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# The coaching interaction patterns of a college volleyball coach with her high-skilled, average-skilled, and low-skilled athletes

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THE COACHING INTERACTION PATTERNS OF A COLLEGE VOLLEYBALL  
COACH WITH HER HIGH-SKILLED, AVERAGE-SKILLED,  
AND LOW-SKILLED ATHLETES

by

Jane M. Ware

An Abstract

of a thesis 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

December 1985

Thesis Advisor: Dr. Victor H. Mancini

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## ABSTRACT

This investigation was conducted to determine if the coaching interaction patterns of a head volleyball coach differed significantly with varsity volleyball players with high skill, with average skill, and with low skill ability. The subjects who participated in this study included the head varsity volleyball coach and 12 female varsity volleyball athletes (four high-skilled, four average-skilled, and four low-skilled) from an AIAW Division II college located in central New York. The subjects were videotaped 20 times throughout the entire 1981 regular season. The tapes were then coded by an expert coder using the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). The recorded data were analyzed by computer. Visual comparisons of the computer results were utilized to determine whether differences existed in the behavior of the coach as she interacted with players of high-skilled, average-skilled, and low-skilled ability. The results showed that the high-skilled athletes received more acceptance and praise, were asked more questions, received more attention, and exhibited more athlete-initiated responses than athletes of average-skilled and low-skilled ability. The average-skilled and low-skilled athletes received more directions and exhibited more predictable behavior than did the high-skilled athletes. The average-skilled athletes received more directions than either of the two groups. The low-skilled athletes received small amounts of criticism in the

most frequent interaction patterns, yet the high-skilled athletes and average-skilled did not. The results led to rejection of the null hypothesis which stated there would be no significant difference in the behavior of a head coach toward her varsity players of high-skilled, average-skilled, and low-skilled ability.

THE COACHING INTERACTION PATTERNS OF A COLLEGE VOLLEYBALL  
COACH WITH HER HIGH-SKILLED, AVERAGE-SKILLED,  
AND LOW-SKILLED ATHLETES

---

A Thesis Presented to the Faculty of  
The School of Health, Physical  
Education, and Recreation  
Ithaca College

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In Partial Fulfillment of the  
Requirements for the Degree  
Master of Science

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by  
Jane M. Ware  
December 1985

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

CERTIFICATE OF APPROVAL

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MASTER OF SCIENCE THESIS

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This is to certify that the Master of Science Thesis of

Jane M. Ware

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.

Thesis Advisor:

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Education:

Dean of Graduate  
Studies:

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Dec. 13, 1985

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## DEDICATION

This thesis is dedicated to my parents, Helen and Bill Ware, for their patience, love, and understanding, which provided endless motivation for the completion of this thesis and attainment of my personal goals.



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## Chapter 1

### INTRODUCTION

Each player on a team is different from every other player in motive, personality, ability, experience, and physical attributes (Schaafsma & Heck, 1972). Frost (1970) stated that it is imperative that the coach interact with all his/her players with equal standards, regardless of athletic ability. Martinek and Mancini (1979) remarked that by studying the interactions of teacher-student dyads the teacher might become more sensitive to and aware of each student's characteristics, behaviors, and individuality, as well as the manner in which the teacher interacts with the student.

Dyadic interaction systems have been used in the classroom setting (Brophy & Good, 1970), in the physical education setting (Crowe, 1979; Devlin, 1979; Martinek & Johnson, 1979; Oien, 1979; Reisenweaver, 1980; Streeter, 1980), and in the coaching setting (Boyes, 1981; Hoffman, 1981) to investigate behavior toward individual students. In a number of these studies students have been classified into groups, then differences in teacher interaction with the groups have been investigated. Boyes, Brophy and Good, Crowe, Hoffman, Martinek and Johnson, Reisenweaver, and Streeter found that individuals classified as high achievers received more encouragement, acceptance of ideas, and questions from their teachers than did low achievers. Oien found that

junior high boys received more praise, encouragement, questions, criticism, lectures, and directions than girls. Devlin concluded that disruptive children trained in contingency management skills could alter their physical education teacher's direct teaching behaviors.

Relatively little research has investigated coaching behavior in volleyball. Bain (1978) used the 1976 Implicit Values Instrument for Physical Education to study the differences among male physical education teachers, female physical education teachers, male basketball coaches, and female volleyball coaches. She found that coaches rated higher than teachers in privacy, instructional achievement, and specificity. Clark (1974) selected coaches from four sports (volleyball, basketball, gymnastics, and swimming) and assessed their characteristics as judged by members of their respective teams. Smith, Smoll, and Hunt (1977) suggested the use of the CBAS system would be an ideal coding system for the sports of volleyball and baseball, because game developments are relatively discrete. Sparks (1983) used the Academic Learning Time-Physical Education-Teacher Behavior Observation Instrument to study teacher/coach behavior during volleyball classes and interscholastic volleyball practices. Her analysis of the results indicated that a teacher/coach gave three times more feedback to teams than to classes. As yet, no research has used dyadic interaction systems to study the effects of coaches' expectations of their players throughout an entire

regular season.

The purpose of this study was to determine if differences exist in the behavior the varsity volleyball coach exhibits toward the players of high athletic ability, as compared to the behavior toward the players of average athletic ability or the players of low athletic ability.

#### Scope of Problem

This investigation was conducted throughout the entire regular volleyball season to compare the coaching interaction patterns of a head volleyball coach with high-skilled, average-skilled, and low-skilled varsity volleyball players. An Association of Intercollegiate Athletics for Women (AIAW) Division II volleyball coach and 12 varsity players from a team in central New York served as subjects for this study.

Each athlete was asked to wear a practice uniform with a unique number on it at each practice to distinguish her throughout data collection and analysis. The coach classified each of the 12 collegiate athletes as being high-skilled, average-skilled, or low-skilled in relative ability, placing 4 athletes into each ability group.

The subjects were videotaped during 20 practices throughout the entire regular season. The tapes were coded using the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) (Martinek & Mancini, 1979).

### Statement of Problem

DAC was used to determine if differences occurred in the behavior patterns of a head coach in her interactions with high-skilled, with average-skilled, and with low-skilled varsity athletes through the entire season.

### Null Hypothesis

There will be no differences in the behaviors of a head coach toward her varsity players of high-skilled, average-skilled, and low-skilled ability.

### Assumptions

The following assumptions were made for the purpose of this investigation:

1. The coding of DAC would yield valid data to test the hypothesis.
2. The coach's ratings of the varsity athletes provided valid data on the skill ability of her players.

### Definition of Terms

The following terms were defined for the purpose of this study:

1. Varsity players are the individuals who tried out and were selected to a Division II collegiate varsity volleyball team.
2. High-skilled ability describes those athletes whose skill ability, as identified by the coach, placed them among the best four performers on the varsity team.
3. Average-skilled ability describes those athletes whose



skill ability, as identified by the coach, placed them among the intermediate four performers on the varsity team.

