches trained to teach in the classroom used extended information giving 16% of the time. It is interesting to note the absence of coaches' acceptance in the coaches trained to teach in the classroom group and the greater amount of athletes' interpretive response in the coaches trained to teach physical education group.

Summary

The multivariate analysis of variance used to determine if significant differences existed in the teaching behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom showed a significant Wilks' Lambda value of .5225. The null hypothesis that there will be no significant difference between coaching behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom was rejected at the .05 level of significance.

Univariate analysis of variance was used to determine which variables independent of each other, significantly contributed to the differences between groups. Those variables showing a significant difference between groups were pupil verbal initiation, teacher suggested; pupil nonverbal initiation, teacher suggested; and pupil nonverbal initiation, student suggested (Table 2). Figure 1 illustrates the behavioral differences in terms of mean percentages of the CAFIAS variables between the two groups. Table 4 shows the top 10 interaction patterns of the two groups to be different.

Chapter 5

DISCUSSION OF RESULTS

This chapter presents a discussion of the results concluded from this investigation. The study compared the behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom. Audio-visual tapings of 15 subjects in both situations were used to observe behaviors.

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was the observation tool used to analyze all the practice sessions. This system was chosen because of its high reliability in analyzing interaction patterns as well as its adequate ability in capturing both verbal and nonverbal behaviors, and identifying teaching agencies, class structure, and specific types of student response (1972). CAFIAS is an adaptation of Flanders' Interaction Analysis System.

Flanders' (1960) concern was to categorize verbal behavior as either direct or indirect. He referred to direct teacher behaviors as those that discouraged student initiative and freedom of action but involved lecture and direction giving. He regarded indirect teacher behaviors as those of question asking, accepting student ideas and suggestions, and encouraging students to initiate their own behavior. Flanders encouraged the use of indirect behavior, and research has supported the idea that indirect behavior can positively influence the behavior of students (1960).

In this study, multivariate analysis of variance indicated that significant differences in coaching behaviors existed between coaches trained to teach physical education and coaches trained to teach in the

classroom. These findings led to a rejection of the null hypothesis that there will be no statistically significant differences in coaching behaviors between coaches trained to teach physical education and coaches trained to teach in the classroom. Of the eight CAFIAS variables analyzed independently from one another, analysis of variance identified three to be statistically significant. These variables were pupil verbal initiation, teacher suggested; pupil nonverbal initiation, teacher suggested; and pupil nonverbal initiation, student suggested. A comparison of means showed the first two significant variables favored the coaches trained to teach physical education group while the last favored the coaches trained to teach in the classroom group.

The findings in this study were similar to those found by Avery (1978) who compared the interaction patterns of effective and less effective coaches. Although her study found five of the eight CAFIAS variables to be independently significant, three of the variables were the same. The three variables were pupil verbal initiation, teacher suggested (PVITS); pupil nonverbal initiation, teacher suggested (PNVITS); and pupil nonverbal initiation, student suggested (PNVISS). Her conclusions showed (a) more pupil verbal and nonverbal initiated behavior, teacher suggested observed in the practices of the effective coaches; (b) practices of less effective coaches included more student initiated nonverbal activity than the practices of the effective coaches; and (c) effective coaches were more indirect in their teaching behavior. These conclusions paralleled the findings in this study and supported the coach trained to teach physical education as the effective group. These findings also supported the research of Hirsch (1978), Proulx (1979), and Staurowsky (1979), who found that more pupil initiated behavior, teacher suggested both verbal

and nonverbal, were observed in the satisfied environments.

The significantly higher mean scores of the coaches trained to teach physical education in the CAFIAS variables of pupil initiation, teacher suggested and pupil nonverbal initiation, teacher suggested demonstrate the use of flexible discourse by the coach that results in pupil verbal or nonverbal responsiveness, student input, and additional learning opportunities. In effect, the student is allowed the freedom to respond in his own unique manner. In a study of the productivity, efficiency, and satisfaction of high school basketball teams, Gilbert (1977) found that a consulting type of leadership rather than an authoritarian or participative style of leadership tended to maximize performance and satisfaction of players.

