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The interaction behavior patterns of collegiate Lacrosse coaches with high-skilled and low-skilled athletes

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ABSTRACT

The interaction behavior patterns of collegiate varsity lacrosse coaches with high-skilled and with low-skilled athletes were investigated. The subjects were lacrosse head coaches, one male and one female, at the same college from the central New York area. Each coach was asked to rank his/her players from high to low according to overall playing ability. The top 10 and bottom 10 ranked players from each team were selected to participate in this study. Each coach wore a wireless microphone and was videotaped for an entire practice on 10 different days. The interaction patterns between the coach and specified athletes were coded using the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). The data obtained from these codings were transposed onto computer cards for computer analysis. Descriptive statistics were used to determine if differences existed in the coaching behavior patterns of the coaches with their high-skilled and low-skilled athletes. The computer scoring of DAC yielded percentages for each of the 17 variables. Visual analysis of the DAC results indicated that [the male coach gave more information and praise and accepted the ideas and actions of the high-skilled athletes more than for the low-skilled athletes. He also tended to ask questions of, give direction to, and criticize the low-skilled athletes more than the high-skilled athletes.] Visual analysis of the DAC results revealed that 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 the male and female coaches, the high-skilled athletes were characterized by interpretive, self-initiated behavior, whereas the low-skilled athletes were more predictable in their responses. This led to a rejection of the null hypothesis that no differences would exist in the interaction patterns of male and female lacrosse coaches with high-skilled and low-skilled athletes.

THE INTERACTION BEHAVIOR PATTERNS OF
COLLEGIATE LACROSSE COACHES WITH
HIGH-SKILLED AND LOW-SKILLED ATHLETES

A Thesis 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
Arthur Frederick Hoffman

September 1981

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

CERTIFICATE OF APPROVAL

MASTER OF SCIENCE THESIS

This is to certify that the Master of Science Thesis of
Arthur Frederick Hoffman

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:

Committee Member:

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Dean of Graduate
Studies:

Date:

Oct. 6, 1981

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DEDICATION

This thesis is dedicated to my parents, Chuck and Emma, for their patience, support, and love which provided endless motivation for completing this thesis.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
DEDICATION	iii
LIST OF TABLES	vi
LIST OF FIGURES	viii
Chapter	
1. INTRODUCTION	1
Scope of Problem	3
Statement of Problem	3
Major Hypothesis	3
Assumptions of Study	4
Definition of Terms	4
Delimitations of Study	5
Limitations of Study	6
2. REVIEW OF RELATED LITERATURE	7
Interaction Analysis in Physical Education	7
Systematic Observation in Coaching	13
Dyadic Interaction in Education	18
Dyadic Interaction Analysis in	
Physical Education	20
Small N Studies	24
Summary	25
3. METHODS AND PROCEDURES	28
Selection of Subjects	28

Chapter	Page
Testing Instrument	28
Procedure	29
Method of Data Collection	29
Validity of Investigator's Coding	29
Coder Reliability	30
Scoring of Data	30
Treatment of Data	30
Summary	30
4. ANALYSIS OF DATA	32
Validity of Investigator's Coding	32
Coder Reliability	32
Individual Profile: Male Coach	33
Individual Profile: Female Coach	42
Combined Profile	49
Summary	65
5. DISCUSSION OF RESULTS	67
Summary	75
6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR	
FURTHER STUDY	76
Summary	76
Conclusions	78
Recommendations for Further Study	79
APPENDIX	
A. INFORMED CONSENT FORM COACH'S COPY	81
B. INFORMED CONSENT FORM ATHLETES' COPY	82

APPENDIX

Page

C. VALIDITY OF INVESTIGATOR'S CODING FOR SELECTED SUBJECTS USING SPEARMAN'S r_s	83
D. CODER'S RELIABILITY FOR SELECTED SUBJECTS USING SPEARMAN'S r_s	84
E. THE CATEGORIES OF CAFIAS	86
REFERENCES	92

LIST OF TABLES

Table	Page
1. Coder Reliability	34
2. Use of Major DAC Parameters by the Male Coach	35
3. Summary of the Most Frequent Interaction Patterns and Percentage of Occurrence Among the Top 10 Cells of the Male Coach . . .	40
4. Use of Major DAC Parameters by the Female Coach	43
5. Summary of the Most Frequent Interaction Patterns and Percentage of Occurrence Among the Top 10 Cells of the Female Coach . .	47
6. Use of Major DAC Parameters with High-skilled Athletes	50
7. Use of Major DAC Parameters with Low-skilled Athletes	52
8. Summary of the Most Frequent Interaction Patterns and Percentage of Occurrence Among the Top 10 Cells for the High-skilled Group	60
9. Summary of the Most Frequent Interaction Patterns and Percentage of Occurrence Among the Top 10 Cells for the Low-skilled Group	62

LIST OF FIGURES

Figure		Page
1.	Mean percentages for DAC variables for the male coach	37
2.	Mean percentages for DAC variables for the female coach	45
3.	Mean percentages for DAC variables for high-skilled athletes	55
4.	Mean percentages for DAC variables for low-skilled athletes	57

Chapter 1

INTRODUCTION

According to Rosenthal and Jacobson (1968), teachers give differential treatment to their students according to their expectations of these students. In their "Oak School" experiment, they tested the hypothesis that teachers' expectations for student achievement would function as self-fulfilling prophecies. Self-fulfilling prophecy has been defined as an expectation which initiates a series of events that causes the original expectation to come true (Martinek & Johnson, 1979). In other words, students live up, or down, to their teachers' expectations of them (Rosenthal, 1973). Thus the self-fulfilling prophecy may be manifested in either a positive or a negative direction. The results obtained by Rosenthal and Jacobson (1968) supported the hypothesis that teacher expectations function as self-fulfilling prophecies. Brophy and Good (1974), after reviewing more than 60 studies dealing with the question of the effects of teacher expectations, concluded that the work done by a large number of investigators using a variety of methods supported the concept of a self-fulfilling prophecy.

During the past 2 decades various interaction analysis (IA) systems have been used by physical educators to investigate teacher-student interactions. Allard (1979) stated that most of the studies have collected data on the entire class rather

than on the interactions between a teacher and an individual student. Observational systems that look at the entire class are too general to yield information about individual students in physical education (Allard, 1979). Martinek and Mancini (1979) developed the Dyadic Adaptation of CAFIAS (DAC) which provides a method for coding and analyzing interactions between a teacher and an individual student or a small group of students. DAC has been used by a number of researchers (Devlin, 1979; Martinek & Mancini, 1979; Reisenweaver, 1980; Streeter, 1980) to study the effects of teacher expectation in the physical education setting. Reisenweaver (1980) used DAC to compare the teaching behaviors of 15 secondary female physical education teachers with high-skilled and low-skilled students. Streeter (1980) in a parallel study used 15 male secondary physical education teachers. Similar results were obtained by these researchers for males and females. * They found that high-skilled students received more praise, were asked more questions, were given more information, received more acceptance of ideas and actions, and initiated more interpretive responses and student-initiated behavior than did the low-skilled students. Low-skilled students received more criticism and direction from their teachers and gave more predictable responses.

IA systems have also been used by researchers to investigate coach-athlete interactions. The parent system of DAC, CAFIAS, has been used by several researchers (Agnew, 1977; Avery, 1978; Barr, 1978; Hirsch, 1978; Proulx, 1979; Rotsko, 1979; Staurowsky, 1979) to analyze the behavior of coaches

during practice. Thus far, however, none of the studies have involved collegiate lacrosse teams. The present study will focus on employing DAC in examining the interactions of collegiate lacrosse coaches with athletes of different abilities.

Scope of Problem

The coaching behavior patterns of collegiate male and female varsity lacrosse coaches in their interactions with high-skilled athletes and with low-skilled athletes were investigated. The subjects were two varsity lacrosse head coaches, one female and one male, at the collegiate level in the central New York area.

Each coach ranked his/her players from high ability to low ability at the end of the season. For this study only the top 10 ranked and the bottom 10 ranked players were selected.

Each coach was videotaped for 10 entire practices during the 1981 season. The tapes were coded after the completion of the season using the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC).

Statement of Problem

The coaching behavior patterns of male and female collegiate varsity lacrosse coaches were examined to determine if differences existed in their interactions with high-skilled athletes and with low-skilled athletes.

Major Hypothesis

The coaching interaction patterns of male and female collegiate varsity lacrosse coaches with high-skilled players will not differ significantly from their interaction patterns

with low-skilled players.

Assumptions of Study

The following assumptions were made for the purpose of the study:

1. The coding of 10 practice sessions of each coach would be sufficient to establish coaching behavior patterns for the coaches.
2. The coaches' rankings of their players provided valid data on the relative skill abilities of their players.

Definition of Terms

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

1. Interaction analysis is an observational technique that systematically records the frequency of teacher-pupil interpersonal behaviors (Amidon & Hough, 1967).
2. Flanders' Interaction Analysis System (FIAS) is an observation system designed to objectively record and analyze the verbal interaction between teachers and pupils as it occurs (Amidon & Flanders, 1971).
3. Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a validated modification of FIAS designed to record and analyze the verbal and nonverbal behaviors found predominantly in physical education settings (Cheffers, Amidon & Rodgers, 1974).
4. The Dyadic Adaptation of CAFIAS (DAC) is a validated modification of CAFIAS that provides a method for recording and analyzing interactions between a teacher and an individual

student or small group of students (Martinek & Mancini, 1979).

5. Interaction patterns are the verbal and nonverbal behaviors which occur between two or more individuals (Reisenweaver, 1980).

6. Verbal behavior is an audible human expression.

7. Nonverbal behavior is a human expression that is not audible.

8. Direct coaching behaviors are coaches' statements that restrict the students' freedom of action (Cheffers et al., 1974).

9. Indirect coaching behaviors are coaches statements that increase the students' freedom of action (Cheffers et al., 1974).

10. High-skilled athlete is any athlete whose skill ability, as perceived by his/her coach, is ranked in the top 33% of the team.

11. Low-skilled athlete is any athlete whose skill ability, as perceived by his/her coach, is ranked in the bottom 33% of the team.

Delimitations of Study

1. Two collegiate varsity lacrosse head coaches, one male and one female, from the central New York area were used in the study.

2. DAC was the only instrument used to record the actual coaching interaction patterns.

3. The coaches' ranking of skill ability was the only procedure used in this study to place players into low-skill ability and high-skill ability classifications.

4. Each subject was videotaped for 10 entire practices.

5. Twenty collegiate athletes, 10 high-skilled and 10 low-skilled, were selected from each team to participate in this study.

Limitations of Study

1. The findings related to the coaching interaction patterns of collegiate varsity lacrosse coaches with high-skilled and low-skilled players may be valid for comparison only when DAC is used to identify behaviors.

2. Because only one college was used, the findings may only be valid for the lacrosse coaches at the involved college.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of literature related to this study will deal with the following topics: (a) interaction analysis in physical education, (b) systematic observation in coaching, (c) dyadic interaction in education, (d) dyadic interaction in physical education, (e) small N studies, and (f) summary.

Interaction Analysis in Physical Education

Teacher-student classroom interactions have been investigated by educational researchers for more than 50 years (Allard, 1979). Before the 1970's, however, little of this research was conducted in the physical education setting (Morgenegg, 1978b). The nature of a physical education class demands that an observational system be able to effectively record both the verbal and nonverbal behaviors occurring in teacher-student interactions.

Bookout (1967) was the first researcher to use interaction analysis (IA) in the physical education setting. Using the Observation Schedule and Record System (OSCAR) developed by Medley and Mitzel (1958), Bookout (1967) studied the relationship between behaviors of teachers in a variety of social-emotional climates.

Barrett (1970) developed a system to code the interaction patterns between teachers and their pupils in primary level

movement education classes. The results obtained by Barrett (1970) indicated that the system lacked reliability.

Anderson (1975) and his associates developed the videotape Data Bank in order to provide raw data for descriptive-analytic research. The Data Bank consists of 83 tapes of elementary and secondary school physical education classes. A number of researchers (Anderson, 1971; Costello, 1977; Fishman, 1975; Hurwitz, 1975; Laubach, 1975; Morgenegg, 1978a; Tobey, 1974) used the Data Bank to develop their systems. Anderson's (1971) system measured the performance of professional functions, models of communication, persons with whom the teachers interact, and the topic of communications. Laubach (1975) developed a system called BESTPED (an acronym for Behavior of Students in Physical Education). Her system was designed to observe solely the behavior of the student in order to describe objectively and sequentially how each student actually spends his/her time in class. This system was also used by Costello (1977) to describe the behavior of 193 students in various physical education classes. Fishman (1975) described systematically the type of augmented feedback given by the teacher and the way in which it was given. Tobey (1974), in a follow-up study, used this system on the Data Bank. Hurwitz (1975) designed the Teachers' Role in the Learning Activity Selection Process System (Tri-Lasp), which described the teachers' role in selecting the students' activities. Morgenegg (1978a) used 40 of the Data Bank tapes to study the pedagogical moves of teachers and students.

Various interaction analysis (IA) systems have been used by researchers to examine the teaching behaviors of elementary and secondary physical education teachers. Johnson (1975) developed the FOTOP-model (Flow of Teacher Operational Procedures), an instrument used mainly in teacher training. The FOTOP-model was designed to assist physical education teachers in organizing their instructional procedures more effectively. Rankin (1975) developed the Rankin Interaction Analysis System to measure the interaction patterns of elementary physical education student teachers and their pupils. The Competency Indicator for Secondary Physical Education (Short, 1976) was designed to be used by department heads for measuring the competencies of secondary physical education teachers. Barrette (1977) used the Physical Education Teachers' Professional Functions system to study the occurrence, distribution, and length of teacher behaviors in 40 elementary and secondary education settings.

One of the most widely used interaction analysis systems was developed by Flanders (1960). His system, the Flanders Interaction Analysis System (FIAS), is used to record only the verbal behaviors occurring in the classroom setting. Nygaard (1975) used FIAS to record the verbal behaviors of physical education teachers and their students at the elementary, high school, and college levels. The results obtained by Nygaard (1975) indicated that the most commonly occurring behavior was teacher talk. Kurth (1969) also used FIAS to analyze student physical education teachers working at the elementary level.

