THE EFFECTS OF SUPPORTIVE AND NON-SUPPORTIVE NONVERBAL MOVEMENTS UPON THE ACQUISITION OF A GROSS MOTOR SKILL

THESIS

Presented to the Graduate Council of the North Texas State University in Partial Fulfillment of the Requirements

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By

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The purposes of the study were (1) to validate five selected supportive and five selected non-supportive non-verbal movements, and (2) to determine the effects of the nonverbal expressions upon subjects' learning of a gross motor skill.

Subjects were twenty-eight college women who met the established criteria. The testing instrument was the Bachman Ladder. Fourteen subjects received the supportive--non-supportive nonverbal treatment sequence; fourteen subjects received the reverse treatment sequence. Subjects numerically ranked the degree of treatment following each experimental session.

Data were analyzed by analysis of variance method. Alpha was .05.

Conclusions of this study were (1) that nonverbal supportive and non-supportive treatments do not significantly affect gross motor learning, and (2) the selected expressions are valid techniques for nonverbal communications.
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CHAPTER I

INTRODUCTION

One of the most important factors leading to successful teaching is that of effective communication. Novice and experienced teachers devote a great amount of their educational time, money, and effort toward the development of communicative skills. These skills, which involve speech, writing, and the use of visual aids for the classroom, have received much attention within the framework of educational methodology. However, recent research indicates deficiencies in verbal message transmission and emphasizes the importance of nonverbal expression (2, 6, 7). Nonverbal cues are transmitted through such features as facial set and movement, eye contact, rhythm, vigor, and agitation of muscular movements and posture. It is these operable, expressive behaviors that make verbal stimulation fascinating and effective (1). The use of nonverbal expression for classroom communication is rarely considered or controlled by even the most conscientious educators (5).

Current research indicates that students' performances correlate with teachers' expectancies of their abilities (13). According to Koch (8), the teacher must be telling
the child with nonverbal signals that he expects the student to achieve or fail. Therefore, it is important for teachers to realize as they work to establish better learning situations that nonverbal meanings make lasting impressions (3). In addition, communication analysts support the contention that many of the motivational states of the individual are aroused and occur at nonverbal levels (11). If contradiction or incongruity exists between words and actions in the teacher-pupil relationship, it is the nonverbal effect that is accepted as valid (3). "If a teacher says, 'I like you and I know you can do this work', but her nonverbal [expression] says, 'But you and I both know I don't and you can't', the latter is believed by the child" (9, p. 235). With an understanding of how motions can be used in the classroom the teacher can learn to produce sequences of movements that will enhance her verbal teaching (4, 5). It is of great importance for teachers to realize if they are sending "positive" or "negative" signals and of even greater importance to realize that they can proficiently control their nonverbal messages.

The "natural teachers" are fortunate persons who are able to relate with the emotions and intellects of others to effect meaningful interactions; however, most teachers develop a level of skill in communication by arduous study and practice (12). Teacher preparation programs generally ignore the entire range of nonverbal communication,
therefore, the programs fail to give prospective teachers an effective method for interaction. It is possible to direct and plan experiences in nonverbal communication which can influence a person's sensitivity in the area (2, 8). It appears that the strength, control, and use of nonverbal transmission is a communicative skill which would be of value to all teachers.

Research in physical education has provided a wealth of information concerning how students learn and perform motor activities. At the same time, there has been limited investigation of teaching behaviors related to the social and psychological dynamics involved in teaching methods. Locke (10) states that the knowledge of how students learn and perform does not produce teachers with the knowledge of how to help students learn and perform. In other words, when a new motor skill is taught, it is accompanied by specific teacher behaviors intended to influence the students' motor performance. It is possible that nonverbal communication as a teaching variable has not been sufficiently explored.

Teaching conditions in physical education often include large spaces, inherent noise, and active students which make effective verbal communication difficult if not impossible throughout much of the instructional period. To cope with such conditions, physical educators depend heavily upon overt demonstrations of the skills to be mastered. The
teacher-pupil interaction that influences the learner's performance is many times left to verbal reinforcement such as explanation, praise, and mechanical coaching hints. The physical educator who does not understand the impact of his nonverbal message transmission may stifle the student's performance before the first trial. His most significant teaching tool is the body and it must be used effectively. It is imperative that physical educators, as movement specialists, acknowledge and investigate nonverbal communication to facilitate the learning process.

It is hoped that this study will provide additional information concerning nonverbal communication and its role in the teaching-learning process. The study further seeks to validate supportive and non-supportive nonverbal movements which influence the acquisition of a gross motor skill. It may also be possible to provide physical educators with an additional communication skill that may be planned, controlled, and taught to prospective teachers in an attempt to improve the effectiveness and efficiency of the educational process.

Statement of the Problem

This study was designed to determine the validity of selected supportive and non-supportive nonverbal communication movements and to determine the effect of their application upon the learning of a gross motor skill.
Purposes of the Study

The purposes of the study were

1. To validate five selected supportive and five selected non-supportive nonverbal movements as symbols for communication interaction.

2. To determine the effects of supportive and non-supportive nonverbal movements of the teacher upon gross motor learning.

Definition of Terms

The following terms and definitions were pertinent to this study:

1. **Nonverbal.**--The behavior that conveys meaning without words (4).

2. **Nonverbal Communication Movements.**--The gestures, facial expressions, and overt body movements performed intentionally by the instructor for communication purposes (4).

3. **Non-supportive Nonverbal Movements.**--The intentional nonverbal communication movements that display an expectancy of low achievement or of failure (4).

4. **Supportive Nonverbal Movements.**--The intentional nonverbal communication movements that display an expectancy of high achievement or of success (4).
Scope of the Study

The present study was designed to determine the effect of supportive and non-supportive nonverbal movements of an instructor upon the learning of a gross motor skill by college women enrolled in physical education activity classes at North Texas State University, Denton, Texas, during the spring semester, 1974. Forty-six students who met the established criteria were selected as subjects for this study. These criteria served as a common reference point for instructor-subject interaction.

One of the limitations of the study was the student's ability to assess the questionnaire items, to classify herself in relation to the information requested, and to rank numerically the supportive and non-supportive nonverbal treatments. A second limitation was the ability of a selected panel of judges to objectively rank a random sample of ten video-taped treatment sessions.

Summary

The improvement of teaching methods is of great concern to all educators. Nonverbal communication serves as a functional operant in teacher-student interaction; therefore, the use, control, and effects of nonverbal communication may have an impact upon future teaching methodologies. The present investigation is an attempt to validate selected components of nonverbal communication
and to determine the effects of nonverbal communication movements of the teacher upon the learning of a gross motor skill.
CHAPTER BIBLIOGRAPHY


CHAPTER II

REVIEW OF LITERATURE

An investigation of the literature revealed a limited number of experimental studies directly related to nonverbal communication and the teaching-learning process in physical education. The literature reviewed in this section was selected because of its importance to the general acceptance of nonverbal communication as a viable interaction technique. Studies related to the specific use of nonverbal cues, methods for measurement of nonverbal communication, and development of classification systems for nonverbal communication are included.

Nonverbal Communication and Interaction

Several authorities have emphasized the need to recognize nonverbal communication as a part of the educational process. Cherry (6) states that "social intercourse is greatly strengthened by habits of gesture,—little movements of the hands and face. With nods, smiles, frowns, handshakes, kisses, fist shakes, and other gestures we can convey the most subtle understanding." A similar belief is expressed by Brysom (5) who reports that verbal statements often transmit an opposite or an incongruent
message. In such cases, the inconsistency of intent is indicated by nonverbal components of communication. While the value of verbal expression must be recognized, concurrently, the inadequacies must not be overlooked. Brysom further contends that improvement in communication could be achieved by systematic study of interpretation of graphs, pictures, gestures, body movements, rhythm, and music.

Tormey (46) suggested that language is a prerequisite for the expression of opinion, but overt and subtle behaviors carry the message of a person's true beliefs or attitudes. In addition, Weiss (48) explained that feelings and emotions which represent categories of behavior result from the interaction between physical stimulating conditions and the sensorimotor system. Based upon these principles of behavior, Remmers (40) developed a list of methods of attitude measurement which are dependent upon visual stimuli. The use of these expressive movement measures is predicated upon the assumption that attitudes are revealed and may be analyzed from overt behavior. The list includes the following:

1. Thematic Apperception Test
2. Rosenweig Picture Frustration Study
3. Szondi Test
4. Bender Visual Motor Gestalt Test
5. graphology
6. drawing and painting

The interrelation of bodily posture and facial expression to emotional behavior was investigated by
Gelhorn (22). A state of erect posture and placid facial expression was induced in subjects by hypnotism. Subjects reportedly were unable to "feel" in depth the emotions of sadness or depression while under the hypnotic suggestion affecting their bodily responses.

Lowen (34) emphasized the importance of analyzing body structure as an essential factor in the treatment of schizophrenic disturbed persons. Lowen's analysis is not based upon static components of body structure alone, but relies most heavily upon the motility and expressiveness of the body which are key elements in personality. A summary of the factors in analysis of body structure includes (1) the look in the eye, (2) the expression of the face, (3) the carriage of the head, (4) the posture of the body, (5) the color of the skin, (6) the tone of the muscles, (7) the timbre of the voice, (8) the stance of the legs, (9) the motility of the pelvis, and (10) the spontaneity of gesture. As initial treatment for schizoid patients, Lowen details three passive and numerous active body movement experiences to induce unity, integration, and freedom of bodily expressions. The significance of effective and well-adjusted body communication for the development of balanced inter- and intra-personal relationships is supported by numerous illustrations of alleviated disturbances following the development of meaningful body movements.
Allport (1) supports the concept that a significant test of normality may lie in harmony of expressive behavior such as facial expression, gestures, and handwriting with the individual's fundamental motivational structure. The recognition, use, and response to expressiveness of the body could also enhance the development and function of relationships of balanced personalities.

