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A comparison of the coaching behaviors of male and female secondary basketball coaches

Robert E. Stulmaker
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A COMPARISON OF THE COACHING BEHAVIORS
OF MALE AND FEMALE SECONDARY
BASKETBALL COACHES

by

Robert E. Stulmaker

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 H. Mancini

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ABSTRACT

This investigation was undertaken to determine if there were any significant differences in the coaching behaviors of male and female secondary basketball coaches. The subjects were 50 male and 50 female secondary basketball coaches from central New York and New Hampshire. Each subject was video-taped 30 minutes during two different practice sessions. CAFIAS was used to code all the practices. Ratios and percentages for the 23 CAFIAS parameters and the 20 CAFIAS variables were yielded by this analysis. A multivariate analysis of variance was performed on the 20 CAFIAS variables. Univariate analyses of variance were performed on the 20 CAFIAS variables and on the 23 CAFIAS parameters. In regard to the 23 CAFIAS parameters, results indicated that no significant differences existed between the male and female secondary basketball coaches. Both the univariate analyses of variance and the multivariate analysis of variance indicated that no significant differences existed between the two groups. The .05 level of statistical significance was selected to determine significant differences. The null hypothesis that there will be no significant differences between the coaching behavior of male and female secondary basketball coaches was accepted.

A COMPARISON OF THE COACHING BEHAVIORS
OF MALE AND FEMALE SECONDARY
BASKETBALL COACHES

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

by
Robert E. Stulmaker
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

Robert E. Stulmaker

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.

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December 15, 1981

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DEDICATION

This project is dedicated to my parents and my brother,
whose love and encouragement helped to make a dream a reality.

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Chapter 1

INTRODUCTION

A coach is responsible for the athletic skills learned by his/her players and for the personal values they learn (Agnew, 1977). How well the players develop these values and skills depends on how much leadership the coach can provide (Gaylord, 1967). The leadership and behavior displayed by the coach has a direct effect on the success and failure of the team (Agnew, 1977). The coach has a very important role in educating his/her players to be able to develop a working knowledge of his/her game and of life in general (Agnew, 1977).

With the growth in women's athletics, there has been a simultaneous growth of female entering the coaching profession, and an increased interest in the different coaching techniques and behaviors of men and women.

In these times of change in the coaching profession, there is an increased need for a better understanding of the coaching process. The use of systematic observation has been helpful to researchers in fulfilling these needs (Anderson, 1971).

Bales (1950) introduced interaction analysis (IA) systems which analyzed student-teacher interaction in the classroom. Flanders (1960) developed the Flanders Interaction Analysis System (FIAS) which coded verbal behavior. Cheffers (1972) took FIAS and developed Cheffers' Adaptation of Flanders'

Interaction Analysis System (CAFIAS). CAFIAS was developed to code both verbal and nonverbal behaviors that occurred in physical activity settings (Proulx, 1979).

There is a need to evaluate the behaviors displayed by the coaches during practice sessions and game conditions. Many times, the only form of evaluation and the coach's major concern is in the team's final record. The behaviors that are displayed during practice sessions and games have a major effect on the players both on and off the field, but are of little concern at times to the coaches (Proulx, 1979).

Through the use of CAFIAS both the verbal and nonverbal behaviors of these coaches can be obtained during practice sessions as well as games. Agnew (1977), Avery (1978), Barr (1978), Hirsch (1978), Proulx (1979), Rotsko (1979), and Staurowsky (1979) all used CAFIAS to study coaching behaviors.

As the importance of athletics continues to grow, the importance of how the coach's behaviors affect the team and the total athletic process will also continue to grow (Proulx, 1979). With the use of IA a coach will be able to improve his/her inappropriate behavior, continue to use and modify his/her effective behavior, and develop behaviors that will make him/her a better coach and professional (Agnew, 1977).

Scope of Problem

The purpose of this study was to determine if any significant differences existed between the coaching behavior of male and female secondary basketball coaches. The subjects were 50

male and 50 female basketball coaches. These coaches were from central New York and New Hampshire and were each videotaped two times during the 1978-79 basketball season. CAFIAS was used to code the videotapes to determine the behaviors that were exhibited.

Statement of Problem

The purpose of this research project was to compare the coaching behaviors of male and female secondary basketball coaches.

Major Hypothesis

There will be no significant differences between the coaching behaviors of male and female secondary basketball coaches.

Assumptions of Study

1. Two 30-minute videotapes of each coach and his/her team will yield valid data to test the hypothesis.
2. The use of an experienced and reliable coder was the best way to obtain a true "picture" of the coaching situation.

Definition of Terms

1. Flanders' Interaction Analysis System (FIAS). FIAS is a system designed to measure verbal interaction between the teacher and students as they occur in the classroom (Amidon & Flanders, 1971).
2. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). CAFIAS is a system designed to measure the verbal and nonverbal interaction between the teacher and the

student (Cheffers, 1972).

3. Interaction Analysis (IA). IA is an observational technique that records the frequency of teacher-pupil interaction of behaviors (Flanders, 1970).

4. Nonverbal Behavior. Nonverbal behavior is observable behavior which is not expressed verbally.

5. Verbal Behavior. Verbal behavior is all interactions expressed orally.

6. Coaches. Coaches are certified educators who coach athletics in voluntary instructional interscholastic sports programs (Staurówsky, 1979).

7. Coaching Situation. A coaching situation is a voluntary instructional class held after school hours where individuals "try-out" in order to participate (Agnew, 1977).

8. Secondary Grade Level. Secondary grade level is grades seven through twelve.

9. Coder Reliability. Coder reliability refers to consistent evaluation on the part of the videotape coder at an acceptable significance level (Proulx, 1979).

Delimitations of Study

1. Male and female secondary basketball coaches in the central New York and New Hampshire area were the only subjects involved in this study.

2. Differences in coaches' behaviors were classified only through the use of CAFIAS.

3. Each coach and his/her team were observed only twice.

Limitations of Study

1. The results will hold true for only male and female secondary basketball coaches.
2. The results may only be valid when CAFIAS is used.

Chapter 2

REVIEW OF RELATED LITERATURE

The following is a review of available literature relative to the present study. This chapter is divided into the following areas: (1) descriptive-analytic techniques, (2) analysis of coaching, (3) analysis of physical education and athletics, and (4) summary.

Descriptive-Analytic Techniques

Early research in evaluating teachers consisted of students' scores on tests, student ratings, teacher ratings, and administrative observations (Avery, 1978). The problems with these types of evaluations is that they are not subjective and usually are not valid (Rotsko, 1979).

In the area of physical education and coaching, descriptive-analytic techniques play an important role in determining what is actually occurring in the physical education and athletic environment, the teaching and coaching behaviors that are displayed, and whether they contribute at all to the education of the students (Agnew, 1977).