Kurth (1969) concluded that in order for FIAS to be effective in analyzing physical education classes, nonverbal behaviors must also be recorded. The limitation of FIAS in physical education settings was also noted by Bahneman (1971). A large majority of the behaviors occurring in a physical education class are nonverbal and cannot be recorded using FIAS.

Modifications of FIAS to include nonverbal behaviors were carried out by Dougherty (1971), Love and Barry (1971), Mancuso (1972), and Melograno (1971). Dougherty (1971) added one category to record nonverbal behavior and divided the teacher talk category into talk to the entire class and talk to an individual. When the teacher talk was directed to an individual student, an "i" was placed in the appropriate category. By placing an "n" next to the behavior that was nonverbal, Melograno (1971) was able to use FIAS to analyze the effects of teacher behavior on student achievement. Love and Barry (1971) used the Love-Timer Adaptation of FIAS to investigate the verbal and nonverbal interactions of physical education student teachers. Mancuso (1972) developed a more precise interaction analysis system by combining the verbal categories of FIAS with the nonverbal categories of the Love-Roderick system (Love & Roderick, 1971). Mancuso (1972) used this system, which consisted of 16 categories, to record both the verbal and nonverbal behaviors exhibited between secondary school physical education student teachers and their pupils. She concluded that more indirect behaviors were exhibited by teachers trained in interaction analysis than those teachers who had not been trained in

interaction analysis.

Goldberger (1970) developed the Spectrum Adaptation of Flanders' Interaction Analysis System (SAFIAS) by subdividing several of Flanders' original categories. Deutsch (1976) used SAFIAS to examine the behaviors and attitudes of 17 physical education teachers.

Perhaps the most advanced and refined adaptation of FIAS for use in physical education settings was designed by Cheffers (1972). CAFIAS, Cheffers' Adaptation of Flanders' Interaction Analysis System, categorized both the verbal and nonverbal behavior of teachers and students as well as the structure of the class (whole or part), and the instructional dimension (teacher, student, or environment). CAFIAS provided the validity and/or reliability that up to this point had been lacking in most IA systems for physical education classes.

Since 1972 CAFIAS has been used in various types of studies in physical education. Mancini (1974) used CAFIAS to compare two decision-making models in an elementary human movement program based on the attitudes and interaction patterns. CAFIAS was also employed by Doenges (1976) to determine if disruptive elementary students trained in contingency management skills could modify the behaviors of their physical education teachers. Chertok (1975), Lydon (1978), and Martinek (1976) used CAFIAS to analyze various teaching models. Batchelder (1975), Scriber (1977), and van der Mars (1979) used CAFIAS to compare the relationship between perceived and observed teaching behaviors in math, English, physical educa-

tion, and health classes. Evaul (1976) compared open and traditional classrooms using CAFIAS. CAFIAS was used by Faulkner (1976) to compare the teaching behaviors of male and female pre-service secondary physical education majors. She found no significant differences between the teaching behaviors of male and female pre-service physical education teachers. Cheffers and Mancini (1978) employed CAFIAS to analyze teacher-student interaction patterns of 40 elementary and 43 secondary physical education classes. They found that for both the elementary and secondary teachers, the most predominant behaviors were teacher lecture and directions. Differences in teaching behaviors between educators teaching normal and atypical children in physical education classes were studied by Mawdsley (1977).

CAFIAS has also been used as a part of the training program in the preparation of pre-service physical education teachers in studies by Getty (1977), Hendrickson (1975), Keilty (1975), Rochester (1976), and Vogel (1976). It was generally found that teachers instructed in CAFIAS showed more indirect behaviors than teachers not instructed in CAFIAS.

Studies of teacher behavior after instruction in CAFIAS have been conducted by Lombardo (1979), and Stevens (1979). These researchers examined the behavior of teachers on a day-to-day basis. The findings indicated that instruction in CAFIAS increased the amounts of teacher praise, acceptance of students' ideas and actions, nonverbal questions, and empathetic behavior.

Several studies examining the teaching behavior of physical educators have been conducted at The Ohio State University under the direction of Daryl Siedentop. Studies by Cramer (1978), Hutslar (1976), and Stewart (1978) used the O.S.U. Teacher Behavior Rating Scale (Siedentop and Hughley, 1975) for research in the modification of student teachers' behavior.

Another instrument used to analyze the physical education setting was developed by Siedentop, Birdwell, & Metzler (1979) at The Ohio State University. The Academic Learning Time-Physical Education (ALT-PE) had been used in studies by Birdwell (1980), Metzler (1979), and Whaley (1980) to study teacher effectiveness in public school physical education.

Systematic Observation in Coaching

Prior to 1970, few studies had been conducted in the realm of coaching behavior. Typically, coaching and coaching behavior studies have been conducted from a framework of assumption, tradition, and opinion (Cratty, 1973). The instruments used in these studies were questionnaires and personality trait inventories. Consequentially, coaching methods have primarily been evaluated on opinions of influential or established coaches rather than by systematic observations (Percival, 1974).

LaGrand (1970) investigated coaches' behavioral characteristics as perceived by their athletes. The coaches' behavioral characteristics were measured by a semantic differential scale. LaGrand (1970) found significant differences in the behavioral characteristics of coaches of different sports and concluded that each sport had its own

individuality and behaviors.

Penman, Hastad, and Cords (1974) used a questionnaire to investigate the success of 30 male high school football and basketball coaches. The investigators concluded that coaches who exhibited more authoritarian characteristics were more successful.

The behaviors of teachers and coaches along the framework of personality and social orientation were compared by Hendry (1973). A personality inventory was given to 48 male and female physical education teachers and 63 male and female coaches at the college level. The results indicated that teachers possessed qualities of overt sociability, high aspiration, and desire, whereas, the coaches were found to be more organized and controlled individuals but with more restrictive ideas. Hendry (1973) also described the six female coaches in the study as self-contained, conventional, and controlled.

Danielson, Zelhart, and Drake (1975) used multidimensional scaling and factor analysis of coaching behavior as viewed by high school ice hockey players. The Coach Behavior Description Questionnaire, a 140-item questionnaire, was administered to 160 athletes attending a summer sport camp. The investigator concluded that the most commonly perceived coaching behaviors were communicative in nature rather than dominating.

Several researchers have expressed the need for a more systematic approach to the analysis of coaching. Tharp and Gallimore (1976) believed that the most efficient means of

analyzing coaching behavior was through direct observation. Using a 10-category observation system, Tharp and Gallimore (1976) analyzed the coaching behaviors of John Wooden from UCLA during practice sessions. The researchers found that of the behaviors exhibited during practice, over 50% were instructionally oriented.

The Coaching Behavior Assessment System (CBAS) was developed by Smith, Smoll, and Hunt (1977) to code and analyze the behaviors of athletic coaches in naturalistic settings. The CBAS deals with two major classes of behaviors: reactive behaviors and spontaneous or game behaviors. The researchers concluded that CBAS was more useful in sports such as baseball and volleyball where coaching behaviors were easily traced.

A 1976 revision of the Implicit Values Instrument for physical education was used by Bain (1978) to investigate the values and norms implicit in secondary school physical education classes and athletic team practices. She also tested for differences between male and female physical educators and between coaches and teachers. The values of the subjects were assessed by seven dimensions: autonomy, competitive and instructional achievement, orderliness, privacy, specificity, and universalism. The results indicated that females obtained higher scores than males on privacy and instructional achievement. Coaches achieved higher scores than teachers on privacy, instructional achievement, and specificity, while teachers scored higher on universalism. Bain (1978) attributed these sex differences to the sex role expectations of society.

Although interaction analysis had been used by researchers in physical education as early as 1967, it did not appear in coaching studies until Kasson (1974) used IA to compare male teaching and coaching behaviors. The instrument used by Kasson (1974) was the Mancuso Adaptation for Verbal and Nonverbal Observation System. The results showed that significant differences in behavior did occur between teaching and coaching sessions. Verbal lecturing, demonstration, performance of physical skills, nonverbal directions, and silence were the predominant behaviors exhibited during teaching sessions. The most frequent behaviors occurring in coaching were verbal lecturing, demonstration, and silence.

Recently, CAFIAS has been used by researchers in several coaching studies. The first of these was a study similar to that of Kasson (1974) conducted by Agnew (1977). She used CAFIAS to examine the teaching and coaching behaviors of 20 female physical educators at the secondary level. She found that the interactions between athletes and coaches were more evident than pupil-teacher interactions. Pupil-initiated behavior and praise and acceptance were greater in the coaching environment than in the classroom.

The effect of instruction in CAFIAS on the coaching behavior of secondary school varsity coaches was investigated by Barr (1978). The researcher found that coaches instructed in CAFIAS allowed more pupil-initiated behavior and used more questioning, praise, and acceptance.

The Coaches' Performance Criteria Questionnaire (CPCQ) was

utilized by Avery (1978) to divide coaches into effective and less effective groups. CAFIAS was then used to determine differences of interaction patterns between the two groups. The results indicated that more indirect behaviors were exhibited by effective coaches than by less effective coaches. Rotsko (1979) also used the CPCQ to divide 10 male high school basketball coaches. Each was videotaped during four practice sessions and each tape was coded using CAFIAS. The results obtained by Rotsko (1979) concurred with the results found by Avery (1978).

CAFIAS and the Group Environment Scale (Moos, Insel, & Humphrey, 1974) were employed by Hirsch (1978) to examine coaching behaviors from two social climates. Scores obtained from the Group Environment Scale (GES) were used to classify 20 secondary basketball teams. It was found that there was more pupil-initiated behavior and more praise by the coaches in the satisfied environment. Teams in the satisfied environment were found to be more cohesive and more organized, and had more control and support from their coaches. Studies using CAFIAS to compare coaching behaviors in two different environments were also conducted by Proulx (1979) and Staurowsky (1979). Proulx (1979) divided 10 men's varsity basketball teams into satisfied and less satisfied groups. His results concurred with those found by Hirsch (1978) with the exception that verbal praise was not found to be significantly different between the two environments. Using the GES Staurowsky (1979) divided 20 female secondary school basketball teams into satisfied and less satisfied

groups. The results obtained by Staurowsky (1979) were also in agreement with Hirsch (1978) and Proulx (1979). The researchers also concluded that coaches generally perceived their environment as being closer to ideal than did their athletes in the same environment.

Investigating the effects of feedback on the practice behavior of athletes, Crossman (1979) used the Ohio State Athletic Observation Code (OSAOC) to record the practice behavior of nine competitive athletes from three separate sports. Crossman (1979) found that intervention increased productive behaviors and decreased non-productive behaviors for wrestlers and gymnasts. Intervention had no effect on the practice behavior of volleyball players.

Systematic observation systems have also been developed by Langsdorf (1979), Quarterman (1980), and Rushall (1981) for analyzing coaching behaviors.

Dyadic Interaction in Education

In Rosenthal and Jacobson's (1968) book, Pygmalion in the classroom, the concept of self-fulfilling prophecy is investigated. The self-fulfilling prophecy basically states that certain expectations of a teacher can affect the manner in which a pupil will behave (Martinek & Johnson, 1979). The results obtained by Rosenthal and Jacobson (1968) support the self-fulfilling prophecy concept. These results have led investigators to study the effects of teacher expectations utilizing dyadic interaction systems.

One of the earliest Dyadic Systems used in education was

developed by Brophy and Good (1970). Their system was designed to sequentially code the interactions of a teacher with an individual student. Another advantage of the dyadic system was that it provided teachers or supervisors with feedback about their teaching behavior toward a particular student.

Brophy and Good (1970) utilized the Teacher-Child Dyadic Interaction System to investigate the relationship between teacher expectations and pupil achievement of first grade students. The researchers found that teachers demanded better performance and were more likely to praise students who were expected to be high achievers. If low expectation students could not answer a question, the teacher would either answer it for them or call on someone else, whereas, with high expectancy students the question would be repeated or rephrased. Results from several follow-up studies (Cornbleth, Davis, & Button, 1972; Good, Sikes, & Brophy, 1972; Jeter & Davis, 1972; Mendoza, Brophy, & Good, 1972) were consistent with those of Brophy and Good (1970).

In a replication of the original study of Brophy and Good (1970), Evertson, Brophy, and Good (1972) found that, in general, teachers treated high and low achievers equally. Follow-up studies by (Brophy, Evertson, Harris, & Good, 1973; Evertson, Brophy, & Good, 1973; Weinstein, 1976) supported the findings of Evertson et al. (1972).

Hillman and Elliot (1978) employed the Brophy-Good System to study the behavior of teachers in integrated public schools in Detroit. The researchers found that teachers interacted

more often with males than females and more frequently with black students than white students. Hillman and Elliot (1978) concluded that both male and female teachers act in similar ways with their students.

The observed and perceived student-teacher dyadic interactions in 30 classrooms were examined by Martin and Keller (1976). The results indicated that teachers were unable to accurately estimate the number of dyadic contacts that occurred during the day.

The finding of such mixed results of studies using dyadic interaction systems suggests that more scientific and systematic studies are needed to fully understand the effects, if any, of teacher expectations.

Dyadic Interaction Analysis in Physical Education

During the past 10 years, most of the research in physical education has been concerned with teacher behavior directed at the entire class (Allard, 1979). Although these studies have provided valuable information concerning the nature of teacher-student interaction patterns, little information has focused on the individual student (Brophy & Good, 1974). Observational systems that look at the entire class are too general to yield information about individual students in physical education (Allard, 1979). In order to obtain information about individual students, observation systems must be able to record the dyadic interactions occurring in physical education classes.

Martinek (1979) pointed out that few studies have investi-

gated the effects of expectations on dyadic interactions in physical education. Studies that have been conducted in this area have used modified versions of popular observation systems.

The Brophy-Good System was used by Crowe (1979) to investigate the effects of teacher expectations on the behavior of high and low expectancy junior high students based on Rosenthal's (1973) four factor theory (climate, feedback, input, and output). A fifth factor, touch, was added to the four factor theory. Results showed that high achievers were asked more questions, given more opportunities to respond, treated more warmly, given more praise and attention, and taught more new materials than students designated as low achievers. Crowe (1979) concluded that students are treated differentially according to the expectations of their teachers.

