Ithaca College
Digital Commons @ IC

Ithaca College Theses

1979

A comparison of interaction patterns of high-anxiety and low-anxiety student teachers

Terrence E. Underwood
Ithaca College

Follow this and additional works at: http://digitalcommons.ithaca.edu/ic_theses

Part of the Health and Physical Education Commons

Recommended Citation

A COMPARISON OF INTERACTION PATTERNS OF

HIGH-ANXIETY AND LOW-ANXIETY

STUDENT TEACHERS

by

Terrence E. Underwood

An Abstract

of a thesis submitted in partial fulfillment

of the requirements for the degree of

Master of Science in the School

of Health, Physical Education

and Recreation at

Ithaca College

December 1979

Thesis Advisor: Dr. Victor H. Mancini

ABSTRACT

This investigation was undertaken to compare the behavioral

interaction patterns of student teachers that ranked either high or low

in anxiety and high or low in perception of threat. Twenty-two student

teachers were used as subjects for this investigation. All subjects were

videotaped during three complete classes. Subjects were assigned to high-

anxiety and low-anxiety groups by a median split of mean scores on the

modified state version of the State-Trait Anxiety Inventory (STAI).

Subjects were assigned to high-perception of threat and low-perception of

threat groups by a median split of mean scores on the subjective analysis

questionnaire (SAQ). The tapes were coded by an expert coder through the

use of Cheffers' Adaptation of Flanders' Interaction Analysis System

(CAFIAS). Behavioral sequences were transposed onto computer cards for

analysis. Computer data included ratios and percentages of the eight

CAFIAS variables. A mean score was used to represent each subject.

Multivariate analysis of variance determined that significant differences

existed between the high-anxiety and low-anxiety groups, and between the

high-perception of threat and the low-perception of threat groups. This

led to a rejection of the null hypotheses that (a) there will be no

significant differences between behavioral interaction teaching patterns

of high-anxiety and low-anxiety student teachers and (b) there will be no

significant differences between behavioral interaction teaching patterns

of student teachers that are high in perception of threat and low in

perception of threat. Univariate analyses of variance were used to

determine those variables that contributed significantly on their own.

Only one variable (pupil nonverbal initiation, student suggested) was

found to be significant for the anxiety groups. Only one variable (teacher questions, verbal) was found to be significant for the perception of threat groups. Discriminant function analysis was performed to reveal the percentage of contribution to between groups difference for each variable. It was found that anxiety and perception of threat affected teacher behavior in this study. Student teachers ranking high in anxiety and perception of threat exhibited more direct teaching behaviors, and student responses were more mechanical and controlled. Student teachers ranking low in anxiety and perception of threat exhibited more indirect teaching behavior and made greater allowance for student creativity.

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

Terrence E. Underwood

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:

Candidate:

Chairman, Graduate
  Programs in Physical
  Education:

Dean of Graduate
  Studies:

Date: _____Aug. 14, 1980_____

A COMPARISON OF INTERACTION PATTERNS OF

HIGH-ANXIETY AND LOW-ANXIETY

STUDENT TEACHERS

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

Terrence E. Underwood

December 1979

ACKNOWLEDGMENTS

DEDICATION

To my mother Marjorie Donaldson Underwood who first told me of the power of faith.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

It is easy to see the important position of the professional teacher
in today's society. As in any profession, teaching must keep pace with the
demands of an ever changing world community. The teaching profession must
constantly analyze, synthesize, redefine, and restructure its methods in
an attempt to gain the goals and objectives that must be obtained and
maintained.

A most important segment of the preparation to enter the teaching
profession is the apprentice-type experience of the pre-service teacher.
The content of a pre-service program is greatly responsible for the
development of a future teacher's actions, responses, and methods during
a teaching situation. Student teaching can be a shocking experience.
After years of playing a passive role as a student in the teaching-learning
process, the student teacher must abruptly take the part of the central
figure, one who generally dictates and dominates the teacher-student
interaction process.

An abrupt change of roles can very often cause a state of anxiety.
The concept of anxiety is a key factor in the study of personality and
human behavior (Fischer, 1970). It is an important fundamental human
emotion that is described by many behavioral scientists as a "basic
condition of human existence" (Spielberger, 1972, p. xi). In the past
3 decades the realization of anxiety as a powerful influence on human
behavior has produced a great deal of interest.

Anxiety can be characterized by feelings of uneasiness (Oxendine,

1

1968; Rogers, 1973) that seem to accompany a stressful situation. These sensations are the results of an activation or arousal response of the organism that can be displayed by increased heart rate, butterflies in the stomach, an increase in perspiration, increased muscle tension, tremor, irritability, dry mouth, and a desire to urinate frequently (Fisher, 1976; Lazarus, 1966; Levitt, 1967; Oxendine, 1968; Shaffer, 1947). These sensations are attributed to the level of neural activity (Butter, 1968; Duffy, 1957; Sage, 1971) an individual is experiencing. "Sometimes these sensations are so intense that they interfere with the upcoming performance. These physiological effects of human emotion can distort behavior, inhibit finely coordinated and complex sport skills, and hamper performance" (Fisher, 1976, p. 88).

These problems relate directly to the highly anxious teacher of physical education. Teaching physical education involves more than transferring a body of knowledge verbally. Physical and nonverbal interaction is an important aspect of the learning process. By being placed in a sudden role change, it is hypothesized that a student teacher will experience some form of anxiety. Moreover, the anxiety-prone individual could be negatively affected to a severe degree.

The question is thus raised: Should pre-service teaching programs in physical education consider some type of desensitization for the highly anxious student teacher?

Scope of Problem

This study was initiated to compare the teaching behaviors of 11 high-anxiety and 11 low-anxiety pre-service teachers. Subjects were student teachers from the School of Health, Physical Education, and Recreation at Ithaca College, Ithaca, New York. Each student teacher was

videotaped three times during the 1979 spring semester. Videotaped
teaching sessions were coded using Cheffers' Adaptation of Flanders'
Interaction Analysis System. Behaviors of the three teaching sessions
were represented by mean scores. The modified state form of the State-
Trait Anxiety Inventory (STAI) was administered to the subjects 10 minutes
before each videotaped teaching situation to categorize the subjects as
being either high anxiety or low anxiety. A subjective analysis
questionnaire was administered to the subjects 10 minutes before each
videotaped teaching situation. This questionnaire assessed 14 possible
threats to student teaching. Subjects were categorized as being either
high in perceived threat or low in perceived threat on the basis of a
median split.

Statement of Problem

This investigation was undertaken to compare the behavioral
interaction teaching patterns of high-anxiety and low-anxiety student
teachers and to compare the behavioral interaction teaching patterns of
student teachers that are high in perceived threat and low in perceived
threat.

Hypotheses

1. There will be no significant differences between behavioral
interaction teaching patterns of high-anxiety and low-anxiety student
teachers.

2. There will be no significant differences between behavioral
interaction teaching patterns of student teachers that are high in
perception of threat and low in perception of threat.

Assumptions of Study

The following assumptions were significant to the intention of this investigation:

1. The subjects selected were representative of the population of physical education student teachers at Ithaca College, Ithaca, New York.

2. The differences in sex, subject matter, skill level, and location would not affect the behavioral interaction patterns of the student teachers and their students.

3. The coding of three entire teaching sessions using CAFIAS would be adequate in the confirmation of a behavioral interaction pattern for each student teacher.

4. The modified state form of the STAI was an adequate measuring device for the selection of high-anxiety and low-anxiety student teachers.

5. The subjective analysis questionnaire was an adequate measuring device for the selection of high-perception of threat and low-perception of threat student teachers.

Definition of Terms

The following terms were significant to the intention of this investigation:

1. Student teacher is a student enrolled in a higher education program in the area of teaching and is obtaining practical experience in an authentic class situation.

2. Secondary school level consists of grades 7 through 12.

3. State anxiety is an emotional reaction "consisting of unpleasant, consciously-perceived feelings of tension and apprehension, with associated activation or arousal of the autonomic nervous system" (Spielberger, 1972, p. 29).

4. <u>The Modified Self-Evaluation Questionnaire for State Anxiety</u> (SEQ) is a self-report instrument that assesses the anxiety mood perceived during a particular situation. It is a modification of the self-evaluation questionnaire for state anxiety in the State-Trait Anxiety Inventory (STAI).

5. <u>High-anxiety student teachers</u> are student teachers that have been classified as being anxiety prone by the SEQ.

6. <u>Low-anxiety student teachers</u> are student teachers that have been classified as being less anxiety prone by the SEQ.

7. <u>The subjective analysis questionnaire</u> (SAQ) is a self-report instrument that assesses perception of threat by student teachers toward student teaching.

8. <u>High-perception of threat student teachers</u> are student teachers that have been classified as being high in threat perception by the SAQ.

9. <u>Low-perception of threat student teachers</u> are student teachers that have been classified as being low in threat perception by the SAQ.

10. <u>Direct teaching behavior</u> consists of teacher behavior that limits the freedom of student action in the class.

11. <u>Indirect teaching behavior</u> consists of teacher behavior that encourages the freedom of student action in the class.

12. <u>Flanders' Interaction Analysis System</u> (FIAS) is an objective instrument used to measure verbal interaction between students and teachers.

13. <u>Cheffers' Adaptation of Flanders' Interaction Analysis System</u> (CAFIAS) is an extension of FIAS that includes nonverbal interaction between students and teachers, differences in class structure, and variations in the teaching agent.

14. <u>Verbal behavior</u> is an audible action or reaction.

15. <u>Nonverbal behavior</u> is an action or reaction that is not audible.

<div align="center">Delimitations of Study</div>

The following were delimitations of this investigation:

1. The subjects of this study were 22 student teachers at Ithaca College, Ithaca, New York, teaching at the secondary level only.

2. Only three entire classes were videotaped for each subject to represent their teaching.

3. This study used one questionnaire (SEQ) to measure anxiety mood.

4. This study used one questionnaire (SAQ) to measure the perception of threat in a teaching situation by student teachers.

5. CAFIAS was the only interaction analysis system used in this investigation to illustrate behavioral interaction in the class situation.

<div align="center">Limitations of Study</div>

The following were limitations of this investigation:

1. The results pertain only to physical education student teachers teaching at the secondary level.

2. The results may only be valid when the SEQ is used to measure anxiety mood.

3. The results may only be valid when the SAQ is used to measure perception of threat.

4. The results may only be valid when CAFIAS is employed to detect behavioral interaction patterns for each student teacher.

Chapter 2

REVIEW OF RELATED LITERATURE

The review of related literature pertinent to this investigation

will consist of the following areas: (a) the concept of anxiety, (b)

arousal and performance, (c) anxiety assessment, (d) use of systematic

observation for teaching analysis, (e) past use of CAFIAS with pre-

service teachers, and (f) summary.

The Concept of Anxiety

A basic problem has existed in all of the anxiety related studies

and experiments that have been completed. This problem is the lack of a

generally accepted definition of anxiety. Many scholars and researchers

have tried to express its meaning in various forms. Unfortunately, there

has been little success in obtaining a statement that would satisfy

everyone. The meaning of anxiety lacks scientific precision and

inconsistencies exist in its usage (Hilgard, Atkinson, & Atkinson, 1971).

One of the major difficulties in obtaining a consensus definition has

been the controversy over the conceptual status of anxiety (Carron, 1971;

Martens, 1971; Spielberger, 1971). Some researchers claim that anxiety is

a relatively stable trait. Others assert that anxiety is transitory in

nature (Spielberger, 1966).

Another contributing problem to the disagreement of conceptualization

has been the confusion of anxiety with closely related terms. Stress,

tension, threat, and fear have all been used synonymously with anxiety

(Fischer, 1970; Martens, 1971). These problems have led to

a number of conceptual perspectives. As Fischer (1970) states:

7

"There are almost as many definitions of anxiety as there are papers about it" (p. 105).

A characteristic of anxiety that seems to be agreed upon is a feeling of uneasiness (Oxendine, 1968; Rogers, 1973). This feeling of uneasiness can be characterized by a number of physiological changes. Common to these changes are increased heart rate, the sensation of butterflies in the stomach, an increase in perspiration, increased muscle tension, tremor, changes in the cognitive process, irritability, dry mouth, a desire to urinate frequently, and a feeling of weakness or helplessness (Lazarus, 1966; Levitt, 1967; Shaffer, 1947).

Another area of mutual consent in conceptualization seems to be the relatively close association of anxiety and fear. Most proposed definitions of anxiety include the term fear in varying degrees of relationship. These relationships can be illustrated by (a) synonymous use of terms, (b) differentiating fear and anxiety, and (c) fear used as a construct of anxiety.

Levitt (1967) and Wolpe (1973) define anxiety and fear synonymously. Psychologists who hold this point of view suggest that the difference between fear and anxiety is only theoretical. They point out that the psychological reactions are the same. Levitt (1967) claims that experimentalists have used the terms interchangeably.