4. Low-skilled ability describes those athletes whose skill ability, as identified by the coach, placed them among the bottom four performers on the varsity team.

5. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a system designed to measure verbal and nonverbal interactions between a teacher and student in a physical education setting (Cheffers, 1972).

6. The Dyadic Adaptation of CAFIAS (DAC) is an instrument used in a physical education setting for coding and analyzing interactions between the teacher and a single student or a small group of no more than four students (Martinek & Mancini, 1979).

#### Delimitations of Study

The following were delimitations of this study:

1. The subject was a head volleyball coach from an AIAW Division II college during the 1981 season.
2. DAC was the only interaction analysis system used to record behavior patterns.
3. The coach's rating of skill ability was the only procedure used in this investigation to group the varsity athletes into classifications of low, average, and high skill ability.

#### Limitations of Study

The following were limitations of this study:

1. The findings may only be valid when DAC is used.

2. The results may differ with coaches and athletes at any other college or at any level other than AIAW Division II.

## Chapter 2

### REVIEW OF RELATED LITERATURE

The review of literature relevant to this investigation will focus on the three following areas: (a) general investigation and systematic observation in coaching, (b) dyadic interaction in physical education and coaching, (c) small N research; and (d) summary.

#### General Investigation and Systematic Observation in Coaching

Investigations in the field of coaching have gradually increased since the 1970s. Prior to the use of a systematic observational system, the instruments used were questionnaires and personality trait inventories. According to Percival (1974), the primary evaluations of coaching methods were based on opinions instead of systematic observations.

LaGrand (1970) studied coaches' behavior characteristics perceived by athletes from four sports: basketball, soccer, tennis, and wrestling. A semantic differential scale measured a coach's enthusiasm, ability to inspire, willingness to give help, and use of discipline. Significant differences were found in the behavioral characteristics of coaches of different sports. LaGrand concluded that each sport had its own specific individuality and behaviors.

Hendry (1974) used the Dynamic Personality Inventory to

compare the behaviors of 48 male and female physical education teachers and 63 male and female coaches at the college level in relation to their personality and social orientation. The results showed that teachers possessed qualities of overt sociability, high aspiration, and drive, whereas coaches were more controlled, with restricted ideals and high organizational abilities.

To investigate the success of high school football and basketball coaches, Penman, Hastad, and Cords (1974) used a questionnaire. They found that coaches who exhibited more authoritarian characteristics were more successful.

With the use of a semantic differential assessment scale, Clark (1974) studied the characteristics of successful women intercollegiate coaches, as judged by members of their respective teams, in the sports of volleyball, basketball, gymnastics, and swimming. The athletes rated their coaches favorably. The athletes all agreed on three common coaching strengths: (a) knowledge of the sport, (b) ability to teach, and (c) knowledge of coaching technique. They also selected the same common weaknesses for all four sports: (a) unfamiliarity with the person as an individual, (b) no interest in the players' out-of-school activities, and (c) fairness in dealing with each player equally.

Danielson, Zelhart, and Drake (1975) used a 140-item questionnaire called the Coaching Behavior Description Questionnaire to study coaching behavior as perceived by 160 high school hockey players. They found that commonly perceived

coaching behaviors in hockey were mainly of the communicative nature with surprisingly little emphasis on domination.

The process of systematically observing and coding teaching behavior has steadily gained favor in the athletic arena, where coaching behaviors are now being subjected to analysis (Darst, Mancini, & Zakrajsek, 1983). Two recently developed systematic observational systems are the Implicit Values Instrument (Bain, 1978) and the Physical Education Teacher/Coach Observational System (Quarterman, 1980).

Tharp and Gallimore (1976) were among the first to analyze coaching behavior through direct observation. The investigators analyzed the coaching behaviors of John Wooden from 15 practice sessions using a 10-category system. They concluded that over 50% of the behaviors exhibited during practice were instructionally oriented.

The Coaching Behavior Recording Form was developed by Langsdorf (1980) from the 10 categories of Tharp and Gallimore (1976). It was used to determine, through objective observation, the coaching behavior of a highly successful major university football coach. He found that the most common behaviors were hustle and scold/reinstruction. He also found that the amount of praise equalled the amount of scolding behaviors and that most scolding behavior was followed by an instructional statement. The data were then compared to the data of the Tharp and Gallimore (1976) study. The investigator concluded that there were

significant similarities in the behavior of the two coaches.

Smith, Smoll, and Hunt (1977) developed the Coaching Behavior Assessment System (CBAS) to code coaching behaviors during practice and game situations. The 12 behavior categories deal with two major classes of behavioral events: spontaneous behavior (initiated by the coach in the absence of a preceding event) and reactive behavior (response to immediately preceding events). Their results indicated that due to the discrete nature of events, CBAS was more useful in sports such as volleyball and baseball. In sports such as soccer, basketball, and hockey, where the action is continuous, the observer had difficulty in identifying the event to which the coach was responding.

Horn (1983) used the CBAS system and a preseason and postseason assessment of coaches' expectations concerning players' ability. The researcher examined the associative relationship between coaches' perceptions of players' ability and their subsequent behavior toward 72 female junior high softball players. A multivariate analysis indicated that coaches do exhibit differential patterns of behavior to individual athletes based on their perceptions concerning players' abilities. Further examination of the direction of these effects suggested that these differential patterns of behavior reflect a coach's attempts to individualize instruction rather than their biased behavior toward athletes with high ability.

The Academic Learning Time in Physical Education instrument

(ALT-PE), a behavior analysis instrument, has recently been used in studies of the coaching setting. One of these, Rate's (1981) study, addressed four major problems:

1. What was the nature of ALT-PE in secondary school athletic practice sessions?
2. What were the differences in ALT-PE between physical education and the athletic setting?
3. What were the differences in ALT-PE among various secondary interscholastic terms?
4. What was the behavior pattern of coaches in the athletic practices?

The investigator added a fifth level to the ALT-PE instrument, coaching behavior, and sampled every 12 seconds. The use of 46 teams for three practice sessions in five sports (basketball, wrestling, gymnastics, tennis, and baseball) yielded the following results:

1. There was considerable variability among teams on most variables examined.
2. Direct instruction accounted for 75% of the instruction time.
3. Over 90% of practice time was spent in Content-PE activity.
4. The coaches spent approximately equal amounts of time in instruction, silent monitoring, and management.
5. ALT-PE (motor) formed approximately two-thirds of ALT-PE

in all sports.

Rate went on to state that considerable differences in ALT-PE were found between physical education classes and the athletic setting. The greater amount of ALT-PE in practice sessions was probably due to the average size of squads, the motivation of athletes, the management procedures adapted by the coach, the use of assistants and managers, the use of scrimmage techniques, and the availability of large equipment pools.