One CAFIAS variable, pupil nonverbal initiation, student suggested favored the classroom teacher/coaches in this study. Because student nonverbal initiated behaviors are not directly related to assigned task-achievement, as determined by the Group Environment Scale by Moos, Insel, and Humphrey (1974), this variable suggests a small percentage of practice time and energy is being spent by the players in physical activity not suggested by the coach. With limited time and facilities in most high school situations, especially with the rapid increase of girls' athletic programs, this variable seems less than desirable. Although the reason for the wasted time cannot be further dissected by the CAFIAS variables, it is reasonable to assume that pupil nonverbal initiation, student suggested may stem from a lack of clarity or task-oriented behavior by the coach. In a comparison of behaviors of two athletic environments, Hirsch (1978) concluded that clarity and task-orientated behavior was demonstrated more in the group of coaches determined to be most effective.

Comparisons were drawn from the mean percentage of CAFIAS behaviors between the two groups. Coach praise, verbal and nonverbal, and student verbal and nonverbal interpretative response were the predominant behaviors observed in the coaches trained to teach physical education group. The coaches' behaviors of those trained to teach in the classroom group were characterized by greater mean percentages of information giving, verbal and nonverbal; coach nonverbal direction giving; athlete narrow behavior, verbal and nonverbal; and student to student interaction, nonverbal. These findings coincide with Staurowsky (1979). She found that coaches' praise and student interpretive response were predominant behaviors in the satisfied group while the less satisfied group was characterized by a greater mean percentage of information giving; coach direction giving; athlete narrow behavior; and student to student interaction, nonverbal. Proulx (1979), in comparing the mean percentage of behaviors between the two groups, found that coach praise and student interpretive response were also the predominant behaviors observed in the satisfied group while the less satisfied group was characterized by more information giving, more directions, and more student to student interaction, nonverbal.

The top 10 ranked cell frequencies and their percentage of occurrence for the coaches trained to teach physical education and coaches trained to teach in the classroom groups were determined. It was apparent from Table 4 that certain behavior patterns did occur in both groups, however, their percentage of occurrence was different. Extended athletes' drills occurred 19% of the time in the coaches trained as classroom teachers' group compared to 5% in the coaches trained to teach in the physical education group. Extended information was given by the coaches trained in the

physical education group 13% of the time while those coaches trained to teach in the classroom group used extended information giving 16% of the time. This was the most frequently observed behavior pattern in both groups. It is interesting to note the absence of coaches' acceptance in the classroom group and the greater amount of athletes' interpretive response in the physical education training group.

A predominant behavior pattern exhibited in the coaches trained to teach in the classroom group was that of extended athlete predictable response, indicating that practices in this group consisted of drills more mechanical in nature. These results compare very closely with those of Proulx (1979) and Staurowsky (1979) who found that the same patterns existed for the less satisfied groups. These findings seem to indicate that the coaches trained to teach in the classroom exhibit more direct teaching behaviors and do not allow as much student freedom in regards to an interpretive response as the coaches trained to teach physical education.

The high frequency of behavior patterns in extended information giving coincide with findings by Tharp and Gallimore (1976). The coaching behavior of John Wooden, former basketball coach at UCLA, was researched using an observer system that consisted of categories such as reinforcement, punishment, modeling, and instruction. Results showed that a majority of Wooden's coaching behaviors were instructionally orientated, portraying Wooden as a disseminator of information. In the current study coaches from both groups were found to rely on extended information giving, indicating that such behavior may be an integral part of the coaching repertoire.