Martinek and Mancini (1979) developed the Dyadic Adaptation of Cheffers' Adaptation of Flanders' Interaction Analysis System (DAC). DAC provides a method for coding and analyzing interactions between a teacher and an individual student. The system was designed to provide pre- and in-service teachers with descriptive data regarding their teaching behavior directed to individual students. The DAC coding procedures are the same as those used in CAFIAS but with the following additions: (1) student identification must be established prior to observation; (2) coding only takes place when a teacher directs a behavior to one student or a small group of students; (3) numbered subscripts identifying the individual student or small group of students are placed next to the

appropriate behavior tally.

Recently, a number of researchers (Devlin, 1979; Martinek & Johnson, 1979; Reisenweaver, 1980; Streeter, 1980) have used DAC in studies in physical education settings.

Martinek and Johnson (1979) used DAC to investigate the effects of teacher expectation on specific teacher-student behaviors and the development of student's self-concept of elementary students in a physical education setting. The results indicated that students designated as high achievers received more encouragement, acceptance of ideas, and analytic-type questions from their teachers. It was also found that students designated as high achievers had significantly higher self-concepts than students designated as low achievers. These results were in agreement with those of Crowe (1979).

Devlin (1979) utilized DAC and the Martinek-Zaichkowsky Self-Concept Scale (MZSCS) to determine if training disruptive elementary children in contingency management skills could affect the behavior of their physical education teachers. Devlin (1979) also investigated what effects the learning of contingency management skills would have on the self-concepts of these students. Results indicated that training disruptive students in specific contingency management skills was successful in altering physical education teachers' direct teaching behavior to more indirect teaching behavior. Devlin (1979) also found that students in the treatment group became more independent, initiated more positive behaviors, and responded with more interpretation. The self-concepts of students in the

treatment groups were also favorably influenced.

Reisenweaver (1980) used DAC to compare the teaching behavior of 15 secondary female physical education teachers with high-skilled and low-skilled students. Streeter (1980) in a parallel study used 15 male secondary physical education teachers. In each case, they found that high-skilled students received more praise, were asked more questions, were given more information, received more acceptance of ideas and actions, and initiated more interpretive responses and student initiated behavior than did the low-skilled students. Low-skilled students received more criticism and direction from their teachers and gave more predictable responses. These results concurred with those found by Martinek and Johnson (1979) and Crowe (1979).

Oien (1979) employed a modification of FIAS and CAFIAS to investigate individualized teacher behaviors of male and female physical educators based on student gender and teachers' perception of the students' skill performance, in-class personality, and class participation. The Individualized Teacher Behavior Analysis System (ITBAS), developed by Dr. George T. Lewis, was used to systematically collect data on individual students from junior high school physical education classes. Results showed that boys received more praise and encouragement, questions, directions, and criticism than did girls.

Allard (1979) points out that further investigations of this nature are needed since dyadic interactions are an impor-

tant factor to consider when analyzing the performance of a group. Although researchers in physical education have begun to study dyadic interactions in the gyms, dyadic studies of coaches and their athletes have not yet appeared.

Small N Studies

The purpose of any single subject research design is to demonstrate control relative to the experimental condition (Hersen & Barlow, 1976). The procedures involved in these studies provide a method for stringent and rigorous inquiry (Rife & Dodds, 1978). The major issue concerning $N=1$ research concerns the generalization of the findings. Since generalization from a single case study to other subjects, settings, and/or instructors is tenuous, researchers must systematically replicate studies using different subjects, settings, and/or instructors in order to discover the extent to which the identified functional relationship can be duplicated (Loovis, 1978).

The small N research design and applied behavior analysis techniques have been used by several investigators at The Ohio State University (Boehm, 1974; Darst, 1974; Dodds, 1975; Hamilton, 1974; Hughley, 1973; Hutslar, 1976; McKenzie, 1976; Rife, 1973). These physical educators conducted research in changes in teaching behaviors of student teachers in physical education. In general these researchers have reported positive changes in the teaching behaviors of student teachers in physical education.

Paterson (1975), in a single case experimental design,

used CAFIAS to compare teaching behaviors of experienced, novice, and trainee physical educators. The results showed no significant differences among those groups in the amount of time spent working as a whole, in small groups, or as individuals.

The single subject design is a useful addition to current educational research practices in physical education for evaluating and analyzing teacher-student interactions. Rife and Dodds (1978) view single subject research as complementary to group investigations using inferential statistics in that focus on a particular subject is possible and direct changes in behavior can be recorded.

Summary

During the past two decades several interaction analysis systems have been used to investigate teacher-student interactions in the physical education setting. A number of these systems (Anderson, 1971; Costello, 1977; Fishman, 1975; Hurwitz, 1975; Laubach, 1975; Morgenegg, 1978a; Tobey, 1974) were developed for use on the Data Bank, a collection of 83 tapes of elementary and secondary physical education classes. The most widely used interaction analysis system in physical education was developed by Cheffers (1972). His system, CAFIAS, provides a method for recording and analyzing the verbal and nonverbal behavior patterns of teacher-student interactions. CAFIAS has also been used by several researchers (Agnew, 1977; Avery, 1978; Barr, 1978; Hirsch, 1978; Proulx, 1979; Rotsko, 1979; Staurowsky, 1979) in the analysis of coaching behavior.

Brophy and Good (1970) developed the Teacher-Child Dyadic Interaction System to investigate the effect of teacher expectations on their pupils. Studies of this nature were prompted by Rosenthal and Jacobson's (1968) book, Pygmalion in the classroom. The results of studies using the Brophy-Good (1970) system have been mixed and suggest the need for more scientific and systematic observation systems.

Martinek and Mancini (1979) developed the DAC system. The DAC system is an extension of CAFIAS that provides a method for coding and analyzing interactions between a teacher and an individual student or small group of students. DAC has been used to study teacher expectation in the physical education setting by several researchers (Devlin, 1979; Martinek & Johnson, 1979; Reisenweaver, 1980; Streeter, 1980). The results of these studies have indicated that students are treated differentially according to the expectations of their teachers. The results were also obtained by Crowe (1979) using the Brophy-Good System. Allard (1979) stated that further investigations of this nature are needed since dyadic interactions are an important factor in the performance of any group.

The small N research design and applied behavior analysis technique have recently been utilized by several physical educators at The Ohio State University (Boehm, 1974, Darst, 1974; Dodds, 1975; Hamilton, 1974; Hughley, 1973; Hutslar, 1976; McKenzie, 1976; Rife, 1973). Rife and Dodds (1978) view the single subject design as a useful addition to current

educational research practices in physical education for evaluating and analyzing teacher-student interactions.

Thus far, however, small N research designs using a dyadic interaction analysis system have not been reported in the analysis of coaching behaviors.

Chapter 3

METHODS AND PROCEDURES

In this chapter the selection of subjects, the testing instrument, validity of investigators' coding, establishment of coder reliability, statistical analysis applied to the data, and the procedures utilized in this investigation are discussed.

Selection of Subjects

The subjects for this investigation were two varsity lacrosse head coaches, one female and one male, at the same college in the central New York area. Each coach was contacted by the investigator and permission to videotape team practices was requested. The coaches were also asked to sign an informed consent form (see Appendix A). Both coaches were asked to rank their players from high to low according to overall playing ability. The top 10 ranked and the bottom 10 ranked players on each team were selected for this study.

Testing Instrument

The testing instrument used to measure the coaching behaviors of the subjects was the Dyadic Adaptation of CAFIAS (DAC) (Martinek & Mancini, 1979). The DAC system provides a method in which interactions between a coach and a single athlete, or a small group of athletes, may be recorded and analyzed. The interactions between the coach and the entire

team are not recorded. The DAC ground rules and coding procedures are basically the same as those used in CAFIAS. However, rather than recording a behavior every 3 seconds, behaviors are recorded only when the coach is interacting with specified athletes.

Procedure

Each coach in this study was personally contacted by the investigator and was informed of the purpose and procedures involved in the study. Each coach was videotaped for an entire practice 10 times during the 1981 season. Both coaches were asked to wear a wireless microphone which did not interfere with their coaching actions.

At the end of the season the coaches were asked to rank their players from high to low according to playing ability. For this investigation the top 10 and the bottom 10 ranked players were selected. All interactions between the coach and any one or more of these players were recorded.

Method of Data Collection

Data for final analysis were obtained from the 10 videotapes taken of each coach. The videotapes were coded by an expert coder trained in using DAC.

Validity of Investigator's Coding

The Spearman rank-order correlation technique was used to establish the validity of the investigator's coding. One randomly selected practice was coded by Dr. Victor H. Mancini, an expert coder in the use of DAC, and by the investigator. The top 10 interaction patterns were ranked and compared to

establish that the investigator was experienced in the principles and functions of DAC.

Coder Reliability

In order to establish coder reliability for this study, two practices, one of each coach, were coded at two different sittings. The top 10 interaction patterns were ranked and then subjected to the Spearman rank-order correlation technique to establish coder reliability.

Scoring of Data

The data collected from the coding of DAC were transferred onto computer cards for computer analysis. The data were compiled into percentages and ratios for the 20 variables identified by DAC.

Treatment of Data

Descriptive statistics were used to determine differences in coaching behavior between the high-skilled and low-skilled groups identified by DAC. The percentages for each of the 20 variables were visually compared to aid in making these comparisons.

Summary

The subjects for this study were two collegiate varsity lacrosse coaches, one female and one male, from the central New York area. Both subjects ranked their players from high to low according to playing ability. The players ranked as the top 10 and the bottom 10 were selected for this study. Each subject was videotaped for an entire practice 10 times during the 1981 season.

The DAC system was used to record the interaction behavior patterns of the subjects and the specific athletes. The videotapes were coded by an expert coder trained in using DAC. The data collected from these codings were transferred onto computer cards for computer analysis.

Descriptive statistics were used to determine whether differences in coaching behavior, as identified by DAC, existed between the high-skilled and low-skilled groups. The computer scoring of DAC yielded percentages for each of the 20 variables, which were compared by visual analysis.

Chapter 4

ANALYSIS OF DATA

The results found when comparing the interaction behavior patterns of male and female collegiate lacrosse coaches with high-skilled and with low-skilled athletes are presented in this chapter. The Dyadic Adaptation of CAFIAS (DAC) was used to measure the behaviors of the coaches and athletes. All of the categories in DAC are the same as those used in the CAFIAS system (see Appendix E), and its variables will be referred to as DAC variables throughout this chapter. The validity of the investigator's coding and coder reliability will also be discussed in this chapter.

Validity of Investigator's Coding

In order to establish the validity of the investigator's coding, one randomly selected practice was coded by Dr. Victor H. Mancini, an expert coder in the use of DAC, and by the investigator. The top 10 interaction patterns were ranked and then subjected to Spearman rank-order correlation (see Appendix C). A correlation of .9242 was found. This was considered an acceptable level of agreement to indicate that the data are representative of data an expert coder would report.

Coder Reliability

In order to establish coder reliability for this study, two randomly selected practices, one of each coach, were coded

by the investigator at two different sittings. The top 10 interaction patterns were ranked and then subjected to the Spearman rank-order correlation technique (see Appendix D). A mean correlation of .9908 was found and was sufficient to indicate that the coder was reliable. The data from the correlations are presented in Table 1.

Individual Profile: Male Coach

The use of the 17 DAC parameters by the male coach with high-skilled and low-skilled athletes is summarized in Table 2. Visual comparisons indicated that differences existed in the behavior of the male coach as he interacted with the high-skilled and low-skilled athletes. The high-skilled athletes received more acceptance and praise and exhibited more initiative behavior, both coach suggested and athlete suggested, than did the low-skilled athletes. The high-skilled athletes also received more content information than did the low-skilled athletes. The low-skilled athletes were asked more questions by the male coach than were the high-skilled athletes.

A bar graph was used to compare the high-skilled and low-skilled athletes' percentages of behavior in each DAC category for the male coach (see Figure 1). Visual inspection revealed differences in the behavior of the male coach toward his high-skilled and low-skilled athletes: In comparison to the low-skilled athletes, the high-skilled athletes received more acceptance and praise and more information, while exhibiting more interpretive responses. The low-skilled athletes received more questions and directions and exhibited more

Table 1
Coder Reliability*

Subject	Spearman Rho	Mean
Male Coach	.9878	.9908
Female Coach	.9939	

*Coder reliability was determined by subjecting the top 10 interaction patterns from the coding of coaching behaviors for two independent observations to a Spearman rank-order correlation.

Table 2

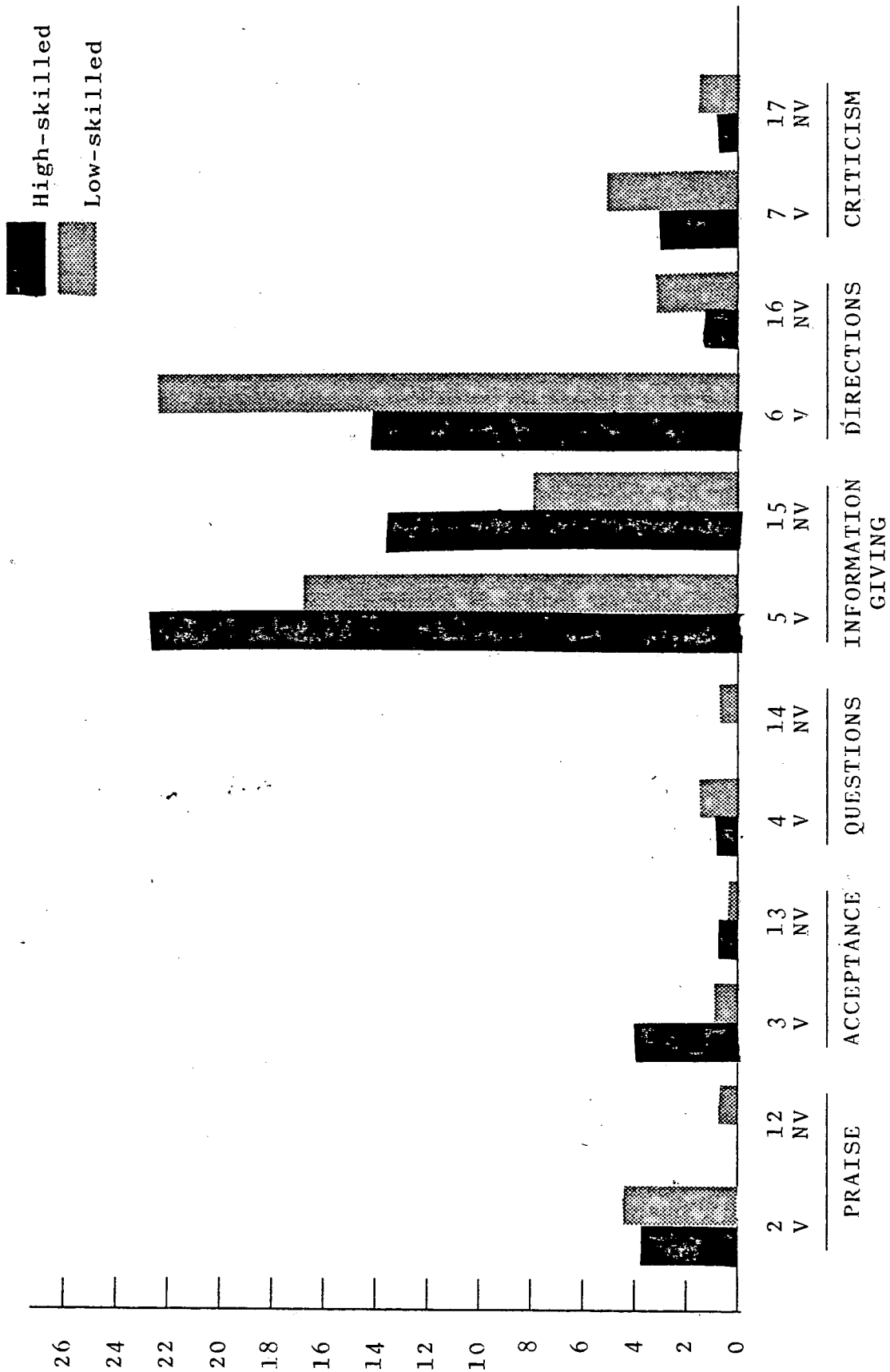
Use of Major DAC Parameters by the Male Coach