Galli (1982) conducted a study to compare the ALT-PE of a high-skilled male basketball player and a low-skilled basketball player throughout a session. The seasonal phases investigated were preseason practices, practice sessions following wins, practice sessions following losses, and postseason practices. The results showed noticeable differences between the two players and among phases. The high-skilled player exhibited greater success in game and skill activities, was more actively involved in motor and cognitive situations, and had greater involvement in game situations. The low-skilled player spent a greater amount of time inactively waiting to participate and received more directions from the coach.

Sparks (1983) used ALT-PE to compare physical education classes with interscholastic athletic practice sessions. She looked at three junior high volleyball classes and three volleyball teams, along with their teacher/coach, over a 4-month period. An analysis of the results disclosed that the volleyball



classes had a higher percentage of academic learning time activities. The teacher/coach also gave almost three times as much feedback to his/her volleyball teams than to his/her classes.

Interaction analysis systems first appeared in coaching research in 1974 in a study by Kasson that compared male teaching and coaching behaviors. Kasson (1975) used the Mancuso Adaptation for Verbal and Nonverbal Observation System (Mancuso, 1972). The investigator found significant differences in the amount of verbal and nonverbal behavior displayed by the three male physical educators while teaching and while coaching. Athletic coaches were more direct in the teaching of their physical education classes. In the coaching aspect, they tended to behave in a more indirect manner. Kasson (1975) also found that the amount of the nonverbal behavior in physical education classes was greater than the amount of verbal behavior. In contrast, the amount of verbal behavior was greater than the amount of nonverbal behavior during coaching sessions.

Recently, several researchers studying coaching behavior have used CAFIAS as an observational instrument. Agnew (1977) used 20 female physical educators at the secondary level to see if there were differences within the individuals when they were teaching and when they were coaching. She concluded that interactions between the athlete and coach were more evident than between the pupil and teacher. In the coaching role, the subjects favored more pupil-initiated behavior and more verbal and nonverbal praise

and acceptance than in the teaching role. They were also found to be more flexible in coaching than in the classroom.

Barr (1978) investigated the effects of CAFIAS training on the coaching behavior of 20 secondary team sport coaches. The research found significant differences existed. The coaches instructed in CAFIAS elicited more questions and gave more acceptance and praise, both verbal and nonverbal, than those who were not instructed in CAFIAS.

Avery (1978) used CAFIAS to study the difference in coaching behaviors of more or less effective secondary school coaches during practice sessions. The classification of coaches was determined by the Coaches' Performance Criteria Questionnaire (CPCQ). The results showed significant differences in the behaviors of effective and less effective coaches, with the effective coaches using more indirect behaviors. Rotsko (1979) completed a similar study using the CPCQ on 10 male secondary school basketball coaches. His results showed that successful coaches used more verbal and nonverbal praise. The less successful coaches were shown to use more verbal criticism.

The Hirsch (1978), Proulx (1979), and Staurowsky (1979) studies used similar research techniques to compare coaching behavior in two different environments. The three researchers used CAFIAS and the Group Environment Scale (GES) (Moos, Insel, & Humphrey, 1974) to categorize teams into groups that were either satisfied or not satisfied with their social climate. The results

of the three studies were in agreement that in satisfied environments there exist greater coach-athlete interactions and more athlete-initiated behaviors, and coaches in satisfied environments used more verbal and nonverbal acceptance and praise.

In the project undertaken by Kenyon (1981), CAFIAS was used to compare the behaviors during team practice sessions of secondary school coaches trained to teach physical education and coaches trained to teach in other academic disciplines. It was determined that the two groups were significantly different on three out of eight CAFIAS variables: pupil verbal initiation, teacher suggested; pupil nonverbal initiation, teacher suggested; and pupil nonverbal initiation, student suggested. The data showed that coaches with a physical education background exhibited more indirect teaching behaviors, which allowed for more varied athlete responses.

#### Dyadic Interaction in Physical Education and Coaching.

There have been increasing numbers of dyadic interaction studies in teaching (Crowe, 1979; Devlin, 1979; Martinek & Johnson, 1979; Oien, 1979; Reisenweaver, 1980; Streeter, 1980) and in coaching (Boyes, 1981; Hoffman, 1981) that demonstrate that the perception a teacher/coach has of the skill level of a student/athlete does appear to influence the interaction behavior. Dyadic interaction behaviors are those exhibited between the teacher and an individual student or with a group of no more than

four students.

Crowe (1979) used the Brophy-Good Interaction Analysis System to observe the effects of the teacher's expectations on five variables (climate, feedback, output, input, and touch) with low- and high-expectancy junior high students. The findings indicated that students designated as high achievers were asked more questions, given more opportunities to respond, treated with more warmth, taught more new materials, given more attention, and given more affirmative comments when desired responses were elicited than those students designated as low achievers.

Oien (1979) utilized a modification of FIAS, developed by Dr. George T. Lewis, called the individualized Teacher Behavior Analysis System (TBAS). He explored the question of whether the effects of individualized teacher behavior toward students differed in conjunction with differences in the perception of skill performance level, student gender, class participation, and in-class personality. The results showed that boys received more praise and encouragement, more lectures, more directions, and more criticism than did girls.

Martinek and Mancini (1979) increased the sensitivity of CAFIAS to individual and small group interactions in the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). The emphasis of this system is on the interaction behavior of the teacher with a particular student. The coding procedures and ground rules for DAC are the same as for CAFIAS except for these needed additions:

1. Each student must be identified prior to the observed class.
2. The observer only codes the behavior the teacher directs to one student or to a small group of no more than four students.
3. The recorded behavior tally is to be accompanied by a numbered subscript representing the individual student or small group of students.
4. When the teacher's behavior directed toward the same student or group of students continues for more than 3 seconds, the behavior is recorded again.

Martinek and Johnson (1979) used DAC to investigate the effects of teacher expectations on specific teacher-student behavior in an elementary physical education setting. They selected a sample of 10 expected high physical achievers and 10 expected low achievers as rated by the five individual teachers. The results showed that those students who were expected to be high achievers received significantly more encouragement, acceptance of ideas, and analytic questions from the teachers than those students expected to be low achievers.

Devlin (1979) used DAC and the Martinek-Zaichowsky Self-Concept Scale (MZSCS) to examine if disruptive elementary age children, trained in specific contingency management skills, could alter the behavior of their physical education teacher. The results indicated that these disruptive students could successfully alter the physical education teacher's direct behavior to more

indirect behavior. The self-concepts of the disruptive students were favorably influenced through learning and practicing the contingency management skills.