Many conceptualizations of anxiety offer differences between fear and anxiety (Goldstein, 1939; Horney, 1937; May, 1950; Sechrest & Wallace, 1967). Horney hypothesized that anxiety and fear are reactions to danger. She suggested that if the danger was subjective or hidden, the perception should be defined as anxiety. If the danger was objective in nature the perception should be termed fear. Goldstein (1939) viewed anxiety and

fear much the same way. He pointed out that fear involves a conscious confrontation while anxiety is not recognizable. May (1950) suggested that fear is a reaction to the specific, while anxiety is a reaction to the nonspecific. Sechrest and Wallace (1967) considered anxiety to be a form of fear. They stated that the difference lies in the source of fear in respect to the definition of anxiety. Fischer (1969) offers an interesting differentiation in that fear seeks to control the body at present, while anxiety seeks to control the anticipated future.

A third conceptualization of the relationship between anxiety and fear is the use of fear as a construct of anxiety. Izard (1972) maintains that anxiety is a varying combination of emotions. He defines anxiety as "a variable combination of fear and two more of the fundamental emotions of distress, anger, shame (including shyness and guilt), and interest-excitement" (Izard, 1972, p. 102). Therefore, anxiety can be viewed as a pattern of emotions that include fear (Spielberger, 1972).

A number of theories maintain that anxiety is a phenomenon that seeks an equilibrium state and plays a key role in the regulation of bodily homeostasis (Basowitz, 1955; Malmo, 1957). The "fight-or-flight" theory (Cannon, 1963) is a prime example. According to this theory, changes take place in glandular activity, muscle reaction, and metabolism. Cannon (1963) also states that muscular reactions seem to increase in efficiency. Jacobson (1970) employed anxiety with this connotation in relation to the ego and the id. He referred to the function of anxiety as being a signal to the ego to control the instinctive movements of the id. Jacobson (1970) claims that anxiety has an adaptive quality that seeks equilibrium. The "general adaptation syndrome" according to Selye (1956) states that the body deals with stressful situations through a series of stages. These

stages are conceived as alarm reaction, resistance, and exhaustion. Freeman (1948) wrote of a need for neuromuscular homeostasis. His theory suggests that when neuromuscular homeostasis is threatened, bodily energies are activated to maintain a normal condition.

Thus far it has been established that anxiety is a feeling of uneasiness that is related to fear. It has been theorized to be a bodily device that maintains homeostasis. Also mentioned were two conceptual problems: (a) the confusion of anxiety with closely related terms, and (b) the definition of the conceptual status of anxiety. These two problems must be analyzed and a conceptual position must be established if one attempts to understand anxiety.

The differentiation of fear and anxiety was discussed previously. Another term that seems to create confusion is stress (Fischer, 1970). As with anxiety, there seems to be a disagreement with the definition of stress (Pepitone, 1967). Selye (1956) defines stress as "the state manifested by a specific syndrome which consists of all nonspecifically induced changes within a biologic system" (p. 54). As pointed out by Martens (1971), stress and anxiety are synonymous and can be used interchangeably. Spielberger (1971) disagrees with Martens. He points out that the synonymous use of anxiety and stress contradicts the fundamental differences between the use of stress as the stimulus variable and state anxiety as the response variable. Spielberger (1971) views state anxiety as the response variable with stress being the stimulus and threat representing the intervening variable. In other words, Spielberger (1971) offers a temporal sequence of events. He equates stress with external danger, threat with perception of that danger, and state anxiety with the emotional reaction.

As mentioned previously, another conceptual roadblock lies in the theoretical status of anxiety. It seems to have taken on two categories. Trait anxiety has been defined as a consistent and permanent personality characteristic. Anxiety response occurs with proper stimulation of a latent disposition (Howell, 1953). Endler (1968) claims that trait anxiety is multidimensional. Individual differences in trait anxiety may be categorized into three domains: physical danger, interpersonal, and ambiguous (Endler, 1968). State anxiety has been characterized as a transitory state that is inconsistent over a period of time (Martens, 1971; Spielberger, 1971). State anxiety is accompanied by the activation of the autonomic nervous system which can be characterized as an increase in tension (Martens, 1971).

This conceptual status problem seems to have developed from the lack of distinguishing between these two categories. In an attempt to clarify the status of anxiety, Spielberger (1972) offers the following conceptual frame of reference:

1. In situations that are appraised by an individual as threatening, an A-State reaction will be evoked. Through sensory and cognitive feedback mechanisms high levels of A-State will be experienced as unpleasant.

2. The intensity of an A-State reaction will be proportional to the amount of threat that the situation poses for an individual.

3. The duration of an A-State reaction will depend upon the persistence of the individual's interpretation of the situation as threatening.

4. High A-Trait individuals will perceive situations or circumstances that involve failure or threats to self-esteem as

more threatening than will persons who are low in A-Trait.

    5. Evaluations in A-State have stimulus and drive properties that may be expressed directly in behavior, or that may serve to initiate psychological defenses that have been effective in reducing A-States in the past.

    6. Stressful situations that are encountered frequently may cause an individual to develop specific coping responses or psychological defense mechanisms which are designed to reduce or minimize A-State. (p. 44)

Arousal and Performance

Anxiety seems to manifest itself through a display of physiological and psychological reactions to an activation or stirring of emotion. It is the activation and degree of intensity in emotion that seems to constitute the concept of arousal. Duffy (1957) and Oxendine (1968) point out that different levels of arousal should be seen on a continuum from excited to death. Although an arousal level can be the product of many conditions as well as a combination of these conditions, Oxendine (1968) notes that the personality factor most often involved with arousal and performance is anxiety. In this sense, high levels of arousal would be exhibited by high levels of anxiety and vice versa. Duffy (1957) carries this concept one step further by pointing out that the proneness to develop anxiety readily can be viewed as a form of overarousal.

Fisher (1976) offers an activation mechanism that involves four neurophysiological components. One of these structures is the hypothalamus. Its function is to control the autonomic bodily processes. Stimulation of the posterior segment results in a speeding up of the autonomic functions. Another contributor to this physiological activation

mechanism is the limbic system. Although its responsibilities are still somewhat vague, the limbic system is known to be involved with regulating emotional responses. A third structure of this mechanism is the adrenal medulla. It is stimulated by the activity of the autonomic nervous system which is regulated by the hypothalamus. By secreting epinephrine into the blood stream the adrenal medulla maintains an aroused state over a period of time. Finally, the reticular formation or the reticular activating system (RAS) seems to regulate the degree of arousal an individual experiences (Lykken, 1968; Malmo, 1957).

The degree of activation or arousal can be brought about by physiological factors such as physical effort, hormones, and drugs (Duffy, 1957), but the factor that is most prominent in causing variation in the level of arousal is the perception of a situation (Duffy, 1941; Hebb, 1955; Oxendine, 1968). It is the degree of significance of the perceived situation that seems to directly affect the amount of neural activity in an individual. This statement seems to fit in nicely with Spielberger's (1971) conception of state anxiety.

The level of arousal has an effect on the functioning efficiency of the organism as a whole. Two theories have been offered in an attempt to describe the relationship between arousal and task performance.

The Hull-Spence drive theory can be illustrated in equation form: $R = f(E) + f(D \times H)$ (Martens, 1971); Spielberger, 1971). The function of drive and habit strength determine the excitatory potential, which determines the nature of the response. It is theorized that the dominant reaction to a situation will be given more often when drive or arousal increases. An increased arousal state will hamper performance that is not well known and will make the task much easier when it is familiar (Fisher,

1976; Martens, 1971; Spielberger, 1971).

The inverted-U theory, as offered by Freeman (1940), states that a moderate level of arousal is needed for maximum performance. Too low or too high a level of arousal would result in a sub par performance. Sage (1971) offers a physiological perspective:

> Moderate arousal has an organizing effect on behavior because it enhances neural transmission. Low arousal inhibits the transmission of impulses because sensory input is not fully processed at the cortex. High arousal so activates and disrupts the system that there is an inability to integrate and coordinate the sensory input with the motor output. (p. 117)

A high level of activation can effect behavioral selection. It has been claimed that a limiting of the behavioral repertoire takes place during a period of high arousal (Sage, 1971). The quantity of reactions or responses available for selection in these situations is more limited when compared to moderate arousal. The well-learned behaviors are often chosen, even if they are incorrect. The greater the activation, the less cognition plays a part in selection. "High arousal results in a restriction of perceptual selectivity. The individual is super-alert in this condition and is thus being bombarded with stimuli. Central stimuli are attended to, but those on the periphery are not" (Fisher, 1976, p. 118).

Anxiety Assessment

The assessment of anxiety suffers from the problem of conceptualizing the term. Throughout the literature, evaluation of anxiety has taken the form of objective observations in physical responses or subjective questionnaires in which the subject states how he or she feels or has felt.

Carron (1971) points out that the measurement of physiological

response to stress can be classified into two main categories: (a) adrenal secretions, and (b) reactions of the autonomic nervous system. The adrenal secretions that have been observed are adrenaline, noradrenaline, and hydrocortisone. Carron (1971) lists "heart rate, electric conductivity of the skin, blood volume, diastolic and systolic blood pressure, pupillary size, finger temperature, respiratory rate, and many others" (pp. 183-184) as measures of the autonomic nervous system. Unfortunately, the different physiological measures of anxiety do not seem to relate well to one another or to the subjective assessors of anxiety (Carron, 1971; Martens, 1971; Sarason, 1960). Furthermore, how does one know that the physiological responses are caused by anxiety and not by other emotional constructs like aggression, enthusiasm, fear, elation, and many others? How can an investigator determine that the response is caused by anxiety alone, and not by a combination of these emotional factors? Physiological reactions are good measures of arousal, but they lack specificity in assessing anxiety.

Subjective tests also have problems in measuring anxiety. Most of the problems stem from the subjective nature of the instrument and from personal biases that can affect the self-evaluation of the subject. The Taylor Manifest Anxiety Scale (MAS), the IPAT Anxiety Scale, and the State-Trait Anxiety Inventory (STAI) are examples of subjective anxiety tests.

The MAS (Taylor, 1953) is based on the Hull-Spence drive theory. It is made up of overt anxiety questions that were taken from the Minnesota Multiphasic Personality Inventory (MMPI). Carron (1971) and Martens (1971) argue that the MAS is not an effective measure for assessing anxiety and motor behavior. Martens points out that the MAS does not

correlate well with physiological measures and that practice of the motor

task will result in a change in motor response.

The IPAT and the IPAT-8 are used to measure trait anxiety. The

problem with these tests is that they lack the ability to measure changes

in anxiety (Martens, 1969). Anxiety being a trait would show little

change through different situations.

The STAI was developed to measure anxiety as both a stable trait and

situational state. Consisting of two forms, the test can evaluate how

an individual generally feels during a specified period of time. Both the

A-Trait scale and the A-State scale are well constructed and show

concurrent validity, internal consistency, and good test-retest reliability

(Carron, 1971; Martens, 1971; Spielberger, 1971). A number of

investigators (Carron, 1971; Martens, 1971; Newmark, 1972; Spielberger,

1971) view the STAI as the most reliable measure of anxiety and assert

that it should be used in future anxiety research.

Use of Systematic Observation for Teaching Analysis

There are various methods of observing and analyzing teaching

systematically and objectively. One of these methods is anecdotal record

keeping. A person using this method would record the behaviors as they

occur. Another method would be a checklist. Behaviors would be listed

before observation takes place. This would help the evaluator in looking

for specifics. A third method consists of a checklist and rating scale.

With this type of record an evaluator could look for specific behaviors

and rate them. Observational instruments for teaching analysis can

consist of these methods, separately or in varying combinations.

The uses of an observational instrument in a teaching environment are

many. It can show classroom practices, be a tool for analyzing teaching,

help to modify teaching behavior, illustrate one's own teaching practices, show differences in teaching patterns, and help show the relationship between behaviors and student growth (Batchelder, 1975).

Withall (1949) developed seven categories for measuring the social interaction of a classroom by differentiating teachers' statements from a number of classroom situations. "He saw those behaviors as lying on a continuum from learner-centeredness to teacher-centeredness" (Medley & Mitzel, 1963, p. 267).

Medley and Mitzel (1963) developed a system called "OScAR." This system was used in the first published research study in physical education using an observational instrument for data collection (Bookhout, 1967). Medley and Mitzel (1963) also wrote a review of observational systems. This paper was so powerful that it acted as a springboard for the development of thousands of observational instruments during the following decade (Cheffers, Amidon, & Rodgers, 1974).

Other leaders in the development of systems were Amidon & Hunter (1966), Bales (1950), Flanders (1970), and Ober, Bentley, & Miller (1971).

The most famous and widely used instrument is the Flanders' System of Interaction Analysis (FIAS). In this system verbal interaction between the teacher and the student is analyzed (Cheffers et al., 1974). This system consists of 10 categories. A trained observer can take these categories to a classroom and record the behavior just witnessed. Recording (coding) uses selected time intervals which are normally 3 seconds in length (Goldberger, 1974). The tallies are then paired and placed in a 10 x 10 matrix. Each cell within the matrix refers to a specific interaction (Cheffers et al., 1974). The matrix can be divided into areas showing the teacher to exhibit a strong tendency to lecture, use student

ideas, give criticism and direction, provide statements that encourage
student talk, respond indirectly to student talk, and respond directly to
student talk (Amidon & Hough, 1967; Cheffers et al., 1974; Goldberger,
1974).