The first study in pupil-teacher interaction was conducted by Anderson (1939). He found that there was more production in the classroom by accepting student ideas as compared to negative feedback or rejecting student ideas.

Bales (1950) introduced the term "interaction process

analysis." He investigated the verbal interaction that occurred among the members of small problem-solving groups. Bales (1950) led to the development of many systems of interaction analysis.

Amidon and Flanders (1971) reported that interaction analysis, if used correctly, could help a teacher improve his/her role in guiding students through a sound and productive learning process. Flanders (1960) reported that IA was an observational technique that could be used in obtaining reliable and spontaneous verbal statements. He believed that every student teacher should be trained in IA.

Flanders' Interaction Analysis System (FIAS) was developed to code verbal behavior. Through the use of FIAS initiative and response characteristics of two or more individuals could be analyzed. Verbal behavior was assumed to be an adequate sample of the total behavior of a person (Amidon & Flanders, 1971).

Shiffman (1976) reported that FIAS has been incorporated in 488 educational research documents spanning a number of different settings and research methods. Shiffman (1976) said that FIAS has been used in observing approximately 10,000 teachers and 9,000 pupils. Kurth (1969) used FIAS to code the behaviors of student teachers in elementary physical education classes and concluded that in physical education classes FIAS did not make provisions for nonverbal behavior that was occurring.

The limitations in FIAS in describing the behaviors in

physical education environments were reported by Bahneman (1971) and Kurth (1969). Bahneman (1971) used FIAS to isolate the patterns of the teaching behaviors that separated male and female physical education teachers. Nygaard (1975) also used FIAS and concluded that male physical education teachers displayed a more direct teaching style than female physical education teachers. He found students of female teachers initiated more student talk although female teachers were more critical.

Amidon and Hunter (1966) developed the Verbal Category System (VICS). This system was based on FIAS and was designed to help teachers control their verbal behavior.

Dougherty (1970) used a modification of FIAS in an attempt to differentiate between three styles of teaching physical education. A new category which represented periods of meaningful nonverbal activity was added. Melograno (1971) also modified FIAS to allow for the identification of nonverbal behaviors. When nonverbal behavior occurred by either a teacher or student, an "N" was placed behind the number in the appropriate category to indicate nonverbal behavior.

FIAS was fused with the Love-Roderick (Love & Roderick, 1971) verbal categories by Mancuso (1972). A new single system was formed which added two motor categories to allow for nonverbal behavior.

The most widely used adaptation of FIAS was developed by Cheffers (1972). The system was called Cheffers' Adaptation of the Flânders' Interaction Analysis System (CAFIAS). This

was conducted to describe the behavior in classes concerned with physical activity. In addition to the verbal behaviors coded with FIAS, CAFIAS coded both verbal and nonverbal behavior that occurred in physical education classes. Agnew, 1977; Avery, 1978; Barr, 1978; Hirsch, 1978; Proulx, 1979; Rotsko, 1979; and Staurowsky, 1979 used CAFIAS to code coaching behaviors as well.

CAFIAS was used in investigating teachers in terms of leadership styles by Keane (1976). He found that leadership styles were not based on the sex of the teacher. Keane (1976) suggested that for teacher to be more effective and more considerate they should develop an understanding of their own leadership styles and the situation in which they find themselves. He pointed out that the key variable may be the environment in which they teach.

Mawdsley (1977) used CAFIAS with male and female movement education teachers to describe and compare their teaching behavior and their teacher-student relationship. No relationship was found between the quality of teacher-student relations and teaching behavior. Faulkner (1976) also used CAFIAS and found no significant differences in the teaching patterns of male and female pre-service teachers.

Many other systems of observation have been developed to measure teacher-student interaction. The Observation Schedule and Record (OScAR) was developed by Medley and Mitzel (1958) to objectively assess teacher function in relation to the classroom climate. Medley and Mitzel (1958) used OScAR to

study teacher behaviors in 36 physical education settings.

Bain (1976) used the Implicit Values Instrument for Physical Education to analyze behaviors in physical activity settings. She studied male and female classes in urban and suburban settings and found significant differences between the urban and suburban classes in the areas of autonomy and universalism, as well as differences in the male and female classes. Bain (1976) concluded that class organization had an effect on the values, norms, and on the behavior of the students.

A modification of the Observation Schedule and Record was used by Bookhout (1967) to describe the relationship between the social-emotional climate and patterns of teacher behavior in 36 physical education classes.

The Teacher's Role in the Learning Activity Selection Process (Tri-lasp) System was developed by Hurwitz (1975). Through this system the teacher's role was categorized as either bystander, encourager, identifier, predictor, or director.

Several studies have been performed with the use of elementary school age children. Mancini (1974) used CAFIAS with elementary school teachers and students, and with the use of two distinct decision making models described the verbal and nonverbal interaction that was occurring. Results indicated that children showed an increased enjoyment of the program, increased positive interaction between the students and the teacher, increased student initiative and contributions,

and an increased variety in teaching strategies when they were involved in the sharing of the decision making process.

An interaction analysis system used to measure five verbal and five nonverbal categories of teacher-student interaction was developed by Rankin in 1975. It was used to evaluate 42 elementary physical education classes. Rankin (1975) found that students appeared more happy and content when they participated in active physical education classes compared to those students who participated in an inactive program.

Barrett (1969) used primary level movement education classes to describe teacher-student behavior patterns. Barrett (1969) found that to record both teachers' verbal behavior and students' movement responses, refinement of the system was needed.

Analysis of Coaching

An increased interest in sports has grown the last few years in society as well as in the educational system. Many educators believe that sports add to the maturation process of an individual (Tutko & Richards, 1971). With this increased growth in sports comes an increased growth in children participating in these sports, and thereby an increase in the coaches' responsibilities. The coach is responsible for the child's physical, motivational, and psychological development as well as developing his/her attitude and talents for that specific sport (Tutko & Richards, 1971).

LaGrand (1970) used a semantic differential scale in studying behavior characteristics of coaches to describe a

coach's enthusiasm, willingness to give individual help, ability to inspire, and use of discipline. Results of the study indicated that the characteristics of coaches were significantly different according to different sports as viewed by their players. Basketball players and wrestlers rated their coaches' methods of teaching and use of discipline higher than did both soccer and tennis players. Wrestlers perceived their coaches as having a greater ability to inspire. LaGrand (1970) concluded that each sport contained its own specific behaviors different from any other sport.

In 1974 Clark had collegiate athletes assess successful women coaches and found that athletes rated successful coaches as strongest in the knowledge of the sport, ability to teach, and knowledge of coaching techniques. These coaches were rated weakest in the ability to understand players as individuals, interest in players' out-of-school activities, and fairness in dealing with each player. The "ability to teach" and "knowledge of coaching techniques" must be adequately described in order to develop good coaches.