There appeared to be a consistency in the findings of this study and other recent investigations. The data collected in this study have shown

that the coaches with a physical education background exhibited more positive teaching behaviors as indicated by the research. Flanders (1960) stated that indirect teaching behavior can positively influence the behavior of students. Conclusions might be made from the descriptive data as to the effectiveness of coaches with and without training in physical education. It appeared that coaches trained to teach physical education did a more effective job in terms of exhibited behaviors. Their athletes appeared to be in a more satisfied environment in comparison to studies completed by Hirsch (1978), Proulx (1979), and Staurowsky (1979). Their teaching style was more indirect, allowing for more varied athlete response, while their practices were more organized. This evaluation may lead to questions concerning who is best suited to coach our student/athletes. If school boards are concerned with developing a higher quality of athletic experience it may be to their advantage to consider the backgrounds of the people coaching in their athletic programs.

Summary

The findings in this investigation rejected the null hypothesis that there will be no significant differences between coaching behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom. Using CAFIAS to code and describe all taped coaching sequences, three variables were found to be significantly different between the two groups.

Relative to this study, Avery (1978) compared the interaction patterns of effective and less effective coaches. Her findings concluded that effective coaches were more indirect in their teaching behavior. This paralleled the finding in this study and supported the coaches trained to teach physical education as the effective group. The findings of Proulx

(1979) and Staurowsky (1979) indicated more pupil initiated behavior, teacher suggested both verbal and nonverbal. These were observed in the satisfied environments and also supported the group of coaches trained to teach physical education. Gilbert (1977) found that a consulting type of leadership rather than an authoritarian style tended to maximize performance and satisfaction of players. The more indirect behaviors of the coaches trained to teach physical education can be related to this finding. The variable of pupil nonverbal initiation, student suggested favored the classroom teacher/coaches. It is reasonable to assume that these behaviors may stem from a lack of clarity or task-orientated behaviors by the coach.

Comparisons were drawn from the mean percentages of CAFIAS behaviors between the two groups. The coaches trained to teach in the classroom group were characterized by greater mean percentages of information giving; coach nonverbal direction giving; athlete narrow behavior; and student to student nonverbal interaction. These findings were compared to those of Proulx (1979) and Staurowsky (1979) and were found to be consistent with their results.

The top 10 cell frequencies and their percentage of occurrence for the two groups were determined. It is apparent that certain behavior patterns did occur in both groups, however, their percentages of occurence were different. The findings seem to indicate that the coaches trained to teach in the classroom exhibited more direct teaching behaviors and did not allow for as much student freedom in regards to interpretive response as the coaches trained to teach physical education.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

This study compared the behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom. The subjects were videotaped twice for 30 minutes while coaching winter team sports in northeastern New York area schools. The tapes were then coded by Dr. Victor H. Mancini through the use of CAFIAS. Sequential behaviors were placed on computer cards for analysis. The computer printout included matrices and tabulated ratios and percentages for eight CAFIAS variables. These ratios and percentages were tallied for each of the two taping sessions for each individual, and a mean score was calculated to represent each subject. Significant behavioral differences between the two groups were determined through one-way analysis of variance. The .05 level of statistical significance was selected to determine significant differences.

A multivariate analysis of variance found a significant difference beyond the .05 level between the coaching behaviors identified by CAFIAS of coaches trained to teach physical education and coaches trained to teach in the classroom. The null hypothesis which stated there would be no significant differences in interaction patterns of coaches trained to teach physical education and coaches trained to teach in the classroom was rejected. Univariate analysis of variance was used to determine the individual capacity of each of the CAFIAS variables to differentiate between groups. Three of eight CAFIAS variables were significant. Pupil verbal

initiation, teacher suggested and pupil nonverbal initiation, teacher suggested favored the coaches trained to teach physical education. Pupil nonverbal initiation, student suggested favored the coaches trained to teach in the classroom. These behavioral differences were further illustrated by the top 10 interaction patterns (see Table 4) contained in each group and also by placing the percentages of the variables on a bar graph.

Conclusions

The following conclusions were established from the findings in this investigation:

1. More pupil verbal and nonverbal initiated behavior, teacher suggested were observed in the practices of coaches trained to teach physical education.