Reisenweaver (1980) conducted a study with the use of DAC that compared the teaching behavior patterns of 15 secondary female physical education teachers in their interactions with high-skilled and low-skilled students. Five high-skilled students and five low-skilled students were randomly selected from skill groups identified by the teachers to participate in this study. The results indicated a significant difference between the behavior patterns of secondary female physical education teachers as they interacted with the high-skilled students and their interactions with the low-skilled students. The interactions with the high-skilled students showed significantly more praise, acceptance of ideas and actions, information, questions, student interpretive response, and student-initiated response. The interactions with low-skilled students showed significantly more directions, criticisms, and predictable response.

Streeter (1980) conducted a study parallel to the Reisenweaver (1980) study using 15 secondary male physical education teachers. He randomly selected five students from the low-skilled and high-skilled groups identified by the teacher. The differences in the teacher's interaction patterns with each of these two groups were significant. The interactions with high-skilled students showed a significantly greater number of interactions, and

significantly more praise, acceptance of ideas, questions, and student-initiated responses. The interactions with low-skilled students showed significantly more criticism, direction, and student predictable responses.

The first two coaching studies to use DAC were by Boyes (1981) and Hoffman (1981). Boyes investigated the interaction behaviors between NCAA Division III college football coaches and athletes of different athletic abilities. He found minimal differences in the interaction patterns of the coaches as they interacted with their starting athletes and with their nonstarting athletes. The interactions with starting athletes showed more praise, acceptance of ideas and actions, and interpretive and self-initiated responses. The nonstarting athletes received more directions and exhibited very predictable responses.

Hoffman (1981) studied the interaction behaviors of two head lacrosse coaches (one male and one female) with their best 10 players and worst 10 players as coaches perceived their skill levels. Visual analysis of DAC revealed that the male coach gave more praise and more acceptance of ideas and actions to the high-skilled athletes. The low-skilled athletes tended to be asked more questions, given more directions, and criticized more than the high-skilled athletes. The female coach gave more acceptance and praise to the high-skilled athletes, while issuing more direction and information to the low-skilled athletes. For both coaches, the high-skilled athletes showed more self-initiated

behavior, whereas the low-skilled athletes were more predictable in their responses.

#### Small N Research

Increasingly we find that large group research can not answer all of our research questions. Guralnick (1978) stated that single subject designs are completely acceptable for instructional and educational research. The single case research models seek to focus on the individual by more complete analysis and control of the situation (Frey, 1978). Studying only one subject provides no basis for statistical inference about the population from which the subject was selected. Hypothesis testing is still possible, but the significance statements are restricted to the effects of the treatment on the subject and population used in the experiment. Generalization to other individuals must be based on logical, nonstatistical considerations (Edgington, 1967). Researchers must systematically replicate studies using different subjects and settings in order to discover the extent to which the identified functional relationship can be duplicated (Loovis, 1978).

The usefulness of small N research designs is established in psychological research (Dukes, 1965; Edgington, 1967) and counseling research (Frey, 1978). Recently, several physical educators have utilized the small N research design in coaching and teaching. Researchers at Ohio State University, Boehm (1975), Dodds (1975), Hutslar (1976), and McKenzie (1980) to name a few, have conducted many studies on the changes in teaching behaviors of



student teachers in physical education. All of these studies reported positive changes in teaching behaviors of student teachers in physical education.

Studies in coaching focusing on a single coach have been done by Tharp and Gallimore (1976), looking at the highly successful John Wooden, and Langsdorf (1980), observing a highly successful major university football coach. To aid in the instruction of future coaches both studies looked for particular behavior patterns that made each coach successful. Hoffman (1981) was the first small N coaching study using DAC. He showed that a male and a female head lacrosse coach differ in their interactions with players of high-skill ability and with players of low-skill ability.

#### Summary

There has been a great evolution in coaching evaluation instruments in the past 15 years. Research in coaching started in questionnaire and personality trait inventory form. They were designed to assess coaching success and achievement. Darst, Mancini, and Zakrajsek (1983) stated the favorable assets for systematically observing and coding the teaching behaviors of coaches. Bain (1978), Horn (1983), LaGrand (1970), Langsdorf (1980), Smith, Smoll, and Hunt (1977), and Tharp and Gallimore (1976) developed and used systems to analyze coaches' behaviors. Interaction analysis systems, and observational procedures for recording coach and athlete verbal and nonverbal behavior patterns, first were researched by Kasson (1975). Agnew (1977), Avery (1978),

Barr (1978), Hirsch (1978), Proulx (1979), Rotsko (1979), and Staurowsky (1979) used CAFIAS in the analysis of coaching behaviors.

Dyadic interaction systems have been used in a number of physical education studies (Crowe, 1979; Devlin, 1979; Martinek & Johnson, 1979; Oien, 1979; Reisenweaver, 1980; Streeter, 1980) to look at direct behavior of the teacher toward individual students. They all concurred that individuals classified as high achievers received more encouragement, acceptance of ideas, and questions from their teachers than did low achievers. Hoffman (1981) and Boyes (1981) were the first to use DAC in coaching to compare the coaches' behavior toward starters/high-skilled athletes and nonstarters/low-skilled athletes. Both of the coaching studies concurred with the results of the teaching studies.

Small N research is a useful addition to current research practices in coaching. Frey (1978) stated that single case research seeks to focus on the individual by a more complete analysis and control of the situation. Tharp and Gallimore (1976) were the first researchers to use N = 1 for a systematic coaching behavior study. The study looked at the behavior patterns that made John Wooden a successful basketball coach to aid in the instruction of future coaches.

## Chapter 3

### METHODS AND PROCEDURES

In this chapter the methods and procedures that were employed in this investigation are described. Topics include the selection of subjects, the testing instrument, procedures, coder reliability, method of data collection, scoring of data, treatment of data, and summary.

#### Selection of Subjects

The subjects for this investigation consisted of the head volleyball coach and the 12 athletes from an AIAW Division II varsity volleyball team in central New York. Informed consent forms were completed by the coach (Appendix A) and the athletes (Appendix B) prior to videotaping.

#### Testing Instrument

The testing instrument used to measure the verbal and nonverbal behaviors was the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC) (Martinek & Mancini, 1979). DAC was concerned with the interactions between a coach and a single athlete or a small group of no more than four athletes in a practice session. Coaching behaviors directed toward the entire group were not recorded. The coding procedures of DAC were the same as for CAFIAS. The behaviors, both verbal and nonverbal, were recorded every 3 seconds or whenever an interaction occurred between the coach and the specified athlete(s) within a practice

session.

### Procedures

The investigator personally contacted and informed the coach involved in this study. Each athlete was assigned a practice uniform with a unique number to be worn for the entire season to distinguish her throughout data collection and analysis. A total of 20 practices throughout the regular season were videotaped. During this time the coach wore a microphone around the neck to obtain verbal communication without interference of coaching activities. The coach was asked at the end of the season to rate four athletes as high-skilled, four athletes as average-skilled, and four athletes as low-skilled.