Danielson, Zelhart, and Drake (1975) used a multi-dimensional scaling and factor analysis of coaching behaviors as perceived by high school hockey players. They found that the major coaching behavior displayed was the passing of information to and from the coach to the players. Communicative behavior was the major behavior displayed.

Gilbert (1977) studied productivity, efficiency, and satisfaction of AAA high school basketball teams and found

that in order to maximize performance and satisfaction of players, consultative style of leadership was better than authoritarian or participative style of leadership.

The Mancuso Adaptation for Verbal and Nonverbal Observation System was used by Kasson (1974) when he studied the verbal and nonverbal behavior of three male teacher/coaches. Kasson (1974) found that in coaching situations more verbal and nonverbal behavior was used, with more direct than indirect behavior being used in both settings. In coaching, 56% of the total behavior was direct with lectures and verbal demonstrations being the predominant behavior.

In 1977 Agnew used CAFIAS and studied 20 female teacher/coaches. She found that coaches used more verbal questioning, more verbal acceptance and praise, and more nonverbal acceptance and praise than teachers. Agnew (1977) found that players in practice sessions showed more pupil nonverbal initiated responses, teacher suggested than the students in physical education classes.

Hendry (1974) studied the personalities of the teacher and coach with the use of 48 physical education teachers and 63 coaches all working at the college level. Teachers were shown to possess qualities of overt sociability, high aspiration, and drive, whereas, the coaches were more controlled individuals with restricted ideals and high organizational abilities. Six female coaches participated in the study, and Hendry (1974) described them as being extremely self-contained, conventional, and controlled.

Tharp and Gallimore (1976) indicated that direct observation was the most efficient way of assessing coaching behavior. They investigated the coaching behavior of John Wooden, labeling Wooden as a master teacher whose techniques were worthy of researching. They used a traditional observer system that consisted of categories such as reinforcement, punishment, modeling, and instruction. Two additional categories, scold/instruction and hustle, were needed to fully depict the behaviors displayed by Wooden. Results indicated that over 50% of Wooden's coaching behavior was instructionally oriented.

Smith, Smoll, and Hunt (1977) constructed the Coaching Behavior Assessment System (CBAS) which consisted of 12 behavioral categories in order to code and analyze the behaviors of athletic coaches in practice and game situations. They concluded that the CBAS could be used with varying effectiveness to analyze different sports. Baseball and volleyball were found to be the easiest to code due to the nature of the sports. Sports like basketball and soccer were more difficult to code because coaches' behaviors were less easily traced.

Analysis of Physical Education and Athletics

Many experts in the area of physical education and athletics believe that a coach is a teacher (Gallon, 1974; Gaylord, 1967; Keith, 1967; Sabock, 1973; Tutko & Richards, 1971). It is thus very important that coaches learn the techniques and skills used by a teacher so they can be

implemented in their coaching duties (Proulx, 1979). Frost (1971) felt that coaches are physical educators. They are working with individuals through the use of physical activity. Their techniques, procedures, and actions can affect the athletes with whom they are working. Frost (1971) stated that if coaches and physical education teachers can keep in mind the objectives of physical education during their coaching experiences they will agree that they are educators.

There have been several studies that have looked at the training background of coaches. Percival (1974) found that coaching methods have been evaluated on tradition or opinion of some influential coach instead of scientific research. Hendry (1974) said the coach has been labeled as authoritative, dominant, and aggressive. Looking at the professional preparation of interscholastic athletic coaches, Maetozo (1965) found that 30% to 70% of the coaches never completed the professional education courses needed for coaching. Meinhardt (1970) found that until the last decade little consideration was given to the extracurricular portion of the student's educational experience. Esslinger (1971) found that coaches who lack professional preparation are handicapped in obtaining the physical, moral, social, ethical, and mental values that occur in interscholastic sports, as well as protecting the health and safety of the students.

Barr (1978) used CAFIAS with secondary school varsity coaches. These coaches were put in either a control group or a treatment group. The treatment group was given instruction

in the use of CAFIAS, and results indicated that the treatment group used more questioning and praise and allowed more pupil-initiated behavior.

The Coaches' Performance Questionnaire was used by Avery (1978) to divide coaches into effective and less effective groups. CAFIAS was used to code the two practice sessions, and the results indicated that effective coaches displayed more indirect behavior than the less effective coaches. Rotsko (1979) also used the Coaches' Performance Questionnaire with male basketball coaches to divide them into successful and less successful groups. Each coach was videotaped four times and was coded with the use of CAFIAS. Rotsko (1979) found that the successful coaches used more indirect behavior such as verbal and nonverbal questioning in their teaching and coaching. The less successful group used more direct behavior such as more verbal and nonverbal information giving, more verbal and nonverbal direction giving, and more verbal and nonverbal criticism.

Hirsch (1978) used the Group Environment Scale (Moos, Insel, & Humphrey, 1974) to investigate behavioral differences between coaches from two social climates. Teams were placed in either a satisfied or not satisfied group as a result of the way the athletes responded to the Group Environmental Scale (GES). A median-split technique was used to divide the two groups. A multivariate analysis of variance was performed on the CAFIAS data to see if there were any significant differences between the two groups. Hirsch (1978) found more inter-

action between the coach and the athletes in the satisfied group as well as more pupil initiated behavior and more praise. Teams that were satisfied with their environment were more cohesive, well organized, and had strong leader support while those in the not satisfied group lacked these characteristics. Proulx (1979) also used the Group Environment Scale (GES) (Moos et al., 1974) to classify teams as being satisfied or less satisfied with their social climate according to how the athletes responded to the GES. CAFIAS was used as the testing instrument to compare the differences between the two groups. Proulx (1979) found that there were significant differences in the coaching behaviors in the satisfied and less satisfied groups. Staurowsky (1979) used the GES (Moos et al., 1974) to classify teams for which CAFIAS was used to compare the behaviors of female coaches in two different athletic environments. Staurowsky (1979) found that significant differences did exist between the two groups.

Rosenshine and Furst (1973) developed a list of teacher behaviors that had a direct and significant effect on student achievement. The list consisted of the following nine variables: (1) clarity, (2) variability or flexibility, (3) enthusiasm, (4) task-oriented and/or business-like behavior, (5) criticism, (6) teacher indirectness, (7) student opportunity to learn criterion material, (8) use of structuring comments, and (9) multiple levels of questions or cognitive discourse.

Keilty (1975) developed an observational rating system which put to use the behavior variables identified by

Rosenshine and Furst (1973). CAFIAS was used to see if behaviors related to the training in CAFIAS were also related to teacher effectiveness. Keilty (1975) established reliability measures for his rating system of .83 for internal consistency, .96 for inter-observer reliability, and .90 for rater agreement. Keilty (1975) found no relationship between teacher effectiveness and the variables measured by CAFIAS.