Mehrabian (36) stated that societal influence has discouraged explicit verbalization of negative feelings in functional or directive relationships such as employer-employee or teacher-student interaction. Consequently, the implicit communication channels have assumed the function of expressing such attitudes. Nonverbal behaviors are, in fact, more important or basic to true attitude displays than verbal expression due to the subtle and primal level of their existence and to the lack of patterned censorship on these behaviors. Mehrabian offers three independent dimensions of feelings or attitudes that are communicated nonverbally. The dimensions are (1) like-dislike, (2) potency or status, and (3) responsiveness. The first dimension is self-explanatory. The second dimension related to the pattern of dominant, submissive, or equal status relationships that effect behaviors. The third dimension is the awareness factor that one person displays for the implicit attitude expressions of another person and the modifications that are made or not made in communication
behavior. The investigator's studies of emotional expression have produced the following linear model:

$$\text{Total Attitude} = 7\% \text{ verbal expression} + 38\% \text{ vocal expression} + 55\% \text{ facial expression}$$

The greatest expression of attitude is communicated non-verbally. Since Mehrabian's investigations have been limited to facial expressions, the percentage of nonverbal communication may be of even greater proportions when total body movements are considered.

Torrance (47) attempted to show the influence of a teacher's expressed favorable attitude and the pupil's perception of the teacher's unexpressed unfavorable attitude upon the behaviors and emotional reaction of the pupils. The subjects were 427 aircrewmen undergoing a seventeen-day survival training course. Subjects were issued bars of pemmican, a food substitute, and instructors were ordered to verbally state and encourage a favorable attitude toward consumption of the pemmican. Following the training session, the subjects completed a questionnaire requesting information concerning the actual number of pemmican bars they had eaten, their rating of the taste of pemmican, the number of times that eating the bars had caused sickness, and their feeling of the instructor's actual opinion of pemmican. Instructors also completed a form requesting their personal, true opinions of the pemmican bars. The results were significant at the .01 level of confidence. The instructor's
implicit negative attitude had a greater influence than his expressed favorable attitude upon the number of bars eaten and the number of times subjects related illness to the pemmican.

Davidson and Lang (9) studied students' perception of their teachers' unstated feelings toward them related to self-perception, school achievement, and behavior. An adjective check-list test was administered to 203 boys and girls in the fourth, fifth, and sixth grades of the New York City public schools. Teachers of the students rated their pupils on academic achievement using a four-point scale and on ten behavioral characteristics. Results of the study demonstrated a positive correlation, significant beyond the .05 level of confidence, between the children's perceptions of the teachers' feelings toward them and the children's perceptions of themselves. The findings of the study also indicated positive correlations, significant at the .05 level of confidence, between favorable perception of teachers' feelings and academic achievement and favorable perception of teachers' feelings and desirable classroom behavior.

In a film study of a typical classroom situation, Byers (10) demonstrated problems that a teacher and the children were having in relating to each other in terms of body motion. In a ten-minute segment of film, one child tried thirty-five times to catch eye contact with the
teacher and succeeded only eight times while a second child successfully made eye contact with the teacher eight times out of only fourteen tries. In another film, a teacher reached out numerous times to touch two children, but at every try failed to make contact. At times the teacher hesitated or aborted her movement and at other times the children made subtle movements or posture shifts to avoid contact. Byers explained that the teacher was unsure of available movement techniques which could be used to ensure expression of success expectation to the students. Consequently, valuable teaching-learning time was lost due to this lack of ability in favorable use of body communication.

Condon (8), a kinesics investigator who used a method of filming interactions and recording patterns of rhythmical body movements, has proposed a theory of interactional synchrony as a fundamental component of nonverbal communication. These films have included the interaction relationships of mother-child, Black-White, teacher-student, employer-job applicant, and therapist-patient. In all relationships, subtle bodily movements were found. These movements included eye blinks, head nodding, hand manipulations, and foot tapping. Condon concludes that this interactional synchrony is the basis for the construction and interpretation of human communication.
Methods for Measurement of Nonverbal Communication

Several researchers have conducted studies to isolate the movements and messages of body expression. Clynes (7), investigating the expression of seven specific emotions, instructed subjects to fantasize an emotion such as anger, hate, joy, sex, grief, love, and reverence and then to express the stated emotion by pressing a finger rest with the middle finger of the right hand. The finger rest was so constructed that it produced graphic tracings of the finger's vertical and horizontal pressures. The design and pattern of the graphical tracings were computed for inter-subject and intra-subject variables. Subjects were given fifty trials per expressed emotion with a test-retest design. Correlation for the graphic tracings generally were above .90 for the same emotion expressed by one subject, while correlations above .80 were obtained between two subject's expression tracings.

Goodenough (23) observed facial expressions that depicted fear, tension, surprise, frustration, and happiness produced by a congenital blind-deaf child. A small china doll was dropped in the child's vest and her reactions were recorded by a sequence of still photographs and by the author's notations. The startle expression of erect posture, hunched shoulders, open mouth and wide-eyed facial expression was the first reaction by the child. Facial
expression changed to pursed lips and furrowed brow as the child attempted unsuccessfully to remove the doll from her clothing. When the girl retrieved the toy, she relaxed her body posture, lifted her head, and smiled broadly. Goodenough pointed out that these behaviors of body expression could not be imitative or culturally patterned because of the child's limitations.

Lanzetta and Kleck (31) attempted to demonstrate a "general nonverbal communication factor" based on the thesis that persons whose nonverbal expressions are easily decoded by others should be good judges of the nonverbal behavior of themselves and others. Twelve collegiate men viewed a sequence of equally spaced and randomly ordered red and green lights. The red light signaled the advent of shock. The subject's nonverbal responses to the stimuli [lights] were video-taped without the subject's knowledge. The tapes were later viewed by the filmed subject and by five other subjects individually under conditions similar to the experimental treatment which required them to discriminate between shock and non-shock trials. A Pearson correlation coefficient was computed between the total number of errors made by each of the twelve subjects when judging the five other individuals in the group and the number of errors the other subjects made when responding to him as a stimulus. The obtained high negative correlation of $r = -.80$ which was significant at the .005 level of
confidence indicated that persons who made comparatively few mistakes in judging others were themselves difficult for others to judge while those who made many errors as judges were relatively easy to judge. The author suggests that the differing degrees of overt expressibility may be related to social inhibitions. Persons who have adapted to low levels of overt expressive behavior remain sensitive to nonverbal displays while persons who demonstrated high levels of overt expressive behaviors were not as sensitive to the nonverbal context.

Levitt's (32) study examined the comparative communicative efficiency of the vocal, facial, and combined vocal-facial modes. His experimental procedures included sound-movie recordings of fifty subjects expressing six emotions via vocal-facial modes. Judges from the same population were divided into three groups--vocal, facial, and vocal-facial--and viewed the appropriate elements of the films. Reliability coefficients ranging between .67 and .82 indicated a fair degree of statistical reliability of the judging ability for purposes of this research. Of the three expression modes, facial communication was shown superior over the facial-vocal and vocal emotion transmissions.

Eckman (12) investigated body position, facial expression, and verbal behavior during interviews. Two staff research psychologists conducted individual, thirty-minute
interviews with four trainees. The interviews were constructed to contain a ten-minute neutral period of introduction, a ten-minute stress period of severe criticism and personal attack, and a ten-minute catharsis period of apology, praise, and humor. Still photographs giving a profile view of both participants were taken at thirty-second intervals and were synchronized with recordings of verbal interaction. Judges were shown pairs of correct-incorrect photographs and a written-verbal segment. The judgement task was to identify the photograph taken when the verbal segment was spoken. Eckman employed this procedure throughout four investigations with variation in the selection of judges. Judges for Experiment I were eighteen college freshmen; judges for Experiment II were sixteen professional modern dancers; judges for Experiment III were fifteen undergraduate psychology students; and judges for Experiment IV were fifty-six female, freshmen psychology students. In Experiment IV, judges first viewed only body position cues and then viewed photographs of isolated head and facial cues. Statistical significance was derived by applying Wilcoxon's matched-pair ranks test to the differences between the obtained scores and the expected medians. Judges' identification of nonverbal cues in Experiments I, II, and III was significant at the .05 level of confidence in accuracy of selection when shown head-body photographs. In Experiment IV, identification of head cues
was significant at the .05 level of confidence, however, identification of body position alone was not statistically significant.

Mead and Byers (35) studied a sequence of still photographs and a related verbal transcript recorded during a small business conference of seven men and one woman. It was observed that three members of the conference who began to verbally agree on the discussion topic also began to assume similar sitting postures and hand gestures. A member expressing an opposing viewpoint, presented a closed-fist hand gesture in the general direction of the triangle of agreeing members and an open, palm-up hand gesture towards the uncommitted members. The authors suggest that the closed fist signified the member's recognition that the three associates had previously made their decision while the open, palm-up gesture was an appeal and/or invitation to those who remained undecided. Near the close of the session, one member spontaneously stood to summarize the proceedings and gained the attention of all the members. As the speaker reviewed the conference points, he sought eye contact with and moved closer to members who displayed disagreement with his words. At the close of his review all members were sitting forward and expressing compliance with the majority decision.