### Coder Reliability

The statistical procedure used to assess coder reliability for this investigation was the Spearman rank-order correlation. Two videotaped practice sessions of the coach involved in this study were randomly selected. These tapes were coded once by an expert coder trained in the use of DAC (Dr. Victor H. Mancini) and then subjected to a repeated coding on a separate sitting by the same coder. The behaviors were ranked in order of highest to lowest occurrence at each coding, and the correlation was conducted on the two sets of rankings.

### Method of Data Collection

The data for analysis were collected from 20 videotapes taken of a coach and her athletes throughout an entire season. The

videotapes were coded by an expert coder using DAC.

#### Scoring of Data

The data were coded from each tape onto three recording sheets, one for high-skilled players, one for average-skilled players, and one for low-skilled players. Computer printouts indicated the tally matrices, tabulated ratios, showed the percentage of time each behavior was exhibited, and gave the behavior that followed each exhibited behavior.

#### Treatment of Data

The entire population of an AIAW Division II college varsity volleyball team from central New York was used for this investigation. Due to the small number of subjects, only descriptive statistics were used to determine whether differences existed in coaching behaviors, as identified by DAC, toward athletes of high skill ability, average skill ability, and low skill ability. Percentages and ratios for each of the DAC 20 variables were obtained by computer. Visual comparisons of these percentages and ratios were made among the high-skilled, average-skilled, and low-skilled groups of athletes, and the relative standing of the three groups on each of the variables was determined. Any differences which were seen were taken to be true differences.

#### Summary

The subjects for this study consisted of the head volleyball coach and the entire 1981 varsity volleyball team from an AIAW

Division II college in central New York. The coach classified the athletes as low, average, or high in skill ability. Videotapes were taken during 20 practices throughout the entire regular season. The videotapes were coded by a reliable coder using DAC. The computer analysis of the raw data provided percentages and ratios for each of the DAC variables. Visual comparisons of the computer percentages and ratios were used to indicate the relative standings of the three groups on each of the variables.

## Chapter 4

### ANALYSIS OF DATA

In this chapter are presented the results found when comparing the behavior of a varsity volleyball coach toward her high-skilled athletes, average-skilled athletes, and low-skilled athletes for 20 practice sessions. The Dyadic Adaptation of CAFIAS (DAC) was used to identify the interaction behavior patterns between the coach and each group of athletes. All of the categories used on DAC were the same as those comprising the CAFIAS system. In addition, this chapter discusses the assessment of coder reliability and concludes with a summary.

#### Coder Reliability

The coder reliability for this investigation was assessed in the following manner. Two videotaped practice sessions of the coach involved in this study were randomly selected from 20 tapes. Each videotape was coded at two independent observation sessions by Dr. Victor H. Mancini, an expert in the coding of DAC. A Spearman rank-order correlation was calculated for each session on the rankings of the behaviors for the two codings. The mean of the correlations was .986; this was sufficient to indicate that the coder was reliable.

#### Analysis of the Coach's Behavior

The percentage of occurrence of the 10 DAC parameters by the varsity volleyball coach with high-skilled, average-skilled, and

low-skilled athletes is represented on Table 1. Visual comparisons indicated that differences existed in the behaviors of the coach as she interacted with the three groups of athletes. In the DAC parameters of Total Coach Use of Acceptance and Praise (TCAP), the percentages significantly decreased as the athletic ability decreased with a difference between the high and low skill ability groups of 35.53%. In the Coach Content Emphasis, Coach Input (CECI) there was a difference of 8.18% between the high and low skill groups, and Total Athlete Initiation, Coach Suggested (TAICS) had a difference of 5.67% for the same groups. There were slightly more interactions exhibited both verbally and nonverbally toward high-skilled and average-skilled athletes than toward the low-skilled athletes. Total Coach Use of Questioning was approximately 3% higher for the high-skilled athletes than for the other two groups.

The percentages of behaviors in each DAC category for the high-skilled, average-skilled, and low-skilled athletes are shown in Figure 1. The coach exhibited 6,855 behaviors toward the high-skilled athletes, 5,217 behaviors toward the average-skilled athletes, and 4,562 behaviors toward the low-skilled athletes. Visual comparisons revealed differences in the behaviors of the coach toward high-skilled, average-skilled, and low-skilled athletes. In comparison to low-skilled and average-skilled athletes, the high-skilled athletes received more praise and acceptance and exhibited more interpretive responses. The



Table 1  
 Percentage of Occurrence of Major DAC Parameters

DAC Parameters	Skill Ability Group		
	High	Average	Low
Total Coach Contribution (TCC)	55.78	55.65	57.26
Total Athlete Contribution (TAC)	44.20	44.34	42.72
Total Silence and/or Confusion (SC)	.01	.02	.02
Total Coach Use of Questioning (TCQ)	6.45	3.68	3.63
Total Coach Use of Acceptance and Praise (TCAP)	51.22	25.52	15.69
Total Athlete Initiation, Coach Suggested (TAICS)	59.54	56.03	53.87
Total Athlete Initiation, Athlete Suggested (TAIAS)	2.38	1.54	2.95
Content Emphasis, Coach Input (CECI)	59.04	56.87	50.86
Verbal Emphasis (VE)	72.98	72.92	72.38
Nonverbal Emphasis (NVE)	27.02	27.08	27.62