Rochester (1976) studied the relationship between training in CAFIAS and teacher effectiveness variables identified by a modification of Keilty's (1975) instrument. CAFIAS variables teacher talk, teacher nonverbal, confusion, student talk, and student nonverbal were correlated with clarity; variability; opportunity to learn; accepting, encouraging, and indirectness; use of structuring and summary comments; and types of questions. These same CAFIAS variables were also found to be correlated with variability, business-like task-oriented behavior and probing.

Summary

Educators have been concerned with effective ways to evaluate teachers for many years. Anderson (1939) was the first to develop a system to study teacher-student instruction.

Bales (1950) introduced interaction analysis systems which analyzed student-teacher interaction in the classroom. Flanders (1960) created FIAS which became the most popular interaction analysis system. There have been many researchers that have used or adapted FIAS (Amidon & Hunter, 1966; Bahneman, 1971; Dougherty, 1970; Kurth, 1969; Mancuso, 1972;

Shiffman, 1976).

The most widely used adaptation of FIAS was by Cheffers (1972) who developed the Cheffers Adaptation of Flanders' Interaction Analysis System. CAFIAS was developed to describe both verbal and nonverbal interactions that were occurring in the physical education setting. Many studies have been done with the use of CAFIAS (Agnew, 1977; Keane, 1976; Mancini, 1974; Mawdsley, 1977; Rochester, 1976).

There has been much concern about coaches and their role in both education and athletics. Many experts in the area of physical education and athletics believe that a coach is a teacher (Gallon, 1974; Gaylord, 1967; Keith, 1967; Sabock, 1973; Tutko & Richards, 1971). Frost (1971) felt that coaches are physical educators because of their work with individuals through the use of physical activity. Several studies have taken place that measure coaching behaviors in an attempt to improve the weaknesses in the coaching profession (Agnew, 1977; Avery, 1978; Barr, 1978; Hirsch, 1978; Proulx, 1979; Rotsko, 1979; Staurowsky, 1979).

Many theories and techniques have been developed to evaluate the effectiveness of teaching and coaching (Avery, 1978). Rosenshine and Furst (1973) developed nine teaching variables that resulted in student growth. Keilty (1975) and Rochester (1976) used these variables in studies seeking a relationship in CAFIAS and teaching effectiveness variables.

Chapter 3

METHODS AND PROCEDURES

This chapter will be concerned with the methods and procedures by which this study was investigated. Included in this chapter will be selection of subjects, testing instrument, coder reliability, procedure, treatment of data, and summary.

Selection of Subjects

The subjects were 50 male and 50 female secondary basketball coaches from central New York and New Hampshire. Coaches were personally contacted and permission was granted for the gathering of data. Coaches completed informed consent forms prior to filming. These forms gave them a brief outline of the study and indicated exactly what their involvement would require if they decided to participate (Appendix B).

Testing Instrument

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used to measure the verbal and nonverbal interactions and behavior patterns of the 100 secondary basketball coaches. This interaction analysis system was specifically designed to code behaviors in physical activity classes.

The 100 subjects were videotaped during two different practice sessions. CAFIAS was then used to code the videotapes. The coding procedure from the videotapes was as follows:

1. Every 3 seconds or every time the behavior changed the coder recorded a number that corresponded to the category of the interaction that had just taken place.

2. These numbers were recorded in sequence in a column on a tally sheet.

3. From the tally sheet these numbers were then placed on a matrix. A computer program was used to determine the number of tallies for each cell.

4. From the matrix and computer print-out the interaction patterns were determined.

Coder Reliability

The Spearman rank-order correlation was the statistical procedure used in determining coder reliability. Four randomly selected practice sessions were coded at two different times by an expert coder in the use of CAFIAS and subjected to the Spearman rank-order correlation.

Procedure

Two visits were made to each school. During each visit, the basketball practice was videotaped for 30 minutes. Data collected during the two taping sessions were used in the final analysis. The tapes were coded through the use of CAFIAS. A microphone was attached around the neck of the coach to obtain the verbal communication that took place between the athletes and the coach.

Scoring of Data

Each tally recorded by the coder was placed on computer cards. The computer print-out indicated the matrices and

also tabulated ratios and percentages for the 23 parameters and the 20 variables determined by CAFIAS. To determine the mean scores for each individual, the two coaching sessions were combined.

Treatment of Data

Multivariate analysis of variance was used to determine overall significant differences in the coaching behaviors of 50 male and 50 female secondary basketball coaches. These results were then subjected to univariate analysis of variance to identify which of the CAFIAS parameters and variables contributed independently to differences between the two groups. Significance beyond the .05 level was used to test the hypothesis.

Summary

Fifty male and 50 female secondary basketball coaches from central New York and New Hampshire were observed to determine if there were any significant differences in their coaching behavior. All 100 coaches were videotaped twice to determine mean scores for their coaching behaviors. The practices were coded according to CAFIAS. A computer was used to tabulate the raw data.

Multivariate analysis of variance was used to determine significant differences in the coaching behaviors of the two groups. Univariate analysis of variance on each of the CAFIAS variables was used in order to understand and differentiate their specific contributions to the group's dissimilarities. The .05 level of significance was used to test the 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 male and female secondary basketball coaches.

Coder's Reliability

This study was a compilation of the studies of Avery (1978), Hirsch (1978), Proulx (1979), Rotsko (1979), and Staurowsky (1979); all of these studies were investigations of the behaviors of male and female secondary basketball coaches. In those previous studies, coder reliability was tested with the use of a Spearman rank-order correlation. The means of the Spearman rank-order correlations for these studies were greater than .965, which was sufficient to indicate the coder was reliable.

Analysis of Coaching Behavior Data

Univariate analyses of variance were performed on 23 CAFIAS parameters of male and female secondary basketball coaches. The mean scores and standard deviations for the 23 CAFIAS parameters resulting from the coding of practice sessions of those coaches are presented in Table 1. The mean scores of the male and female coaches were compared, and at (1,98) degrees of freedom were found not to be significant at the .05 level.

