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MODULAR INSTRUCTION IN
NONVERBAL COMMUNICATION

DISSERTATION

Presented in Partial Fulfillment of the Requirement for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Joan N. Shapiro, B.A., M.S.

* * * * *

The Ohio State University
1976

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ACKNOWLEDGMENTS

I wish to thank each member of the Reading Committee for the attention and support they have given me. Without the time spent by Thomas M. Stephens, Charles M. Galloway, and Fred H. Wallbrown in reading the material, offering suggestions for revisions, and seeing me on a personal basis, this dissertation might not have been possible.

Special thanks go to my former adviser, the late Charles B. Huelsman, Jr., for his efforts on my behalf. His encouragement and interest enabled me to continue working towards the doctorate.

Finally, I wish to acknowledge the part played by my husband, Arthur, in the completion of this dissertation. His incisive questions, varied suggestions, unwavering support, and willingness to accept the roles of devil's advocate and gadfly at appropriate times helped to spur me on to action.
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Chapter I

INTRODUCTION

There is an increasing emphasis on effective communication among people in both their individual and group relationships because human communication is a complex process involving more than words alone. Besides the verbal content of a message, there are various nonverbal elements such as gestures, body posture, tone of voice, facial expressions, and eye contact which play a role in communications (Knapp, 1972).

The importance of the nonverbal aspect of communication in human interaction is cited throughout the literature. Nonverbal behaviors are considered to play a central role in interpersonal relationships, particularly in the communication of emotions (Duncan, 1969; Ekman & Friesen, 1968). The complementary use of both nonverbal and verbal language is one aim of psychotherapy (Ruesch, 1955). Nonverbal behaviors provide cues to deception (Ekman & Friesen, 1969; Mehrabian, 1971). Further, there is some evidence to support the hypothesis that when nonverbal and verbal messages are contradictory, the nonverbal message is more likely to be accepted as an accurate reflection of the
individual's feelings than is the verbal statement (Argyle, Salter, Nicholson, Williams, & Burgess, 1970; Galloway, 1966; Mehrabian, 1972; Tabor, 1970).

Since the teaching-learning process is basically a communication event and nonverbal messages are part of the total process of communication, investigators need to concern themselves with nonverbal behavior in order to have a comprehensive view of the communication process (Knapp, 1971). In view of the fact that "the teacher's nonverbal behavior seems to be integral in the formation of student attitudes toward school" (Galloway, 1971, p. 227), teachers need to become aware of their nonverbal activities.

Although nonverbal communication has been investigated in the fields of anthropology, sociology, and psychology, it is a relatively neglected area in educational research, but "it is a major part of the affective domain in any classroom" (Schusler, 1971, p. 282). Teacher effectiveness, teacher-pupil communication, and interpersonal relations among school personnel can be facilitated by further investigation of nonverbal communication.

There appears to be little doubt in the literature that nonverbal communication is an important factor in human interaction. The impact, scope, and pervasiveness of nonverbal communication as well as the appropriateness and desirability of school personnel to become more
acquainted with the area have been discussed in various publications.

Statement of the Problem

On the basis of the research that has been cited above, school personnel should be trained in awareness of nonverbal communication in their personal and professional lives. Before school personnel can become aware of the part nonverbal communication plays in their lives, they must have knowledge of what it is.

The primary intent of this study was to develop awareness of nonverbal communication. Volunteers used a module on nonverbal communication, which had been developed by this investigator as part of the present study. The problem with which this investigator was concerned was the effectiveness of modular instruction in nonverbal communication. The following question, which resulted from the problem statement, was investigated:

Will elementary school personnel who volunteer to use the investigator's module on nonverbal communication make significant gains in their knowledge of nonverbal communication?

Definition of Terms

1. Module - a self-contained packet of materials, exercises, and tests which allows an individual to work at his own pace and which is designed to increase his knowledge in a particular area.
2. Nonverbal communication - messages sent and/or received which are independent of the written and spoken word. The various aspects of nonverbal communication that the present study will focus upon are as follows:

   a. Paralanguage - nonverbal vocal components of speech
   b. Proxemics - man's use of personal and social space
   c. Kinesics - the study of body movements
   d. Clothing
   e. Physical appearance

3. School personnel - any person who is working in a public or private school system, such as regular classroom teachers, special classroom teachers, reading specialists, language development teachers, counselors, administrators, learning disabilities tutors, speech therapists, school psychologists and any other specialists who are certified by the State to hold a particular professional position in a school system.