There have been a number of modifications to FIAS. Some of the more
prominent adaptations were developed by Boschee (1972), Cheffers (1972),
Dougherty (1970), Ebbs (1975), Gasson (1971), Kiemele (1972), Furth (1969),
Love & Roderick (1971), Melograno (1971), and Nygaard (1975).

As for physical education, the development and use of observational
systems in research has been limited (Locke, 1977). Leaders are Anderson
(1971), Cheffers (1972), Mancini, Cheffers, & Zaichkowsky (1976), Nygaard
(1975), and Siedentop (1972). One of the reasons that physical education
has had so few users of observational instruments in analyzing student/
teacher interaction is that FIAS is limited for physical education
instruction. It is limited by three characteristics that are vital.
These characteristics are different class structures, shifts in the
teaching agency, and the lack of nonverbal behavior categories.

In 1972 Cheffers introduced an observer system of interaction
analysis that was shown to be reliable and valid for measuring and
observing behaviors in the physical education classroom. Cheffers'
Adaptation of Flanders' Interaction Analysis System (CAFIAS) is a most
important expansion of FIAS. Although the basic constructs are the same
for both systems, CAFIAS offers a much broader perspective from which to
analyze student/teacher interactions. One area of expansion can be
characterized by the following phrase: "If learning occurs, then teaching
is taking place" (Cheffers et al., 1974, p. 12). Therefore, one could
redefine and classify the teacher as (a) the classroom instructor, (b)

students in the class, or (c) the environment. Another change takes

nonverbal interaction into account and makes a distinction between

confusion and silence. A third expansion is the formation of a new

category for student behavior that shows a predictable response while

allowing for student creativity. The fourth expansion shows differences

in the definition of criticism. In a sense, it distinguishes between

encouraging criticism and negative reinforcement. Finally, class structure

is analyzed and compared to the whole when it is segmented. Development

of a computer program (Cheffers et al., 1974) has made CAFIAS a practical

method of analyzing data from the interaction of class participation in

physical education.

Past Use of CAFIAS with Pre-Service Teachers

A major problem in the area of pre-service teaching is the over-

abundance of subjectivity in the training and evaluating of future teachers

(Cheffers, 1977). With the use of CAFIAS and videotape, the pre-teachers

can critique their own teaching experiences and correct their own

mistakes. Six studies using CAFIAS have been involved with student

teachers.

The first of these studies was completed at Boston University (Keilty,

1975). This study investigated the effects of CAFIAS on pre-service

physical education students and their attitudes toward different styles of

teaching. It also dealt with the development of a new instrument for

measuring teaching effectiveness: The Teacher Performance Criteria

Questionnaire (TPCQ). Twenty-one student teachers and 653 pupils in the

New Brunswick public schools took part. The 11 student teachers

in the treatment group received 15 hours of instruction in CAFIAS. The

control group was given conventional feedback. Both groups taught for a

period of 3 weeks. While the independent variable was CAFIAS, the dependent
variables were the Teaching Situation Reaction Test (TSRT) which measured
the student teachers' attitudes toward teaching, the Pupil Opinion
Questionnaire (POQ) which measured the pupil's perception of the student
teachers, and the TPCQ. The investigator concluded that 3 weeks was not
a long enough period of time to effectively measure attitudes and teaching
effectiveness. However, the POQ showed that the pupils could definitely
see a difference in favor of the treatment group.

Most of the research on pre-service teachers with the use of CAFIAS
has been completed at Ithaca College, Ithaca, New York. A study by
Hendrickson (1975) combined the use of CAFIAS as the independent variable
and testing instrument. The major thrust of the study dealt with the
effect of CAFIAS on pre-service physical education majors and their
teaching behaviors. The subjects consisted of 40 undergraduate physical
education majors enrolled in the 1975 secondary curriculum and methods
class at Ithaca College. The treatment group received instruction in
CAFIAS as well as conventional feedback. The control group received
conventional feedback only. Three 10-minute peer teaching situations were
recorded for each individual. Data were analyzed by a two-way analysis of
variance by ranks. This revealed the differences in teaching behavior.
Chi-square analysis was then used to identify and specify each significant
difference. Results showed a significant difference between the two
groups. The treatment group showed more student contribution, more
questioning, more praise and acceptance, and a greater amount of student
initiation.

Another investigation (Rochester, 1976) studied the effects of coding
CAFIAS on pre-service physical education majors' teaching behaviors and

teaching effectiveness. Teacher effectiveness was measured by the TPCQ
(Keilty, 1975). Once again, an undergraduate curriculum and methods class
at Ithaca College was utilized. The treatment group received basic
instruction in CAFIAS and conventional feedback. All subjects taught in
two micro-peer teaching situations. Five 1976 Ithaca College graduate
students served as judges using the TPCQ. Data were analyzed by multi-
variate analysis of variance, analysis of variance, and canonical
correlation. The findings revealed a correlation between teacher
effectiveness and teacher behavior. The practical application of coding
was found to be beneficial.

Forty physical education student teachers were used by Vogel (1976)
in a study at Ithaca College. Two lessons for each subject were videotaped
in area schools. Only the second taping was coded to reduce the Hawthorne
effect. The treatment group received instruction in CAFIAS. The control
group did not. Multivariate analysis of variance determined the
differences in teaching behavior. Such behavioral characteristics as
verbal contribution, praise and acceptance, and nonverbal questioning were
found in the treatment group.

A study completed by Getty (1977) was closely related to that of
Vogel (1976). Getty examined the effects of CAFIAS with the practical
application of coding on student teachers' teaching behaviors along with
the lasting effects of those behaviors. The treatment group received
instruction in CAFIAS and coding procedures. The control group received
conventional supervisory feedback. Each student was videotaped three times.
The second and third tapes were used for data collection. The initial
taping attempted to control the Hawthorne effect. The third taping session
occurred 1 month after the second taping session. Multivariate analysis

of variance and univariate analysis of variance were used to determine statistical differences. Findings showed that the treatment group revealed more pupil activated behavior, greater use of questioning, more student talk, and that the effects of CAFIAS on teaching behavior can be maintained over a period of time.

The effects of feedback and interpretation of interaction analysis on the teaching behaviors and attitudes of 28 physical education student teachers at Ithaca College were studied by Mancini, Inturrisi, and Frye (1979). The Teaching Situation Reaction Test (TSRT) was used to assess teaching attitudes. Teacher behavior was determined through the use of CAFIAS. Videotapes of three classes for each subject were used. Both treatment and control groups received conventional supervisory feedback. The treatment group had the CAFIAS data interpreted for them. Data for final analysis were taken from the third videotape. Results showed significant differences in 6 of the 8 CAFIAS variables and more positive attitudes on the TSRT.

Summary

Anxiety is an important fundamental contributor to a person's emotional makeup. Although the feelings are easy to recognize, a problem exists in conceptualizing the term (Carron, 1971; Martens, 1971; Spielberger, 1971). This problem stems from the close association and synonymous use of terms such as fear, stress, and threat, as well as a disagreement as to the conceptual status of anxiety as a stable trait or transient state (Fischer, 1970; Hilgard, Atkinson, & Atkinson, 1971; Martens, 1971; Spielberger, 1971). Anxiety is theorized to be an emotional phenomenon that helps the body seek out and maintain an equilibrium state or homeostasis (Basowitz, 1955; Malmo, 1957). Anxiety seems to manifest

itself through psychological as well as physiological arousal. Four neurophysiological structures are known to be involved with arousal. They are the hypothalamus, the adrenal medulla, the limbic system, and the reticular activating system (Fisher 1976; Lykken, 1968; Malmo, 1957). The relationship between arousal and bodily performance has been illustrated by two theories: the drive theory (Fisher, 1976; Martens, 1971; Spielberger, 1971) and the inverted-U (Freeman, 1940). A high level of arousal limits behavioral selection (Fisher, 1976; Sage, 1971). Anxiety can be assessed through physiological measurement and subjective questionnaires. Both methods have limitations which stem from the conceptual problem of anxiety (Carron, 1971; Martens, 1971: Sarason, 1960).

There have been a number of observational systems developed over the past 3 decades (Cheffers et al., 1974); however, the development and use of observational systems in physical education has been limited. CAFIAS is a valid and reliable instrument for measuring and observing behaviors in the physical education classroom (Cheffers et al., 1974). This system can provide objective data to the evaluator as well as the teacher in the form of revealing interaction ratios. Five studies have utilized CAFIAS with pre-service physical education teachers (Getty, 1977; Hendrickson, 1975; Mancini et al., 1979; Rochester, 1976; Vogel, 1976).

Chapter 3

METHODS AND PROCEDURES

This chapter reveals the methods and procedures used in the pursuit

of this study. It includes the selection of subjects, testing

instruments, coder reliability, methods of data collection, scoring of

data, treatment of data, and summary.

Selection of Subjects

The subjects of this study were 22 student teachers selected randomly

from the School of Health, Physical Education, and Recreation at Ithaca

College, Ithaca, New York. The subjects consented to take part in the

study after being completely informed of the purpose of the study and

their rights as subjects. All subjects were student teaching during the

spring semester and were videotaped three times.

Testing Instruments

Cheffers' Adaptation of Flanders' Interaction Analysis System was

used in this investigation to collect data, systematically on interaction

behavior variables, every 3 seconds or whenever the behavior changed.

CAFIAS measured the teacher/student interaction patterns and behaviors

and objectively recorded verbal and nonverbal behavior, shifts in the

teaching agencies, and the structure of the class. CAFIAS has been shown

to be a valid and reliable instrument for the collection of teacher/

student interaction behavioral data (Cheffers, 1972).

The modified state form (SEQ) of the State-Trait Anxiety Inventory

was used in this study to (a) separate and categorize the student teachers

into high-anxiety and low-anxiety groups, and (b) to assess the perceived

level of anxiety during a student teaching experience.

The subjective analysis questionnaire (SAQ) was constructed for and used in this study to assess 14 possible threats to student teaching and to separate and categorize the student teachers into high-perception of threat and low-perception of threat groups. The investigator and Dr. Victor H. Mancini devised the test to diagnose specific threats to student teaching as perceived by student teachers. A review of literature revealed no test appropriate for assessing the perception of specific threats to student teaching. Items for the test were suggested by students enrolled in the Curriculum and Methods class at Ithaca College, Ithaca, New York, students enrolled in the Curriculum Design and Analysis graduate class at Ithaca College, and selected faculty members at Ithaca College. When construction of the test was complete, it was presented to the Curriculum Design and Analysis graduate class at Ithaca College. The test was evaluated for administration, instructions, and clarity. Final modifications were made based upon the recommendations of the graduate students. Fourteen items were agreed upon to be incorporated into the test. The 14-item subjective analysis questionnaire (SAQ) is presented in Appendix C.

Coder Reliability

Coder reliability for this investigation was assessed through the use of Spearman rank-order correlation on one randomly selected subject from both the (a) high-anxiety and low-anxiety groups, and the (b) high-perception of threat and low-perception of threat groups. The data were taken from two videotapes of each subject. Two different codings were made for each tape. The results are outlined in Appendix B. To insure competency in the use of CAFIAS the tapes were coded by an expert coder.

Methods of Data Collection

Data for analysis of teacher interaction behaviors were collected
during the 1979 spring semester. Cooperating teachers and student
teachers were notified before each videotaping. The student teachers and
their classes were videotaped during entire teaching segments on 3
separate days. A microphone was employed to capture verbal behavior. The
videotapes were taken by this investigator who is experienced in the use
of the equipment.

Data on anxiety were collected throughout the semester. The modified
state form (SEQ) of the STAI was administered to the student teachers
10 minutes before each videotaping segment.

The subjective analysis questionnaire (SAQ) was administered
immediately following the completion of the SEQ. Completion of the SAQ
took place prior to the start of each class.

The tapes were coded by an expert coder using CAFIAS, and behaviors
were recorded on a tally sheet.

Scoring of Data

The responses to all anxiety questions were recorded by STAI format.
The responses to all perception of threat questions were recorded by
scores ranging from 1 (I can't see how it could be threatening) to 5 (It
is quite threatening a great deal of the time). All scores were totalled
and a mean score was calculated. The SAQ is presented in Appendix C.
Data collected from the coding of teaching segments using CAFIAS were
transposed to computer cards to be analyzed. The computer printout
included CAFIAS ratios and matrices for the eight behavioral variables.
A mean score for each variable from the three teaching sessions that were
taped for each subject was used to represent an individual student teacher.

Treatment of Data

The median score for the total means on the SEQ was used to
distinguish the 11 high-anxiety student teachers from the 11 low-anxiety
student teachers. Multivariate analysis of variance was used to
determine significant differences between the means of the two groups'
behavioral variables that were illustrated through CAFIAS. Univariate
analysis of variance was used to distinguish which behaviors contributed
independently to differences between high-anxiety and low-anxiety groups.
Discriminant function determined the percentage of contribution to
between-groups difference for each of the eight CAFIAS variables. The
median score for the total means on the SAQ was used to distinguish the
11 high-perception of threat student teachers from the 11 low-perception
of threat student teachers.