DAC Parameters	High-skilled Percentage	Low-skilled Percentage
Total Coach Contribution (TCC)	62.93	65.81
Total Athlete Contribution (TAC)	36.97	34.07
Total Silence and/or Confusion (SC)	.11	.12
Total Coach Use of Questioning (TCQR)	2.12	8.14
Total Coach Use of Acceptance and Praise (TCAPR)	31.27	16.98
Total Athlete Initiation, Coach Suggested (TAICSR)	56.65	32.26
Total Athlete Initiation, Athlete Suggested (TAIASR)	23.98	8.89
Content Emphasis, Coach Input (CECI)	47.33	38.83
Coach as Coach (CC)	100.00	100.00
Other Athlete as Coach (AC)	.00	.00
The Environment as Coach (EC)	.00	.00
Verbal Emphasis (VE)	58.33	55.80
Nonverbal Emphasis (NVE)	41.67	44.20
Class Structure as One Unit (W)	100.00	100.00
Class Structure as Groups or Individuals (P)	.00	.00

Table 2 (continued)

DAC Parameters	High-skilled Percentage	Low-skilled Percentage
Class Structure with No Coach		
Influence (I)	.00	.00
Coach's Empathy to Athlete's		
Emotions (CE)*	.00	.00

*Sum of the frequencies of Flanders' verbal and nonverbal category, coach's acceptance of athletes' feelings or emotions.



COACH

Figure 1. Mean percentages for DAC variables for the male coach.

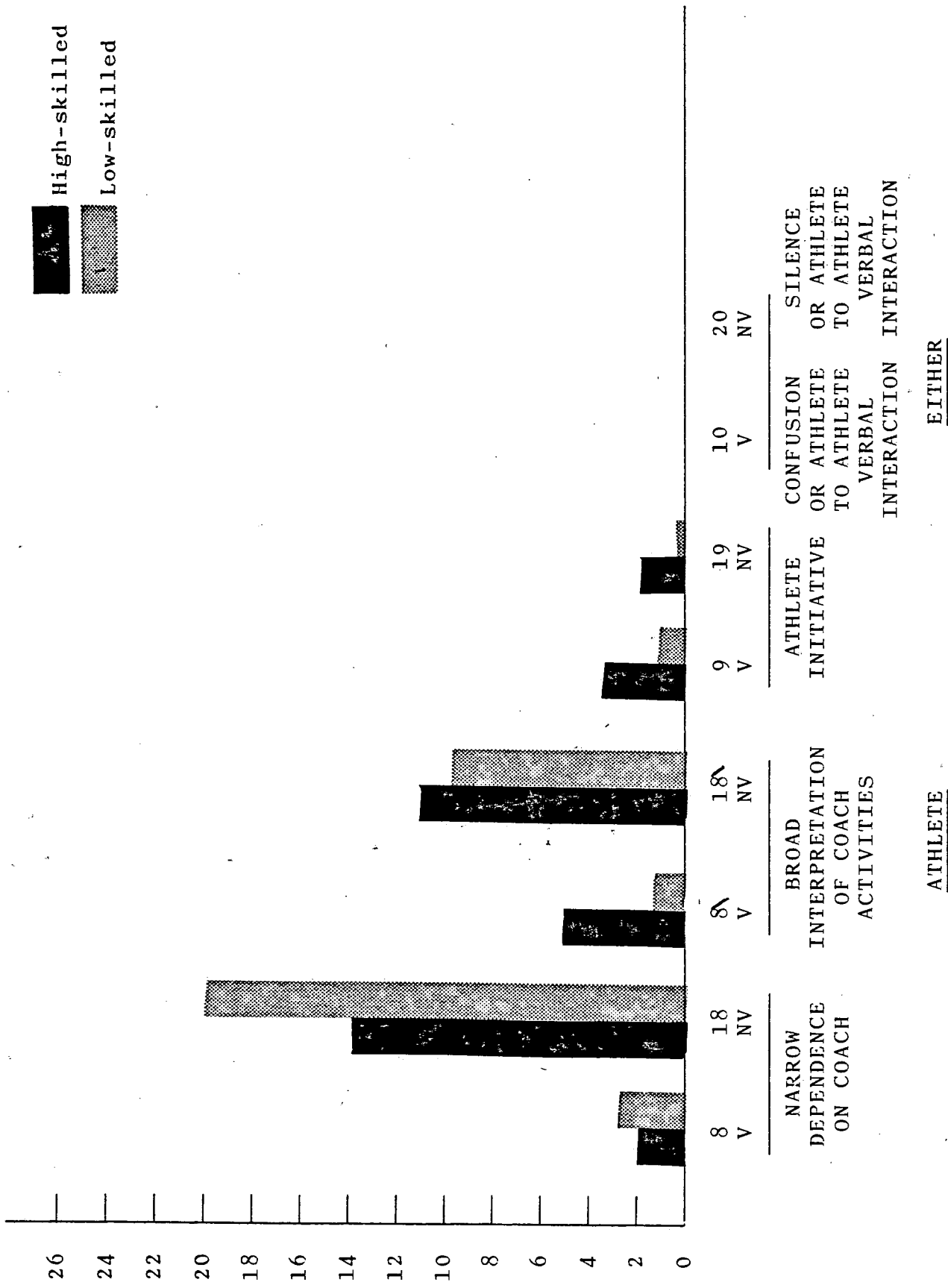


Figure 1. (continued)

predictable behavior than did the high-skilled athletes. The low-skilled athletes also received more criticism from the male coach than did the high-skilled athletes.

The top 10 ranked cell frequencies of interaction patterns and their percentages of occurrence for both the high-skilled and low-skilled athletes of the male coach are presented in Table 3. Again it was found that differences existed in the behavior patterns of the male coach as he interacted with high-skilled and low-skilled athletes. The interaction patterns of the male coach with high-skilled athletes were characterized by extended information-giving followed by coaches' direction and the athletes' predictable response (5-5-6-8). This led to more direction and information-giving by the coach which required extended interpretive responses by the athletes during drills (6-5-8-8). The athletes' interpretive behavior during drills was followed by coaches' information-giving and direction requiring the athletes' interpretive response leading to the athletes' predictable response (6-5-8-8). The interaction patterns for the male coach with the low-skilled athletes were characterized by extended information-giving and coaches' direction which led to the athletes' predictable response (5-5-6-8). Following the athletes' predictable response, the coach gave more direction that required the athletes' interpretive response while participating in a drill, which was followed by additional coaches' direction leading to the athletes' predictable response (6-8-6-8). The coach then gave more information which led to a predictable response by

Table 3
 Summary of the Most Frequent Interaction Patterns and
 Percentage of Occurrence Among the Top 10 Cells
 of the Male Coach

High-skilled		Low-skilled	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
5-5	23.29	5-5	13.80
6-8	10.47	6-8	13.43
8-6	5.56	8-6	10.26
5-8\	4.70	8\ -6	5.74
8\ -8\	4.70	8-5	4.27
8\ -5	4.06	6-8\	3.91
5-6	2.99	5-6	3.54
6-8\	2.99	5-8	3.42
8-5	2.88	6-6	2.93
8\ -6	2.78	8-7	2.93

Interaction Pattern Description

- 5-5 Extended coaches' information-giving
- 6-8 Coaches' direction followed by athletes' predictable response.
- 8-6 Athletes' predictable behavior followed by coaches' direction.

Table 3 (continued)

- 5-8\ Coaches' information-giving followed by athletes' interpretive response.
- 8\-8\ Extended athletes' interpretive drills.
- 8\-5 Athletes' interpretive behavior followed by coaches' information-giving.
- 5-6 Coaches' information-giving followed by coaches' direction.
- 6-8\ Coaches' direction followed by athletes' interpretive response.
- 8-5 Athletes' predictable behavior followed by coaches' information-giving.
- 6-6 Extended coaches' direction-giving.
- 8-7 Athletes' predictable behavior followed by coaches' criticism.

the athlete followed by extended coaches' direction, athletes' predictable response, and the coaches' criticism (5-8-6-6-8-7).

Individual Profile: Female Coach

The use of the 17 DAC parameters by the female coach with high-skilled and low-skilled athletes is summarized in Table 4. Visual comparisons indicated that differences existed in the DAC parameters: Total Coach Use of Acceptance and Praise (TCAPR); Total Athlete Initiation, Coach Suggested (TAICSR); and Total Athlete Initiation, Athlete Suggested (TAIASR). It was found that the high-skilled athletes received more acceptance and praise and exhibited more initiative behaviors, both coach and athlete suggested, than did the low-skilled athletes.

A bar graph was utilized to compare the high-skilled and low-skilled athletes' percentages of behavior in each DAC category for the female coach (see Figure 2). Visual inspection revealed differences in the behavior of the female coach toward her high-skilled and low-skilled athletes. The high-skilled athletes received more acceptance and praise and exhibited more interpretive behaviors than did the low-skilled athletes. The low-skilled athletes received more information and direction and exhibited more predictable behaviors than the high-skilled athletes.

The top 10 ranked cell frequencies of interaction patterns and their percentage of occurrence for both the high-skilled and low-skilled athletes of the female coach are presented in Table 5. The interaction patterns for the female coach with both the high-skilled and low-skilled athletes were character-

Table 4

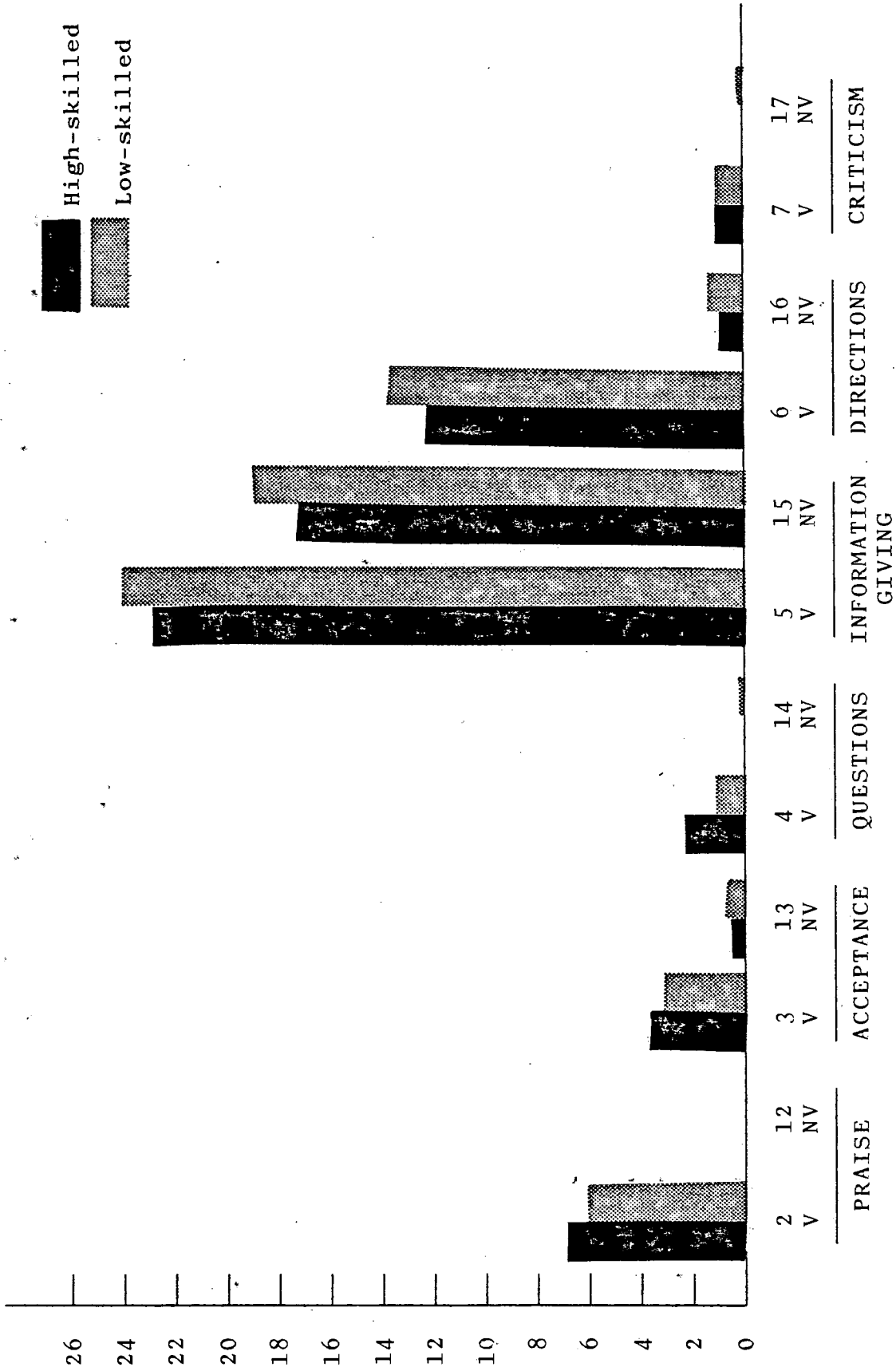
Use of Major DAC Parameters by the Female Coach

DAC Parameters	High-skilled Percentage	Low-skilled Percentage
Total Coach Contribution (TCC)	69.35	71.15
Total Athlete Contribution (TAC)	30.61	28.80
Total Silence and/or Confusion (SC)	.04	.05
Total Coach Use of Questioning (TCQR)	5.71	4.21
Total Coach Use of Acceptance and Praise (TCAPR)	41.44	33.06
Total Athlete Initiation, Coach Suggested (TAICSR)	43.39	32.58
Total Athlete Initiation, Athlete Suggested (TAIASR)	11.86	1.73
Content Emphasis, Coach Input (CECI)	58.41	58.46
Coach as Coach (CC)	100.00	100.00
Other Athlete as Coach (AC)	.00	.00
The Environment as Coach (EC)	.00	.00
Verbal Emphasis (VE)	57.30	54.18
Nonverbal Emphasis (NVE)	42.70	45.82
Class Structure as One Unit (W)	100.00	100.00
Class Structure as Groups or Individuals (P)	.00	.00

Table 4 (continued)

DAC Parameters	High-skilled Percentage	Low-skilled Percentage
Class Structure with No Coach		
Influence (I)	.00	.00
Coach's Empathy to Athlete's		
Emotions (CE)*	1.00	2.00

*Sum of the frequencies of Flanders' verbal and nonverbal category, coach's acceptance of athletes' feelings or emotions.