Limitations of the Study

One limitation of the study is related to the nature of nonverbal communications. Behavior of this type is just one facet of total communications and, as such, must be placed in a situational context. It is not easily isolated from verbal aspects of communications. Therefore, a module dealing with nonverbal communication needs to delineate aspects of nonverbal behavior as part of a whole behavior complex, while at the same time making clear the nonverbal elements involved in the process.

A second limitation is that the module was developed solely by the investigator after an extensive review of
the literature in the area of nonverbal communication. Consequently, gains made in knowledge of nonverbal communication by the volunteers involved in the study are probably limited to the instructional materials.

A third limitation is that those school personnel who used the module were volunteers. Therefore, the findings of the module's effectiveness in teaching the various aspects of nonverbal communication should be confined only to volunteer school personnel.

Organization of the Study

Subsequent chapters are arranged as follows: Chapter II presents a review of related literature concerning organizational approaches to nonverbal research and a review of studies in three nonverbal modalities; Chapter III describes procedures and methodology; Chapter IV discusses the findings of the data analysis; Chapter V presents the summary and conclusions. Instruments used in the study, with the exception of the module on nonverbal communication, are found in the Appendix.
Chapter II

REVIEW OF RELATED LITERATURE

The purpose of the present study was to evaluate the efficacy of modular instruction in nonverbal communication. The effects were determined by school personnel at the elementary level who volunteered to participate in the investigation. The problem with which the investigator was concerned was to see if the volunteers would make statistically significant gains in their knowledge of nonverbal communication through the use of a module specifically developed with this objective in mind. Although nonverbal communication is a behavior each individual engages in every day of his existence, it has not been studied through modular instruction. The contribution the investigator hoped to make to educational research was to field test the instructional effectiveness of the module in nonverbal communication which she had developed.

Since the module which was used in the study relied heavily on research findings in the field, the present review of the literature discusses the results of pertinent studies in nonverbal communication which the investigator had reported in the module. Thus, by perusing the contents
of this chapter, the reader will have an excellent idea of the research findings which were incorporated in the module.

The present review of the literature on nonverbal communication is comprised of two major parts. The first section focuses on organizational approaches to nonverbal research and describes the ways in which nonverbal studies have been classified. The second part uses the organizational framework established in the first section to review studies in the following three nonverbal modalities: (a) proxemics or man's use of social and personal space, (b) paralanguage or the nonverbal vocal components of speech, and (c) kinesics or body movement.

One need not be a scholar to recognize that interest in nonverbal communication is burgeoning. There is a growing list of books written for laymen which overtly, or covertly, promise readers an understanding of body signals that will presumably enable them to learn the personal secrets of others and to improve their social and business lives (Davis; Fast; Nierenberg & Calero; Poiret; all 1971). For more serious students, textbooks are available which define such nonverbal dimensions as proxemics, kinesics, and paralanguage and cite pertinent literature related to each of these areas (Eisenberg & Smith, 1971; Harrison, 1974; Knapp, 1972).
During the past fifteen years, research studies in nonverbal communication have increased. Investigators from the disciplines of psychology, anthropology, linguistics, and education have brought diverse philosophical perspectives and methodological approaches to bear upon the subject resulting in a breadth and variety of data and behavioral insights. Nonverbal research is making contributions in such applied fields as psychotherapy and teacher-pupil relations. The use of film and videotape equipment promises further advances in the field.

ORGANIZATIONAL APPROACHES TO NONVERBAL RESEARCH

No overall theory exists to assist in organizing the mass of information that is available in nonverbal communications (Rezmierski, 1973). Since this type of research is being conducted by investigators in diverse fields such as anthropology, education, and psychology, there is no single comprehensive theory of nonverbal communication which incorporates all facets of the subject. Investigators within particular disciplines are formulating some threads of theory which have implications for their specialized areas, but do not always extend to other fields (Birdwhistell, 1970; Goffman, 1959, 1963, 1971; Hall, 1959, 1966; Scheflen, 1964, 1965, 1968, 1972, 1974; Trager, 1958).
Three approaches can be considered as ways to organize nonverbal research. First, research studies can be classified according to the research strategy employed. Then, the types of information produced from studies using different research strategies can be discussed. A second approach is to organize nonverbal research according to the discipline which spawns it, such as anthropology, psychology, or education, and to discuss the resulting information in terms of the framework imposed upon it by the field from which it originates. A third system of organization is to classify the available nonverbal studies into areas that are commonly investigated, such as posture, personal space, and paralanguage, and to review pertinent studies in each specific area. Each of the three organizational approaches to nonverbal research will be discussed in turn.