Summary

The subjects used in this investigation were 22 student teachers from
Ithaca College, Ithaca, New York, who were observed during the spring
semester of 1979. Teaching sessions were videotaped for the entire class.
Each subject was taped three times during the semester. The subjects
were categorized into a high-anxiety group and a low-anxiety group by
data obtained from the SEQ. The subjects were also categorized into a
high-perception of threat group and a low-perception of threat group by
data obtained from the SAQ. Teaching sessions were coded with CAFIAS
behavioral categories. The data were transposed for computer analysis.
Interaction patterns of each student teacher were illustrated by mean
ratios and percentages of CAFIAS variables.

Differences between groups were determined by the use of multivariate
analysis of variance. Significant independent CAFIAS behavioral variables

were discovered through the use of univariate analysis of variance.

Between group differences were computed by discriminant function analysis.

The .05 level of significance was used to test the hypotheses.

Chapter 4

ANALYSIS OF DATA

The results of the statistical analysis of the data from this study
on the teaching behaviors of student teachers categorized as high-anxiety
or low-anxiety and high-perception of threat or low-perception of threat
are presented in this chapter. The following are offered: coder
reliability, the analysis of teacher behavior, and a summary.

Coder Reliability

The coder established coder reliability by randomly selecting one
subject from both the (a) high-anxiety and low-anxiety groups, and the
(b) high-perception of threat and low-perception of threat groups. Two
videotapes of each subject were viewed and coded. The top 10 cell
concentrations for each coding session were compared through the use of
a Spearman rank-order correlation. Adequate reliability was indicated by
obtaining a correlation of .9725. Table 1 illustrates the data from the
compared observations.

Analysis of Teaching Behavior Data for
the Anxiety Groups

Multivariate analysis of variance (MANOVA) revealed a significant
difference between the high-anxiety and low-anxiety student teachers,
$\theta = .749(1, 3, 5.5)$, $p < .01$. These findings led to a rejection of the
null hypothesis that there would be no statistically significant difference
between behavioral interaction teaching patterns of high-anxiety and low-
anxiety student teachers.

Univariate analysis of variance was used to determine those

Table 1

Coder Reliability[*]

	Subject	r_s	M
111	Low-Anxiety	.98	
222	High-Anxiety	.98	
			.9725
114	Low-Perception of Threat	.94	
223	High-Perception of Threat	.99	

[*]Coder reliability determined by a Spearman r_s comparison of the coding of teaching behaviors for the first and second observations.

statistically significant variables that contributed to the overall group difference. The univariate analyses of variance results, cell means, and standard deviations are presented in Table 2. One variable (pupil nonverbal initiation, student suggested) was found to be statistically significant, F = 7.21 (1,10), p < .01.

Percentages of the between groups difference for each of the eight CAFIAS variables were determined by discriminant function analysis. As shown in Table 3, 88.08% of the between groups variance can be accounted for by four of the variables: pupil verbal initiation, teacher suggested (32.09%); teacher questions, verbal (31%); teacher acceptance and praise, nonverbal (14.19%); and teacher acceptance and praise, verbal (10.08%).

The mean percentage of behaviors in each CAFIAS category for both anxiety groups are presented in Figure 1. Substantial differences exist in information giving (in favor of the high-anxiety group) and in the students' broad interpretation of teachers' activities as well as student-to-student verbal interaction (in favor of the low-anxiety group).

The most frequent interaction patterns and the percentage of occurrence among the top 10 cells for student teachers of high-anxiety and low-anxiety are presented in Table 4. The top 10 interaction patterns for the high-anxiety group are information giving to information giving, direction to predictable response, information giving to direction, predictable response to information giving, predictable response to direction, student-to-student verbal interaction to an extended students' interpretive performance, information giving to an extended students' interpretive performance, predictable response to predictable response, an extended students' interpretive performance to student-to-student verbal interaction, and information giving to predictable response. The

Table 2

Univariate Analyses of Variance Contrasting High-Anxiety and Low-Anxiety

Student Teaching Behaviors Using CAFIAS Variables

CAFIAS Variables	High-Anxiety Group		Low-Anxiety Group		
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{F}$
1. Teacher Questions, Verbal	11.56	4.89	12.16	7.67	.0468
2. Teacher Questions, Nonverbal	11.43	9.22	12.87	12.17	.0806
3. Teacher Acceptance and Praise, Verbal	33.93	18.48	35.78	24.17	.0819
4. Teacher Acceptance and Praise, Nonverbal	33.47	21.37	40.53	21.71	.0859
5. Pupil Verbal Initiation, Teacher Suggested	63.93	18.98	84.36	18.90	2.0220
6. Pupil Nonverbal Initiation, Teacher Suggested	39.08	24.59	76.69	25.49	3.5540
7. Pupil Verbal Initiation, Student Suggested	23.38	12.69	55.56	7.81	2.8582
8. Pupil Nonverbal Initiation, Student Suggested	11.23	20.78	26.67	6.41	7.2105[*]

*$\underline{p}$ < .01.

32

Table 3

Discriminant Function Analysis and Percentage of Contribution

of the Top Four CAFIAS Variables for Anxiety Differences

CAFIAS Variables	Standardized Discriminant Weighting	Percentage of Contribution
5. Pupil Verbal Initiation, Teacher Suggested	.56650	32.09
1. Teacher Questions, Verbal	.55669	31.00
4. Teacher Acceptance and Praise, Nonverbal	-.38612	14.91
3. Teacher Acceptance and Praise, Verbal	.31749	10.08
	Total	88.08
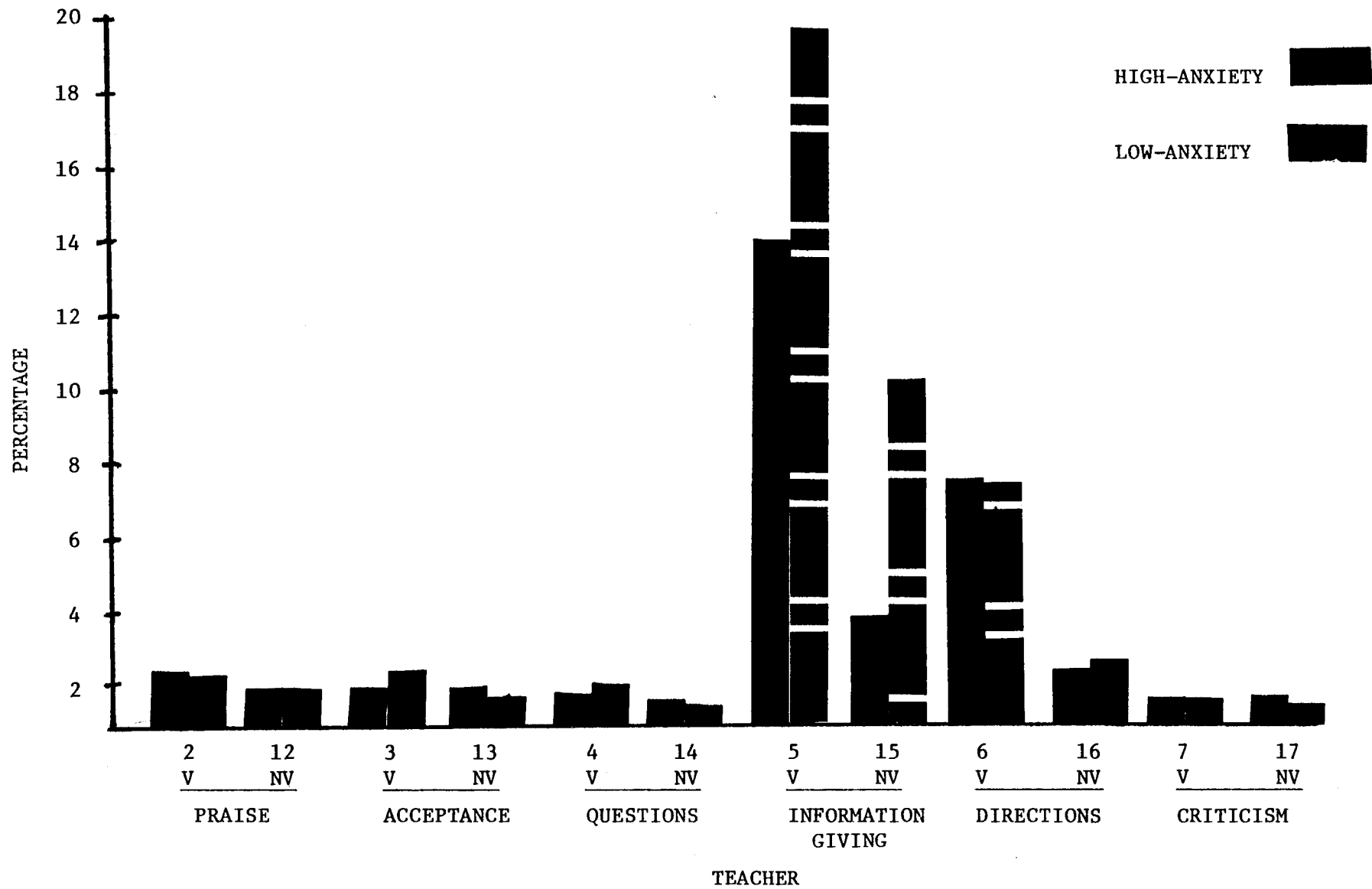
Figure 1. Mean percent of behaviors in each CAFIAS category for anxiety groups.
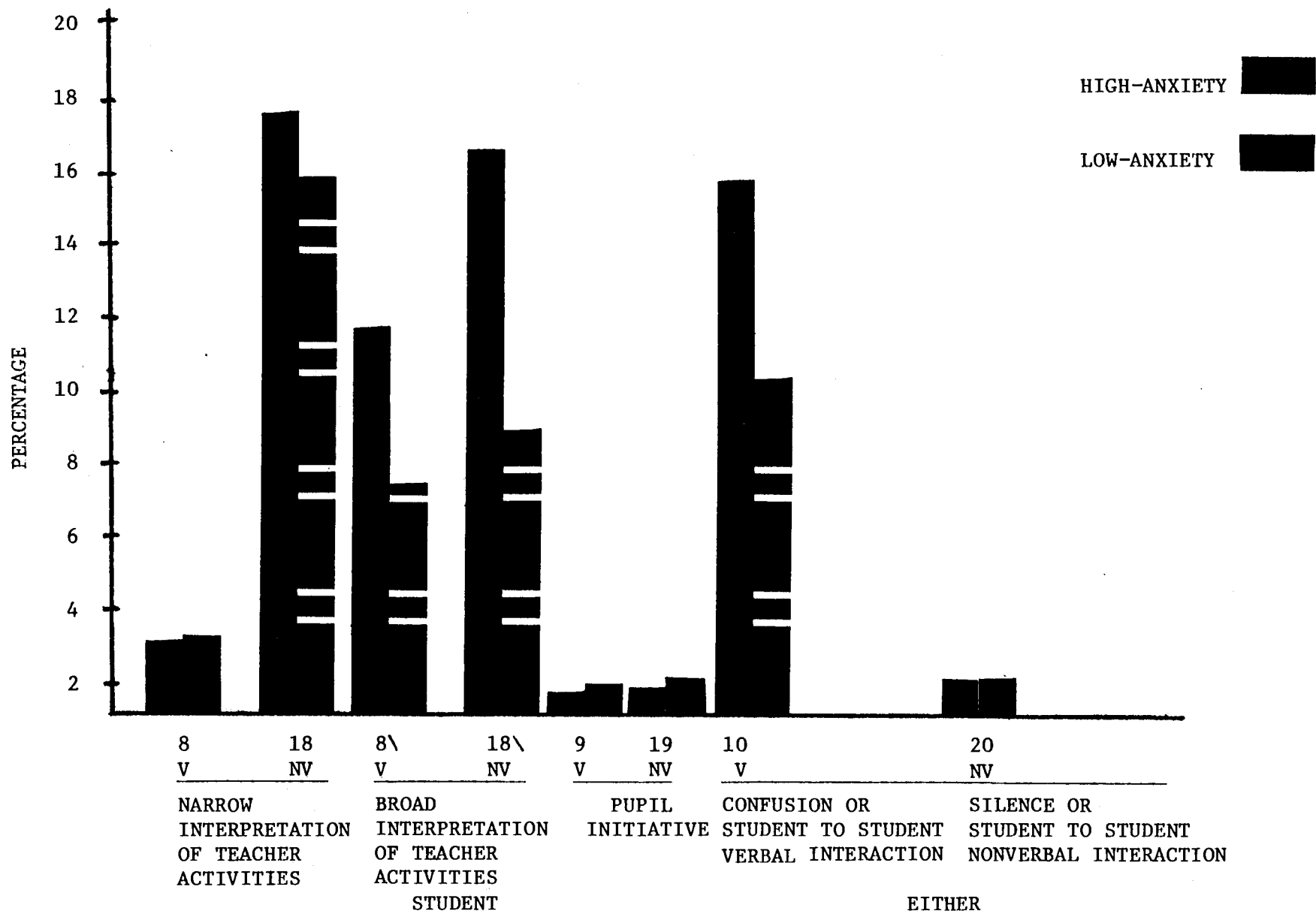
Figure 1 (continued). Mean percent of behaviors in each CAFIAS category for anxiety groups.