2. Pupil nonverbal initiated behavior, student suggested was more prevalent in the practice sessions of coaches trained to teach in the classroom.

3. CAFIAS can objectively distinguish differences between behaviors of coaches trained to teach physical education and coaches trained to teach in the classroom.

4. There are significant differences of interaction patterns between coaches trained to teach physical education and coaches trained to teach in the classroom.

Recommendations for Further Study

The following recommendations are made for future investigations:

1. Conduct a similar study using female coaches and athletes.

2. Conduct a similar study outside New York state.

3. Undertake a study comparing interaction patterns of coaches

trained to teach in the academic areas with and without coaching certification.

4. Conduct a study using male coaches and female athletes.

5. Conduct a similar study using individual sports' coaches.

Appendix A

THE CATEGORIES OF CHEFFERS' ADAPTATION OF FLANDERS' INTERACTION ANALYSIS SYSTEM

Teacher
Environment (E)
Student (S)

Categories	Verbal	Relevant Behaviors	Nonverbal
	2		12
2-12	Praises, commends, jokes, encourages	Face:	Smiles, nods with smile, (energetic) winks, laughs
		Posture:	Claps hands, pats on shoulder, places hand on head of student, wrings student's hand, embraces joyfully, laughs to encourage, spots in gymnastics, helps child over obstacles
	3		13
3-13	Accepts, clarifies, uses, and develops suggestion and feeling by the learner	Face:	Nods without smiling, tilts head in empathetic reflection, sighs empathetically
		Posture:	Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches an implement thrown by student, accepts facilities
	4		14
4-14	Asks questions requiring student answer	Face:	Wrinkles brow, opens mouth, turns head with quizzical look
		Posture:	Places hands in air, waves finger to and fro anticipating answer, stares awaiting answer, scratches head, cups hand to ear, stands still half turned towards person, awaits answer

CATEGORIES (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	5		15
5-15	Gives facts, opinions, expresses ideas, or asks rhetorical questions	Face:	Whispers words inaudible, sings, or whistles
		Posture:	Gesticulates, draws, writes, demonstrates activities, points
	6		16
6-16	Gives directions or orders	Face:	Points with head, beckons with head, yells at
		Posture:	Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction
	7		17
7-17	Criticizes, expresses anger or distrust, sarcastic or extreme self-reference	Face:	Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head
		Posture:	Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down
	8		18
8-18	Student response that is entirely predictable, such as obedience to orders, and responses not requiring thinking beyond the comprehension phase of knowledge	Face:	Poker face response, nods, shakes, gives small grunts, quick smile
		Posture:	Moves mechanically to questions or directions, responds to any actions with minimal nervous activity, robot like

CATEGORIES (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	Eine (8\)		Einteen (18\)
Eine (8\) Einteen (18\)	Predictable student responses requiring some measure of evaluation and synthesis from the student, but must remain within the province of predictability. The initial behavior was in response to teacher initiation	Face: Posture:	A "What's more, Sir" look, eyes sparkling Adds movements to those given or expected, tries to show some arrangement requiring additional thinking; e.g., works on gymnastic routine, dribbles basketball, all game playing
	9		19
9-19	Pupil, initiated talk that is purely the result of their own initiative and that could not be predicted	Face: Posture:	Interrupting sounds, gasps, sighs Puts hands up to ask questions, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of the game
	10		20
10-20	Stands for confusion, chaos, disorder, noise, much noise	Face:	Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

Note. Cited from Cheffers, Amidon, & Rodgers, 1974.

Appendix B

CODER RELIABILITY[a] FOR SELECTED SUBJECTS USING SPEARMAN'S RHO

Subject 104--Classroom Teacher/Coach

Top 10 Cells[b]	Rank Observation One[c]	Rank Observation Two	$\underline{d}$[d]	$\underline{d}^2$
5-5	1	1.5	.00	.00
8-5	2	2.5	.50	.25
5-8	3	2.5	.50	.25
6-8	4	4	.00	.00
5-6	5	5	.00	.00
8-6	6	6	.00	.00
10-8	7	7	.00	.00
3-5	8	8	.00	.00
8-3	9	9	.00	.00
4-8	10	10	.00	.00
Total				.50

[a].990

[b]Top 10 cells listed refer to the order of coder's numerical frequency.