Table 1

ANOVA of CAFIAS Parameters for Male and Female
Secondary Basketball Coaches

Parameter	Male (<u>n</u> =50)		Female (<u>n</u> =50)		<u>F</u> ^a
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Coach talk	32.1900	6.6570	32.0900	7.2150	.005
Coach nonverbal	11.8600	5.9270	13.1400	7.1630	.952
Athlete talk	10.1500	5.8720	10.4800	5.4580	.085
Athlete nonverbal	29.6200	6.5200	29.6100	8.8990	.000
Silence	7.8710	5.2700	6.5980	4.1300	1.807
Confusion	8.3130	6.4140	7.5490	6.8870	.330
Coach questioning verbal	8.8560	6.1510	10.7400	8.0610	1.722
Coach questioning nonverbal	4.6170	14.4900	9.4020	28.9100	1.094
Coach acceptance and praise verbal	42.4900	20.8600	43.7900	23.4600	.085
Coach acceptance and praise nonverbal	44.2500	25.9100	54.7500	30.1800	3.487

Table 1 (continued)

Parameter	Male (<u>n</u> =50)		Female (<u>n</u> =50)		F ^a
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Athlete initiation verbal, coach suggested	78.4800	24.4000	77.4900	19.0500	.051
Athlete initiation nonverbal, coach suggested	49.9600	31.1200	45.3400	27.5500	.619
Unstructured verbal	10.5600	10.4600	9.5110	6.2100	.370
Unstructured nonverbal	7.1400	9.9250	6.3700	6.3510	.214
Content cross	34.7900	10.8600	36.9900	13.5700	.804
Teacher as teacher	99.9700	.1867	99.9700	.1172	.000
Student as teacher	.0264	.1867	.0208	.1114	.033
Environment as teacher	.0000	.0000	.0056	.0396	1.000
Percent verbal	50.6500	10.2500	50.1100	9.7500	.072
Percent nonverbal	49.3500	10.2500	49.8900	9.7500	.072
Part	10.4500	19.4700	14.1900	26.8000	.636
Whole	87.5500	23.1600	85.7900	26.7900	.123

Table 1 (continued)

Parameter	Male ($\bar{n}=50$)		Female ($\bar{n}=50$)		F^a
	\bar{M}	\underline{SD}	\bar{M}	\underline{SD}	
No interest	2.0000	14.1400	.0178	.1259	.982

^a $p > .05$ in all cases.

A multivariate analysis of variance of the 20 CAFIAS variables was also performed as shown in Table 2. The findings, presented in this table, are again not significant at the .05 level and, therefore, the null hypothesis was accepted. Another univariate analysis of variance was performed on the same 20 CAFIAS variables of the basketball coaches. The mean scores and standard deviations for those 20 CAFIAS variables are presented in Table 3. Those mean scores were also compared, and at (1,98) degrees of freedom were found not to be significant at the .05 level. There were no significant differences between the coaching behaviors of male and female secondary basketball coaches.

Figure 1 further illustrates the mean percentages of the CAFIAS variables of the male and female secondary basketball coaches through the use of a bar graph. Minimal or no differences were observed in each CAFIAS variable between male and female secondary basketball coaches.

The top 10 ranked cell frequencies and their percentage of occurrence for the male and female coaches are presented in Table 4. The top patterns for both the male and female coaches were extended information giving (5-5); extended athletes' scrimmage or interpretive drills (10-8 -10); coaches' directions followed by athletes' predictable response (6-8); and athletes' predictable response followed by coaches' information (8-5).

Summary

The multivariate analysis of variance used to determine if

Table 2

Multivariate Analysis of Variance Contrasting Male and Female
Secondary Basketball Coaches Using 20 CAFIAS Variables

Source	<u>df</u>	<u>Λ</u>
Between Groups	20,79	1.649

p > .05.

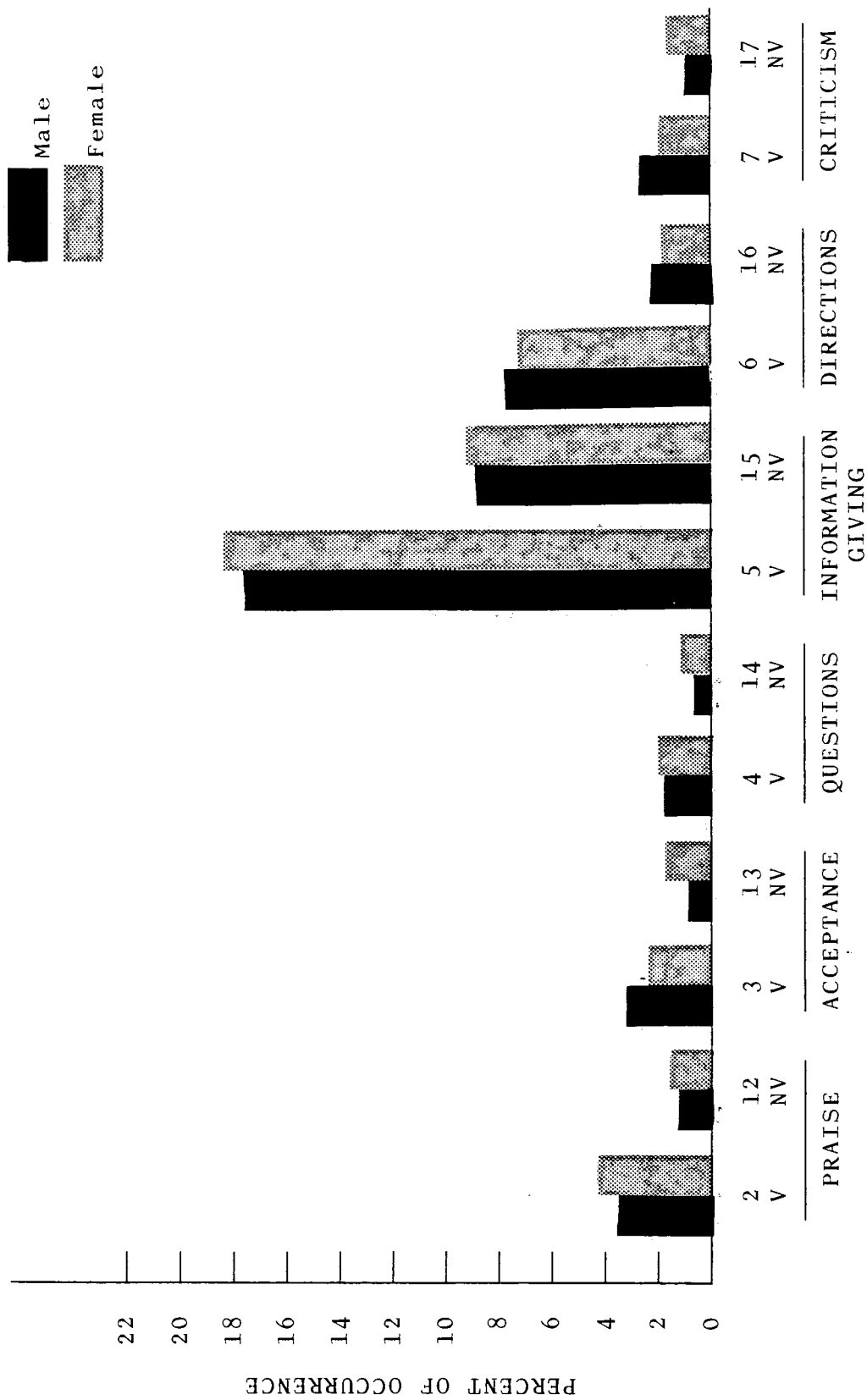
Table 3
ANOVA of CAFIAS Variables for Male and Female
Secondary Basketball Coaches