Table 4

Summary of Most Frequent Interaction Patterns and Percentage of

Occurrence among the Top 10 Cells for Student Teachers of

High-anxiety and Low-anxiety

High-anxiety			Low-anxiety		
Interaction Patterns	Number of Times	Percentage of Occurrence	Interaction Patterns	Number of Times	Percentage of Occurrence
5-5	26	24.09	5-5	25	11.79
6-8	26	9.37	6-8	25	8.7
5-6	22	4.32	8\-5	25	4.8
8-5	22	5.00	8\-10	23	21.21
8-6	17	7.17	10-8\	23	16.42
10-8\	16	23.35	8-5	22	4.99
5-8\	15	3.98	5-8\	21	5.48
8-8	15	8.32	5-6	16	7.58
8\-10	15	18.96	8-6	14	4.71
5-8	14	3.50	5-8	12	5.79

5-5   extended information giving

6-8   teachers' directions followed by students' predictable response

5-6   teachers' information giving followed by teachers' directions

8-5   students' predictable response followed by teachers' information

       giving

8-6   students' predictable response followed by teachers' directions

10-8\ extended students'interpretive performance

5-8\   teachers' information giving followed by students' interpretive

       performance

Table 4 (continued)

8-8   extended students' predictable response

8\-10   extended students' interpretive performance

5-8   teachers' information giving followed by students' predictable

        response

8\-5   students' intrepretive response followed by teachers' information

        giving.

top 10 interaction patterns for the low-anxiety group are information

giving to information giving, direction to predictable response, an

extended students' interpretive performance to information giving, an

extended students' interpretive performance to student to student verbal

interaction, student to student verbal interaction to an extended

students' interpretive performance, predictable response to information

giving, information giving to an extended students' interpretive

performance, information giving to direction, predictable response to

direction, and information giving to a predictable response.

Analysis of Teaching Behavior Data for

Perception of Threat Groups

A MANOVA was performed on eight CAFIAS variables of high-perception

of threat and low-perception of threat student teachers and revealed a

significant difference, Θ = .830(1, 3, 5.5), p < .01. These findings led

to a rejection of the null hypothesis that there would be no statistically

significant difference between behavioral interaction teaching patterns

of high-perception of threat and low-perception of threat student teachers.

Univariate analysis of variance was used to determine those

statistically significant variables that contributed to the overall group

difference. The univariate analyses of variance results, cell means, and

standard deviations are presented in Table 5. One variable (teacher

questions, verbal) was found to be statistically significant, F = 12.90

(1, 10), p < .01.

Percentages of the between groups difference for each of the eight

CAFIAS variables were determined by discriminant function analysis.

As shown in Table 6, 95.63% of the between groups variance can be

accounted for by four of the variables: teacher questions, verbal

Table 5

Univariate Analyses of Variance Contrasting High-perception of Threat and Low-perception

of Threat Student Teaching Behaviors Using CAFIAS Variables

CAFIAS Variables	High-perception of Threat Group		Low-perception of Threat Group		
	$\underline{M}$	$\underline{SD}$	$\underline{M}$	$\underline{SD}$	$\underline{F}$
1. Teacher Questions, Verbal	10.70	6.08	12.24	6.61	12.8976[*]
2. Teacher Questions, Nonverbal	11.14	9.69	13.15	11.26	.2685
3. Teacher Acceptance and Praise, Verbal	27.81	17.53	41.90	23.04	2.8732
4. Teacher Acceptance and Praise, Nonverbal	35.61	18.63	43.39	22.96	.7219
5. Pupil Verbal Initiation, Teacher Suggested	63.86	19.05	70.91	17.77	.9471
6. Pupil Nonverbal Initiation, Teacher Suggested	37.48	27.37	57.17	21.02	3.8565
7. Pupil Verbal Initiation, Student Suggested	22.09	14.46	15.90	5.97	1.4112
8. Pupil Nonverbal Initiation, Student Suggested	25.48	21.35	12.46	7.21	2.9359

[*]$\underline{p} < .01$.

Table 6

Discriminant Function Analysis and Percentage of Contribution

of the Top Four CAFIAS Variables for Perception

of Threat Differences

CAFIAS Variables	Standardized Discriminant Weighting	Percentage of Contribution
1. Teacher Questions, Verbal	-.87208	76.05
4. Teacher Acceptance and Praise, Nonverbal	.29673	8.80
5. Pupil Verbal Initiation, Teacher Suggested	-.25097	6.30
3. Teacher Acceptance and Praise, Verbal	-.21157	4.48
	Total	95.63

(76.05%); teacher acceptance and praise, nonverbal (8.80%); pupil verbal initiation, teacher suggested (6.30%); and teacher acceptance and praise, verbal (4.48%).

The mean percentage of behaviors in each CAFIAS category for both perception of threat groups are presented in Figure 2. Substantial differences exist in information giving and nonverbal predictable response (in favor of the high-perception of threat group) and in the use of verbal praise and broad interpretation of teacher activities (in favor of the low-perception of threat group).

The most frequent interaction patterns and the percentage of occurrence among the top 10 cells for the perception of threat groups are presented in Table 7. The top 10 interaction patterns for the high-perception of threat group are information giving to information giving, direction to predictable response, information giving to direction, predictable response to information giving, information giving to an extended students' interpretive performance, an extended students' interpretive performance to student to student verbal interaction, student to student verbal interaction to an extended students' interpretive performance, a predictable response to direction, predictable response to predictable response, and an extended students' interpretive performance to information giving. The top interaction patterns for the low-perception of threat group are direction to predictable response, predictable response to information giving, information giving to information giving, an extended students' interpretive performance to information giving, an extended students' interpretive performance to student to student verbal interaction, student to student verbal interaction to an extended students' interpretive performance,
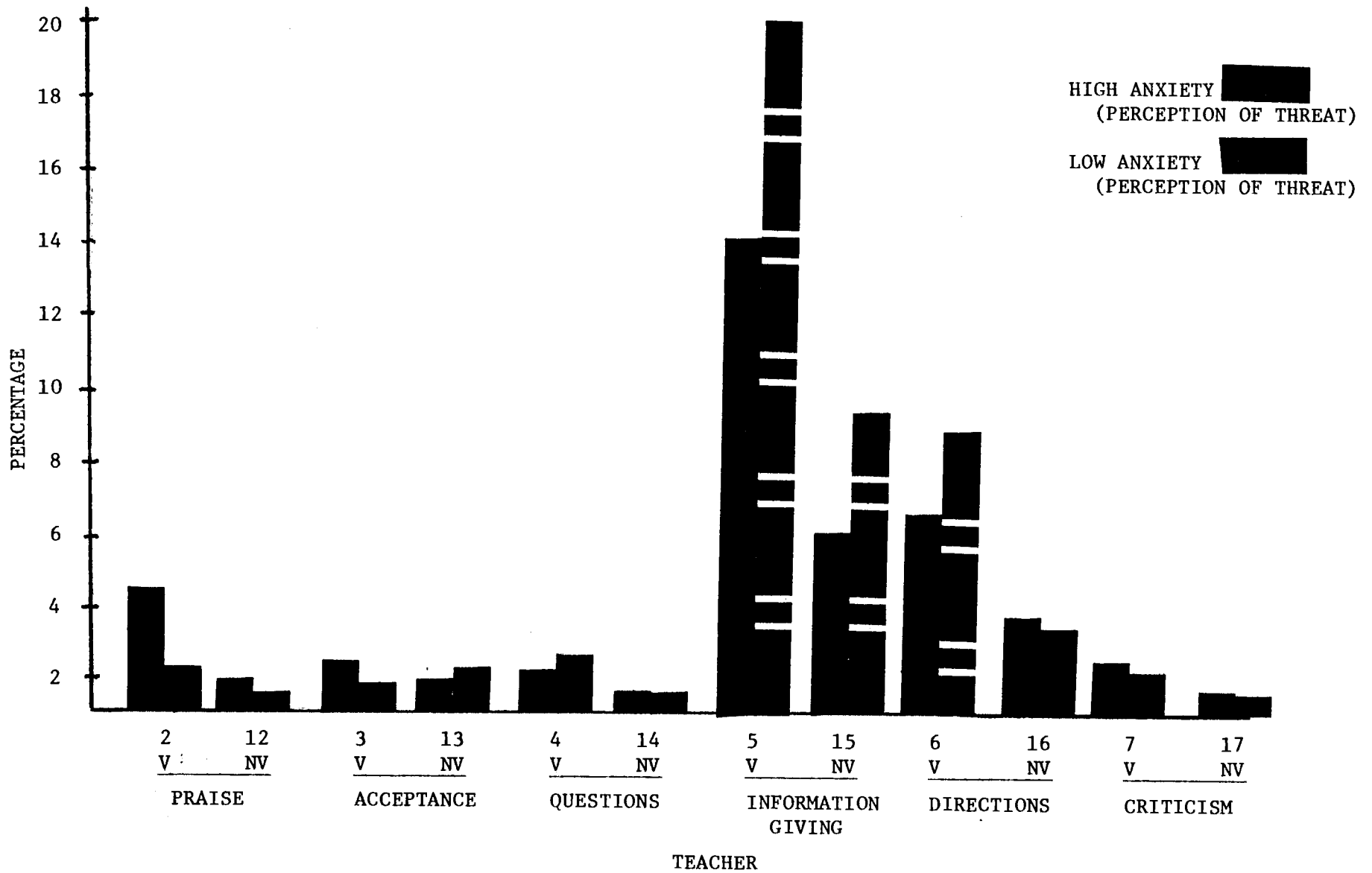
Figure 2. Mean percent of behaviors in each CAFIAS category for anxiety groups (perception of threat)
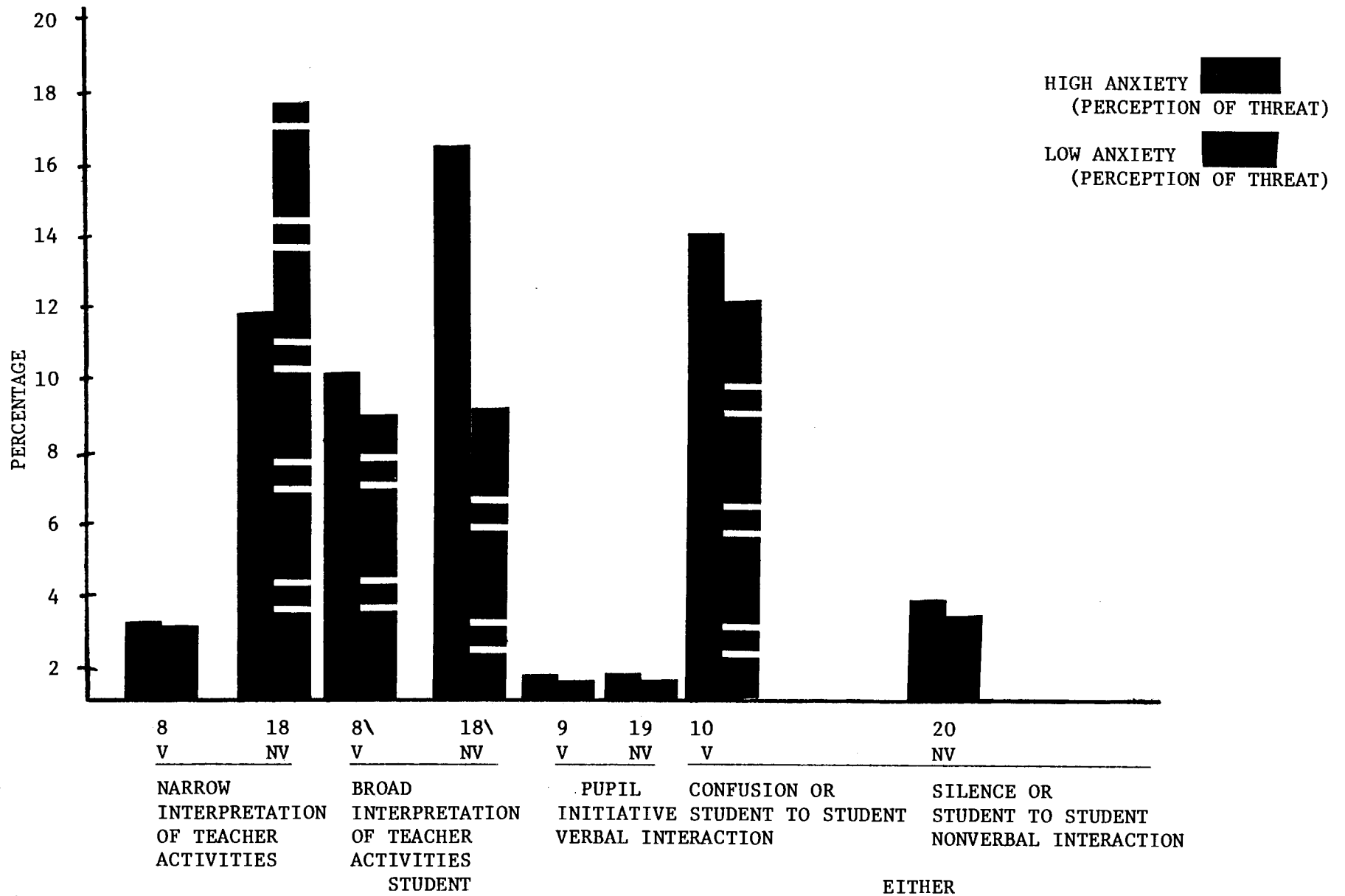
Figure 2 (continued). Mean percent of behaviors in each CAFIAS category for anxiety groups (perception of threat)