COACH

Figure 2. Mean percentages for DAC variables for the female coach.

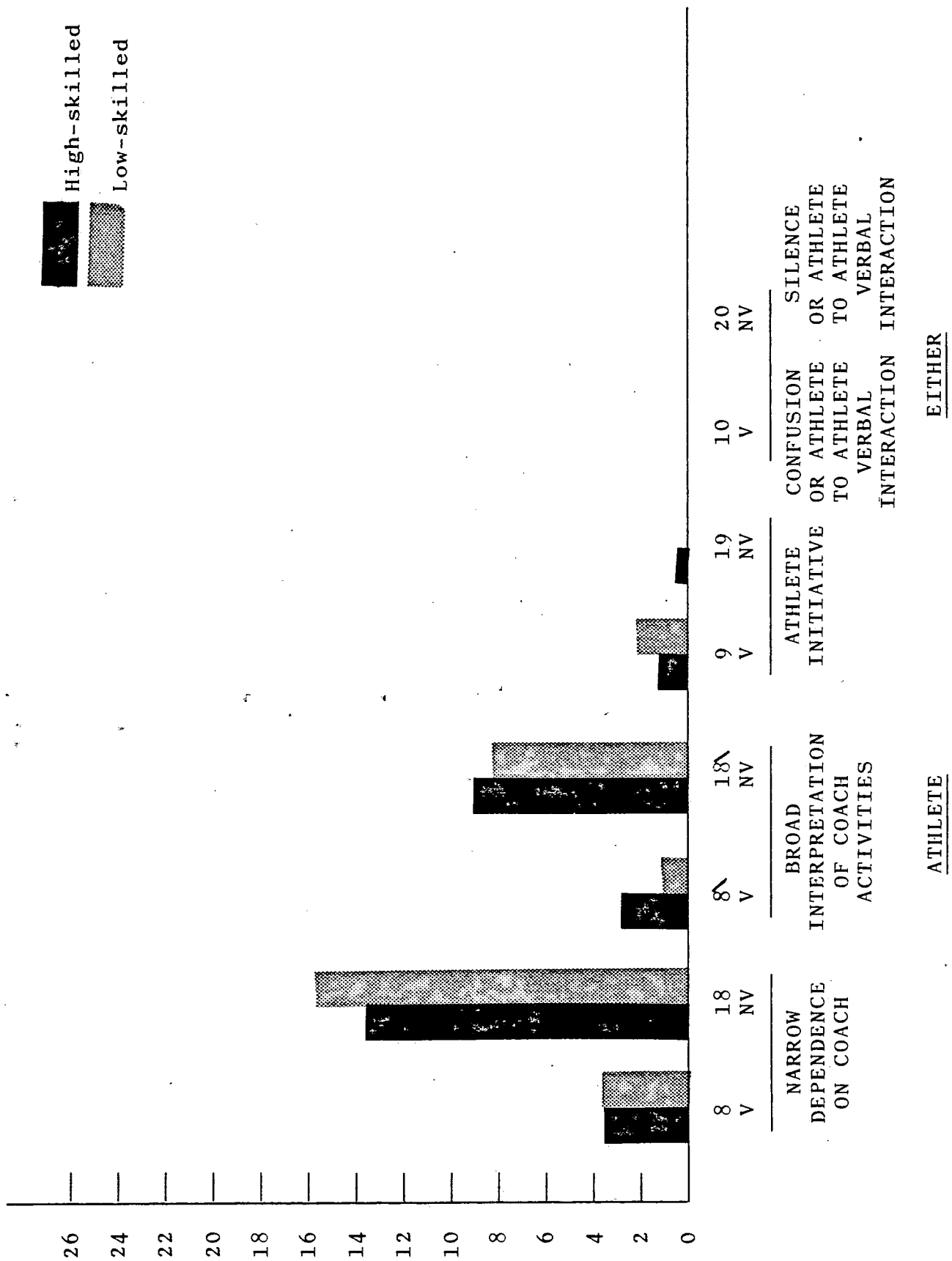


Figure 2. (continued)

Table 5

Summary of the Most Frequent Interaction Patterns and
Percentage of Occurrence Among the Top 10 Cells
of the Female Coach

High-skilled		Low-skilled	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
5-5	28.35	5-5	13.80
6-8	9.03	6-8	11.01
8-5	5.70	8-5	6.62
8-6	4.85	8-6	5.64
5-8\	4.51	5-8	4.23
5-8	3.92	5-6	4.12
5-6	3.58	5-8\	3.36
8\ -2	3.53	6-8\	2.77
6-8\	2.89	8-2	2.71
8\ -6	2.77	8\ -6	2.66

Interaction Pattern Description

- 5-5 Extended coaches' information-giving.
- 6-8 Coaches' direction followed by athletes' predictable response.
- 8-5 Athletes' predictable behavior followed by coaches' information-giving.

Table 5 (continued)

- 8-6 Athletes' predictable behavior followed by coaches' direction.
- 5-8\ Coaches' information-giving followed by athletes' interpretive response.
- 5-8 Coaches' information-giving followed by athletes' predictable response.
- 5-6 Coaches' information-giving followed by coaches' directions.
- 8\ -2 Athletes' interpretive behavior followed by coaches' praise.
- 6-8\ Coaches' direction followed by athletes' interpretive response.
- 8\ -6 Athletes' interpretive behavior followed by coaches' direction.
- 8-2 Athletes' predictable behavior followed by coaches' praise.

ized by extended coaches' information-giving and direction which led to the athletes' predictable response (5-5-6-8). The predictable response was followed by more information-giving and coaches' direction which required the athletes' interpretive response while participating in a drill (6-5-8). The coach then praised the high-skilled athletes' interpretive response and the low-skilled athletes' predictable response before issuing more directions which required the athletes' interpretive response again (2-6-8).

Combined Profile

The use of the 17 DAC parameters by the male and female coach with high-skilled athletes are represented in Table 6. Visual comparison indicated that in interactions with high-skilled athletes, the male and female coach showed a relatively large difference of behavior in seven DAC parameters. When interacting with the high-skilled athletes, the female coach exhibited more total contribution, asked more questions, used more acceptance and praise of ideas, and gave more content information than did the male coach. The high-skilled athletes of the male coach exhibited more total athlete contribution and more total athlete initiation, both coach and athlete suggested, than did the high-skilled athletes of the female coach. It was also found that the female coach showed more empathy to the athletes than did the male coach.

The use of the 17 DAC parameters by the male and female coach with low-skilled athletes are presented in Table 7. Visual comparison indicated that in interactions with low-

Table 6

Use of Major DAC Parameters with High-skilled Athletes

DAC Parameters	Male Coach Percentage	Female Coach Percentage
Total Coach Contribution (TCC)	62.93	69.35
Total Athlete Contribution (TAC)	36.97	30.61
Total Silence and/or Confusion (SC)	.11	.04
Total Coach Use of Questioning (TCQR)	2.12	5.71
Total Coach Use of Acceptance and Praise (TCAPR)	31.27	41.44
Total Athlete Initiation, Coach Suggested (TAICSR)	56.65	43.39
Total Athlete Initiation, Athlete Suggested (TAIASR)	23.98	11.86
Content Emphasis, Coach Input (CECI)	47.33	58.41
Coach as Coach	100.00	100.00
Other Athlete as Coach (AC)	.00	.00
The Environment as Coach (EC)	.00	.00
Verbal Emphasis (VE)	58.33	57.30
Nonverbal Emphasis (NVE)	41.67	42.70
Class Structure as One Unit (W)	100.00	100.00
Class Structure as Groups or Individuals (P)	.00	.00

Table 6 (continued)

DAC Parameters	Male Coach Percentage	Female Coach Percentage
Class Structure with No Coach		
Influence (I)	.00	.00
Coach's Empathy to Athlete's		
Emotions (CE)*	.00	.1.00

*Sum of the frequencies of Flanders' verbal and nonverbal category, coach's acceptance of athletes' feelings or emotions.

Table 7

Use of Major DAC Parameters with Low-skilled Athletes

DAC Parameters	Male Coach Percentage	Female Coach Percentage
Total Coach Contribution (TCC)	65.81	71.15
Total Athlete Contribution (TAC)	34.07	28.80
Total Silence and/or Confusion (SC)	.12	.05
Total Coach Use of Questioning (TCQR)	8.14	4.21
Total Coach Use of Acceptance and Praise (TCAPR)	16.98	33.06
Total Athlete Initiation, Coach Suggested (TAICSR)	32.26	32.58
Total Athlete Initiation, Athlete Suggested (TAIASR)	8.89	1.73
Content Emphasis, Coach Input (CECI)	38.83	58.46
Coach as Coach (CC)	100.00	100.00
Other Athlete as Coach (AC)	.00	.00
The Environment as Coach (EC)	.00	.00
Verbal Emphasis (VE)	55.80	54.18
Nonverbal Emphasis (NVE)	44.20	45.82
Class Structure as One Unit (W)	100.00	100.00
Class Structure as Groups or Individuals (P)	.00	.00

Table 7 (continued)

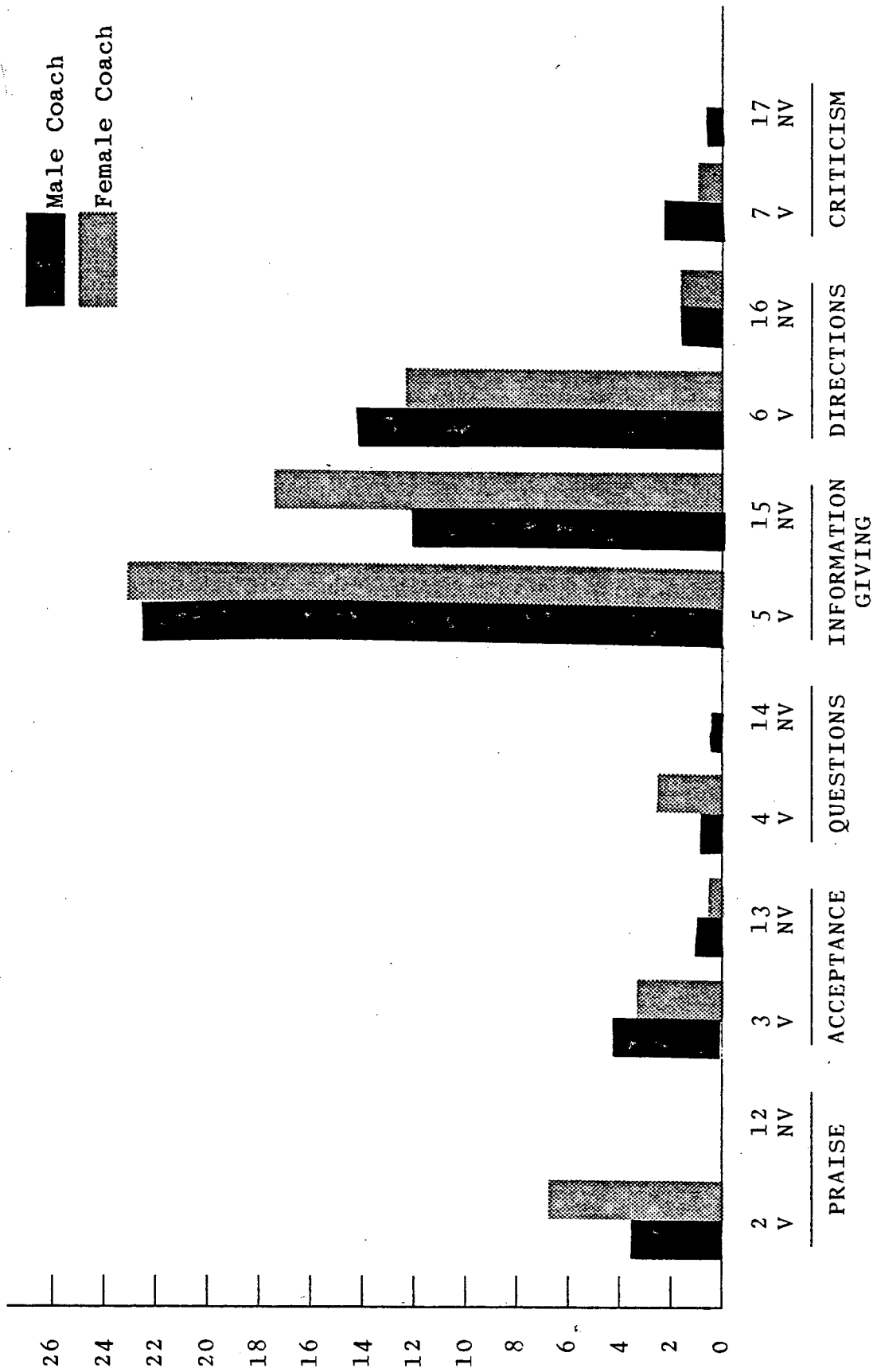
DAC Parameters	Male Coach Percentage	Female Coach Percentage
Class Structure with No Coach		
Influence (I)	.00	.00
Coach's Empathy to Athlete's		
Emotions (CE)*	.00	2.00

*Sum of the frequencies of Flanders' verbal and nonverbal category, coach's acceptance of athletes' feelings or emotions.

skilled athletes, the male and female coach showed differences of behavior in six DAC parameters. When interacting with the low-skilled athletes, the female coach gave more total contribution, more acceptance and praise of ideas, and more content information than did the male coach. The male coach, when interacting with low-skilled athletes, asked more questions and received more total athlete contribution and athlete initiated behaviors than did the female coach.