Research Strategy Approach

Nonverbal studies are divided into those dealing with structure and those concerning external variables in the research strategy organizational approach (Duncan, 1969). Studies of structure employ a nonstatistical methodology in attempting to isolate basic units of nonverbal behavior and to describe the systematic relationships among these units. Structural studies are searching for underlying
communication rules which govern nonverbal behavior. External variable studies use statistics to explore the relationships between specific nonverbal behaviors and other variables, such as observers' judgments and personality characteristics. Studies dealing with external variables amass large amounts of data in very specific areas.

Structural and external variable research strategies can be used to categorize many of the studies in nonverbal behavior. However, most of the research conducted in the educational field does not fit into either of the strategies described. Investigators in educational research have had as a major focus the development of observational instruments and the creation of observational categories to describe both verbal and nonverbal classroom interaction (Galloway, 1972). Some of the observational instruments that have been developed include a seven category instrument for observing teacher nonverbal communication (Galloway, 1968b), the Student Behavior Index, which describes students' verbal and nonverbal behaviors (Parker and French, 1971), a nonverbal inventory for teachers (Grant & Hennings, 1971), an instrument to record teacher nonverbal behavior (Love & Roderick, 1971), and a system called the MINI-TIA (Miniaturized Total Interaction Analysis) which consists of verbal and nonverbal categories.
used by an observer (Heger, 1969). The research that is being conducted in education warrants the creation of a third research strategy entitled "Instrument Development."

**Disciplinary Approach**

The disciplinary approach to the organization of research in nonverbal communication involves an examination of the information which is generated in different fields, such as anthropology, sociology, psychology, and education. Anthropologists study the similarities and differences of nonverbal behaviors across cultures. Sociologists are interested in a molar view of nonverbal expressions as they appear in role behaviors. Psychologists take a molecular view of body movements and study specific behaviors, such as eye movements and facial expressions, in an attempt to generate hypotheses about personality and emotional expression. Educators are interested in the development of observational categories and instruments to study classroom interaction (Galloway, 1967).

**Area of Study Approach**

A third organizational approach to nonverbal research is to classify the studies into specific areas that are commonly investigated, such as posture, distance, and
paralanguage (Evans & Howard, 1973; Mehrabian, 1969; Sommer, 1967). An investigator who has done research in a specific area, such as personal space, will be grouped with others who have done work in the same area. The studies in a particular area are described and categorized according to similarities and differences of findings.

If the three organizational approaches to nonverbal research are combined, more information about an investigator is available. Table 1 illustrates the writer's compilation of the three organizational approaches for a few select investigators of nonverbal behavior.

An examination of the table reveals that there are some empty cells. The research conducted by two of the investigators has been molar in nature so that it does not fit into the more narrowly conceived Area of Study category delineated in Table 1. One of these investigators has been interested in teacher-pupil nonverbal behavior and its interactional components, which would necessarily include facets of kinesics, paralanguage, and proxemics (Galloway, 1966, 1968a, 1968b, 1971). The other investigator has been concerned with a general view of nonverbal behavior in such areas as role performance, face-to-face interaction, behavior in public life, and personal forms of territoriality (Goffman, 1959, 1963, 1971).
Table 1

Classification of Investigators of Nonverbal Behavior According to Discipline, Area of Study, and Research Strategy

<table>
<thead>
<tr>
<th>Investigator</th>
<th>Discipline</th>
<th>Area of Study</th>
<th>Research Strategy</th>
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<tr>
<td>Birdwhistell</td>
<td>Anthropology</td>
<td>Kinesics</td>
<td>Structural</td>
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<tr>
<td>Dittmann</td>
<td>Psychology</td>
<td>Paralanguage</td>
<td>External Variable</td>
</tr>
<tr>
<td>Ekman</td>
<td>Psychology</td>
<td>Kinesics</td>
<td>External Variable</td>
</tr>
<tr>
<td>Galloway</td>
<td>Education</td>
<td></td>
<td>Instrument</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Development</td>
</tr>
<tr>
<td>Goffman</td>
<td>Sociology</td>
<td></td>
<td>Structural</td>
</tr>
<tr>
<td>Hall</td>
<td>Anthropology</td>
<td>Proxemics</td>
<td>Structural</td>
</tr>
<tr>
<td>Mehrabian</td>
<td>Psychology</td>
<td>Kinesics</td>
<td>External Variable</td>
</tr>
<tr>
<td>Scheflen</td>
<td>Psychiatry</td>
<td>Kinesics</td>
<td>Structural</td>
</tr>
<tr>
<td>Sommer</td>
<td>Psychology</td>
<td>Proxemis</td>
<td>External Variable</td>
</tr>
<tr>
<td>Trager</td>
<td>Linguistics</td>
<td>Paralanguage</td>
<td>Structural</td>
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The combination of the three organizational approaches to research in nonverbal communication illustrated in Table 1 will be applied to a review of the studies in the area in the section which follows. Where applicable, each area of study will be divided into structural and external variable studies, which, in turn, will be further divided according to the discipline from which they originate. However, since many of the external variable studies are conducted by psychologists, too fine a division of these studies on the basis of the field from which they originate would result in a choppy review of the literature. Therefore, external variable studies will not be differentiated on the basis of the discipline which produces them.