Efran (14) investigated the influence of approval and/or status variables upon eye contact during small group
conversation. Subjects, 122 college freshmen, were asked to talk to two individuals who were confederates of the investigator. The confederates were introduced as two seniors, two freshmen, or one senior and one freshman. In addition to the status manipulation, one of the confederates was instructed to produce an "approval effect" by smiling and nodding when it seemed appropriate. The second confederate was instructed to appear interested, but not to smile or nod. Both aides were told to strive for natural and spontaneous eye-contact with the subject. During the subject's conversation, an observer behind a one-way window kept a continuous record of his visual behavior by depressing telegraph keys that activated the pens of an Esterline-Angus multipen recorder whenever the subject looked at either confederate. Following the treatment session the subject was asked to complete a questionnaire. Effectiveness of the "smiling" manipulation was shown significant at the .001 level of confidence. On the post-session questionnaire, ninety-eight of the 122 subjects reported a feeling of approval of the confederate assigned the "smiling" manipulation. Subjects also reported their feelings of respect for each confederate. Effectiveness of the status manipulation was significant at the .001 level of confidence. However, there was interaction between the effect of approval and the effect of status. Subjects claimed greater respect for confederates of manipulated lower status who assumed
the approving role. This effect was significant at the .001 level of confidence. Analysis of visual behavior demonstrated that subjects focused more on the approving than the neutral confederate. Efran concluded that the status factor and approval reinforcement determined the visual focus in this situation.

Mehrabian (37) surveyed the experimental literature to determine the influence of posture and position of a communicator expressing attitude and status to an addressee. The purpose of this study was to isolate the consistent indicators of communication attitude. Several consistent patterns emerged from this comprehensive review of the literature. The distance between a communicator and his addressee is a decreasing linear function of the degree of liking for the addressee. Eye contact is minimal for disliked addressees, approaches a minimum value for neutral status addressees, and slightly diminishes for addressees who are liked very much. The investigator inferred that the cause of diminishing eye contact with high status subjects was due to the greater frequency of these subjects moving to a side-to-side, closed body position.

The investigation by Bugenthal, Kaswan, and Love (4) had two central goals. The first purpose was to compare the interpretation of conflicting verbal and nonverbal communication by adults and children. The second purpose was to compare the adequacy of linear versus an interactive
model in accounting for the interpretation of conflicting communication. Subjects were drawn from a broad, middle-class selection and divided into two groups. Group one was composed of eight children, ages five to twelve. Group two was composed of eighty parents of the selected children. Each subject viewed and rated four video-taped scenes representing one combination of positive or negative script, positive or negative picture, and positive or negative voice. A thirteen-point color-schema adaptable for use with young children was used for scene ratings. Ratings were statistically analyzed by means of a mixed-design analysis of variance containing four between subject effects: (1) positive versus negative picture, (2) positive versus negative script, (3) positive versus negative voice, and (4) parent versus child interpretations. The results of the study demonstrated that a linear model of picture-script-voice communication is satisfactory for interpretation of verbal and nonverbal communication. The results further illustrated that the visual channel received greater weight in the resolution of strong conflicting messages than did the verbal or vocal channels. However, in moderate conflicting positive-negative communication, children rated the total comment as negative whereas the adults interpreted the same stimuli as humor, irony, or sarcasm. Personal derogatory remarks such as "You're hopeless.", "I give up on you.", or "You're a complete idiot.", made with positive visual
cues such as a smile were rated highly negative by the children, but had neutral effects upon the adults.

Operable influences of nonverbal aspects also have been examined within the limits and special setting of the classroom. Harrington (26) studied smiling as a measure of teacher effectiveness. Seven nursery school teachers were observed by a panel of six judges for a time period of five and one-half hours each. The per cent of classroom time the teachers demonstrated a smiling expression was noted. Four of the judges independently ranked the teachers using the criteria question, "For your own child, which teacher would you most prefer?". Two of the judges, through mutual discussion, jointly ranked the teachers using the criteria of a detailed protocol list of teacher behavior. Objective measures of each teacher's influence upon the students was obtained by measures of growth and development in operational behavioral forms. Using a rank order correlation coefficient, Harrington found that the frequency of smiling had a correlation of .62 with judges' personal ranking; a correlation of .81 with judges' ranking based on analysis of protocol material; and a correlation of .43 with the ranking of objective measures of child growth.

Jecker, Maccoby, and Breitrose (29), recognizing the potential use of nonverbal expression for educational communication, investigated teachers' recognition of students' nonverbal cues of comprehension. The subjects
were twenty teachers assigned to present identical lesson material which was designed to limit their verbal usage. During each teaching session, random film recordings were made of students for a duration of either five or ten instruction items. As a pretest, teachers viewed silent film clip sessions of the students and were asked to judge their degree of comprehension. The investigators then compiled an inventory of student nonverbal cues by viewing the films denoting movement expressions and actual performance on test items. Subjects were then divided into two groups. Ten teachers received training in recognition and interpretation of nonverbal cues; ten teachers served as a control group. Following the treatment period, all teachers were given a posttest identical to the pretest methods. The results were significant at the .05 level of confidence. Teachers could be taught to recognize nonverbal cues. This statistically significant improvement was achieved with only six to eight hours of treatment.

Galloway (18) attempted to determine the best of three experimental procedures for observing teacher nonverbal communication. Data were collected by observing six elementary school teachers and recording their nonverbal behaviors on a continuum of encouraging-inhibiting communication. One procedure employed trained observers to record data. A second procedure utilized qualified judges to record data. The third procedure enlisted experts
from the areas of communication, curriculum, and leadership to assess teacher behaviors by observation. Data obtained from the three procedure-groups were then correlated with students' perceptions of teacher behavior obtained by the administration of the Davidson-Lang Adjectival Checklist. Findings were not statistically significant for any of the three methods. Two procedures, trained observers and narrative records, appeared to provide the most informative data.

In additional writings, Galloway (19, 20, 21) supports the initial study related to the effects of nonverbal teacher behavior. Numerous authorities (11, 27, 28, 45) endorse Galloway's contention that nonverbal communication behaviors within the classroom are vital and dynamic components of the educative process.

Recognizing the potential significance of nonverbal communication as a classroom tool, Love and Roderick (33) developed an awareness unit to be used by teachers and tested its application in a natural field environment. Based upon observations of both elementary and secondary teachers, ten categories of nonverbal actions that were exhibited by a majority of the teachers and that were singular in meaning were listed. A study unit was designed for teachers to produce a level of awareness of nonverbal behaviors. This unit consisted of (1) reading about nonverbal behavior, (2) general observation of nonverbal
behaviors, (3) specific observation via use of the Love-Roderick instrument, (4) live practice, and (5) classroom practice. Teachers who were enrolled in inservice courses in three University of Maryland Teacher Education Centers served as subjects. Participants were given an awareness pretest, studied the unit tasks, and then were given an awareness posttest. The research findings indicated that a change can occur in frequency and type of nonverbal behaviors which are exhibited and that change in teacher nonverbal behavior may vary with the type of lesson.

Classification of Nonverbal Communication

Hall (25) conducted a communication research project at the Washington School of Psychiatry from 1959-1963. Hall's long-range research included case studies, dialogues, personal observations and field work with American foreign aid personnel and their foreign counterparts. The author relates that simultaneously with verbal language, people are constantly expressing their real feelings in a silent language of behavior. Specifically, the expressive behaviors that effect communication are (1) the use of time, (2) the use of space, (3) the use of posture and/or gestures, and (4) the use of culture patterned attitudes toward work, play and learning. Hall details the influence and importance of these nonverbal communication forms and their effect upon cross-culture relationships. The author asserts that while
spoken language barriers can be eliminated, meaningful and honest communication cannot occur until the silent language of behavior is employed and interpreted correctly.

Ruesch and Kees (42) stated that "all signals that human beings use to communicate with each other originate in some physical action implemented by the contraction of smooth or striped muscles." The authors further contend that all these physical actions can be categorized as (1) spatial, (2) temporal, or (3) postural.

Scheflen (43), Fast (15), Nierenberg (38), and Scheider (44) listed and suggested explanations of behavioral interpretation of hand gestures, facial expressions, and body postures. The categories listed by these authors include the following:

1. openness and defensiveness
2. evaluation and suspicion
3. frustration
4. doubt and nervousness
5. confidence
6. boredom
7. cooperation
8. readiness

The authors stress that recognition and understanding of the movements used to convey the categorical listings can enhance personality development and social intercourse.

The relationship of expressive movements, warmth, and verbal reinforcement to verbal responsiveness was examined by Reece and Whitman (39). Sixty-nine subjects placed in treatment groups designated as warm-reinforced, warm-nonreinforced, cold-reinforced, and cold-nonreinforced
performed a free association verbal task. Warmth and coldness were defined in terms of expressive movements of posture (warm--leaned toward the subject; cold--learned away from the subject), glance (warm--direct eye contact; cold--evasive eye contact), facial expression (warm--smile; cold--no smile), and finger activity (warm--no finger movement; cold--drumming finger movement) based on a previous study by the experimenters. Subjects' evaluation of the expressed movements was significant at the .05 level of confidence. Results of the study demonstrated that warm, expressive movements with verbal reinforcement produced the greatest amount of responsiveness from subjects. Verbal reinforcement alone was not significant; expressive movements alone did prove, however, to have a significant effect.

In an effort to determine a set of common nonverbal behaviors that display approval--seeking, Rosenfeld (41) conducted an inspection pilot study of same- and mixed-sex groups in interactions in which one subject had been previously instructed to act friendly or unfriendly. Using the information relating to subjects' proximal seating arrangements during approval or avoidance interactions, Rosenfeld then conducted a similar study to further investigate the subjects' use of gestural behaviors to express approval or avoidance interactions, Rosenfeld then conducted a similar study to further investigate the subjects' use of gestural behaviors to express approval
or avoidance. Eighteen female subjects were used; nine of the subjects acted as confederates and were given instructions to demonstrate approval or disapproval. Gestural patterns were recorded via codings on adding machine tapes by two independent observers, positioned behind a one-way window. Observers did not hear the verbal components of the interactions. Gestural categories selected for observation were (1) smile, (2) positive head nod, (3) negative head nod, (4) gesticulation, (5) self-manipulation, and (6) postural changes. Interobserver reliabilities ranged from .77 to .96. Categories one, two, four, and five occurred frequently and were submitted to statistical analysis. Correlations between gestures were significant in two cases. Smiles were positively related to positive head nods and negatively related to self-manipulation. Overall gestural activity was statistically significant at the .01 level of confidence among subjects in the approval seeking condition.