[c]Rank observation one and observation two refer to the origin of the coding.

[d]$\underline{d}$ refers to the differences between the ranks of each cell for observation one and observation two.

CODER RELIABILITY[a] FOR SELECTED SUBJECTS USING SPEARMAN'S RHO

Subject 110--Classroom Teacher/Coach

Top 10 Cells[b]	Rank Observation One[c]	Rank Observation Two	$\underline{d}$[d]	$\underline{d}^2$
10-8	1	1	.00	.00
8-10	2	2	.00	.00
8-8	3.5	3	.50	.25
6-8	3.5	4	.50	.25
8-6	5	5	.00	.00
8-5	6	6	.00	.00
5-8	7	7	.00	.00
8-7	8	8	.00	.00
7-8	9.5	9	.50	.25
5-6	9.5	10	.50	.25
Total				1.00

[a].984

[b]Top 10 cells listed refer to the order of coder's numerical frequency.

[c]Rank observation one and observation two refer to the origin of the coding.

[d]$\underline{d}$ refers to the differences between the ranks of each cell for observation one and observation two.

CODER RELIABILITY[a] FOR SELECTED SUBJECTS USING SPEARMAN'S RHO

Subject 202--Physical Education Teacher/Coach

Top 10 Cells[b]	Rank Observation One[c]	Rank Observation Two	$\underline{d}$[d]	$\underline{d}^2$
5-5	1	1	.00	.00
10-8\	2	2	.00	.00
8\-10	3	3	.00	.00
8-10	4	4	.00	.00
6-8	5.5	5	.50	.25
10-8	5.5	6	.50	.25
8-5	7	7	.00	.00
8\-5	8	8	.00	.00
5-6	9	9	.00	.00
5-8	10	10	.00	.00
Total				.50

[a].990

[b]Top 10 cells listed refer to the order of coder's numerical frequency.

[c]Rank observation one and observation two refer to the origin of the coding.

[d]$\underline{d}$ refers to the differences between the ranks of each cell for observation one and observation two.

CODER RELIABILITY[a] FOR SELECTED SUBJECTS USING SPEARMAN'S RHO

Subject 209--Physical Education Teacher/Coach

Top 10 Cells[b]	Rank Observation One[c]	Rank Observation Two	$\underline{d}$[d]	$\underline{d}^2$
5-5	1	1	.00	.00
10-8\	2	2	.00	.00
8\-10	3	3	.00	.00
4-8\	4.5	4	.50	.25
5-8\	4.5	5	.50	.25
8\-3	6.5	6	.50	.25
8\-5	6.5	7	.50	.25
6-8\	8	8	.00	.00
8\-7	9	9	.00	.00
7-7	10	10	.00	.00
Total				1.00

[a].984

[b]Top 10 cells listed refer to the order of coder's numerical frequency.

[c]Rank observation one and observation two refer to the origin of the coding.

[d]$\underline{d}$ refers to the differences between the ranks of each cell for observation one and observation two.

Appendix C

CLASSIFICATION OF DATA FOR ALL SUBJECTS ON THE EIGHT CAFIAS VARIABLES

1. Teacher use of questioning, verbal (TQV)
2. Teacher use of questioning, nonverbal (TQNV)
3. Teacher use of acceptance and praise, verbal (TAPV)
4. Teacher use of acceptance and praise, nonverbal (TAPNV)
5. Pupil verbal initiation, teacher suggestion (PVITS)
6. Pupil nonverbal initiation, teacher suggestion (PNVITS)
7. Pupil verbal initiation, student suggestion (PVISS)
8. Pupil nonverbal initiation, student suggestion (PNVISS)

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