Table 7

Summary of Most Frequent Interaction Patterns and Percentage of

Occurrence among the Top 10 Cells for Student Teachers of

High-Perception of Threat and Low-

Perception of Threat

High-perception of Threat			Low-perception of Threat		
Interaction Patterns	Number of Times	Percentage of Occurrence	Interaction Patterns	Number of Times	Percentage of Occurrence
5-5	23	21.20	6-8	30	8.68
6-8	22	9.53	8-5	29	4.06
5-6	18	5.27	5-5	27	15.75
8-5	17	6.53	8\-5	24	3.87
5-8\	15	4.30	8\-10	24	16.67
8\-10	15	21.95	10-8\	23	16.62
10-8\	15	22.52	5-8\	22	5.17
8-6	14	7.13	5-6	17	3.97
8-8	14	8.73	8-6	17	8.18
8\-5	14	4.47	8-8	12	11.89

5-5   extended information giving

6-8   teachers' directions followed by students' predictable response

5-6   teachers' information giving followed by teachers' directions

8-5   students' predictable response followed by teacher's information
        giving

5-8\   teachers' information giving followed by students' extended
        interpretive performance

Table 7 (continued)

8\-10   extended students' interpretive performance

10-8\   extended students' interpretive performance

 8-6   students' predictable response followed by teachers' directions

 8-3   extended students' predictable response

8\-5   students' extended interpretive performance followed by teachers'
        information giving.

information giving to an extended students' interpretive performance, information giving to direction, predictable response to direction, and predictable response to predictable response.

Summary

Coder reliability was established by comparing the results of two different codings of one subject from each group. A Spearman rank-order correlation score of .9725 was adequate in the determination of coder reliability.

Multivariate analysis of variance was employed to determine if significant differences existed between the high-anxiety and low-anxiety groups. The between group difference of the eight CAFIAS variables was significant and led to a rejection of the null hypothesis that there would be no statistically significant difference between behavioral interaction teaching patterns of high-anxiety and low-anxiety student teachers.

Univariate analysis of variance was used to determine those statistically significant variables that contributed to group difference. One variable (pupil nonverbal initiation, student suggested) was found to be statistically significant.

Discriminant function analysis determined the percentage of contribution of each variable to the between group difference. Most of the between groups variance was accounted for by four variables: pupil verbal initiation, teacher suggested; teacher questions, verbal; teacher acceptance and praise, nonverbal; and teacher acceptance and praise, verbal.

The mean percentage of behaviors in each CAFIAS category and the most frequent interaction patterns of the two anxiety groups were compared.

Multivariate analysis of variance was employed to determine if

significant differences existed between the high-perception of threat group and the low-perception of threat group. The between group difference of the eight CAFIAS Variables was significant and led to a rejection of the null hypothesis that there would be no statistically significant difference between behavioral interaction teaching patterns of high-perception of threat and low-perception of threat student teachers.

Univariate analysis of variance was used to determine those statistically significant variables that contributed to group difference. One variable (teacher questions, verbal) was found to be statistically significant.

Discriminant function analysis determined the percentage of contribution of each variable to the between group difference. Most of the between groups variance can be accounted for by four variables: teacher questions, verbal; teacher acceptance and praise, nonverbal; pupil verbal initiation, teacher suggested; and teacher acceptance and praise, verbal.

The mean percentage of behaviors in each CAFIAS category and the most frequent interaction patterns of the two perception of threat groups were compared.

Chapter 5

DISCUSSION OF RESULTS

This chapter presents a discussion of the results that were derived from this investigation. The following will be discussed: (a) expansion of results, (b) analysis of results, (c) indirect vs. direct teaching behavior, (d) dissemination of knowledge as desensitization, and (e) summary.

Expansion of Results

Multivariate analysis of variance revealed a statistically significant difference between high-anxiety and low-anxiety student teachers and between the high-perception of threat and low-perception of threat student teachers. Thus, anxiety and perception of threat affected teacher behavior overall. Univariate analysis of variance on the anxiety groups revealed statistical significance for the CAFIAS variable pupil nonverbal initiation, student suggested. This indicates a substantial difference in student nonverbal actions in favor of the low-anxiety group and suggests that more student freedom was accounted for. To support this difference, the cell means for each of the eight CAFIAS variables in the low-anxiety group exceeded the corresponding cell mean for the high-anxiety group. Univariate analysis of variance on the perception of threat groups revealed a statistically significant difference for the CAFIAS variable teacher questions, verbal. This indicates a substantial difference in the use of verbal questioning which in turn solicits a student response and supports the concept of student freedom in the low-perception of threat group. To support this difference, the cell means

48

for six of the eight CAFIAS variables in the low-perception of threat group exceeded the corresponding cell mean in the high-perception of threat group. Discriminant function analysis showed that most of the difference between the high-anxiety and low-anxiety group was due to the amount of predictable student behavior, the use of verbal questioning, and the verbal and nonverbal use of acceptance and praise. Most of the difference between the high-perception of threat and the low-perception of threat group was due to the amount of verbal questioning used by the teacher, the amount of predictable student behavior, and the verbal and nonverbal use of acceptance and praise. Added support to these findings can be obtained by comparing the mean percentage of classroom behaviors. For the anxiety groups a substantial difference existed in information giving (in favor of the high-anxiety group) and in the students' broad interpretation of teachers' activities as well as student to student verbal interaction (in favor of the low-anxiety group). For the perception of threat groups, a substantial difference existed in information giving and nonverbal predictable response (in favor of the high-perception of threat group) and in the use of verbal praise and broad interpretation of teacher activities (in favor of the low-perception of threat group). A comparison of interaction patterns also reveals differences in the amount of student freedom and teacher control. In favor of the high-anxiety group, differences existed in the following CAFIAS variables: information giving to direction (5-6), a predictable student response to direction (8-6), and a predictable student response to a predictable student response (8-8). In favor of the low-anxiety group, differences existed in the following variables: an extended students' interpretive performance to information giving (8\-5), and an

extended students' interpretive performance to student to student

verbal interaction (8\-10). In favor of the high-perception of threat

group, differences existed in the following variables: information

giving to information giving (5-5), and information giving to direction

(5-6). In favor of the low-perception of threat group, a difference

existed in an extended students' interpretive performance

to information giving (8\-5).

These data suggest that anxiety and perception of threat affected

teacher behavior in this study. The differences existed in student

freedom and teacher control. The high-anxiety group and the high-

perception of threat group were characterized by more direct teaching

behaviors and student responses that were mechanical and controlled. The

low-anxiety group and the low-perception of threat group exhibited more

indirect teaching methods. There was an allowance for student creativity

and there was less of a concern for control.

Analysis of Results

As pointed out previously, anxiety and perception of threat affected

teacher behavior in this investigation. A logical question might then be:

What caused the anxiety and what did the student teachers perceive as

being threatening? Spielberger (1971) views state anxiety as a response

variable with stress being the stimulus and threat representing the

intervening variable. He equates stress with external danger, threat with

perception of that danger, and state anxiety with the emotional reaction.

If one accepts this sequence, it is easy to see that anxiety and

perception of threat are the result of stress. Sells (1970) believes that

stress arises under the following conditions:

1.   The individual is called upon in a situation to respond

to circumstances for which he has no adequate response
available. The unavailability of an adequate response may
be due to physical inadequacy; absence of the response in
the individual's response repertoire; lack of training,
equipment, or opportunity to prepare.

2.   The consequences of failure to respond effectively are
important to the individual. Personal involvement in
situations can be defined in terms of importance of consequences
to the individual. (p. 148)

In this study, the stressor may have been one or a combination of the
following: personal appearance, teaching an activity that the student
teacher was not skillful at, the supervising teacher, the cooperating
teacher, talking (lecturing in front of the class), new surroundings, new
situations, the final grade for student teaching, not being accepted by
faculty members, not being accepted by the students, fear of failure to
do a good job, getting sick during class, lacking teaching experience,
and/or controlling students (discipline).

According to Spielberger (1972) situations that are stressful may
cause coping responses, defense mechanisms, and drive properties that can
affect behavior. The Hull-Spence drive theory (Martens, 1971; Spielberger,
1971) states that a dominant reaction to a situation will be given more
often when drive or arousal increases, and Sage (1971) claims that a
limiting of the behavioral repertoire takes place during a period of high
arousal. Well learned behaviors are often chosen even if they are
incorrect.

Since teaching was a relatively new experience for the subjects of
this study, direct teaching methods were more familiar and easier to

utilize. Therefore, the student teachers that ranked high in anxiety and in perception of threat appear to have dealt with stress by narrowing their teaching behavior through employing direct teaching methods more often than those student teachers that ranked low in anxiety and perception of threat.

Indirect vs. Direct Teaching Behavior

For nearly half a century, one of the major areas of educational research has dealt with the teacher-student relationship in the classroom. An interesting and controversial aspect of this relationship has been the amount of teacher control vs. the amount of student freedom that should be maintained in the classroom environment. A review of the literature seems to support a position of student freedom. Anderson (1939) compared dominant and integrative teaching behavior. Findings showed that teachers who allowed more student freedom received more cooperation than the teachers who were dominant. Withall (1949) found that a dominant teacher must battle attitude problems, lack of cooperation, lack of attention, and over-aggressiveness more often than less dominant teachers. Lippitt and White (1943) concluded that learning is facilitated by an environment that is positive in nature and Simon and Boyer (1974) noted that a positive classroom climate is maintained by teacher encouragement of student behavior. Flanders (1960) made the distinction of direct and indirect teaching behaviors. Direct teaching behavior limits the freedom of student action in the class. Indirect teaching behavior encourages the freedom of student action in the class. Studies that support indirect teaching behavior are Amidon and Flanders (1961), Flanders (1960), Flanders and Simon (1969), LaShier and Westmeyer (1967), and Nelson (1966). On the basis of this research, the indirect teaching approach would appear

to be more effective. A reasonable explanation might be that more efficient learning takes place when a person is able to manipulate the environment to the extent that what is taught is congruent with what is learned (Coates, 1974).

Dissemination of Knowledge as Desensitization

Anxiety can be characterized by feelings of uneasiness (Oxendine, 1968; Rogers, 1973) that can be attributed to an increase in the level of neural activity (Butter, 1968; Duffy, 1957; Sage, 1971). The physiological response to this stirring of emotions can have a negative effect on behavior and performance (Fisher, 1976).

If a supervisor feels that anxiety is severely affecting the behavior and performance of a student teacher, some type of desensitization might be considered. Desensitization is "a technique that reduces one's susceptibility to a sensitizing or activating agent" (Fisher, 1976, p. 447). Of the various methods of desensitization, dissemination of knowledge might be very effective for the student teacher who is exhibiting feelings of anxiety and as a result is limiting his or her teaching behavior.

The cognitive appraisal of a stressful situation leads to an emotional experience such as anxiety. It has been found that learning has a direct relationship with the cognitive appraisal of stress (McGrath, 1977). The more knowledge a person has about a situation the less threatening the stressor becomes, thereby reducing the level of anxiety. McGrath (1977) reports that people often seek information about a possible stressor before being faced with it and that prior information will reduce stress. Expectations and coping responses are affected by knowledge (McGrath, 1977). This principle can be applied to the student teacher who

is exhibiting feelings of anxiety and as a result is limiting his or her teaching behavior to more direct methods. If the objective of the supervisor would be to lower anxiety and broaden a student teacher's behavior to allow more student freedom, advanced instruction or clarification of indirect teaching might be offered.

The utilization of an observational instrument could be employed in this situation. An observational instrument can be a tool for analyzing teaching, can help to modify teaching behavior, can show differences in teaching patterns, and can help show the relationship between behaviors and student growth (Batchelder, 1975). The past CAFIAS studies with student teachers offer excellent examples of how dissemination of knowledge can affect teaching behavior.

Kielty (1975) found that students could see a difference in their teachers' behaviors after instruction in CAFIAS. Studies by Getty (1977), Hendrickson (1975), Mancini, Frye & Inturrisi (1979), Rochester (1976), and Vogel (1976) all found differences in student teacher behavior and classroom interaction after instruction in CAFIAS. Findings showed more use of indirect teaching behavior, less teacher control, and more student freedom. In this study, the low-anxiety group and the low-perception of threat group showed more use of indirect teaching behavior, less teacher control, and more student freedom.

Therefore, if knowledge can affect stress and stress can produce anxiety which in turn can affect behavior, then the dissemination of knowledge can be utilized as a desensitization technique for the student teacher who is experiencing heightened anxiety. If indirect teaching behavior is desirable, CAFIAS instruction might be employed to lower anxiety and improve teacher-student interaction behavior.