Love and Roderick (33) identified ten nonverbal communication categories with accompanying teacher behaviors:

<table>
<thead>
<tr>
<th>Categories</th>
<th>Behaviors [Selected Examples]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. accepts student behavior</td>
<td>1. smiles, affirmatively shakes head, touches pupil</td>
</tr>
<tr>
<td>2. praises student behavior</td>
<td>2. places index finger and thumb together, claps, raises eyebrows and smiles</td>
</tr>
<tr>
<td>3. displays student ideas</td>
<td>3. writes comments on board, displays student's work, provides for nonverbal student demonstration</td>
</tr>
</tbody>
</table>
4. shows interest in student behavior
4. establishes and maintains eye contact
5. moves to facilitate student-to-student interaction
5. physically moves into the position of group member or away from the group
6. gives directions to students
6. points with the hand, looks at specified area, employs a predetermined signal
7. shows authority towards students
7. frowns, stares, taps foot, negatively shakes head, walks away from deviant
8. focuses students' attention on important points
8. uses pointer, walks toward the person, thrusts head forward, employs a non-verbal movement with a verbal statement to give it emphasis
9. demonstrates and/or illustrates
9. performs a physical skill, manipulates materials and media
10. ignores or rejects student behavior
10. lacks nonverbal response when one is ordinarily expected

The authors suggest that teachers can create a more effective and efficient learning environment within the classroom by conscious manipulation of nonverbal movements. Grant (24) classified teacher use of nonverbal behaviors as "conducting options." Conducting, in this usage, refers to motions that control participation and obtain attending behavior of students. The list included seven teacher non-verbal options:

1. smiling at the student
2. eye contact
3. orienting the body toward the student
4. nodding
5. pointing
6. moving toward the student
7. touching the student
Koch (30) listed thirty-five nonverbal observable behaviors that occurred with significant frequency in selected classrooms of a junior and a senior high school. Among the thirty-five listed are several behaviors which have been reported by numerous investigators:

1. gestures
2. hand movements
3. silences
4. facial expressions
5. eye-language
6. head movements
7. postures
8. lack of expected reaction
9. status moves or acknowledgment

Feldman (16) developed a list of forty-seven nonverbal body movements and wrote an explanation and interpretation of meaning for each expression. Included in this list are the six behaviors of (1) expressive movements of the head, (2) facial expressions, (3) mannerisms with the eyes and looking, (4) movements with arms and fingers, (5) manneristic movements with the shoulders, and (6) gait and stance.

Throughout the literature the nonverbal expressive behaviors of smiling, hand movements, head nodding, eye contact, and forward or backward movement occurred most frequently and demonstrated the greatest effects. The review revealed that these specific nonverbal communication cues can be controlled scientifically and can be measured with reliability.

Feleky (17) attempted to produce a categorical listing of facial expressions complete with interpretation of the emotional meaning of each expression. Eighty-six still photographs of posed facial expressions were selected and
presented to judges selected by the investigator. Judges were also given a list of 109 single word adjectives of emotions. The judgement task was to assign appropriate word meanings to each facial expression. Photograph-emotion assignments receiving the greatest recognition and identification were laughter, interest, physical suffering, sympathy or pity, surprise, mental suffering, happiness, reverence, disgust, and scorn or contempt.

Following a comprehensive review of experimental and anecdotal studies of facial expression of emotions, Eckman, Friesen, and Ellsworth (13) concluded that discrepancies and deficiencies produced by past research were due to the lack of a valid and consistent tool for measuring facial behaviors. The Facial Affect Scoring Technique (FAST) was designed and tested by the investigators to provide facial behavior information and to provide statistical data for scientific analysis. The FAST atlas contains criterion photographs of three facial expression areas. There are eight criterion photographs of brow-forehead movements, seventeen criterion photographs of eyes-lid movements, and forty-five criterion photographs of lower face movements. FAST is applied by a coder who views video-taped recordings of each of the three facial areas separately. The coder compares an observed movement to the FAST atlas of criterion photographs and assigns the experimental facial-expression segment the number of the FAST photo that it most closely
resembles. Data analysis can be performed by measuring frequency of expression, duration of movement, and/or identification of facial expression.

Birdwhistell (3) developed a notational system for recording nonverbal body expression for research analysis. The human body was arbitrarily divided into eight sections and each section was assigned a related symbol to depict a normal, static position. The body sections selected were: (1) the head, (2) the face, (3) the trunk, (4) the shoulders, arms, and wrists, (5) the hand and finger activity, (6) the hip, leg, and ankle, (7) the foot activity, and (8) the neck. Directional lines, arrows, slashes, punctuation marks, assigned alphabet letters, and simple illustrations can be added to or used to distort the "normal" symbol to indicate variants of expressions. The simple drawing technique makes the method easy to learn, quick to record, and adaptable to expansion. A significant advantage of the system is the universal recognition of the symbols which allows accurate interpretation of recorded body movements.

Summary

A review of the literature revealed a limited number of experimental studies related to nonverbal communication and the teaching-learning process in physical education. A resume of literature selected for this chapter focused upon
the specific uses of nonverbal cues, the methods of measurement of nonverbal interactions, and the development of classification systems for nonverbal communication.
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27. Hennings, Dorothy Grant and Barbara M. Grant, "Nonverbal Teacher Activity in the Classroom." Education. 93:42-44, 1972.


CHAPTER III

PROCEDURES

The problem of this study was to determine the validity of selected supportive and non-supportive nonverbal movements as symbols for communication interaction. The study further sought to determine the effects of nonverbal communication upon the learning of a gross motor skill.

Preliminary Procedures

A comprehensive review of the literature was conducted. Materials related to nonverbal communication as an interaction technique, the specific uses of nonverbal cues, the methods for measurement of nonverbal expressions, and the development of classification systems for nonverbal communication were included. Information from these studies was utilized to determine the selection of the five supportive and the five non-supportive nonverbal movements and to verify the accuracy of recording techniques of the nonverbal communication cues by video-tape.

A pilot study was conducted in order to determine the approach and methodology for the nonverbal interaction of teaching a gross motor skill. It was important to specify the frequency and use of each nonverbal communication
movement to produce the effect of a spontaneous and natural learning atmosphere.

Four female undergraduate students who met the established criteria selected for this study were used as subjects. The subjects were tested individually with no other subject present on two consecutive nights in the Motor Learning Research Laboratory in the Women's Gymnasium of North Texas State University, Denton, Texas. The investigator and two assistants were present at each testing session. The investigator presented the supportive and non-supportive nonverbal communication treatment; one assistant operated the video-tape apparatus; and one assistant scored the trials on the Bachman Ladder task, timed the interaction periods, and presented the post-treatment questionnaire. Supportive or non-supportive treatment was randomly selected prior to each subject's first testing session. At the second testing session, subjects received the treatment opposite that of their first session. Nonverbal expressions of the investigator during all eight pilot study sessions were recorded on video-tape. The purpose of recording the treatment sessions on video-tape was to produce a verification of the use, frequency, and spontaneity of the nonverbal expressions by the investigator to affect a supportive or non-supportive treatment.
Each subject was given a verbatim explanation of the Bachman Ladder task (Appendix A). At both testing sessions, subjects were given forty trials divided into four blocks of ten trials with a thirty-second interaction period following the tenth, twentieth, and thirtieth trials. In an attempt to control verbal interaction during the thirty-second pause between blocks of trials the investigator presented verbatim statements and questions to the subjects (Appendix A). Following the fortieth trial of both treatment sessions, subjects completed a post-treatment questionnaire (Appendix B).

The pilot study demonstrated the need for two basic changes in the proposed procedures. Each modification was incorporated to insure accurate and consistent research.

In the original proposal, the video-tape apparatus was placed behind a one-way window facility constructed in the Motor Learning Research Laboratory. On the first night of testing, each experimental treatment session was video-taped without the subject's knowledge. The video-tape images filmed through the one-way window were not precise enough to permit accurate distinction of supportive or non-supportive facial expressions employed by the investigator because of lighting difficulties which could not be corrected within the Motor Learning Research Laboratory. Therefore, it was necessary to place the camera directly behind the testing area with no attempt
at concealment. With the camera in this stationary position, it was possible to video-tape the maximum front view of the investigator and the rear view of the head and hand movements of the subject. At the beginning of each treatment session on the second night of the pilot study, the subject was told that the purpose of the camera was to film her feet while climbing the Bachman Ladder in order to produce an accurate recount of her learning attempts.

The second necessary change dictated by the findings from the pilot study was the verbal interaction during the thirty-second periods following the tenth, twentieth, and thirtieth trials. On the first night of testing, it was found that the verbatim statements and questions presented by the investigator did not offer sufficient control of the verbal interchanges. The subjects who received the supportive nonverbal treatment were extremely responsive and demonstrated a tendency to ask numerous questions about their performances and the Bachman Ladder. No response by the investigator when a reply was expected by the subject produced a negative nonverbal effect. Therefore, at the beginning of each treatment session on the second night of testing subjects were told that talking would be limited in order not to disturb their concentration upon learning the Bachman Ladder task. During the thirty-second period, the investigator did report to the subject the highest score achieved during the previous ten trials. The only
other interaction during the thirty-second periods was the controlled nonverbal communication movements selected for this study.