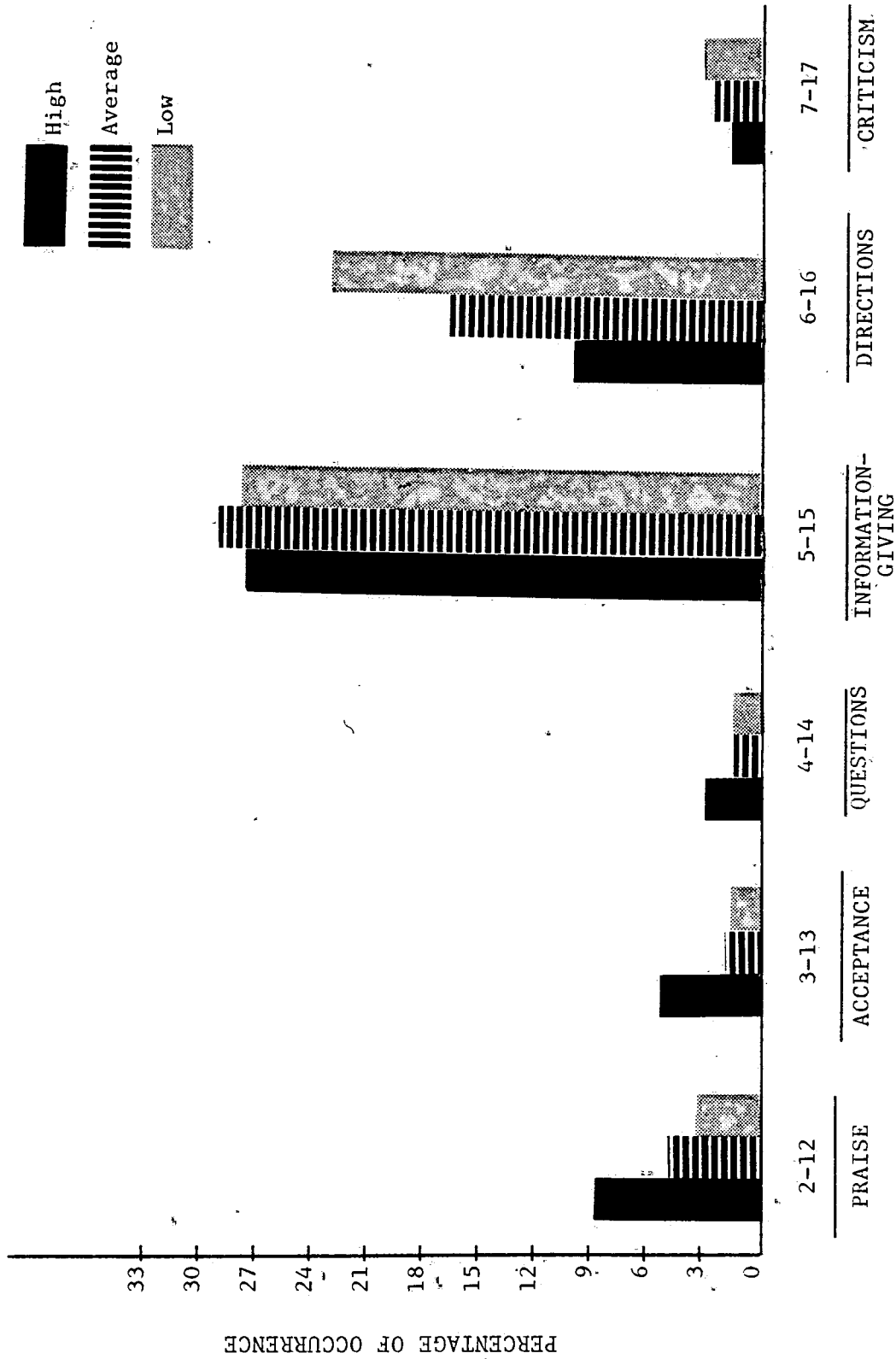


Figure 1. Mean percentages for DAC variables for high-, average-, and low-skilled athletes.

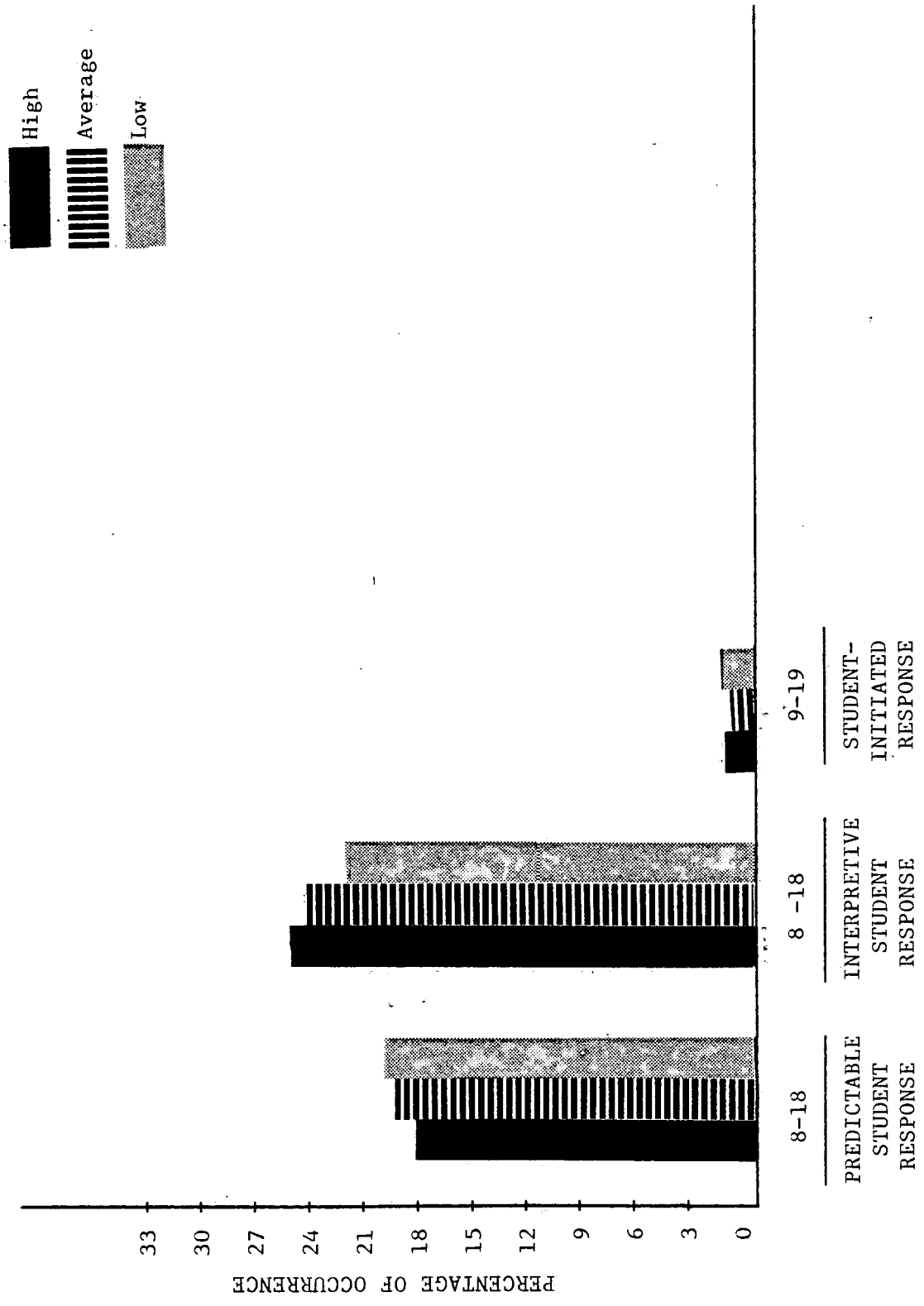


Figure 1. (continued)

average-skilled and low-skilled athletes received more directions and exhibited more predictable behaviors than did the high-skilled athletes. The average-skilled athletes received slightly more information than the low-skilled athletes. The coach gave minimal nonverbal feedback to each of the three groups.