Summary

Statistical analysis was performed on eight CAFIAS variables and comparisons were made of mean behaviors and interaction patterns. It was found that anxiety and perception of threat affected teacher behavior in this study. The differences existed in student freedom and teacher control. Student teachers ranking high in anxiety and perception of threat exhibited more direct teaching behaviors and student responses that were more mechanical and controlled. Student teachers ranking low in anxiety and perception of threat exhibited more indirect teaching methods. There was an allowance for student creativity and there was less of a concern for control.

If anxiety and perception of threat are a result of stress, then stress must be dealt with. Stressors in this study may have been one or a combination of the following: personal appearance, teaching an activity that the student teacher was not skillful at, the supervising teacher, the cooperating teacher, talking (lecturing) in front of the class, new surroundings, new situations, the final grade for student teaching, not being accepted by faculty members, not being accepted by the students, fear of failure to do a good job, getting sick during class, lacking teaching experience, and/or controlling students (discipline).

Situations that are stressful may cause coping responses, defense mechanisms, and drive properties that can affect behavior (Spielberger, (1972). This can be supported by the Hull-Spence drive theory (Martens, 1971; Spielberger, 1971) and a claim by Sage (1971) that the behavioral repertoire becomes more limited when arousal increases. By relating these concepts to this study, the student teachers who ranked high in anxiety and perception of threat appear to have dealt with stress by

narrowing their teaching behavior through the employment of direct teaching behavior more often than those student teachers who ranked low in anxiety and perception of threat.

On the basis of past research, the indirect teaching approach would appear to be more effective. A reasonable explanation might be that more efficient learning takes place when a person is able to manipulate the environment to the extent where what is taught is congruent with what is learned (Coates, 1974).

It has been found that learning has a direct relationship with the cognitive appraisal of stress (McGrath, 1977). Prior information will reduce stress (McGrath, 1977). If the objective of the supervisor would be to lower anxiety and broaden a student teacher's behavior to allow more student freedom, advanced instruction or clarification might be offered.

An observational instrument such as CAFIAS could be employed in this situation. It can be a tool for analyzing teaching, to help to modify teaching behavior, to show differences in teaching patterns, and to help show the relationship between behaviors and student growth (Batchelder, 1975). The past CAFIAS studies with student teachers (Getty, 1977; Hendrickson, 1975; Kielty, 1975; Mancini et al., 1979, Rochester, 1976; Vogel, 1976) are excellent examples of how dissemination of knowledge can affect teaching behavior. Findings showed more use of indirect teaching behavior, less teacher control, and more student freedom. In this study the low-anxiety and low-perception of threat groups reflected these behaviors.

If indirect teaching behavior is desirable, instruction in CAFIAS might be employed to lower anxiety and improve teacher-student interaction behavior.

Chapter 6

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

Summary

This study was undertaken to compare the behavioral interaction patterns of student teachers that ranked either high or low in anxiety and high or low in perception of threat. Twenty-two student teachers were used as subjects for this investigation. All subjects were videotaped during three complete classes. Subjects were assigned to high-anxiety and low-anxiety groups by a median split of mean scores on the SEQ. Subjects were assigned to high-perception of threat and low-perception of threat groups by a median split of mean scores on the SAQ. The tapes were coded by an expert coder through the use of CAFIAS. Behavioral sequences were transposed onto computer cards for analysis. Computer data included ratios and percentages of the eight CAFIAS variables. A mean score was used to represent each subject. Multivariate analysis of variance determined that significant differences existed between the high-anxiety and low-anxiety groups, and between the high-perception of threat and the low-perception of threat groups. This led to a rejection of the null hypotheses that (a) there will be no significant differences between behavioral interaction teaching patterns of high-anxiety and low-anxiety student teachers, and (b) there will be no significant differences between behavioral interaction teaching patterns of student teachers that are high in perception of threat and low in perception of threat. Univariate analyses of variance were used to determine those variables that contributed significantly on their own.

57

Only one variable (pupil nonverbal initiation, student suggested) was found to be significant for the anxiety groups. Only one variable (teacher questions, verbal) was found to be significant for the perception of threat groups. Discriminant function analysis was performed to reveal the percentage of contribution to between groups difference for each variable.

It was found that anxiety and perception of threat affected teacher behavior in this study. Student teachers ranking high in anxiety and perception of threat exhibited more indirect behaviors, and student responses were more mechanical and controlled. Student teachers ranking low in anxiety and perception of threat exhibited more indirect teaching behavior and made greater allowance for student creativity. Anxiety and perception of threat are a result of stress (Spielberger, 1971). Sage (1971) claims that the behavioral repertoire becomes more limited when arousal increases. Past research has indicated that an indirect teaching approach is more effective than a direct teaching approach. Learning has a direct relationship with the cognitive appraisal of stress (McGrath, 1977). If the objective of the supervisor would be to lower anxiety and broaden a student teacher's behavior to allow more student freedom, advanced instruction or clarification might be offered. CAFIAS could be employed in this situation to lower anxiety and improve teacher-student behavior.

Conclusions

From the findings of this investigation the following conclusions can be drawn:

1. Students of low-anxiety student teachers exhibit more student initiated nonverbal activity than the students of high-anxiety student

teachers.

2.   Low-perception of threat student teachers exhibit greater use of verbal questions than do high-perception of threat student teachers.

3.   Low-anxiety student teachers are more indirect in their teaching behaviors than high-anxiety student teachers.

4.   Low-perception of threat student teachers are more indirect in their teaching behaviors than the high-perception of threat student teachers.

Recommendations for Further Study

The following recommendations are made for future study:

1.   A comparison of interaction behavior patterns of high-anxiety and low-anxiety methods students during micro-peer teaching sessions.

2.   A comparison of interaction behavior patterns of high-anxiety and low-anxiety physical education teachers.

3.   A comparison of interaction patterns of high-anxiety and low-anxiety coaches.

4.   A comparison of the SAQ and any other measure of threat perception.

5.   Investigate the effects of CAFIAS training on the behaviors of high-anxiety student teachers.

THE CATEGORIES OF CHEFFERS' ADAPTATION OF FLANDERS' INTERACTION ANALYSIS SYSTEM[a]

Teacher Environment (E) Student (S) Categories	Verbal	Relevant Behaviors	Nonverbal
2-12	2 Praises, commends, jokes, encourages	Face: Posture:	12 Smiles, nods with smile, (energetic) winks, laughs Claps hands, pats on shoulder, places hand on head of student, wrings student's hand, embraces joyfully, laughs to encourage, spots in gymnastics, helps child over obstacles
3-13	3 Accepts, clarifies, uses, and develops suggestion and feeling by the learner	Face: Posture:	13 Nods without smiling, tilts head in empathetic reflection, sighs empathetically Shakes hands, embraces sympathetically, places hand on shoulder, puts arm around shoulder or waist, catches an implement thrown by a student, accepts facilities
4-14	4 Asks questions requiring student answer	Face:	14 Wrinkles brow, opens mouth, turns head with quizzical look

Categories	Verbal	Relevant Behaviors	Nonverbal
	4		14
		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 toward person, awaits answer
5-15	5 Gives facts, opinions, expresses ideas, or asks rhetorical questions	Face:	15 Whispers words inaudibly, sings, or whistles
		Posture:	Gesticulates, draws, writes, demonstrates activities, points
6-16	6 Gives directions or orders	Face:	16 Points with head, beckons with head, yells at
		Posture:	Points finger, blows whistle, holds body erect while barking commands, pushes child through a movement, pushes a child in a given direction
7-17	7 Criticizes, expresses anger or distrust, sarcastic or extreme self-reference	Face:	17 Grimaces, growls, frowns, drops head, throws head back in derisive laughter, rolls eyes, bites, spits, butts with head, shakes head

Categories	Verbal	Relevant Behaviors	Nonverbal
	7		17
		Posture:	Hits, pushes away, pinches, grapples with, pushes hands at student, drops hands in disgust, bangs table, damages equipment, throws things down
8-18	8 Student response that is entirely predictable, such as obedient to orders and responses not requiring thinking beyond the comprehension phase of knowledge	Face: Posture:	18 Poker face response, nods, shakes, gives small grunts, quick smile Moves mechanically to questions or directions, responds to any action with a minimal nervous activity, robot like
Eine (8⟍)	Eine Predictable student responses requiring some measure of evaluation and synthesis from the student, but must remain within the province of predictability. The initial behavior was in response to teacher initiation	Face: Posture:	Eineteen A "What's more sir?" look, eyes sparkling Adds movement to those given or expected, tries to show some arrangement requiring additional thinking; e.g., works on gymnastic routine, dribbles basketball, all game playing

Categories	Verbal	Relevant Behaviors	Nonverbal
9-19	9 Pupil initiated talk that is purely the result of their own initiative and that could not be predicted	Face: Posture:	19 Interrupting sounds, gasps, sighs Puts hands up to ask questions, gets up and walks around without provocation, begins creative movement education, makes up own games, makes up own movements, shows initiative in supportive movement, introduces new movements into games not predictable in the rules of the game
10-20	10 Stands for confusion, chaos, disorder, noise, much noise	Face:	20 Silence, children sitting doing nothing, noiselessly awaiting teacher just prior to teacher entry, etc.

[a]From Cheffers, Amidon, & Rodgers (1974).

Appendix B

Coder's Reliability[*] for Selected Subjects Using Spearman's r_s

Subject 111--Low Anxiety

Top 10 Cells	Rank Observation One	Rank Observation Two	$\underline{d}$	$\underline{d}^2$
8\-10	1	1	.00	.00
10-8	2	2	.00	.00
3-8\	3	3	.00	.00
8\-3	4	4	.00	.00
5-8\	5	5	.00	.00
8\-5	6	6	.00	.00
2-8\	7	7	.00	.00
8\-2	8	8	.00	.00
6-8\	9	10	1.00	1.00
8\-6	10	9	1.00	1.00
Total				2.00

[*].98

The order of coder's numerical frequency is shown by top 10 cells.

The origin of the coding is shown by the rank observations.

The difference between the ranks of each cell is shown by $\underline{d}$.

$\underline{d}^2$ is the $\underline{d}$ column squared.

Appendix B (continued)

Subject 222--High Anxiety

Top 10 Cells	Rank Observation One	Rank Observation Two	$\underline{d}$	$\underline{d}^2$
8-8	1	1	.00	.00
6-8	2	2	.00	.00
8-5	3	3	.00	.00
8-6	4	4	.00	.00
5-8	5	5	.00	.00
5-6	6	6	.00	.00
10-8	7	8	1.00	1.00
8-10	8	7	1.00	1.00
5-5	9	9	.00	.00
4-8	10	10	.00	.00
Total				2.00

*.98

The order of coder's numerical frequency is shown by top 10 cells.

The origin of the coding is shown by the rank observations.

The difference between the rank of each cell is shown by $\underline{d}$.

$\underline{d}^2$ is the $\underline{d}$ column squared.

Appendix B (continued)

Subject 114--Low Perception of Threat

Top 10 Cells	Rank Observation One	Rank Observation Two	$\underline{d}$	$\underline{d}^2$
5-5	1	1	.00	.00
8-8	2	2	.00	.00
6-8	3	3	.00	.00
8-6	4	4	.00	.00
8-5	5	7	2.00	4.00
5-6	6	6	.00	.00
5-8	7	5	2.00	4.00
5-8\	9	8	1.00	1.00
8-7	9	9	.00	.00
8-8\	9	10	1.00	1.00
Total				10.00

*.94

The order of the coder's numerical frequency is shown by top 10 cells.

The origin of the coding is shown by the rank observations.

The difference between the rank of each cell is shown by $\underline{d}$.

$\underline{d}^2$ is the $\underline{d}$ column squared.

Appendix B (continued)

Subject 223--High Perception of Threat

Top 10 Cells	Rank Observation One	Rank Observation Two	$\underline{d}$	$\underline{d}^2$
8\-10	1.5	1	.50	.25
10-8\	1.5	2	.50	.25
5-8	3	3	.00	.00
8-5	4	4	.00	.00
8\-6	5	5	.00	.00
6-8	6	6	.00	.00
8-8\	7.5	7	.50	.25
8\-9	7.5	8	.50	.25
6-8\	9.5	9	.50	.25
8\-8\	9.5	10	.50	.25
Total				1.50

*.99

The order of the coder's numerical frequency is shown by top 10 cells.

The origin of the coding is shown by the rank observation.

The difference between the rank of each cell is shown by $\underline{d}$.

$\underline{d}^2$ is the $\underline{d}$ column squared.

Appendix C

SUBJECTIVE ANALYSIS QUESTIONNAIRE

*On a scale of 1-5, how threatening can the following things be to you as a student teacher?

_____ Personal appearance.

_____ Teaching an activity you are not skillful at.

_____ Your supervising teacher.

_____ Your cooperating teacher.

_____ Talking (lecturing) in front of the class.

_____ New surroundings.

_____ New situations.

_____ Your final grade for student teaching.

_____ Not being accepted by faculty members.

_____ Not being accepted by your students.

_____ Failing to do a good job.

_____ Getting sick during class.

_____ Lacking teaching experience.

_____ Controlling students (discipline).

*1- I can't see how it could be threatening.