The pilot study films were viewed by the investigator and two selected physical education specialists to determine if the supportive and non-supportive nonverbal effects were discernible for judgement purposes and were comparable to a natural teaching situation. It was decided by mutual discussion that the nonverbal communication movements did produce a supportive or non-supportive effect and that a lesser degree of exaggeration of the movements would still produce the desired effects, but would simulate a more natural teaching situation.

Subjects

The subjects were forty-six undergraduate college female students enrolled in physical education activity classes at North Texas State University, Denton, Texas, during the spring semester, 1974. Students from the activity classes who met the established criteria were randomly selected as subjects for this study. Criteria for selection were as follows:

1. female
2. 17-20 years of age
3. right handed
4. Caucasian
5. middle class socio-economic status
6. mono-linguistic--English
7. no knowledge of the Bachman Ladder task
8. college entrance score ranked within a twenty-point norm
9. average height and weight for age groups: deviation of fifteen pounds and one inch allowed
10. able to attend the scheduled filming time

These criteria helped to establish a common reference point for instructor-subject interaction and offered some control of intra-subject variables that might influence gross motor learning. The four women used in the pilot study and physical education majors were excluded from the study.

Instrument to Measure Gross Motor Learning

The instrument selected to measure gross motor learning was the Bachman Ladder (see Fig. 1). The specific activity involved the balance task as modified by Schmidt, Zuckerman, Martin, and Wolke (13). Selection of this instrument was based upon its qualities as a novel, objective, gross motor task which is seemingly low in the use of verbal processes (13).

Selection of Supportive and Non-Supportive Movements

The selection of supportive and non-supportive movements was based upon an extensive review of current research including experimental investigations, case studies, inventories, and lists of classification and categorization related to gestural behaviors. Nonverbal movements that occurred frequently during interaction processes, that had
Fig. 1--The Bachman Ladder as modified by Schmidt, Zuckerman, Martin, and Wolke (13).

a universal use, that had a degree of measurability, that produced effects, and that offered some control were used (1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12). Supportive nonverbal movements selected for this study were the following:

1. pleasant facial expression, smiling
2. hand movements, palm upwards
3. nodding head movement, up and down
4. eye contact, direct
5. forward movement, stepping toward the subject

Non-supportive nonverbal movements selected for this study were the following:

1. unpleasant facial expression, no smile
2. hand movements, palm downward
3. head movement, side to side
4. eye contact, indirect and evasive
5. backward movement, stepping away from subject
Test Administration

The study was conducted in the Motor Learning Research Laboratory in the Women's Gymnasium at North Texas State University. Each experimental session was administered by the investigator to alleviate the possibility of experimenter variability. Two trained assistants were present during each treatment session. One assistant operated the video-tape apparatus from a static position directly behind the treatment area, and one assistant scored the trials on the Bachman Ladder task, timed the interaction periods, and presented the post-treatment questionnaire. Both assistants received prior training in these techniques and all equipment was checked to assure accurate and functional use. In addition, the investigator wore the same teaching apparel for both treatment groups on a given testing day. The arrangement of the testing room was identical for both groups. Both of these techniques were included to minimize color distractions and physical properties which might have unconsciously influenced interactions.

Each subject was exposed to two experimental sessions each lasting approximately twenty minutes with a one-week time lapse between each subject's testing periods. Each subject was tested individually with no other subject present. The total experimental period consisted of four hours daily for ten days spaced over a time span of four consecutive weeks. Two subjects per hour received the
supportive or the non-supportive treatment. Supportive or non-supportive treatment was randomly determined prior to each subject's testing period. Subjects that received the supportive nonverbal treatment during their first testing session received the non-supportive treatment during their second testing session. Subjects that received the non-supportive nonverbal treatment during their first session received the supportive treatment during their second session. Fifteen subjects were given the supportive--non-supportive treatment sequence and fifteen subjects were given the non-supportive--supportive treatment sequence on a test-retest experimental design. When a subject missed the appointment, she was rescheduled for the same time on the following day.

Prior to the administration of the test each subject was told that the purpose of the camera was to film her feet while climbing the Bachman Ladder in order to produce an accurate recount of her learning trials. Subjects were also told that the assistants in the room were merely aides who would help in recording data and that their presence should be disregarded so that the subjects' complete attention was focused upon the gross motor activity to be learned. In an attempt to control verbal interaction, the investigator further explained to each subject that talking would be limited during the test to facilitate her concentration upon the learning task.
A rehearsed explanation of the Bachman Ladder task was given to each subject (Appendix A). A trial on the Bachman Ladder task was counted when the subject lost her balance either forward or backward and was unable to continue climbing. A rung was counted when the subject placed the sole of her shoe on it. The number of rungs climbed was recorded on prepared score sheets for each trial (Appendix B).

Subjects were given a total of forty trials in blocks of ten trials with thirty-second rest periods following the tenth, twentieth, and thirtieth trials. During the recovery periods following the tenth, twentieth, and thirtieth trials the investigator reported to the subject the highest number of rungs climbed in the previous ten trials. All other interaction during the thirty-second periods was the controlled nonverbal communication movements selected for this study. Immediately following the fortieth trials of both treatment sessions, subjects were asked to complete a three-item questionnaire (Appendix B) designed to determine if the subject believed the investigator to be supportive or non-supportive of her learning efforts and to determine if this impression was communicated to the subject verbally or nonverbally. The subjects also marked the degree of support or non-support that was expressed by the investigator's actions, gestures, and movements.
A random selection of five supportive and five non-supportive treatment sessions was recorded on video-tape. Movements of the investigator and the rear view of the head and hand movements of the subject during a complete test session were filmed. A panel of six junior and senior physical education majors selected by the investigator viewed the five supportive and the five non-supportive treatment sessions without sound. Three of the observers received a sixty-minute training session conducted by the investigator on nonverbal communication which included explanation, identification, and practice in recognition of the specific nonverbal expression movements chosen for this study. The trained observers also viewed the pilot study films, rated the nonverbal communication, and received feedback upon their ratings. The three untrained observers received no explanation or practice of recognition of nonverbal communication movements. Each observer was supplied a check sheet for each treatment session viewed (Appendix B) and was instructed to complete each item to the best of her ability. The ratings of the observers served as verification of the supportive or non-supportive treatment effect produced by the nonverbal communication expressions performed by the investigator.

Eighteen subjects were dropped from the study. Eight subjects who received the non-supportive treatment on their first testing session did not reappear for the second
testing session. One subject who received the supportive
treatment on her first testing session did not reappear
for the second testing session. Four subjects were unable
to continue because of illness. Two subjects failed to
attend the first scheduled testing session and one subject
was disqualified by an item on the screening questionnaire.
Two subjects who received the supportive--non-supportive
treatment sequence were randomly dropped from the study
to maintain an equal number of subjects receiving the
supportive--non-supportive treatment sequence and subjects
receiving the non-supportive--supportive treatment
sequence.

Analysis of Data

The data were treated statistically by use of analysis
of variance. The experimental design was split plot fac-
torial; the constant was the Bachman Ladder task and the
variables were the supportive and non-supportive nonverbal
treatments. The $F$ ratio was used to determine if a sig-
nificant difference existed between the mean scores of the
supportive treatment and the mean scores of the non-supportive
treatment. In this study, the .05 level of significance
was used for acceptance or rejection of the hypothesis being
tested (14). Data were analyzed by the IBM Model 50
Computer System at the North Texas State University Computer
Center.
In addition, the subjects' numerical ratings of the degree of the supportive and non-supportive treatment received from the investigator were ranked and plotted on a scattergram. A line of good fit drawn through the subjects' ranked ratings was used to illustrate the supportive and non-supportive variables (2).

Summary

This chapter described the design and procedures used in the investigation. It included a discussion of the pilot study, the subjects tested, the Bachman Ladder task, the selected nonverbal communication movements, the testing procedures, and the statistical analysis of test results.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

PRESENTATION OF DATA

Findings of the Study

The purpose of the present investigation was to determine the effects of five supportive and five non-supportive nonverbal communication movements upon the learning of a gross motor skill. Data secured for the investigation included climbing scores from the Bachman Ladder task for subjects performing during the experimental treatments of supportive and non-supportive nonverbal expressions. Additional data were obtained from the subjects' numerical ratings of the degree of nonverbal supportive and non-supportive treatment received from the investigator while performing the climbing task. Tables representing each subject's raw scores and mean scores of the rungs climbed for the forty supportive and the forty non-supportive climbing trials may be found in Appendix B.

Data from the gross motor activity were analyzed by the analysis of variance method. The .05 level of confidence was used to determine significance for this study. The subjects' ratings of supportive and non-supportive treatments were ranked and represented graphically by a scattergram for the first forty trials and for the second forty trials.
A line of good fit was used to depict the variable of supportive and non-supportive nonverbal communication expression as perceived by the subjects.

Table I includes raw score totals, means, and standard deviations for the two groups' test-retest climbing performances. The groups were Group I (subjects receiving the supportive--non-supportive treatment, \( N = 14 \)) and Group II (subjects receiving the non-supportive--supportive treatment, \( N = 14 \)).

<table>
<thead>
<tr>
<th></th>
<th>Test First Forty Scores</th>
<th>Retest Second Forty Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw Score Totals</td>
<td>M</td>
</tr>
<tr>
<td>I. S-N*</td>
<td>1,577</td>
<td>2.7839</td>
</tr>
<tr>
<td>Subjects</td>
<td>(( N = 14 ))</td>
<td></td>
</tr>
<tr>
<td>II. S-N**</td>
<td>1,464</td>
<td>2.6857</td>
</tr>
<tr>
<td>Subjects</td>
<td>(( N = 14 ))</td>
<td></td>
</tr>
</tbody>
</table>

*S-N = supportive--non-supportive treatment group.