A bar graph was utilized to compare the male and female coaches' percentages of behavior in each DAC category with the high-skilled athletes (see Figure 3). Visual inspection revealed differences in the behavior of the male and female coach when interacting with high-skilled athletes. The female coach showed more acceptance and praise of ideas, asked more questions, and gave more information than did the male coach. The male coach, when interacting with the high-skilled athletes, gave more direction and criticism and received more interpretive responses and athlete initiated behaviors than did the female coach.

A comparison of the male and female coaches' percentages of behaviors in each DAC category with the low-skilled athletes are illustrated in Figure 4. Visual analysis revealed differences in the behaviors of male and female coaches when interacting with low-skilled athletes. The female coach showed more acceptance and praise of ideas and gave more information to the low-skilled athletes than did the male coach. The male coach, when interacting with low-skilled athletes, gave more



COACH

Figure 3. Mean percentages for DAC variables for high-skilled athletes.

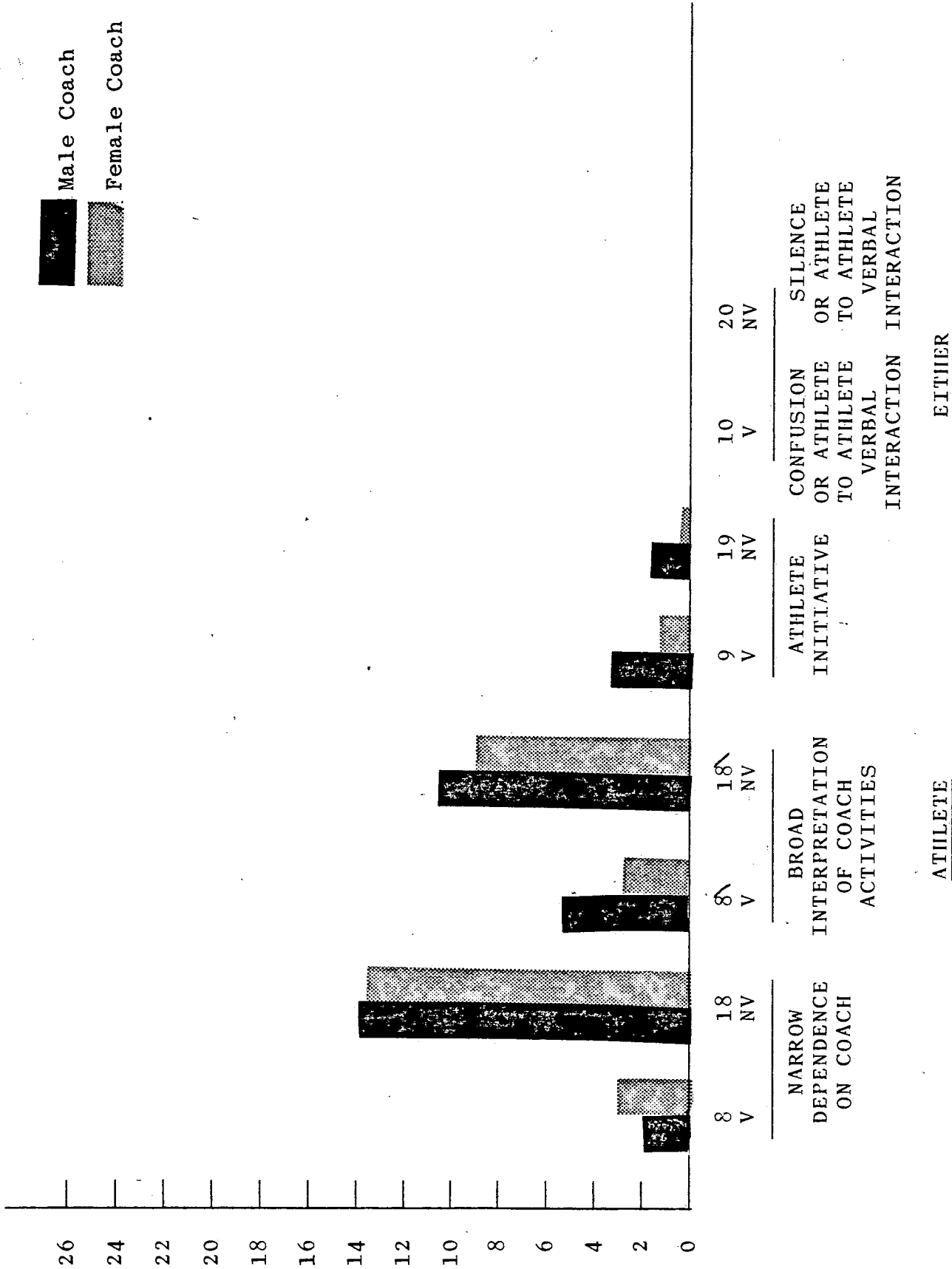
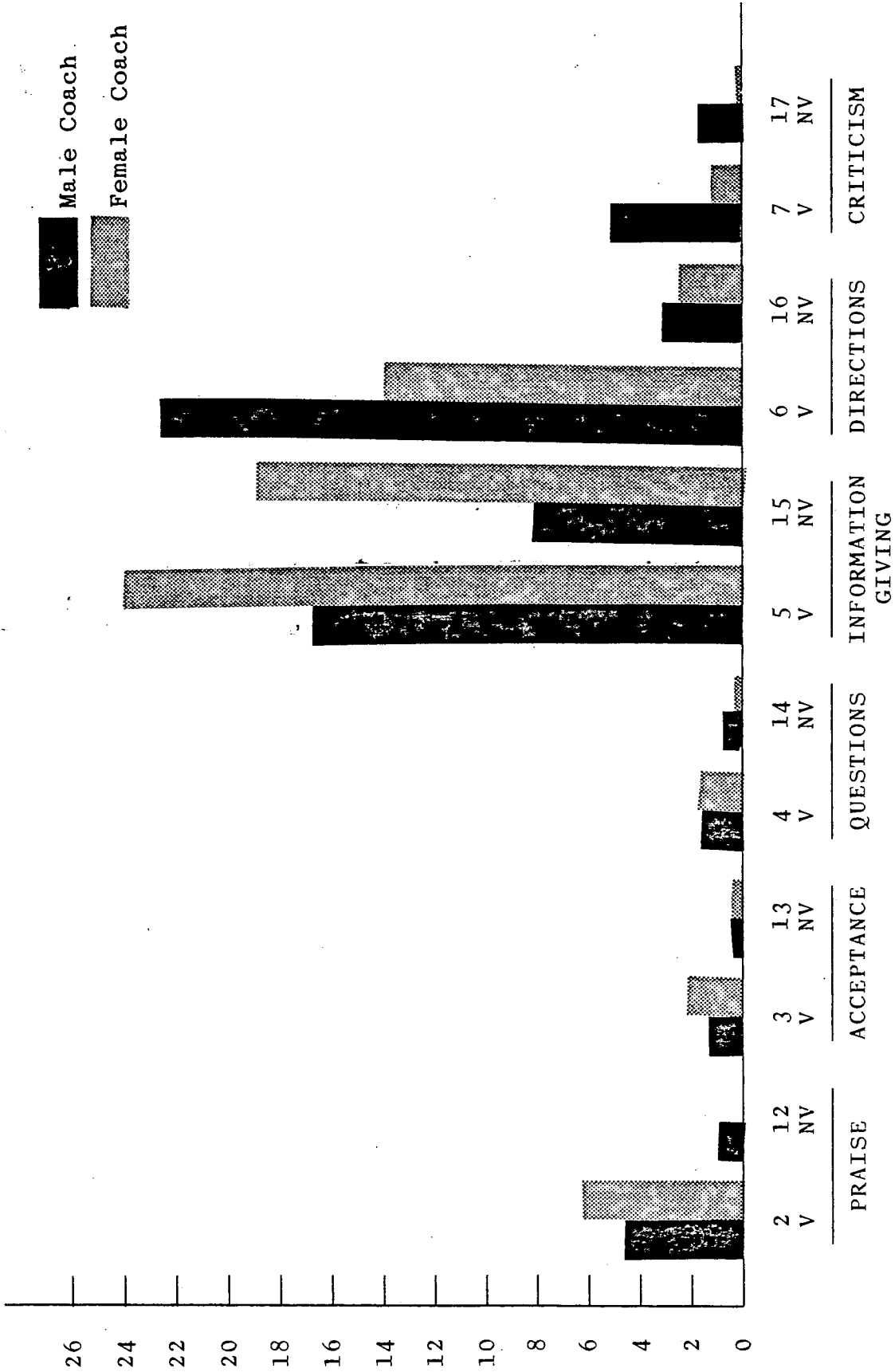


Figure 3. (continued)



COACH

Figure 4. Mean percentages for DAC variables for low-skilled athletes.

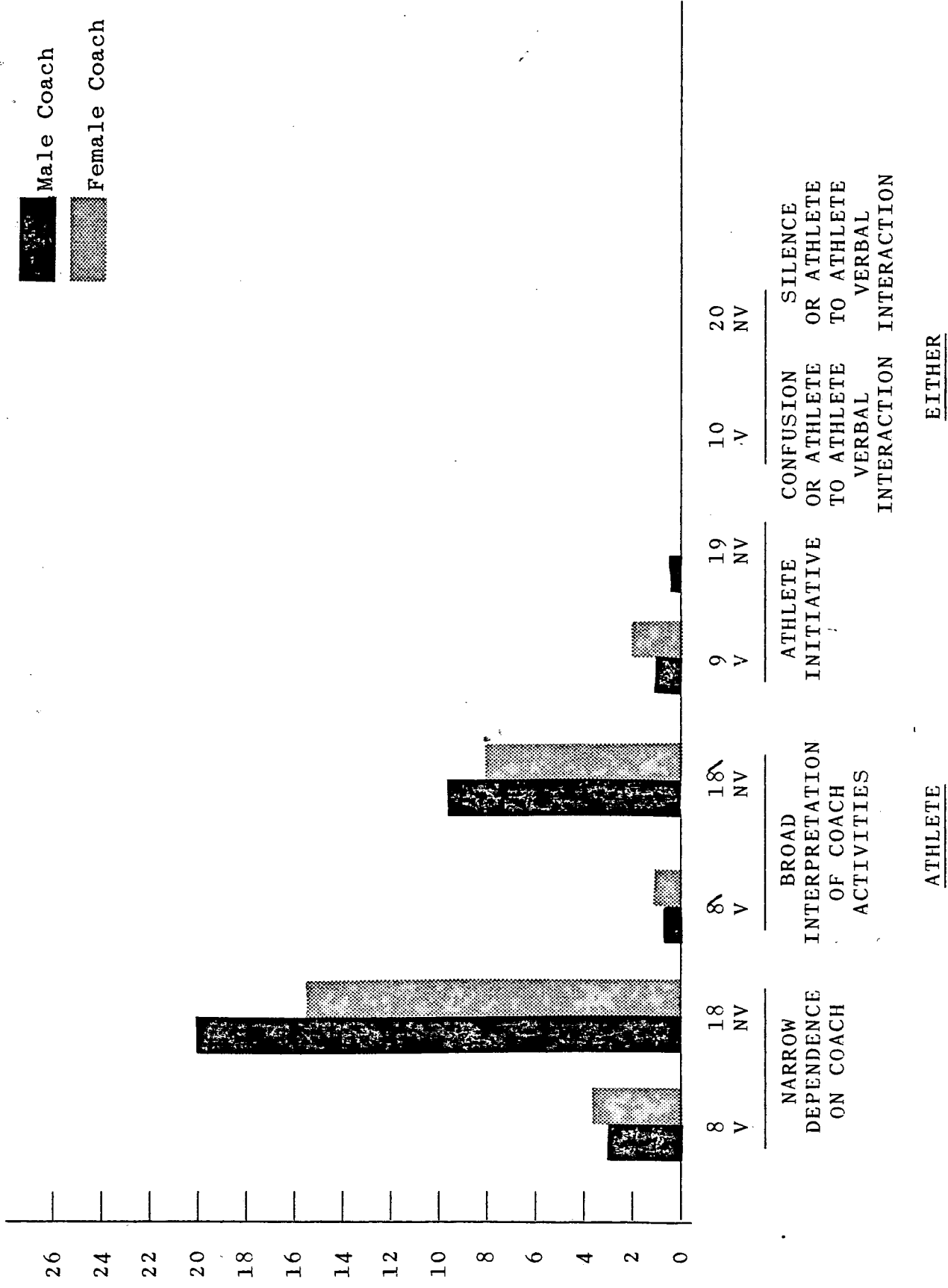


Figure 4. (continued)

NARROW DEPENDENCE ON COACH BROAD INTERPRETATION OF COACH ACTIVITIES ATHLETE
 CONFUSION OR ATHLETE TO ATHLETE VERBAL INTERACTION SILENCE OR ATHLETE TO ATHLETE VERBAL INTERACTION EITHER

direction and criticism than did the female coach.

The top 10 ranked cell frequencies of interaction patterns and their percentages of occurrence for both the male and female coach with the high-skilled athletes are presented in Table 8. The percentages of occurrence of the interaction patterns were relatively similar between the two coaches. The largest difference occurred in the extended information-giving pattern where the percentage of occurrence for the female coach (28.35) was 5.06% higher than the male coach (23.29).