The interactions that occurred most frequently and their percentages of occurrence for the high-skilled, average-skilled, and low-skilled athletes are presented in Table 2. Six of the seven top interaction patterns are common to all three ability groups. The most frequent pattern was coach information-giving followed by athlete interpretive response followed by further information by the coach (5-8-5); however there was almost a 10% difference between the occurrences with high-skilled and with low-skilled athletes. A little more than a 10% difference from the low-skilled to the high-skilled athlete was exhibited in the interaction pattern of coach direction followed by athlete predictable response followed by further coach direction (6-8-6).

Two unique differences existed in the most frequent interaction patterns. The first was the small percentage of 8-7, athlete interpretive response followed by coach criticism, which was found only with the low-skilled athlete. The other difference was the presence of the 8-2-8, athlete predictable response followed by coach use of praise followed by further athlete predictable response, which was found for the high-skilled and average-skilled athlete but not for the low-skilled athlete.

Table 2

## The Most Frequent Interaction Patterns for the Three Groups

High-Skilled		Average-Skilled		Low-Skilled	
Interaction Patterns	Percentage of Occurrences	Interaction Patterns	Percentage of Occurrences	Interaction Patterns	Percentage of Occurrences
5-8\ -5	27.53	5-8\ -5	25.80	5-8\ -5	19.86
5-8-5	17.92	5-8-5	18.62	6-8\ -6	19.22
6-8\ -6	9.16	6-8\ -6	15.84	6-8-6	19.14
6-8-6	8.87	6-8-6	13.59	5-8-5	15.94
8\ -2-8\	8.92	5-6	7.84	5-6	10.41
5-6	5.86	8-2-8	3.65	8\ -7	1.41
8-2-8	5.31	8\ -2-8\	3.60	8\ -2-8\	1.27

Note. A description of the interaction patterns appears in Appendix C.

### Summary

Coder reliability was determined by the Spearman rank-order correlations on the rankings from two independent codings of two randomly selected sessions. The mean of the correlations was .986, which was sufficient to indicate that the coder was reliable.

Visual examinations of Table 1, Figure 1, and Table 2 indicate that differences existed in the behaviors of the varsity volleyball coach toward the high-skilled, average-skilled, and low-skilled athletes. The high-skilled athletes received more acceptance and praise, were asked more questions, received more attention, and exhibited more athlete-initiated responses than the average-skilled and low-skilled athletes. The average-skilled and low-skilled athletes received more directions and exhibited more predictable behavior than did the high-skilled athletes. The average-skilled athletes received more directions than either of the other two groups. The low-skilled athletes received small amounts of criticism in the most frequent interaction patterns, yet the high-skilled and average-skilled athletes did not.

## Chapter 5

### DISCUSSION OF RESULTS

This present study is the first to use the Dyadic Adaptation of CAFIAS (DAC) to examine the interaction patterns of a varsity volleyball coach with her high-skilled, average-skilled, and low-skilled athletes. DAC has been used in teaching studies (Martinek & Johnson, 1979; Reisenweaver, 1980; Streeter, 1980) to compare the interaction patterns of physical education teachers with high-skilled and low-skilled students. Two similar coaching studies at the collegiate level using DAC were done by Hoffman (1981) and Boyes (1981). Hoffman (1981) used DAC to investigate the interaction patterns of two collegiate lacrosse coaches, one male and one female, with low-skilled and high-skilled athletes. Boyes (1981) used DAC to investigate the interaction patterns of six collegiate football coaches with starting and nonstarting athletes.

The three DAC physical education teaching studies were investigated at age levels that were different than the age level of this study. Martinek and Johnson (1979) studied elementary level students, and Streeter (1980) and Reisenweaver (1980) studied secondary level students. These studies only used two categories of ability, high-skilled and low-skilled students, but the results were similar to those in the current investigation. The first area in which these studies are parallel is the significantly greater

amount of praise and acceptance given to the high-skilled students. The high-skilled students in these studies were also asked more questions and demonstrated more student-initiated responses than the low-skilled students. The low-skilled students in Reisenweaver's and Streeter's studies received more criticism, received more direction, and exhibited more student predictable response, findings which are also similar to the current findings.

A greater number of interactions toward the high-skilled student were present in Streeter's study. This investigation shows this in the fact that the high-skilled athletes received 6,855 interaction behaviors and the low-skilled athletes received only 4,562 interaction behaviors in the same amount of practice time.

The significant amounts of criticism directed toward the low-skilled students by the teachers in the Reisenweaver and Streeter studies were not duplicated by this varsity volleyball coach. However, this study did show a small amount of criticism by the coach toward the low-skilled athletes during game play.

The coaching studies using DAC (Boyes, 1981; Hoffman, 1981) were investigated at the collegiate level. Boyes found minimal differences existed in the behaviors of the coaches as they interacted with their starting and nonstarting athletes. Hoffman found that differences did exist in the coaches' behaviors toward their athletes of high-skilled ability and toward their athletes of low-skilled ability. Boyes and Hoffman both found that the



high-skilled athletes received more praise and acceptance and exhibited more self-initiated response. All of these results agree with the findings of the current study. The low-skilled athletes received more directions and exhibited more predictable responses from the football coaches (Boyes, 1981), the lacrosse coach (Hoffman, 1981), and the volleyball coach present in this investigation. Hoffman's male lacrosse coach asked more questions of the low-skilled athletes, and the female lacrosse coach gave more information to the high-skilled athletes. The greater information provided to the high-skilled athletes parallels the Reisenweaver (1980) results but not the results of this study. In this study, questions were asked mainly of the high-skilled athletes, and the most information was relayed to the average-skilled athlete.

#### Practical Implications

This investigator has written an evaluation for the practical implication of the results. The coach in this study did a good job of watching the skill, then giving a short feedback so the athlete could resume the skill, which allows more time and opportunity for the individual to practice and improve. In many of the studies reviewed (Hoffman, 1981; Reisenweaver, 1980; Streeter, 1980), significant amounts of criticism were found. In this study the coach's criticism was minimal and occurred with the low-skilled athlete. She had very positive feedback to her athletes at all times, which is an asset to her coaching. A high percentage of her

feedback went to the high-skilled athletes. The high-skilled athlete is the one who will be doing most of the performance on the court, but a team will improve with comparable amounts of the feedback given. The low-skilled athlete has more to learn, so more feedback is required. The low-skilled athlete also needs praise to compliment that feedback, yet praise in this study was mainly reserved for the high-skilled athlete.