**N-S = non-supportive--supportive treatment group.
During the first session of forty trials, the subjects receiving the supportive nonverbal treatment scored a total of 113 more rungs climbed than the subjects receiving the non-supportive nonverbal treatment. On the second session of forty trials when the treatment variables were reversed, subjects receiving the supportive nonverbal treatment scored a total of 345 more rungs climbed than the subjects receiving the non-supportive treatment, thus denoting a better performance under the supportive nonverbal condition. All subjects demonstrated an increase in climbing scores for the total eighty trials. Subjects receiving the supportive--non-supportive treatment sequence had a total improvement of 481 rungs climbed. Subjects receiving the non-supportive--supportive sequence had a total improvement of 939 rungs climbed. The total number of rungs climbed for Group I was 3,635; the total number of rungs climbed for Group II was 3,867.

An analysis of variance was computed for the twenty-eight subjects' first session of forty trials to determine if a significant difference existed in the climbing scores between the fourteen subjects receiving the supportive treatment and the fourteen subjects receiving the non-supportive treatment. Table II includes the results of the analysis of variance.

The F ratio of 0.1756 was not significant at the .05 level of confidence for the between subject
TABLE II
ANALYSIS OF VARIANCE OF THE FIRST FORTY TRIALS ON THE BACHMAN LADDER TASK*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between subjects</td>
<td>0.0675</td>
<td>1</td>
<td>0.0675</td>
<td>0.1756</td>
</tr>
<tr>
<td>Within subjects</td>
<td>9.9979</td>
<td>26</td>
<td>0.3845</td>
<td>...</td>
</tr>
<tr>
<td>Total</td>
<td>10.0654</td>
<td>27</td>
<td>0.3845</td>
<td>...</td>
</tr>
</tbody>
</table>

*F. .05, 30 df = 4.17.

comparisons of the supportive and non-supportive treatment groups (9).

Table III includes the results of the analysis of variance for the twenty-eight subjects' second forty trials. The data were used to determine if a significant difference existed between the fourteen subjects receiving the supportive treatment and the fourteen subjects receiving the non-supportive treatment.

The \( F \) ratio of 1.1860 was not significant at the .05 level of confidence for the between subject comparisons of the supportive and non-supportive treatment groups (9).

An analysis of variance was computed for the twenty-eight subjects' total scores on eighty trials to determine if a significant difference existed between the supportive
TABLE III

ANALYSIS OF VARIANCE OF THE SECOND FORTY TRIALS ON THE BACHMAN LADDER TASK*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
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<tbody>
<tr>
<td>Between subjects</td>
<td>1.7500</td>
<td>1</td>
<td>1.7500</td>
<td>1.1860</td>
</tr>
<tr>
<td>Within subjects</td>
<td>38.3630</td>
<td>26</td>
<td>1.4755</td>
<td>. .</td>
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<tr>
<td>Total</td>
<td>40.1130</td>
<td>27</td>
<td>. .</td>
<td>. .</td>
</tr>
</tbody>
</table>

*F. .05, 30 df = 4.17.

and non-supportive treatments disregarding the treatment sequence. Table IV includes the results of the analysis of variance.

TABLE IV

ANALYSIS OF VARIANCE OF THE SUBJECT'S EIGHTY TRIALS ON THE BACHMAN LADDER TASK*

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Between subjects</td>
<td>1.2525</td>
<td>1</td>
<td>1.2525</td>
<td>0.9549</td>
</tr>
<tr>
<td>Within subjects</td>
<td>70.8322</td>
<td>54</td>
<td>1.3117</td>
<td>. .</td>
</tr>
<tr>
<td>Total</td>
<td>72.0847</td>
<td>55</td>
<td>. .</td>
<td>. .</td>
</tr>
</tbody>
</table>

*F. .05, 60 df = 4.00.
The F ratio of 0.9549 was not significant at the .05 level of confidence for the between subject comparisons of the supportive and non-supportive treatment (9). No significant differences were found between the supportive and non-supportive groups, and there was no interaction between the two groups' performances.

Following the fortieth trials of the first treatment session and the eightieth trials of the second treatment session, subjects rated the degree of nonverbal supportive or non-supportive expression used by the investigator on a one-to-ten scale. Fourteen subjects received the supportive nonverbal communication treatment and fourteen subjects received the non-supportive nonverbal communication treatment on both the first and second experimental sessions. The subjects' ratings were rank-ordered and plotted on a scattergram for both the first and second experimental sessions. A negative-ten rating represented the extreme non-supportive nonverbal treatment; a zero rating represented a neutral nonverbal treatment; and a positive-ten rating represented the extreme supportive nonverbal treatment.

Fig. 2 depicts the subjects' ratings of the supportive and the non-supportive experimental treatment for the first forty trials. Nineteen subjects rated the treatment as supportive; one subject rated the treatment as neutral; and eight subjects rated the treatment as non-supportive.
Fig. 2--The subjects' ratings of the degree of supportive and non-supportive treatment on the first forty trials.

A line of good fit drawn through the subjects' ranked ratings illustrates the variable of supportive and non-supportive treatment as perceived by the subjects during the experimental sessions. The range of the fourteen non-supportive ratings was -2 to -6; and the median of the non-supportive ratings was -4. The range of the fourteen supportive ratings was +4 to +10; and the median of the supportive ratings was +7.
Fig. 3 depicts the subjects' ratings of the supportive and the non-supportive experimental treatment for the second forty trials. Eighteen subjects rated the treatment as supportive; one subject rated the treatment as neutral; and nine subjects rated the treatment as non-supportive.

---No treatment variance
Treatment variance

Fig. 3--The subjects' ratings of the degree of supportive and non-supportive treatment on the second eighty trials.

A line of good fit drawn through the subjects' ranked ratings illustrates the variable of supportive and non-supportive treatment as perceived by the subjects during
the experimental sessions. The range of the fourteen non-supportive ratings was -1 to -10; the median of the non-supportive ratings was -4.5. The range of the fourteen supportive ratings was +2 to +10; the median of the supportive ratings was +8.

A further verification of the supportive--non-supportive treatment variable was obtained from the ratings of a panel of six junior and senior physical education majors who viewed a random selection of five supportive and five non-supportive treatment periods that had been video-taped during the experimental sessions. Three of the judges received a one-hour training period on discrimination of supportive and non-supportive expressive movements. The training program was conducted by the investigator and included definition and explanation of nonverbal expressive movements; demonstration and discussion of the supportive and non-supportive nonverbal movements selected for this study; and practice in recognition of the selected nonverbal expressions. The trained judges viewed three supportive and three non-supportive experimental treatment sessions video-taped during the pilot study, rated the degree of supportive and non-supportive treatment, and received feedback upon their ratings. The other three judges received no training in nonverbal communication. The judges' ratings of treatment effect for each film may be found in Appendix B. The range of the judges' thirty ratings of the supportive nonverbal
treatments was +7 to +10; the median rating was +10. The range of the judges' thirty ratings of the non-supportive nonverbal treatments was -5 to -10; the median rating was -10.

Discussion of the Findings

In the present investigation twenty-eight subjects performed a Bachman Ladder climbing task during experimental treatment sessions of supportive and non-supportive nonverbal communication on a test-retest design. Fourteen subjects received the supportive nonverbal treatment on the first session of forty trials and the non-supportive treatment on the second session of forty trials. Fourteen subjects received the non-supportive nonverbal treatment on the first session of forty trials and the supportive nonverbal treatment on the second session of forty trials. No significant difference between the mean climbing scores of the supportive and the non-supportive treatment groups was found.

The mean scores from the climbing task indicated that subjects climbed more rungs during the supportive nonverbal communication treatment sessions than during the non-supportive nonverbal communication session. The Bachman Ladder task requires that the subject maintain balance of both the total body weight and the ladder for the first rung climbed and then shift the total body weight to climb
each successive rung. Each rung of the Bachman Ladder task is scored as a discrete unit of one. The balancing task becomes increasingly more difficult as the subject moves upward on the rungs and must reposition the body and the ladder. At this stage of the performance more total movement is incorporated and the distance from the stable, starting point increases. It is possible that the groups were not significantly different because climbing four rungs on the Bachman Ladder is of much greater difficulty than climbing two rungs, but the resulting score difference of two rungs does not demonstrate the actual magnitude of improvement. The higher mean scores of the subjects receiving the supportive nonverbal treatment, while not statistically significant, are indicative of better performance.

It was expected that all subjects' scores would show an increase on the second forty trials because of familiarity with the task and the experimental environment, the reduction of the subjects' anxiety levels, and the learning effect (2). According to Morehouse and Miller (5), performance may continue to improve for several practice sessions if fatigue is not an excessive factor in the task. It is important to note, however, that Group II, subjects who received the non-supportive--supportive treatment sequence, had lower mean scores for the first forty trials and higher mean scores for the second forty trials than Group I, subjects
who received the supportive--non-supportive treatment sequence. The greater increase in the scores of Group II may indicate the subjects' unconscious response to the supportive treatment during the second session while the lesser degree of increase in the scores of Group I may indicate an unconscious response to the non-supportive treatment received by these subjects during the second session (8). In each case, the mean scores of the Bachman Ladder task are greater for the supportive treatment. The results may suggest that nonverbal communication has an effect upon performance rather than learning. Lawther (4) states that performance can be measured by a score at a specified point of practice, but that learning must be measured by a score that reflects the rate and amount of change or improvement of skill level performance over a span of time. When treatment conditions were reversed, the mean scores were greater for the group which had changed to the supportive treatment, thus denoting a temporary state of performance rather than a permanent change in climbing behavior or learning during the first session.