The interaction patterns for both the male and female coach with high-skilled athletes were characterized by extended information-giving and coaches' direction followed by the athletes' predictable response (5-5-6-8). Both coaches then gave more direction and information which required the athletes' interpretive response while participating in a drill (6-5-8). The male coach then gave additional information and direction which led to both interpretive and predictable responses of the athletes before giving more direction which required interpretive responses from the athletes (8-2-6-8).

Table 9 represents the top 10 ranked cell frequencies of interaction patterns and their percentages of occurrence for both the male and female coaches with the low-skilled athletes. The percentages of occurrence of interaction patterns of both coaches with low-skilled athletes showed relatively large differences. The largest difference occurred in the amount of extended information-giving. The percentage of occurrence for the female coach (30.53) was 16.73% higher than the male coach

Table 8
 Summary of the Most Frequent Interaction Patterns and
 Percentage of Occurrence Among the Top 10 Cells
 for the High-skilled Group

Male Coach		Female Coach	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
5-5	23.29	5-5	28.35
6-8	10.47	6-8	9.03
8-6	5.56	8-5	5.70
5-8\	4.70	8-6	4.85
8\ -8\	4.70	5-8\	4.51
8\ -5	4.06	5-8	3.92
5-6	2.99	5-6	3.58
6-8\	2.99	8\ -2	3.53
8-5	2.88	6-8\	2.89
8\ -6	2.78	8\ -6	2.77

Interaction Pattern Description

- 5-5 Extended coaches' information giving.
- 6-8 Coaches' direction followed by athletes' predictable response.
- 8-6 Athletes' predictable behavior followed by coaches' direction.

Table 8 (continued)

- 5-8\ Coaches' information-giving followed by athletes' interpretive response.
- 8\ -8\ Extended athletes' interpretive drills.
- 8\ -5\ Athletes' interpretive behavior followed by coaches' information-giving.
- 5-6 Coaches' information-giving followed by coaches' direction.
- 6-8\ Coaches' direction followed by athletes' interpretive response.
- 8-5 Athletes' predictable behavior followed by coaches' information-giving.
- 8\ -6 Athletes' interpretive behavior followed by coaches' direction.
- 5-8 Coaches' information-giving followed by athletes' predictable response.
- 8\ -2 Athletes' interpretive behavior followed by coaches' praise.

Table 9
 Summary of the Most Frequent Interaction Patterns and
 Percentage of Occurrence Among the Top 10 Cells
 for the Low-skilled Group

Male Coach		Female Coach	
Interaction Patterns	Percentage of Occurrence	Interaction Patterns	Percentage of Occurrence
5-5	13.80	5-5	30.53
6-8	13.43	6-8	11.01
8-6	10.26	8-5	6.62
8\ -6	5.74	8-6	5.64
8-5	4.27	5-8	4.23
6-8\	3.91	5-6	4.12
5-6	3.54	5-8\	3.36
5-8	3.42	6-8\	2.77
6-6	2.93	8-2	2.71
8-7	2.93	8\ -6	2.66

Interaction Pattern Description

- 5-5 Extended coaches' information-giving.
- 6-8 Coaches' direction followed by athletes' predictable response.
- 8-6 Athletes' predictable behavior followed by coaches' direction.

Table 9 (continued)

- 8\ -6 Athletes' interpretive behavior followed by coaches' direction.
- 8-5 Athletes' predictable behavior followed by coaches' information-giving.
- 6-8\ Coaches' direction followed by athletes' interpretive response.
- 5-6 Coaches' information-giving followed by coaches' direction.
- 5-8 Coaches' information-giving followed by athletes' predictable response.
- 6-6 Extended coaches' direction-giving.
- 8-7 Athletes' predictable behavior followed by coaches' criticism.
- 5-8\ Coaches' information-giving followed by athletes' interpretive response.
- 8-2 Athletes' predictable behavior followed by coaches' praise.

(13.80).

^x The interaction patterns for both the male and female coach with low-skilled athletes were characterized by extended information-giving and coaches' direction followed by the athletes' predictable response (5-5-6-8). The male coach then gave more direction which required the athletes' interpretive response while participating in a drill (6-8\). This was followed by more direction leading to the athletes' predictable response which was followed by more information and direction requiring the athletes' interpretive response (6-8-5-6-8\). The male coach then gave additional information and direction which led to the athletes' predictable response which was then criticized by the coach (5-6-8-7). The female coach, however, reacted to the athletes' predictable response by giving more direction and information leading to more of the athletes' predictable response (6-5-8). She then gave additional information and direction which required the athletes' interpretive response while participating in a drill, leading to the athletes' predictable behavior which was praised by the coach (6-5-8\ -8-2).

The number of times in which the coaches were observed was constant. During this time period, the male coach interacted with the high-skilled athletes 936 times in comparison to 819 times with the low-skilled athletes. The female coach interacted with the high-skilled athletes 2349 times in comparison to 1844 times with the low-skilled athletes. In other words, for the male coach 53% of his interactions were

with high-skilled athletes, whereas, for the female coach, 56% of her interactions were with high-skilled athletes.

Summary

Validity of the investigator's coding was determined by randomly selecting one practice and having it coded by Dr. Victor H. Mancini, an expert coder in the use of DAC, and by the investigator. The top 10 interaction patterns were ranked and then subjected to the Spearman rank-order correlation technique (see Appendix C). A correlation of .9242 indicated that the investigator's coding was valid.

Coder reliability for this study was determined by randomly selecting two practices, one of each coach, and subjecting them to two independent codings by the investigator. The top 10 interaction patterns were ranked and then subjected to the Spearman rank-order correlation technique (see Appendix D). A mean correlation of .9908 indicated that the coder was reliable (see Table 1).

Visual comparison of Table 2, Figure 1, and Table 3 indicated a relatively large difference in the behavior of the male coach toward his high-skilled and low-skilled athletes. The high-skilled athletes received more acceptance and praise, and more information while exhibiting more interpretive responses and athlete initiated behavior than did the low-skilled athletes. The low-skilled athletes were asked more questions, received more direction and criticism and exhibited more predictable behavior than did the high-skilled athletes.

Visual analysis of Table 4, Figure 2, and Table 5

revealed noticeable differences in the behavior of the female coach towards her high-skilled and low-skilled athletes. The high-skilled athletes received more acceptance and praise and exhibited more interpretive behaviors than did the low-skilled athletes. The low-skilled athletes received more information and direction and exhibited more predictable behaviors than did the high-skilled athletes.

Visual comparison of Tables 6-9 and Figures 3 and 4 indicated that differences in the behaviors of the coaches when interacting with high-skilled and low-skilled athletes did exist. When interacting with the high-skilled and low-skilled athletes, the female coach exhibited more praise and acceptance, asked more questions, and gave more information to the athletes than did the male coach. The male coach, when interacting with both groups, gave more direction and criticism than did the female coach. The male coach also received more interpretive responses and athlete initiated behavior from the high-skilled athletes and more predictable behavior from the low-skilled athletes than did the female coach.

Chapter 5

DISCUSSION OF RESULTS

The present study is the first to utilize the Dyadic Adaptation of CAFIAS (DAC) to examine the interaction behavior patterns of male and female coaches with high-skilled and low-skilled athletes. DAC has been used in similar studies (Martinek & Johnson, 1979; Reisenweaver, 1980; Streeter, 1980) to compare the interaction patterns of physical education teachers with high-skilled and low-skilled students. This study used DAC to determine if differences existed in the behavior patterns of male and female lacrosse coaches as they interacted with high-skilled and low-skilled athletes. A discussion of the results obtained in this study as well as a comparison of these results to results obtained in related investigations will be presented in this chapter.

Visual analysis of the DAC results indicated that differences did exist between the behavior of the male coach with high-skilled and low-skilled athletes. During practices the male coach gave information to and praised and accepted the ideas of the high-skilled athletes more than the low-skilled athletes. He also received more interpretive behaviors and athlete initiated behavior from the high-skilled group compared to the low-skilled group. The male coach tended to ask more questions of, gave more directions and criticism to, and

received more predictable behavior from the low-skilled athletes than from the high-skilled athletes. The top interaction pattern for both the high-skilled and low-skilled athletes was the coach's extended information-giving (5-5). The majority of practice time, however, was spent giving feedback to the athletes during an activity or drill. For both the high-skilled and low-skilled athletes, most of this feedback was either more information or more direction. It is important to note that with the low-skilled athletes, feedback in the form of criticism was one of the top 10 interaction patterns (8-7). Also important is that feedback in the form of acceptance or praise was not one of the top 10 interaction patterns for either groups, although the high-skilled athletes did receive more acceptance and praise than did the low-skilled athletes. The male coach also interacted more with the high-skilled athletes than he did with the low-skilled athletes.

Visual analysis of the DAC results also revealed differences between the behavior of the female coach with high-skilled and low-skilled athletes. During practice the female coach gave more acceptance and praise to the high-skilled athletes than to the low-skilled athletes. She also received more interpretive responses from the high-skilled athletes than from the low-skilled athletes. With low-skilled athletes, she issued more directions and gave more information. The low-skilled athletes also exhibited more predictable responses than did the high-skilled athletes. For both the high-skilled and low-skilled athletes, the top interaction pattern was the

coaches' extended information-giving (5-5). Although the sequence of interaction patterns differs slightly between the two groups, the percentages of occurrence of these interaction patterns are similar. The majority of practice time of the female coach was spent giving feedback to the athletes during an activity or drill. For both the high-skilled and low-skilled athletes, most of the feedback was either information or direction. It is also important to note, however, that in both the high-skilled and low-skilled groups, feedback in the form of praise was within the top 10 interaction patterns. For the high-skilled athletes, praise was given after the athlete performed some interpretive response or behavior, whereas, with the low-skilled athlete praise followed a predictable behavior. Finally, it was seen that the female coach interacted more with her high-skilled athletes than with the low-skilled athletes.

Visual comparison of the male and female coaches as they interacted with high-skilled and low-skilled athletes indicated that differences in the behavior of the male coach and female coach toward high-skilled and low-skilled athletes did exist. For both the high-skilled and low-skilled athletes, the female coach interacted more with her athletes, praised them more, and gave more information than the male coach. The male coach issued more directions, gave more criticism, and used more "live" or scrimmage situations during practice than the female coach. The female coach also exhibited more empathy toward the athletes' feelings or emotions than did the male coach.

With the high-skilled athletes the male coach accepted the

ideas and actions of the athletes and received more athlete initiated behavior than the female coach. The female coach asked more questions and drilled her athletes more than did the male coach.

For both the male and female coach when interacting with the high-skilled and low-skilled athletes, the top interaction pattern was coaches' extended information-giving (5-5). However, when interacting with the low-skilled athletes, the percentage of occurrence of the interaction pattern is more than twice as high for the female coach (30.53%) as compared to the male coach (13.80%).

In summary, the practices of the male coach consisted mostly of scrimmage type drills. During these drills the male coach would give feedback in the form of information and direction to the high-skilled athletes, and information, direction, and criticism to the low-skilled athletes. The male coach also used more direct coaching behaviors with the low-skilled athletes in comparison to the high-skilled.

The practices of the female coach consisted mainly of drills rather than scrimmage situations. During these drills, she would give feedback in the form of information, direction, and praise to both the high-skilled and low-skilled groups. As was seen with the male coach, the female coach tended to use direct coaching behaviors more with the low-skilled athlete than with the high-skilled.

The results of this investigation indicated that differences existed in the behavior of both the male and female

coaches in this study as they interacted with high-skilled and low-skilled athletes. These results were similar to the results obtained by Martinek and Johnson (1979), Reisenweaver (1980), and Streeter (1980) in physical education and by Brophy and Good (1970), Cornbleth, Davis and Button (1972), Good, Sikes and Brophy (1972), and Jeter and Davis (1972) in education.

Using DAC Martinek and Johnson (1979), Reisenweaver (1980), and Streeter (1980) found that physical education teachers gave significantly more praise and acceptance of ideas and actions to the high-skilled students than to the low-skilled students, which concurs with the results found in the present study. Crowe (1979) in a study using the Brophy-Good system also found that junior high physical education teachers gave more praise and acceptance of ideas and actions to high achievers than to low achievers. These results were also supported by studies conducted in education (Brophy & Good, 1970; Cornbleth et al., 1972; Good et al., 1972; Jeter & Davis, 1972).

Studies by Crowe (1979), Martinek and Johnson (1979), Reisenweaver (1980), and Streeter (1980) found that physical education teachers tended to ask more questions of their high-skilled students than of their low-skilled students. In this study, the female coach asked only slightly more questions of the high-skilled athletes (2.4%) compared to the low-skilled athletes (1.9%). In contrast to these results, this study found that the male coach asked more questions of his low-

skilled athletes than of his high-skilled athletes. One explanation for this may be that the male coach tended to ask the low-skilled athletes more rote questions to make sure that they knew where they were supposed to be. This may also help answer why the low-skilled athletes exhibited more predictable responses.

The amount of information given to the high-skilled athletes by the male coach in this study parallels that reported by Reisenweaver (1980) and Streeter (1980), who found that high-skilled students received more information from their teachers than did low-skilled students. In contrast to this, however, the female coach in this study was found to give more information to the low-skilled athletes rather than to the high-skilled athletes. It seems logical that low-skilled athletes would require more information from their coach in order to understand and perform a required task more efficiently.

The top interaction pattern of both the male and female coach with high-skilled and low-skilled athletes was that of extended information-giving. These results were also found in coaching studies conducted by Danielson, Zelhart, and Drake (1975), Kasson (1974), and Tharp and Gallimore (1976). Tharp and Gallimore (1976) reported that over 50% of John Wooden's coaching behaviors were instructionally oriented.

Both the male coach and female coach involved in this study were found to give more directions to the low-skilled athletes in comparison to the high-skilled athletes. These

results concur with those of Reisenweaver (1980) and Streeter (1980), who also found that low-skilled students received more directions from their teachers. This may be due to the reasoning of coaches that low-skilled athletes need more guidance or need to be told what to do more than high-skilled athletes.