The coach had virtually no off-task behavior with which to deal. She kept a very good flow of activity throughout practice. The low-skilled had a higher need for information, but fewer questions were asked of them. The coach should ask more questions of the low-skilled athletes to make sure they understand the information given. The coach in this study was very successful in the win-loss column. However, she provided her high-skilled athletes with more advantageous practice conditions and offered them more support and encouragement than their lesser skilled teammates. She needs to become aware of the behavior she exhibits to become more effective. To promote equal opportunity for all athletes in order for each to reach his/her fullest potential, the coach must make a concerted effort to motivate and to teach both the high-skilled and low-skilled athletes and provide them with equal chances for success.

#### Summary

This study was the first to use DAC in an investigation of the interaction behavior patterns of a varsity volleyball coach with

high-skilled, average-skilled, and low-skilled athletes for 20 practices throughout an entire season. Visual analysis of the data revealed that differences existed in the behaviors of the coach toward these three groups. The coach exhibited more praise, acceptance, and attention to the high-skilled athletes than to the average-skilled and low-skilled athletes. The low-skilled and average-skilled athletes received more directions than the high-skilled athletes. The low-skilled received a minimal amount of criticism, but for the average-skilled and high-skilled athletes, criticism did not occur among the most frequent patterns. The high-skilled athletes were characterized by interpretive behavior, whereas the low-skilled and average-skilled athletes were more predictable in their responses. The results of this study were similar to the results of studies by Boyes (1981), Hoffman, (1981); Martinek and Johnson (1979), Reisenweaver (1980), and Streeter (1980). The chapter concludes with practical implications of the results. The coach excels at positive feedback, short feedback, and a flowing practice. The coach needs improvement at giving more attention and positive feedback to, and asking more questions of, the low-skilled and average-skilled athletes.

## Chapter 6

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

#### Summary

This investigation was conducted to determine if the coaching interaction patterns of a head volleyball coach differed significantly with varsity volleyball players with high-skill, average-skill, and low-skill ability. The subjects who participated in this study included the head volleyball coach and 12 female varsity volleyball athletes from an AIAW Division II college located in central New York State. The coach classified each of the 12 collegiate athletes into three groups (high-skilled, average-skilled, low-skilled) of four athletes.

The data were obtained from the 20 videotapes taken throughout the entire 1981 season. Each videotape was analyzed utilizing the Dyadic Adaptation of CAFIAS (DAC). The data collected from the coding of DAC were transferred into the computer for analysis. Computer printouts indicated the tally matrices, tabulated ratios, showed the percentage of time each behavior was exhibited, and gave the behavior that followed each exhibited behavior. This information for the three groups was then analyzed visually.

The visual comparisons of the coach's interaction with high-skilled, average-skilled, and low-skilled athletes indicated differences did exist. The interactions with the high-skilled

athletes showed significantly more praise, acceptance, questioning, and attention than the interactions with average-skilled and low-skilled athletes. More interpretive behavior was also exhibited by the high-skilled athletes than by average-skilled and low-skilled athletes. The average-skilled and low-skilled athletes received more directions and exhibited more predictable behavior than did the high-skilled athletes. The average-skilled athletes received slightly more information than the other two groups. Among the most frequently occurring interaction patterns for the three groups was a small percentage of criticism which occurred only with the low-skilled athletes.

#### Conclusions

The following conclusions were formulated from the results of this study:

1. The coach's total use of acceptance and praise was significantly higher toward the high-skilled athletes than toward the average-skilled and low-skilled athletes.
2. The most frequent interaction patterns were very similar among the high-skilled, average-skilled, and low-skilled athletes.
3. Criticism was found in the most frequent interaction patterns with the low-skilled athletes only, but the amount was minimal.
4. The interaction pattern of athlete interpretive response followed by coach use of praise followed by further athlete interpretive response was a frequent pattern only with the

high-skilled and average-skilled athletes.

5. The coach received more interpretive responses from the high-skilled athletes than from the average-skilled and low-skilled athletes.

6. The coach received more predictable responses from the low-skilled and average-skilled athletes than from the high-skilled athletes.

7. The number of coach-athlete interactions increased significantly as the athletic ability of the athletes increased.

8. The coach gave more information to the average-skilled athletes than to the low-skilled athletes.

9. The coach asked more questions of the high-skilled athletes than of the low-skilled athletes.

10. The Content Emphasis, Coach Input (CECI) and Total Athlete Initiation, Coach Suggested (TAICS) parameters showed higher percentages with the high-skilled athletes than with the average-skilled athlete and higher percentages with the average-skilled athletes than with the low-skilled athletes.

11. The coach gave minimal nonverbal feedback to each of the three groups.

#### Recommendations for Further Study

The following recommendations are suggested for further study:

1. Conduct a similar study to observe a coach as he/she interacts with athletes of high-skilled, average-skilled, and

low-skilled ability comparing different parts of a season such as preseason, regular season, and postseason.

2. Conduct a similar study at the interscholastic level.
3. Conduct a similar study that investigates more than one volleyball coach.

Appendix A

INFORMED CONSENT FORM

COACH'S COPY

The study in which you are asked to participate is looking at the interaction behavior patterns between a collegiate volleyball coach and her athletes.

The procedure to be used: You will be videotaped the entire regular season. The taping sessions will take place every practice for the entire duration. During each session you will be asked to wear a microphone which should not interfere with your practice. You will be asked to rank your athletes from high to average to low ability. The tapes will be subject to a dyadic interaction analysis system which consists of 20 categories to describe the verbal and nonverbal behaviors which occur between the coach and athlete.

It is assured that all names in this study will be kept strictly confidential. If you do not have any questions and if you are willing to participate in the study, please sign your name on the space provided.

Name: \_\_\_\_\_

Date: \_\_\_\_\_



Appendix B

INFORMED CONSENT FORM

ATHLETE'S COPY

The study in which you are asked to participate is looking at the interaction behavior patterns between a collegiate volleyball coach and her athletes.

The procedure to be used: You will be videotaped the entire regular season. During this time you will be asked to wear your issued practice uniform for the purpose of easier identification on the videotapes.

It is assured that all names in this study will be kept strictly confidential. If you do not have any questions, and if you are willing to participate in this study, please sign your name on the space provided.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Appendix C

DESCRIPTIONS OF INTERACTION PATTERNS

- 5-6 Coach information-giving followed by coach directions.
- 5-8-5 Coach information-giving followed by athlete predictable response followed by further information-giving by the coach.
- 5-8\5 Coach information-giving followed by athlete interpretive response followed by further information-giving by the coach.
- 6-8-6 Coach directions followed by athlete predictable response followed by further coach directions.
- 6-8\6 Coach directions followed by athlete interpretive response followed by further coach directions.
- 8-2-8 Athlete predictable response followed by coach use of praise followed by further athlete predictable response.
- 8\2-8\ Athlete interpretive response followed by coach use of praise followed by further athlete interpretive response.
- 8\7 Athlete interpretive response followed by coach criticism.

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