The Bachman Ladder task was selected for its qualities as a gross motor, novel skill which requires a minimum amount of verbal explanation and instruction. It was intended that the effects upon the subjects' learning would be limited to the nonverbal supportive and non-supportive expressions performed by the investigator during the test
sessions. The simplicity of the Bachman Ladder task, however, created an "independent learning situation" and greatly reduced the need for subject-investigator interaction verbally or nonverbally. Subjects could count the number of rungs that they climbed on each trial and thus received instant feedback on their learning attempts. Singer (7) reports that immediate reinforcement is of greater strength than delayed reinforcement for acquisition of motor skills. The success or failure expectations expressed nonverbally by the investigator followed the instant reinforcement of the subjects' knowledge of the number of rungs climbed on each trial. The effects of the nonverbal treatment upon the subjects' learning might have been weakened because it followed the feedback and consequently, it was not essential information for the learner in this task.

It is also possible that the influence of nonverbal communication upon learning a physical skill is dependent upon a time sequence. Subjects must recover physically and psychologically from the attempted skill or trials before effective communication is considered. In the present study, subjects were regaining balance, adjusting the ladder, repositioning the body, preparing for the next trial, and performing the climbing task during the nonverbal treatments. Therefore, the expressive movements performed by the investigator did not receive the focused attention of the
subjects and the effect of the nonverbal communication may have been reduced.

Subjects' reactions to the expressed success or failure expectations by the nonverbal communication treatment was a factor that may have altered the results. Oxendine (6) states that continuous negative reinforcement may lose some of its effect resulting in subsequent little influence upon the motivational state of the learner. Oxendine further relates that negative reinforcement may actually stimulate the motivational state of some learners and improve rather than hinder the level of performance. These factors could have influenced the subjects' reactions to the non-supportive nonverbal communication resulting in the higher than expected mean scores for the non-supportive treatment sessions. In addition, Bayton and Conely (1) report that following early, extended success experience, subsequent failure tends to increase the motivation of the learner. Subjects receiving the forty trials with supportive reinforcement were highly motivated. The failure expectation expressed by the non-supportive treatment following the forty success-trials may have heightened the motivational levels of the subjects resulting in a continued increase in the climbing scores. The opposing effects of these factors on subjects' reactions to supportive and non-supportive treatments may have
neutralized the difference between the mean scores of the
two groups during the climbing trials.

The subjects' ratings of the degree of the nonverbal
supportive and non-supportive communication effects pro-
duced by the expressive movements of the investigator
during the treatment periods were graphically represented.
The ratings were rank ordered and plotted on two scatter-
grams representing the first and second testing sessions.
A line of good fit drawn through the subjects' ratings
demonstrated that the subjects did distinguish a difference
between the supportive and the non-supportive treatment
variable.

The range of the twenty-eight ratings for the first
testing session was \(-6\) to \(+10\). Nineteen subjects rated
the session as supportive; however, only fourteen of these
subjects had received the positive treatment. Eight of
the fourteen subjects receiving the negative treatment
rated the session as non-supportive. One subject, who
had received the non-supportive treatment, reported a
neutral rating. Subjects that reported a supportive
treatment effect rated the degree of expressive behaviors
as above-average to superior, while the subjects that
reported a non-supportive treatment effect rated the degree
of expressive behaviors as below-average to average, but
they did not register high degrees of non-supportive
treatment. In addition, five subjects who received
non-supportive nonverbal communication rated the treatment as favorable while none of the subjects who received the supportive treatment failed to distinguish the treatment.

The range of ratings for the second testing session was -10 to +10. Eighteen subjects rated the session as supportive; however, only fourteen of these subjects had received the positive treatment. Nine of the fourteen subjects receiving the negative treatment rated the sessions as non-supportive. One subject, who had received the non-supportive treatment, reported a neutral rating. Four subjects who were exposed to the nonverbal non-supportive treatment erroneously rated the treatment. The degree ratings of expressive behaviors of the supportive treatments were clustered within the top one-half of the one-to-ten scale. The degree ratings of expressive behaviors of the non-supportive treatments were distributed equally within the one-to-ten scale. The greater range of variance of the ratings on the second sessions suggests that the subjects were better able to discriminate between the effects of supportive and non-supportive nonverbal expressions following exposure to both treatments.

Kent (3) reports that student ratings of teachers tend to be overly lenient. Negative criticisms are represented as average or as middle-scale ratings and positive opinions are represented as superior or as top-scale ratings. In this investigation, subjects' median ratings of the supportive
treatments were consistently higher than the median ratings of the non-supportive treatments. The data indicate that the subjects did tend to be overly lenient in the degree of ratings of the positive expressive behaviors and only mildly critical of the negative expressive behaviors to the extent that nine of the subjects who received the non-supportive nonverbal communication inappropriately assessed the treatment.

Nine of the subjects who were dropped from the study did not reappear for the second testing session and did not indicate an explanation for their withdrawal from the study. One of the subjects had received the supportive treatment on the first testing session and eight of the subjects had received the non-supportive treatment on the first testing session. The greater drop-out rate of the subjects receiving the non-supportive treatment may imply that the subjects did develop a negative attitude toward the experimental sessions.

A panel of six junior and senior physical education majors viewed a random selection of five supportive and five non-supportive treatment sessions. The median ratings of +10 for the supportive sessions viewed and -10 for the non-supportive sessions viewed verified the variance of treatment effect produced by the nonverbal expressive movements of the investigator. Both supportive and non-supportive movements were easily distinguished by the
physical education majors. It is possible that the judges were able to view the films with focused attention upon the expressive movements and objectively evaluate the treatment effects while subjects may have experienced a personal, emotional reaction and were unable to adequately assess the treatment variance.

Summary

Data in the present investigation were analyzed by the analysis of variance method. No significant difference was found between the two groups' performances in climbing the Bachman Ladder during supportive nonverbal treatment and non-supportive nonverbal treatment. Both groups improved in climbing skill with the greatest increase of scores produced under supportive nonverbal treatment. In addition, subjects' ratings of the supportive--non-supportive treatment effects were represented graphically. Inspection of the ranked ratings illustrated that subjects did distinguish the supportive--non-supportive variable.


CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

Purpose and Procedures

The purposes of the study were to (1) validate five selected supportive and five selected non-supportive nonverbal movements as symbols for communication interaction, and (2) to determine the effects of supportive and non-supportive nonverbal movement expressions of the investigator upon the subjects' learning of a gross motor skill.

The subjects were twenty-eight women enrolled in physical education activity classes at North Texas State University, Denton, Texas. Students who met the established criteria for the present investigation were randomly selected as subjects for the study.

The nonverbal expressive movements that were selected for the supportive treatment were (1) pleasant facial expression, (2) hand movements with palm upward, (3) up and down head nodding movements, (4) direct eye contact, and (5) forward movement toward the subject. The nonverbal expressive movements that were selected for the non-supportive treatment were (1) unpleasant facial expression,
(2) hand movements with palm downward, (3) side to side head shaking movements, (4) indirect eye contact, and (5) backward movement away from the subject.

The testing instrument used to measure gross motor learning was the Bachman Ladder task. Subjects were given a total of eighty trials; forty trials were given on the first testing session and forty trials were given on the second testing session. Each testing period of forty trials was divided into four blocks of ten trials with thirty-second intervals following the first, second, and third blocks of trials. Following the fourth block of trials, the subjects completed a post-treatment questionnaire designed to determine the degree of supportive or non-supportive treatment given by the investigator during the testing session. The nonverbal treatment for the first session was randomly selected for each subject. On the second testing session, each subject received the nonverbal treatment opposite that received on her first testing session. Fourteen of the subjects received the supportive--non-supportive treatment sequence and fourteen of the subjects received the non-supportive--supportive treatment sequence.

Six junior and senior physical education majors were selected by the investigator to serve as a panel of judges. The judges observed a random selection of five supportive and five non-supportive treatment sessions video-taped during the experimental sessions. Three of the judges were
trained to recognize and interpret nonverbal expressive movements; and three of the judges received no training. The judges rated the degree of supportive or non-supportive treatment produced by the selected nonverbal expressive movements.

Data were analyzed by the analysis of variance method to determine significant differences between groups' performances on the climbing task under supportive and non-supportive nonverbal treatments. Alpha was .05. Subjects' ratings of the degree of supportive or non-supportive treatment distinguished by them during the climbing trials were represented graphically.

Results

The following are the results of the present investigation:

1. No significant difference was found between the nonverbal supportive group and the nonverbal non-supportive group in rungs climbed over forty trials during the first testing session.

2. No significant difference was found between the nonverbal supportive groups and the nonverbal non-supportive group in rungs climbed over forty trials during the second testing session.

3. No significant differences existed between climbing scores for the supportive and non-supportive groups regardless of the treatment sequence.
4. Improvement in climbing performance for all subjects occurred. A higher climbing score was recorded for the supportive group than the non-supportive group in both testing sessions.

5. Subjects were able to distinguish supportive and non-supportive nonverbal treatment effects but were lenient in the critical judgement of the degree of supportive and non-supportive nonverbal expressions.

6. Judges were able to discriminate between the supportive and non-supportive treatments. As indicated by the judges' ratings the five selected expressive movements did produce a supportive treatment effect; and the five selected expressive movements did produce a non-supportive treatment effect.

Conclusions

The results of the investigation would seem to justify the following conclusions:

1. Nonverbal supportive and non-supportive treatments do not significantly affect gross motor learning.

2. Supportive nonverbal movements appeared to produce a greater improvement in gross motor performance than non-supportive movements within this sample.