REVIEW OF STUDIES IN THREE NONVERBAL MODALITIES

There is an increasing emphasis on effective communication among people in both their individual and group relationships. Communication involves more than an exchange of words. One definition of communication is a set of messages which an individual sends at any one time (Eisenberg & Smith, 1971). This definition is broad enough to include the possibility that the messages sent may be verbal and/or nonverbal in nature.
Nonverbal communication has been defined as behavior that conveys meaning without words (Galloway, 1968a). Some modalities of nonverbal communication are (a) proxemics, (b) paralanguage, and (c) kinesics. Research in each of these areas of nonverbal communication will be examined within the organizational framework delineated above.

Proxemics

Proxemics is the study of man's use of social and personal space and his concern with maintaining certain physical distances in various interpersonal situations. Proxemics is based on the concept of territoriality which involves claiming a particular spatial area as one's own and defending it against invaders. The study of proxemics includes research on personal space and seating arrangements.

Structural Studies

In Anthropology. Man's use of space has three aspects: (a) fixed-feature, (b) semifixed-feature, and (c) informal. Fixed-feature space is characterized by unmovable boundaries. Expressions of fixed-feature patterns are buildings and walls of a room. Semifixed-feature space refers to large, movable objects such as furniture. What is fixed-feature space in one culture can be semifixed in another, and vice versa. For example, the walls in an American home
are fixed-feature because they are immovable, but the walls in a Japanese home are movable and thus, classified as semifixed (Hall, 1966).

Both fixed and semifixed-feature spatial arrangements can be sociofugal or sociopetal. Sociofugal spatial arrangements discourage interaction between people by structuring space in such a manner that people face away from each other. A library is an example of sociofugal space. Sociopetal arrangements facilitate face-to-face interaction (Hall, 1968).

The third spatial category is informal or personal space. Each person carries around with him an imaginary bubble called informal space which expands or contracts depending on the culture from which the person comes, the type of personal encounter which is occurring, and the personalities of the interactants. Four types of informal space which have been observed in middle class adults from the northeastern part of the United States are intimate distance which ranges from touch to 18 inches, personal-casual distance which ranges from 18 to 48 inches, social-consultative distance which extends from 4 to 12 feet, and public distance which ranges from 12 to 25 feet or more (Hall, 1966).

In Sociology. The individual's use of space in public is guided by a special set of rules called situational
proprieties. These rules determine the allocation of the individual's involvement within a particular situation. To control the allocation of involvement and to avoid getting too embroiled with the concerns of others in public places, one convention that is used is civil inattention. When two strangers approach each other on an uncrowded street, they glance at each other up to approximately eight feet to locate and acknowledge each other's presence and to apportion sides of the street for passage. As they continue to approach each other, each person drops his gaze to avoid prolonged eye contact that might invite a more personal encounter. Civil inattention is a courtesy that demonstrates an appreciation of the other's presence without a more formal recognition that would personally involve the participants (Goffman, 1963).

Another mechanism that is used to control the individual's involvement and to govern his use of public space is labeled temporary territories. Reserving a space by placing a coat over the back of a chair or a notebook on a table are examples of establishing temporary territories. Most people respect temporary territories without a need to exchange words (Goffman, 1963).
External Variable Studies

Studies of proxemics that have employed the external variable research strategy can be classified in two ways. First, there are the studies that investigate the factors which influence personal space. Second, there are the studies that explore the variables which are involved in seating arrangements.

Studies of Personal Space

Personal space studies are concerned with the elements which determine the distances people maintain in their face-to-face interactions. The data collected from studies relating a person's spatial behavior to various psychological variables are not always consistent as a result of methodological differences. Research findings show that interpersonal distances are related to sex, age, culture, and attitude.