Variable	Male (<u>n</u> =50)		Female (<u>n</u> =50)		<u>F</u> ^a
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
2	3.610	2.710	3.900	3.240	.248
12	1.140	1.180	1.320	1.210	.601
3	3.280	2.450	2.820	2.780	.754
13	.886	1.210	1.350	1.720	2.505
4	1.360	.944	1.710	1.250	2.550
14	.148	.152	.232	.283	3.421
5	14.940	5.070	15.140	5.590	.035
15	7.290	4.700	7.930	6.420	.323
6	6.940	3.220	6.830	3.790	.025
16	2.000	1.790	1.840	2.020	.193
7	2.060	1.430	1.670	1.280	2.552
17	.376	.360	.442	.539	.518
8	1.900	3.410	1.780	1.540	.050
18	15.500	11.300	17.800	12.500	.856
8\	7.650	5.740	8.030	5.600	.115
18\	13.500	8.820	11.700	6.570	1.236
9	.590	.587	.656	.479	.385
19	.562	.590	.610	.461	.205

Table 3 (continued)

Variables	Male (<u>n</u> =50)		Female (<u>n</u> =50)		<u>F</u> ^a
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
10	8.310	6.410	7.540	6.880	.335
20	7.870	5.260	6.600	4.130	1.811

^ap > .05 in all cases.



COACH

Figure 1. Mean percentages for the CAFIAS variables.

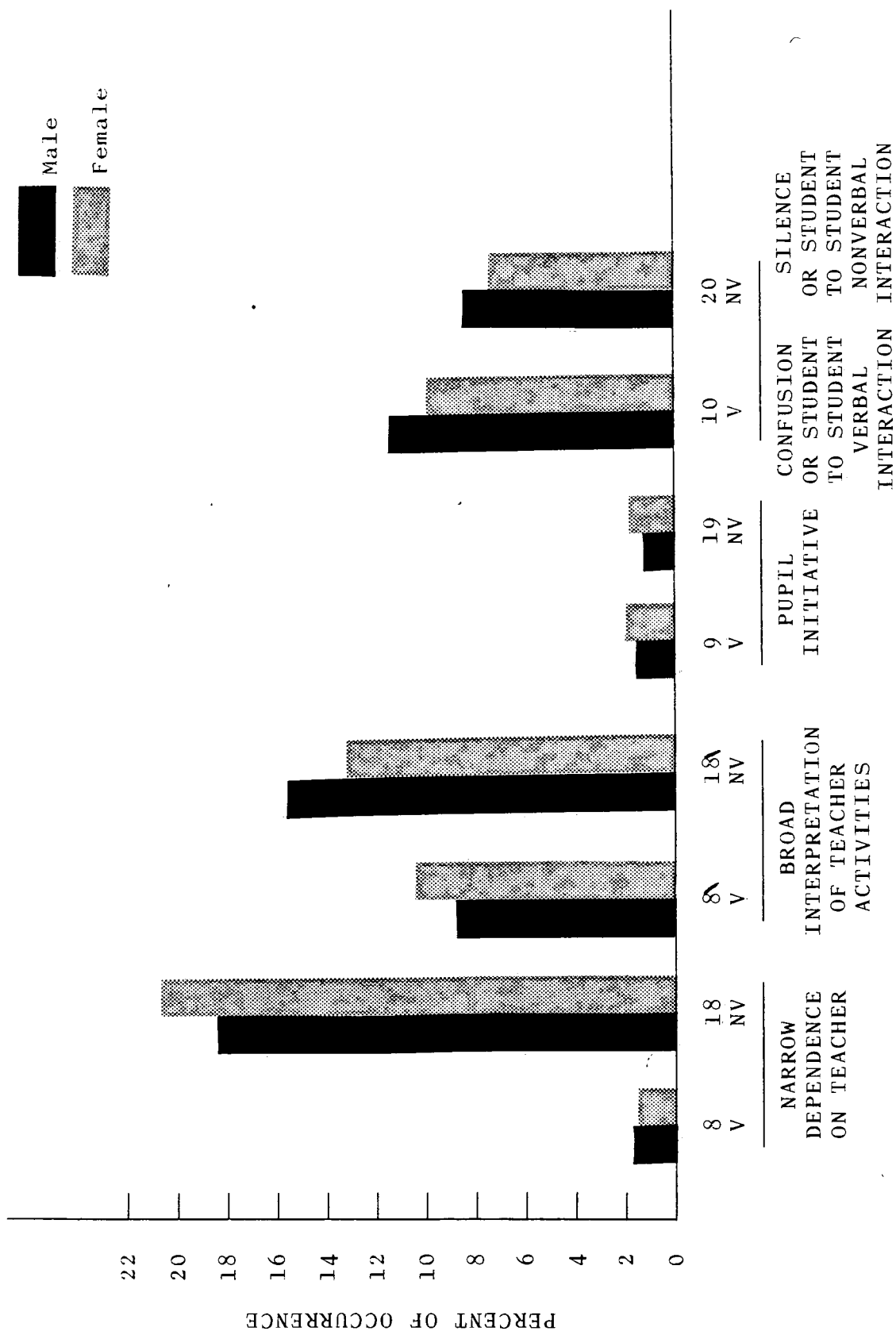


Figure 1. (continued)

Table 4
 Summary of Most Frequent Patterns Among the Top 10 Cells
 of Male and Female Secondary Basketball Coaches

Male				Female		
Interaction Patterns	Number of Times	Percent of Occurrence	Interaction Patterns	Number of Times	Percent of Occurrence	
5-5	47	13.65	5-5	47	13.53	
10-8	40	12.66	10-8	40	10.62	
8-10	40	11.90	8-10	39	9.89	
8-5	39	4.70	6-8	38	7.24	
6-8	39	6.85	8-10	34	7.33	
8-10	30	9.47	8-5	34	5.41	
10-8	27	9.78	10-8	32	7.19	
5-6	27	4.25	5-8	29	4.71	
5-8	26	5.99	5-8	26	5.01	
8-5	24	4.76	5-6	26	8.34	

5-5 extended information giving.

10-8 extended athletes' scrimmage or interpretive drills.