3. Subjects are able to recognize supportive and non-supportive nonverbal expressive movements.
4. The five selected supportive expressive movements and the five selected non-supportive expressive movements are valid techniques for nonverbal communication.

Recommendations

The following recommendations are offered:

1. Although the Bachman Ladder offered qualities that provided for a low level of verbal interaction, the simplicity and nature of the task also reduced the subjects' dependence upon the investigator for learning feedback and thus weakened the supportive and non-supportive nonverbal treatment effects. A gross motor task with instructor controlled feedback should be used to determine supportive and non-supportive nonverbal influence of the instructor upon the student's learning efforts.

2. A gross motor task involving a greater range in score variance and which has continuous units for measurement of learning should be used in future studies.

3. Further investigation could be conducted which would include two additional groups of women subjects. One group would receive the supportive nonverbal treatment for the total eighty trials and one group would receive the non-supportive treatment for the total eighty trials. The groups of subjects would be equated on initial skill ability on the first ten trials. These groups might determine if longer periods of nonverbal supportive and
non-supportive treatments would influence the learning of a gross motor skill.

Summary

This chapter presented a summary of the purposes and procedures of this investigation, as well as the results and conclusions of the study. Recommendations for future investigations involving nonverbal effects upon gross motor learning were included.
APPENDIX A

SCREENING QUESTIONNAIRE FOR SUBJECT SELECTION

Name ____________ Age _____ Height ________ Weight _____
Place of Birth ____________ College Entrance Score ________
Ethnic Group, Check One Preferred Writing Hand, Check One
______ Caucasian _____ Right
______ Indian _____ Left
______ Mexican
______ Negro
______ Oriental

Socio-economic Status, Check One
______ Upper
______ Middle
______ Lower

Languages Spoken by You Or In Your Home
______ English Only
______ Others, Please List __________, __________, __________

Do you have knowledge of or experience with the Bachman Ladder?
______ Yes ________ No

If selected as a subject, would you participate in a research experiment that would require approximately forty minutes and moderate physical activity?
______ Yes ________ No

Name ____________________________
NTSU Address _____________________
NTSU Phone _______________________

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VERBAL INSTRUCTIONS FOR THE BACHMAN LADDER TASK

1. The object of the Bachman Ladder task is to climb as high as possible each time.
2. You may climb as fast or as slow as you want.
3. You must start with the right foot each time. Do not skip any rungs.
4. Each time you lose your balance or skip a rung you must start over.
5. Place your hands on the sides of the ladder near the top cross bar.
6. The support bars in front of the ladder will hold your weight if you should fall forward while climbing.
7. On the command, "begin," you may start to climb. Continue the climbing trials until you hear the command, "stop."
8. You will have ten climbing trials, then a thirty-second rest. You will follow this pattern for a total of forty trials.
9. Do you understand?
PILOT STUDY

VERBAL INTERACTION FOR THIRTY-SECOND RECOVERY PERIOD

Approximately 20-25 seconds

"Stop, ______(name)_______. That was your _____th block of ten trials. The highest number of rungs you climbed was ________. How do you feel about your performance?

Answer from subject.

"On the next block of ten trials, what would you like your high score to be?"

Answer from subject.

"What do you think your high score will really be?"

Answer from subject.

"You will have _________ more trials. Be sure to concentrate on climbing as high as possible. You may prepare yourself to climb again. Start when you hear the word begin."
<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>TREATMENT</th>
<th>DATE</th>
<th>TRIALS</th>
<th>BLOCK 1</th>
<th>BLOCK 2</th>
<th>BLOCK 3</th>
<th>BLOCK 4</th>
<th>TOTAL</th>
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<td></td>
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<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
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</tbody>
</table>
APPENDIX B

MODIFICATION OF VERBAL INTERACTION CONTROL FOR
THIRTY-SECOND RECOVERY PERIOD OF
INVESTIGATION

Investigator looked toward the assistant and asked, "What was the highest number of rungs climbed during the ten trials?"

Answer from assistant.

Supportive Interaction Treatment--Investigator looked toward the subject and repeated the high score.

All other interaction during this thirty-second period consisted of the nonverbal communication movements selected for this study.
SUBJECTS RAW SCORE TOTALS AND MEANS FOR SUPPORTIVE AND NON-SUPPORTIVE BACHMAN LADDER CLIMBING TRIALS

<table>
<thead>
<tr>
<th>Subject</th>
<th>First Supportive</th>
<th>Second Non-Supportive</th>
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<tbody>
<tr>
<td></td>
<td>Total Raw Score</td>
<td>M</td>
</tr>
<tr>
<td>1. CJ</td>
<td>129</td>
<td>3.2250</td>
</tr>
<tr>
<td>2. LB</td>
<td>94</td>
<td>2.4000</td>
</tr>
<tr>
<td>3. JK</td>
<td>97</td>
<td>2.4250</td>
</tr>
<tr>
<td>4. PM</td>
<td>90</td>
<td>2.2500</td>
</tr>
<tr>
<td>5. JG</td>
<td>145</td>
<td>3.6750</td>
</tr>
<tr>
<td>6. SB</td>
<td>102</td>
<td>2.4250</td>
</tr>
<tr>
<td>7. AM</td>
<td>93</td>
<td>2.3250</td>
</tr>
<tr>
<td>8. KR</td>
<td>125</td>
<td>3.1250</td>
</tr>
<tr>
<td>9. KS</td>
<td>128</td>
<td>3.2000</td>
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<tr>
<td>10. SP</td>
<td>150</td>
<td>3.7500</td>
</tr>
<tr>
<td>11. KH</td>
<td>140</td>
<td>3.0750</td>
</tr>
<tr>
<td>12. KR</td>
<td>83</td>
<td>2.0750</td>
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<tr>
<td>13. CW</td>
<td>82</td>
<td>2.0500</td>
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<tr>
<td>14. FW</td>
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<td>2.9750</td>
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<table>
<thead>
<tr>
<th>First Non-Supportive</th>
<th>Second Supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. DP</td>
<td>102</td>
</tr>
<tr>
<td>16. LR</td>
<td>108</td>
</tr>
<tr>
<td>17. SW</td>
<td>112</td>
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<tr>
<td>18. PW</td>
<td>110</td>
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<tr>
<td>19. KF</td>
<td>104</td>
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<tr>
<td>20. DC</td>
<td>90</td>
</tr>
<tr>
<td>21. PD</td>
<td>118</td>
</tr>
<tr>
<td>22. SG</td>
<td>123</td>
</tr>
<tr>
<td>23. DR</td>
<td>54</td>
</tr>
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<td>24. KS</td>
<td>110</td>
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<tr>
<td>25. LS</td>
<td>126</td>
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<tr>
<td>26. JC</td>
<td>146</td>
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<tr>
<td>27. CW</td>
<td>96</td>
</tr>
<tr>
<td>28. MG</td>
<td>65</td>
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</table>
POST-TREATMENT QUESTIONNAIRE

Directions: Please check either A or B as answers to each question.

1. During your trials of climbing the Bachman Ladder did you believe the instructor to be
   _____ A. encouraging of your efforts
   _____ B. discouraging of your efforts

2. Was the encouraging or discouraging attitude expressed to you by
   _____ A. words and statements
   _____ B. gestures and movements

3. On the 1-10 scale below, circle the numerical value that best indicates the degree of encouraging or discouraging expression given you by the instructor's actions, gestures, or movements.

   1  2  3  4  5  6  7  8  9  10

   low degree of expression  neutral degree of expression  high degree of expression
NONVERBAL OBSERVATION CHECK SHEET FOR
JUDGES TREATMENT VERIFICATION

1. Facial
   _____ A. pleasant facial expression, smiling
   _____ B. unpleasant facial expression, no smile

2. Hands
   _____ A. hand movements with palm upwards
   _____ B. hand movements with palm downwards

3. Head
   _____ A. nodding head movement, up and down
   _____ B. shaking head movement, side to side

4. Eyes
   _____ A. eye contact, direct
   _____ B. eye contact, indirect and evasive

5. Body position
   _____ A. forward movement, stepping toward the subject
   _____ B. backward movement, stepping away from the subject

6. Total rating of instructor's nonverbal communication movements.
   _____ A. supportive
   _____ B. non-supportive

7. On the 1-10 scale below, circle the numerical value that best indicates the degree of expression of supportive or non-supportive nonverbal communication demonstrated by the investigator.

   1   2   3   4   5   6   7   8   9   10
   low expression   neutral expression   high expression
JUDGES' RATINGS OF A RANDOM SELECTION OF FIVE SUPPORTIVE AND FIVE NON-SUPPORTIVE NONVERBAL TREATMENT SESSIONS

<table>
<thead>
<tr>
<th>Judge</th>
<th>Supportive Treatment Ratings</th>
<th>Non-Supportive Treatment Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a DS</td>
<td>10 10 10 10 10</td>
<td>8 10 10 8 10</td>
</tr>
<tr>
<td>2a BP</td>
<td>10 10 10 10 10</td>
<td>10 9 10 9 10</td>
</tr>
<tr>
<td>3a PT</td>
<td>9 9 7 9 7</td>
<td>9 7 7 5 10</td>
</tr>
<tr>
<td>4b DS</td>
<td>10 10 10 10 10</td>
<td>10 9 8 10 9</td>
</tr>
<tr>
<td>5b SE</td>
<td>10 10 9 10 10</td>
<td>10 10 10 8 10</td>
</tr>
<tr>
<td>6b RS</td>
<td>10 10 8 10 10</td>
<td>10 10 8 8 10</td>
</tr>
</tbody>
</table>

a--trained observer  
b--untrained observer
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