The use of criticism by the male coach in this study parallels that reported by Reisenweaver (1980) and Streeter (1980), who found that teachers gave significantly more criticism to the low-skilled students than to the high-skilled students. The female coach in this study showed no differences in the amount of criticism given to the high-skilled and low-skilled athletes. Studies by Hirsch (1978), Proulx (1979), and Staurowsky (1979) compared the behavioral patterns of coaches from two different social climates: satisfied and less satisfied. The researchers concluded that more praise than criticism was used by coaches in the satisfied group than by coaches in the less satisfied group. Avery (1978), in a study comparing effective and less effective coaches, found that the effective coaches used significantly more acceptance and praise than criticism than did coaches who were less effective. It is of interest to note that in this study the women's lacrosse team had a higher percentage of wins compared to losses than the men's team and also went on to post-season playoffs. In this study, the female coach was more like the effective coach found in Avery (1978), and her team was more like the satisfied team in Hirsch (1978), Proulx (1979), and Staurowsky (1979) than was the male coach and his team.

The high-skilled athletes, in this study, were characterized by more interpretive, self-initiated behavior, whereas, the low-skilled athletes were found to be more predictable in their responses. These results were also found by Reisenweaver (1980) and Streeter (1980). The predictable behavior of the low-skilled athletes may be related to the greater amount of direction given to these athletes by their coaches. Another reason may be that the male coach asked the low-skilled athletes more questions that required a predictable response. The greater amounts of interpretive and self-initiated behavior of the high-skilled athletes may be related to the greater amounts of praise and acceptance of ideas given to these athletes by their coaches.

In comparing the behaviors of the female coach and the male coach with high-skilled and low-skilled athletes, the results obtained in this study contrast those found by Faulkner (1976). She found that no differences existed between the teaching behaviors of male and female pre-service physical education teachers. Oien (1979) reported that boys received more directions and criticism from their male and female physical education teachers than did females. This agrees with the results obtained in this study in that the male coach gave more direction and criticism to his high-skilled and low-skilled athletes in comparison to the female coach and her athletes. However, Oien (1979) reported that boys received more praise from their teachers, whereas, in this study the female athletes received more praise from their coach compared

to the male athletes.

Summary

This study was the first to utilize DAC in investigating the interaction behavior patterns of male and female collegiate lacrosse coaches with high-skilled and low-skilled athletes. Visual analysis of the data revealed that differences existed in the behaviors of both the male coach and female coach toward high-skilled and low-skilled athletes. This led to a rejection of the null hypothesis that no differences would exist in the coaching interaction patterns of male and female lacrosse coaches with high-skilled and low-skilled athletes.

Visual analysis of the DAC results indicated that the male coach gave information to and praised and accepted the ideas and actions of the high-skilled athletes more than for the low-skilled athletes. He also tended to ask questions of, give direction to, and criticize the low-skilled athletes more than the high-skilled athletes.

Visual analysis of the DAC results revealed that 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 the male and female coaches, the high-skilled athletes were characterized by interpretive, self-initiated behavior, whereas, the low-skilled athletes were more predictable in their responses.

The results of this study are similar to those found by Martinek and Johnson (1979), Reisenweaver (1980), and Streeter (1980).

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

This study examined the coaching behavior patterns of male and female collegiate varsity lacrosse coaches to determine if differences existed in their interactions with high-skilled and low-skilled athletes. The subjects were two varsity lacrosse head coaches, one male and one female, at the same college in the central New York area. Both coaches ranked their players from high to low according to overall playing ability. The top 10 ranked and bottom 10 ranked players on each team were selected for this study. Each coach was videotaped for an entire practice 10 times during the 1981 season.

Data were obtained from the 10 videotapes taken of each coach and analyzed with the Dyadic Adaptation of CAFIAS (DAC) to assess the coach-athlete interactions. The data collected from the coding of DAC were transferred onto computer cards for computer analysis. The data were compiled into percentages and ratios for the 20 variables identified by DAC.

Descriptive statistics were used to determine differences in coaching behaviors between the high-skilled and low-skilled groups as identified by DAC. The percentages for each of the 20 variables were visually compared to aid in making these comparisons.

Visual comparison of both coaches indicated that differences did exist between the behaviors of the coaches with high-skilled and low-skilled athletes. Both coaches gave more acceptance and praise to and received more interpretive responses from the high-skilled athletes than from the low-skilled. Both coaches also interacted more with high-skilled athletes than with low-skilled athletes.

The male coach also gave more information to and received more athlete initiated behavior from the high-skilled athletes than from the low-skilled athletes. Both coaches gave more directions to and received more predictable responses from the low-skilled athletes than the high-skilled athletes. The female coach also gave more information to the low-skilled athletes than to the high-skilled athletes, while the male coach asked more questions of and gave more criticism to the low-skilled athletes than the high-skilled athletes. Both coaches spent a majority of the practice time giving feedback to the athletes during an activity or drill.

In comparing the male coach to the female coach, visual analysis indicated that for both the high-skilled and low-skilled athletes, the female coach interacted more with the athletes, praised them more and gave more information than did the male coach. The male coach, however, gave more direction and criticism and used more "live" or scrimmage situations than did the female coach. When interacting with the high-skilled athletes, the male coach gave more acceptance of ideas and actions of the athletes and received more athlete initiated

behavior than the female coach, while the female coach asked more questions and received more predictable behaviors than the male coach. When interacting with low-skilled athletes, the female coach accepted the ideas and actions of the athletes and received slightly more athlete initiated behavior compared to the male coach, while the male coach received more predictable behaviors from the athletes compared to the female coach. The female coach also exhibited more empathy to the athletes' feelings or emotions than did the male coach.

Conclusions

The results of this study led to the following conclusions regarding the interaction behavior patterns of male and female collegiate varsity lacrosse coaches with high-skilled and low-skilled athletes:

1. The interaction patterns of male and female collegiate varsity head lacrosse coaches were not the same with high-skilled and low-skilled athletes.

2. The male and female coaches interacted more with the high-skilled athletes than with the low-skilled athletes.

3. The male and female coaches gave more acceptance and praise of ideas to the high-skilled athletes than to the low-skilled athletes.

4. The male and female coaches received more interpretive and self-initiated behaviors from the high-skilled athletes than from the low-skilled athletes.

5. The male and female coaches received more predictable responses from the low-skilled athletes than from the high-

skilled athletes.

6. The male coach gave more information to the high-skilled athletes than to the low-skilled athletes.

7. The female coach gave more information and direction to the low-skilled athletes than to the high-skilled athletes.

8. The male coach gave more criticism, more direction, and more questions to the low-skilled athletes than to the high-skilled athletes.

9. The majority of practice time for both coaches was spent giving feedback to the athletes during an activity or drills.

10. The female coach interacted more, praised more, gave more information, and exhibited more empathy to her athletes than did the male coach.

11. The male coach used more directions, more criticism, and more "live" or scrimmage-like drills than the female coach.

12. With high-skilled athletes, the male coach gave more acceptance of ideas and received more athlete initiated behaviors than the female coach, whereas, the female coach asked more questions and received more predictable behaviors.

13. With the low-skilled athletes, the female coach accepted the ideas more and received more athlete initiated behavior than the male coach, whereas, the male coach received more predictable responses.

Recommendations for Further Study

1. Conduct a similar study using more coaches, randomly selected from a clearly defined coaching population.

2. Investigate the interaction patterns between a coach and his/her athletes in the beginning, middle, and end of the season to see if differences exist during a season.

3. Use CAFIAS to code all the coach-athlete interactions in this study and compare these results to those obtained using DAC.

4. Conduct a similar study with high school coaches.

5. Conduct a similar study comparing the behavior of coaches after a win and after a loss.

Appendix A
INFORMED CONSENT FORM
COACH'S COPY

The purpose of this study is to observe the behavior patterns collegiate varsity lacrosse coaches exhibit in their interactions with high-skilled and low-skilled athletes.

The subjects are one male and one female varsity lacrosse coaches from the central New York area. Each subject will be videotaped 10 entire practices during the 1981 spring lacrosse season. The coach will be asked to wear a wireless microphone and will be filmed using a videotape machine. At no time will the coach's normal actions be affected by the taping. Each tape will be coded using the Dyadic Adaptation of CAFIAS. At the end of the season, the coach will be asked to rank his/her players from high to low according to skill ability.

It is assured that names in this study will be kept strictly confidential. Taping is solely for the purpose of this study and will only be available to the researcher, Dr. Mancini, and the coach involved. Data analysis on information gathered on your practices will be available for review upon request. Thank you.

Researcher: Arthur F. Hoffman

Yes I agree to participate in this study.

No I will not agree to participate in this study.

Signature

Date

Appendix B
INFORMED CONSENT FORM
ATHLETES' COPY

The study in which you are asked to participate is looking at the interaction behavior patterns of collegiate lacrosse coaches with their athletes. During practice, you will be videotaped 10 times during the 1981 season. The taping will not interfere with your normal actions.

It is assured that names in this study will be kept strictly confidential. If you do not have any questions and are willing to be a subject in this study, please sign your name below.

Thank you,

Art Hoffman

Name: _____

Date: _____

Appendix C

VALIDITY OF INVESTIGATOR'S CODING FOR
SELECTED SUBJECTS USING SPEARMAN'S r_s^a

Male Coach

Top 10 Cells ^b	Rank VHM ^c	Rank AFH	\underline{d}^d	\underline{d}^2
5-5	1.0	1.0	.00	.00
6-8	2.0	2.0	.00	.00
8-6	3.0	3.0	.00	.00
8-5	4.5	5.0	.50	.25
8-2	4.5	4.0	.50	.25
2-6	6.5	8.0	1.50	2.25
8-8	6.5	8.0	1.50	2.25
8-2	8.5	9.5	1.00	1.00
8-8	8.5	6.0	2.50	6.25
5-8	10.0	9.5	1.50	.25
Total				12.50

^a $r_s = .9242$.

^bTop 10 cells refers to the order of coder's numerical frequency.

^cRank for VHM and AFH refers to the rank of each cell for Dr. Victor H. Mancini and Arthur F. Hoffman.

^d \underline{d} refers to the difference between the ranks of each cell for Dr. Victor H. Mancini and Arthur F. Hoffman.

\underline{d}^2 refers to the \underline{d} column squared.

Appendix D
 CODER'S RELIABILITY FOR SELECTED
 SUBJECTS USING SPEARMAN'S r_s^a
 Male Coach

Top 10 Cells ^b	Rank Observation One ^c	Rank Observation Two	\underline{d}^d	\underline{d}^2
5-5	1.0	1.0	.00	.00
8\ -6	2.0	2.0	.00	.00
6-8	3.5	4.0	.50	.25
6-8\	3.5	3.0	.50	.25
8-6	5.5	5.0	.50	.25
8\ -2	5.5	6.0	.50	.25
3-9	8.5	8.5	.00	.00
7-8\	8.5	8.5	.00	.00
8\ -5	8.5	8.5	.00	.00
8\ -7	8.5	8.5	.00	.00
Total				1.00

^a.9939.

^bTop 10 cells listed refers to the order of coder's numerical frequency.

^cRank observation one and rank observation two refer to the origin of coding.

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

\underline{d}^2 refers to the \underline{d} column squared.

Appendix D (continued)

Female Coach

Top 10 Cells ^b	Rank Observation One ^c	Rank Observation Two	\underline{d} ^d	\underline{d}^2
6-8	1.0	1.0	.00	.00
5-5	2.0	2.0	.00	.00
8-2	3.5	4.5	1.00	1.00
8-6	3.5	3.0	.50	.25
5-6	5.0	4.5	.50	.25
8-5	6.0	6.0	.00	.00
2-6	7.0	7.5	.50	.25
2-8	8.0	7.5	.50	.25
4-6	9.0	9.0	.00	.00
2-5	10.0	10.0	.00	.00
Total				2.00

^a.9878.

^bTop 10 cells listed refers to the order of coder's numerical frequency.

^cRank observation one and rank observation two refer to the origin of coding.

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

\underline{d}^2 refers to the \underline{d} column squared.

Appendix E

THE CATEGORIES OF CAFIAS¹

Categories 2-17 Teacher Behaviors

Categories 8-19 Student Behaviors

Category 10 Confusion

Category 20 Silence

Categories	Verbal	Relevant Behaviors	Nonverbal
2-12	Praises, jokes, commands, encourages	Face: Smiles, nods with smile (energetic) winks, laughs Posture: Claps hands, pats on shoulder, places hand on head of student, wrings student's hand, embraces joyfully, laughs to encourage, spots in gymnastics, helps child over obstacles	

2

12

Appendix E (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
			13
3-13	Accepts, clarifies, uses, and develops suggestion and feelings by the learner	Face: Nods without smiling, tilts head in empathetic reflection, sighs empathetically	
		Posture: Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches implement thrown by student, accepts facilities	
			14
4-14	Asks questions requiring student answer	Face: Wrinkles brow, opens mouth, turns head with quizzical look	
		Posture: Places hands in air, waves fingers to and fro anticipating answer, stares awaiting answer, scratches head, cups hand to ear, stands still half turned towards person	
		awaits answer	

Appendix E (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
			15
5-15	Gives facts, opinions, expresses ideas, or asks rhetorical questions	Face: Whispers words inaudibly, sings, or whistles Posture: Gesticulates, draws, writes, demonstrates activities, points	
			16
6-16	Gives directions or orders	Face: Points with head, beckons with head, yells at Posture: Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction	

Appendix E (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	7		17
7-17	Criticizes, expresses anger or distrust, sarcastic or extreme self-reference	Face: Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head	
		Posture: Hits, pushes away, pinches, grapples with, pushes hand at student, drops hand in disgust, bangs table, damages equipment, throws things down	
	8		18
8-18	Student response that is entirely predictable, such as obedience to orders, and responses not requiring thinking beyond the comprehension phase of knowledge (after Bloom)	Face: Poker face response, nod, shake, gives small grunts, quick smile	Posture: Moves mechanically to questions or directions, responds to any action with minimal nervous activity, robot like

Appendix E (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	Eineteen (18\)		
eine (8\)	Predictable student	Face: "What's more, Sir" look, eyes	
&	response requiring some	sparkling	
eineteen	measure of evaluation and	Posture: Adds movements to those given or	
(18\)	synthesis from the student,	or expected, tries to show some	
	but must remain within the	arrangement requiring additional	
	province of predictability.	thinking, e.g., works on gymnastic	
	The initial behavior was in	routine, dribbles basketball, all	
	response to teacher	game playing	
	initiation		

Appendix E (continued)

Categories	Verbal	Relevant Behaviors	Nonverbal
	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	
	10		20
10-20	Stands for confusion, chaos, disorder, noise, much noise	Face: Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.	

¹Cited from Cheffers, Amidon, and Rodgers (1974).

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