Table 4 (continued)

- 8-10 extended athletes' scrimmage or interpretive drills.
- 8-5 athletes' predictable response followed by coaches' information.
- 6-8 coaches' directions followed by athletes' predictable response.
- 8-10 extended athletes' drills.
- 10-8 extended athletes' drills.
- 5-6 coaches' information giving and direction.
- 5-8 coaches' information giving followed by athletes' interpretive response.
- 8-5 athletes' interpretive response followed by coaches' information.
- 5-8 coaches' information giving followed by athletes' predictable response.

significant differences existed in the coaching behaviors of male and female secondary basketball coaches showed a value of 1.649 which was not significant at the .05 level. The null hypothesis that there will be no significant differences between the coaching behaviors of male and female secondary basketball was, therefore, accepted..

A univariate analysis of variance was performed on both the 23 CAFIAS parameters and on the 20 CAFIAS variables with the mean scores and standard deviations for both computed. The mean scores were then compared between the male and female coaches, and at (1,98) degrees of freedom, were found not to be significant at the .05 level.

The analysis of data revealed there were no differences among the coaching behaviors of male and female basketball coaches.

Chapter 5

DISCUSSION OF RESULTS

This chapter presents a discussion of the results and conclusions of this study. This study compared the coaching behaviors of male and female secondary basketball coaches.

Cheffers' Adaptation of Flanders' Interaction Analysis System, known as CAFIAS (Cheffers, 1972) was used as the testing instrument to determine if there were behavioral differences between the two groups of coaches.

In this study, a multivariate analysis of variance was performed on the 20 CAFIAS variables. Univariate analyses of variance were also performed on 23 CAFIAS parameters and 20 CAFIAS variables. In regard to the 23 CAFIAS parameters, results indicated that no significant differences existed between the male and female basketball coaches. The only two parameters that had any differences were teacher question nonverbal, where it occurred 4.61% of the time with the males, and 9.40% of the time with the females; and teacher response nonverbal, with the occurrence being 44.2% of time with the males and 54.8% of time with the females.

Both the univariate analysis of variance and the multivariate analysis of variance on the 20 variables indicated that again no significant differences existed between the two

groups. There were only four variables that had any differences occurring at all, and they were very slight. Male coaches used verbal acceptance 3.28% of the time, while the female coaches used it 2.82% of the time. Nonverbal acceptance occurred .886% of the time with the males and 1.35% of the time with the females. Verbal criticism occurred 2.06% of the time with the male coaches but only 1.67% of the time with the female coaches.

The athletes displayed a nonverbal predictable response 15.5% of the time when it was directed from the male coach and 17.8% of the time when it was directed from the female coach. The athletes displayed a nonverbal interpretive response 13.5% of the time when it was directed from the male coach and 11.7% of the time when it was directed from the female coach.

The top 10 ranked cell frequencies and their percentage of occurrence for the male and female secondary basketball coaches were determined. It is apparent from Table 4 that the behavior patterns and the percentage of occurrence were very similar.

The only behaviors that differed between the two sexes were coaches' information giving and direction. These behaviors occurred 8.34% of the time with the female coaches and 4.25% of the time with the males. Extended athletes' drills was the next behavior which differed between the two sexes. This behavior occurred 9.47% of the time with the male coaches and 7.33% of the time with the female coaches. There were only two behavior patterns that did not occur in both groups. In the female coaches, the coaches' information giving followed by an athlete's predictable response occurred 5.01% of the time but

did not occur at all with the male coaches. In the male coaches, the athlete's interpretive response followed by coaches' information occurred 4.76% of the time but did not occur with the females.

The behavior pattern that occurred in large numbers in both groups was extended information giving. This occurred 13.65% of the time with the male coaches and 13.53% of the time with the female coaches. Extended athlete's scrimmage or interpretive drills occurred 12.66% of the time with the male coaches and 10.62% of the time with the female coaches. Coach's directions followed by athlete's predictable response occurred 6.85% of the time with the males and 7.24% of the time with the females, and extended athlete's drills occurred 9.47% of the time with the male coaches and 7.33% of the time with the female coaches.

Many similar studies have been investigated which studied the differences in coaching behaviors of two groups. In more studies the results differed from the results found by this investigator.

Proulx (1979) did a study comparing the behaviors of male coaches in two different athletic environments. Team environments were classified as being either satisfied or less satisfied by taking the cumulative absolute differences on Form R and Form I of the Group Environment Scale (Moos, Insel, & Humphrey, 1974). CAFIAS was used as the testing instrument to compare the differences between the two groups. Results of Proulx's (1979) study differed from this study in that there

were significant differences in the coaching behaviors in the satisfied and less satisfied groups.

Staurowsky (1979) did a similar study to compare the behaviors of female coaches in two different athletic environments. By using the Group Environment Scale (Moos et al., Insel, & Humphrey, 1974), Staurowsky (1979) found that significant differences did exist between the two groups.

Hirsch (1978) also conducted a study comparing the behaviors of coaches in two different athletic environments. Hirsch (1978) also found significant differences between the two groups. He found that teams that were satisfied with their environment were more cohesive and well-organized and had strong leader support. Hirsch (1978) stated that there was more praise used by the coaches in the satisfied group.

Avery (1978) used the Coaches' Performance Questionnaire to divide coaches into effective and less effective groups. Analysis of two videotapes coded through the use of CAFIAS indicated significant differences in the coaching behaviors of the effective and less effective groups. The coaches in the effective group displayed more direct coaching behaviors, and the athletes in the effective group displayed more interpretive behavior.

Rotsko (1979) also used the Coaches' Performance Questionnaire with male basketball coaches to divide them into successful and less successful groups. He found that the successful coaches used more indirect behavior such as verbal and nonverbal questioning in their teaching and coaching,

whereas, the less successful group used more verbal and non-verbal information giving, more verbal and nonverbal direction giving, and more verbal and nonverbal behavior.

Nygaard (1975) used FIAS and found that male physical education teachers displayed a more direct teaching style than female physical education teachers. Nygaard (1975) also found that students of female teachers initiated more student talk although female teachers were more critical.

Bain (1976) used the Implicit Values Instrument for Physical Education in studying male and female classes in urban and suburban settings. Again as in previous studies significant differences were found between the two groups, specifically in the areas of autonomy and universalism. Bain (1976) concluded that class organization had an influence on values, norms, and student behavior.

Keane (1976) also used CAFIAS to investigate teachers in terms of leadership styles and found that leadership styles were not influenced by the sex of the teacher. Keane (1976) suggested that teachers should begin to develop an understanding of their own leadership styles and the situation in which they find themselves in order to become more effective and more considerate. Keane (1976) pointed out that the environment may be the key variable.

In another study in which the results differ from this investigation, LaGrand (1970) used a semantic differential scale to study the behavioral characteristics of coaches in describing a coach's enthusiasm, willingness to give individual

help, ability to inspire, and use of discipline. Results of the study indicated that significant differences existed in characteristics of coaches of different sports. LaGrand (1970) concluded that each sport contained a unique set of behaviors from any other sport.