2- A little threatening, sometimes.

3- It can be threatening, in an average sense.

4- It can be very threatening, sometimes.

5- It is quite threatening a great deal of the time.

If you have experienced or are experiencing an anxiety producing situation, what do you think is causing the anxiety?

Appendix D

INFORMED CONSENT FORM

I hereby consent to take part in this research study as a subject.
I realize that I will be videotaped during three of my classes and that
I will answer an anxiety inventory and a subjective questionnaire before
each class. I realize that I will be categorized into an anxiety group
from the results of the inventory and that my teaching behavior will be
analyzed through the use of Cheffers' Adaptation of Flanders' Interaction
Analysis System.

I realize that:

I have been informed of all important features of the
study, all my pertinent questions will be or have been answered, the
researcher is responsible for all obligations, there will be no
deception, my confidentiality will be protected, I have the right to
drop out at any time, and that a clear and fair agreement has been
made between the researcher and myself.

Signature _____

REFERENCES

Amidon, E., & Flanders, N. The effects of direct and indirect teacher

influence on dependent-prone students learning geometry. Journal of

Educational Psychology, 1961, 52, 286-291.

Amidon, E., & Hough, J. Interaction analysis: Theory, research, and

application. Reading, Ma.: Addison-Wesley, 1967.

Amidon, E., & Hunter, E. Improving teaching: The analysis of classroom

verbal interaction. New York: Holt, Rinehart, and Winston, 1966.

Anderson, H. The measurement of domination and of socially integrative

behavior in teachers' contacts with children. Child Development,

1939, 10, 73-89.

Anderson, W. Descriptive-analytic research on teaching. Quest, 1971,

15, 1-8.

Bales, R. Interaction process analysis. Cambridge, Ma.: Addison-

Wesley, 1950.

Basowitz, H. Anxiety and stress. New York: McGraw-Hill, 1955.

Batchelder, A. S. Process objectives and their implementation in

elementary math, English, and physical education classes. Unpublished

doctoral dissertation, Boston University, 1975.

Bookhout, E. C. Teaching behavior in relation to the social-emotional

climate of physical education classes. Research Quarterly, 1967, 38,

336-347.

Boschee, F. A. A comparison of the effects of command, task and individual

program styles of teaching on four developmental channels. Unpublished

doctoral dissertation, University of Montana, 1972.

Boyer, E., & Simon, A. (Eds.). Mirrors of behavior III: An anthology of
observation instruments (3rd ed.). Philadelphia: Communication
Materials Center, 1974.

Butter, C. M. Neuropsychology: The study of brain and behavior. Belmont,
Ca.: Brooks/Cole, 1968.

Cannon, W. B. Bodily changes in pain, hunger, fear, and rage, an account
of researches with the function of emotional excitement (2nd ed.).
New York: Harper & Row, 1963.

Carron, A. V. Reactions to anxiety and motor behavior. Journal of Motor
Behavior, 1971, 3, 181-188.

Cheffers, J. T. F. Observing teaching systematically. Quest, 1977, 28,
12-28.

Cheffers, J. T. F. The validation of an instrument designed to expand the
Flanders' System of Interaction Analysis to describe nonverbal
interaction, different varieties of teaching behavior, and pupil
responses. Unpublished doctoral dissertation, Temple University, 1972.

Cheffers, J. T. F., Amidon, E. J., & Rodgers, K. D. Interaction analysis:
An application to nonverbal activity. Minneapolis: Association for
Productive Teaching, 1974.

Coates, G. Alternative learning environments. Stroudsburg, Pa.: Dowden,
Hutchinson, & Ross, 1974.

Dougherty, N. J. A comparison of the effects of command, task, and
individucal program styles of teaching in the development of physical
fitness and motor skills. Unpublished doctoral dissertation, Temple
University, 1970.

Duffy, E. An explanation of emotional phenomena without the use of the
concept emotion. Journal of General Psychology, 1941, 25, 283-293.

Duffy, E. The psychological significance of the concept of arousal
or activation. Psychological Review, 1957, 64, 265-275.

Ebbs, P. A. The relationship among selected characteristics of
cooperating teachers and the attitude change of student teachers.
Unpublished doctoral dissertation, Temple University, 1975.

Endler, N. S. (Ed.). Contemporary issues in developmental psychology.
New York: Holt, Rinehart, and Winston, 1968.

Fischer, W. F. Towards a phenomenology of anxiety. In B. Rourke (Ed.),
Exploration in the psychology of stress and anxiety. Don Mills,
Ont.: Longmans, 1969.

Fischer, W. F. Theories of anxiety. New York: Harper & Row, 1970.

Fisher, A. C. (Ed.). Psychology of sport. Palo Alto, Ca.: Mayfield,
1976.

Flanders, N. A. Interaction analysis in the classroom: A manual for
observers. Minneapolis: College of Education, 1960.

Flanders, N. A. Analyzing teacher behavior. Reading Ma.: Addison-
Wesley, 1970.

Flanders, N. A., & Simon, A. Teacher effectiveness. In C. W. Harris
(Ed.), Encyclopedia of educational research (4th ed.). New York:
MacMillan, 1969.

Freeman, B. L. The relationship between performance level and bodily
activity level. Journal of Experimental Psychology, 1940, 26, 602-608.

Freeman, G. L. The energies of human behavior. Ithaca, N.Y.: Cornell
University Press, 1948.

Gasson, I. S. H. The development of an observational instrument to record
selected teacher-pupil behaviors in primary school physical education.
Unpublished doctoral dissertation, The Ohio State University, 1971.

Getty, H. L. <u>Effects of instruction and supervision in interaction analysis on the teaching behavior of student teachers</u>. Unpublished master's thesis, Ithaca College, 1977.

Goldberger, M. S. Studying your teaching behavior. <u>Journal of Health, Physical Education, and Recreation</u>, 1974, <u>45</u>, 33-36.

Goldstein, K. <u>The organism</u>. New York: American Book, 1939.

Hebb, D. O. Drives and the conceptual nervous system. <u>Psychological Review</u>, 1955, <u>62</u>, 243-254.

Hendrickson, C. E. <u>The use of Cheffers' Adaptation of Flanders' Interaction Analysis System in a pre-service training program of physical education teachers</u>. Unpublished master's thesis, Ithaca College, 1975.

Hilgard, E. R., Atkinson, R. C., & Atkinson, R. L. <u>Introduction to psychology</u> (5th ed.). New York: Harcourt Brace Jovanovich, 1971.

Horney, K. <u>The neurotic personality of our time</u>. New York: Norton, 1937.

Howell, M. L. Influence of emotional tension on speed of reaction and movement. <u>Research Quarterly</u>, 1953, <u>24</u>, 22-32.

Izard, C. E. Anxiety: A variable combination of interacting fundamental emotions. In C. Spielberger (Ed.), <u>Anxiety: Current trends in theory and research</u> (Vol. 1). New York: Academic Press, 1972.

Jacobson, E. The ego-psychological approach. In W. Fischer (Ed.), <u>Theories of anxiety</u>. New York: Harper & Row, 1970.

Keilty, G. C. <u>The effect of instruction and supervision in interaction analysis on the preparation of student teachers</u>. Unpublished doctoral dissertation, Boston University, 1975.

Kiemele, D. A. A comparison of perceived and actual verbal interaction in elementary school physical education classes. Unpublished master's thesis, University of Montana, 1972.

Kurth, A. Interaction analysis applied to student teachers in elementary school physical education. Unpublished master's thesis, Wisconsin State University at La Crosse, 1969.

La Shier, W., & Westmeyer, P. The use of interaction analysis in BSCS block classrooms. The Journal of Teacher Education, 1967, 18, 439-446.

Lazarus, R. S. Psychological stress and the coping process. New York: McGraw-Hill, 1966.

Levitt, E. The psychology of anxiety. Indianapolis, In.: Bobbs-Merrill, 1967.

Lippitt, R., & White R. The social climate of children's groups. In R. G. Barker, J. S. Kounin, & J. F. Wright (Eds.), Child behavior and development. New York: McGraw-Hill, 1943.

Locke, L. F. Research on teaching physical education: New hope for a dismal science. Quest, 1977, 28, 2-16.

Love, A., & Roderick, J. Teacher nonverbal communication: The development and field testing of an awareness unit. Theory into Practice, 1971, 10, 295-299.

Lykken, D. Neuropsychology and psychophysiology in personality research. In E. F. Borgatta & W. W. Lambert (Eds.), Handbook of personality theory and research. Chicago: Rand McNally, 1968.

Malmo, R. B. Anxiety and behavioral arousal. Psychological Review, 1957, 64, 276-287.

Mancini, V. H., Cheffers, J. T. F., & Zaichkowsky, L. Decision making
in elementary children: Effects on attitudes and interaction.
Research Quarterly, 1976, 47, 80-85.

Mancini, V., Frye, P., & Inturrisi, E. The use of interaction analysis:
Its effects on attitudes and teaching behaviors of student teachers.
A paper presented to the School of HPER, Ithaca College, Ithaca, New
York, March 20, 1979.

Martens, R. Palmar sweating and the presence of an audience. Journal of
Experimental Social Psychology, 1969, 5, 371-374.

Martens, R. Anxiety and motor behavior. Journal of Motor Behavior,
1971, 3, 151-180.

May, R. The meaning of anxiety. New York: Ronald Press, 1950.

McGrath, J. E. Settings, measures, and themes: Integrative review of
some research on social psychological factors in stress. In A. Monet
& R. S. Lazarus (Eds.), Stress and coping. New York: Columbia
University Press, 1977.

Medley, D., & Mitzel, H. E. Measuring classroom behavior by systematic
observation. In N. L. Gage (Ed.), Handbook of research on teaching.
Chicago: Rand McNally, 1963.

Melograno, V. J. Effects of teacher personality, teacher choice of
educational objectives, and teacher behavior in student achievement.
Unpublished doctoral dissertation, Temple University, 1971.

Nelson, L. Teacher leadership: An empirical approach to analyzing teacher
behavior in the classroom. Classroom Interaction Newsletter, 1975,
46, 351-357.

Newmark, C. S. Stability of state and trait anxiety. Psychological
Reports, 1972, 30, 196-198.

Nygaard, G. A. Interaction analysis of physical education classes.

   Research Quarterly, 1975, 46, 351-357.

Ober, R. L., Bentley, E. L., & Miller, E. Systematic observation of

   teaching. Englewood Cliffs, N.J.: Prentice-Hall, 1971.

Oxendine, J. B. Psychology of motor learning. New York: Appleton-

   Century-Crofts, 1968.

Pepitone, A. Self, social environment, and stress. In M. H. Appley &

   R. Trumbull (Eds.), Psychological stress. New York: Appleton-

   Century-Crofts, 1967.

Rochester, D. A. The effects of supervision and instruction in the use

   of interaction analysis on the teacher behavior of pre-service teachers.

   Unpublished master's thesis, Ithaca College, 1976.

Rogers, C. Client centered therapy. In C. H. Patterson (Ed.), Theories

   of counseling and psychotherapy (2nd ed.). New York: Harper & Row,

   1973.

Sage, G. H. Introduction to motor behavior: A neuropsychological

   approach. Reading, Ma.: Addison-Wesley, 1971.

Sarason, I. G. Empirical findings and theoretical problems in the use

   of anxiety scales. Psychological Bulletin, 1960, 57, 403-415.

Sechrest, I., & Wallace, J., Jr. Psychology and human problems.

   Columbus, Oh.: Merrill, 1967.

Sells, S. B. On the nature of stress. In J. E. McGrath (Ed.), Social

   and psychological factors in stress. New York: Holt, Rinehart, and

   Winston, 1970.

Selye, H. The stress of life. New York: McGraw-Hill, 1956.

Shaffer, L. F. Fear and courage in aerial combat. Journal of Consulting

   Psychology, 1947, 11, 137-143.

Siedentop, D. Behavior analysis and teacher training. Quest, 1972,
28, 26-32.

Spielberger, C. D. Anxiety and behavior. New York: Academic Press, 1966.

Spielberger, C. D. Trait-state anxiety and motor behavior. Journal of
Motor Behavior, 1971, 3, 265-279.

Spielberger, C. D. Anxiety: Current trends in theory and research.
New York: Academic Press, 1972.

Taylor, J. A. A personality scale of manifest anxiety. Journal of
Abnormal and Social Psychology, 1953, 48, 285-290.

Vogel, R. Effects of instruction and supervision in Cheffers' Adaptation
of Flanders' Interaction Analysis System on the teaching behavior of
student teachers. Unpublished master's thesis, Ithaca College, 1976.

Weinberg, R. S., & Hunt, V. V. The interrelationships between anxiety,
motor performance, and electromyography. Journal of Motor Behavior,
1976, 8, 219-224.

Withall, J. The development of a technique for measurement of social-
emotional climate in classrooms. Journal of Experimental Education,
1949, 17, 347-361.

Wolpe, J. Psychotherapy by reciprocal inhibition, In C. H. Patterson
(Ed.), Theories of counseling and psychotherapy (2nd ed.). New York:
Harper & Row, 1973.