Mawdsley (1977) and Faulkner (1976) performed studies in which no significant differences in the behaviors of the sexes were found. Mawdsley (1977) used CAFIAS to describe and compare the teaching behavior and teacher-student relationships of male and female movement education teachers. No significant relationship was found between the quality of teacher-student relations and teacher behavior. Faulkner (1976) also used CAFIAS and found no significant differences in the teaching patterns of male and female pre-service physical education teachers. The findings of the present study agreed with the results of Faulkner (1976) and Mawdsley (1977).

The basketball practices of the 100 coaches in this study were dominated by coaches spending most of the time providing information to their athletes while they remained inactive. This was followed by the coach giving specific directions to the athletes. The athletes' behaviors varied between predictable narrow response or mechanical drilling and "live" drills or scrimmage play. The manner in which these coaches gave feedback to their athletes' ideas or actions during practice was to provide further information and direction instead of encouraging or praising their players.

Summary

Results obtained from the CAFIAS data were subjected to a multivariate analysis of variance on the 20 CAFIAS variables and univariate analyses of variance on 23 CAFIAS parameters and 20 CAFIAS variables. The results led to the acceptance of the null hypothesis that stated that there will be no significant difference between the coaching behaviors of male and female secondary basketball coaches. Of the 20 CAFIAS variables and 23 CAFIAS parameters no significant differences occurred between the two sexes.

Hirsch (1978), Proulx (1979), and Staurowsky (1979), comparing the behaviors of coaches in two different athletic environments, found significant differences in their behaviors. Avery (1978) and Rotsko (1979) also used CAFIAS and found a significant difference in the coaching behaviors of successful and less successful coaches. Kean (1976) used CAFIAS and studied teachers in terms of leadership styles and found that leadership styles were not influenced by the sex of the teacher.

Results of this study are in agreement with those found by Mawdsley (1977) and Faulkner (1976). Mawdsley (1977) used CAFIAS and found no significant differences in the behaviors between the quality of teacher-student relations and teacher behavior. Faulkner (1976) also using CAFIAS found no significant differences in the behavior of male and female pre-service physical education teachers.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

FOR FURTHER STUDY

Summary

This study was undertaken to determine if any significant differences exist between the coaching behavior of male and female secondary basketball coaches.

The subjects were 50 male and 50 female secondary basketball coaches from central New York and New Hampshire. Each subject was videotaped 30 minutes during two different practice sessions. The tapes were then coded by Dr. Victor H. Mancini through the use of CAFIAS. The data collected from the coding of CAFIAS were transposed to data cards for computer analysis. The computer print-out included matrices and also tabulated ratios and percentages for 23 CAFIAS parameters and 20 CAFIAS variables. These ratios and percentages were tallied for each of the two taping sessions for each individual, and a mean score and standard deviation was calculated to represent each subject.

Both a multivariate analysis of variance and univariate analyses of variance were performed on the coaching behaviors of male and female secondary basketball coaches and were found to be not significant at the .05 level.

The null hypothesis that there will be no significant

differences between the coaching behaviors of male and female secondary basketball coaches was accepted.

Conclusions

Based on the analysis of the data, male and female secondary basketball coaches exhibited the same coaching behaviors. There were no major differences between the verbal and nonverbal interaction patterns that occurred between the two sexes. The differences that did occur between the male and female secondary basketball coaches were very slight and were not significant at the .05 level. The differences that were established from the findings in this investigation were

1. the female coaches used more nonverbal teacher response than the male coaches.
2. that female coaches used more nonverbal teacher response than the male coaches.
3. that male coaches used more verbal criticism than the female coaches.
4. the athletes of the female coaches displayed more nonverbal predictable responses than the athletes of the male coaches.
5. the athletes of the male coaches displayed more non-verbal interpretive responses than the athletes of the female coaches.

Recommendations for Further Study

The following recommendations are made for future research:

1. A study comparing the coaching behavior of males coaching women and females coaching men in the same sport be

undertaken.

2. A study comparing the coaching behaviors of male and female coaches at two different levels of competition be researched.

3. A study comparing the coaching behaviors of male and female coaches during practice and game situations be researched.

4. A study where male and female coaches coach more than one sport in order to see if differences occur between the sports be studied.

Appendix A

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

Coding Symbols

Teacher (E)
Environment (E)
Student (S)

Categories	Verbal	Relevant Behaviors	Nonverbal
	2		12
2-12	Praises, jokes, commands, encourages	<p>Face: Smiles, nods with smile (energetic) winks, laughs</p> <p>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</p>	
	3		13
3-13	Accepts, clarifies, uses, and develops suggestion and feelings by the learner	<p>Face: Nods without smiling, tilts head in empathetic reflection, sighs empathetically</p> <p>Posture: Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches an implement thrown by student, accepts facilities</p>	

Appendix A (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
			14
4-14	Asks questions requiring student answer	Face: Posture:	Wrinkles brow, opens mouth, turns head with quizzical look Places hands in air, waves finger to and fro anticipating answer, scratches head, cups hand to hear, stands still half turned toward person, awaits answer
			15
5-15	Gives facts, opinions, expresses ideas, or asks rhetorical questions	Face: Posture:	Whispers words inaudibly, sings, or whistles Gesticulates, draws, writes, demonstrates activities, points
			16
6-16	Gives directions or orders	Face: Posture:	Points with head, beckons with head, yells at Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction
			17
7-17	Criticizes, expresses anger or distrust, sarcastic or extreme self-reference	Face: Posture:	Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down

Appendix A (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	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 (after Bloom)	Face: Poker face response, nods, shakes, gives small grunts, quick smile Posture: Moves mechanically to questions or directions, responds to any action with minimal nervous activity, robot like	
	Eineteen (8\)	Eineteen (18\)	
eine (8\) & eineteen (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: A "What's more, Sir" look, eyes sparkling Posture: 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: Interrupting sounds, gasps, sighs Posture: 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 games	

Appendix A (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
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
INFORMED CONSENT FORM
COACHES' COPY

The study in which you have been asked to take part deals with coaching behavior and effectiveness. Data collected for this coaching study will be obtained through the use of videotape equipment. Two 30-minute videotapes will be made of your practice sessions. The videotape procedure will not interfere with your practice at all. You will be asked to wear a microphone during these taping sessions.

The videotapes will be subjected to an interaction analysis system. This interaction analysis system consists of 20 categories which will record the verbal and nonverbal interaction that is occurring between the coaches and the players.

All information used in this study will remain confidential. None of the coaches' or schools' names will be used in the study. If you do not have any questions and agree to be a subject in this study, please sign your name on the line below.

NAME: _____

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