Sex. There are definite sex differences in proxemic behavior. Females have smaller personal space zones than males (Hartnett, Bailey, & Gibson, 1970; Willis, 1966). Female pairs have smaller personal space zones than male pairs (Adler & Iverson, 1974; Lott & Sommer, 1967; Pellegrini & Empey, 1970), while male-female pairs use smaller personal space zones than same-sexed pairs (Kuete & Weingartner, 1964). In grades one through six, males have a larger
personal space than females, and personal space toward opposite sexed children is smaller than toward same-sexed children (Pedersen, 1973). Girls become sensitive to proxemic cues in judging liking earlier than boys do (Post & Hetherington, 1974).

**Age.** Very little research has been reported on the developmental aspects of personal space. Although children are aware of informal space by the time they are in third grade, the awareness of the four levels of informal space are not learned simultaneously. Children first become aware of the meaning of public distance, followed by intimate distance, with personal and social distances being learned last (Scott, 1974). Children between the ages of eight and ten develop the capacity to elicit personal space invasion behavior in adults behind whom they stand too closely (Fry & Willis, 1971). Children use more personal space as they grow older. Same-sexed pairs, particularly males, require more personal space than heterosexual pairs by grades six or seven (Meisels & Guardo, 1969).

**Culture.** Since the four informal space distances discussed above were observed in middle class adults located in the northeastern part of the United States, hypotheses about whether these distances exist in all cultures and in subcultures within the United States have
arisen. Cross-cultural studies show that interpersonal distances vary from culture to culture. A study of the proxemic behavior of Arabs and Americans reveals that Arabs stand closer together, face each other more directly, and are more apt to touch each other than are Americans (Watson & Graves, 1966). The results of another cross-cultural study disclose that the social interaction distances for Americans, Swedes, and Swiss are greater than the interaction distances of Greeks and Italians (Little, 1968).

In subcultural studies, there are differences in the proxemic behavior of blacks and whites. Pairs of whites stand closer together than pairs of blacks (Baxter, 1970; Willis, 1966), but when blacks and whites interact, their personal space zones are larger than when members of the same race, black or white, interact (Willis, 1966). Blacks stand closer than whites in the early grade school years (Aiello & Jones, 1971), but this difference diminishes by the third grade and actually reverses by the fifth grade (Jones & Aiello, 1973).

**Attitude.** The attitude people have towards one another may affect the ways in which they spatially relate to one another. Attitude change decreases in direct proportion to distance from a hostile speaker, with increasing negative attitudes at close interpersonal distances (Albert & Dabbs,
Increasing interpersonal distances are used by persons under stress (Dosey & Meisels, 1969; Little, 1965). Persons who wish to convey a positive attitude choose smaller interpersonal distances than neutral or unfriendly communicators (Kelly, 1972; Lott & Sommer, 1967; Mehrabian, 1969; Rosenfeld, 1965; Sommer, 1967). Individuals who are more friendly with each other have smaller personal space zones than those who are strangers (Little, 1965; Willis, 1966).

Studies of Seating Arrangements

Seating behavior in small groups has come to be known as small group ecology. Studies in the area reveal that there are reasons for many of our seating arrangements. The particular seating location one chooses in relation to another person depends on the task at hand, the status of the interactants, the personalities of the individuals, and the sex of the interactants (Sommer, 1967). The effect of diverse variables on seating arrangements are summarized as follows:

1. At a rectangular table, conversing groups prefer corner to corner or opposite seating arrangements; cooperating groups prefer a side-by-side arrangement; and competing groups prefer an opposite arrangement (Sommer, 1965).
2. High status, dominant individuals in American culture choose the head position at a rectangular table (Strodtbeck & Hook, 1961).

3. Persons sit further from higher and lower status individuals than they do from peers (Lott & Sommer, 1967).

4. Corner seating is judged more intimate than side seating in photographs (Scherer & Schiff, 1973).

5. Extroverts choose to sit opposite another and choose positions which will place them in close physical proximity to another (Cook, 1970).


Aside from the variables that affect seating arrangements, seating location in a classroom has several effects of its own. Where one sits in a traditional classroom has many implications. Some positive outcomes are associated with front row seating. Accumulated findings concerning front row seating are as follows:

1. Students sitting near the front participate more than students sitting in the back (Sommer, 1969).

2. Students sitting in the center of a row participate more than students at the sides (Sommer, 1969).

3. Children in the front row are more attentive to class activities than classmates in the middle and back rows (Schwebel & Cherlin, 1972).

4. Students seated in the front are perceived more positively by their teachers and peers than students seated in the middle and back (Schwebel & Cherlin, 1972).
5. Students sitting in the front evaluate themselves more positively than students sitting in the middle or back (Schwebel & Cherlin, 1972).

6. College students sitting toward the front and center of a class have higher grades than students sitting in the rear and at the sides (Becker, Sommer, Bee, & Oxley, 1973).

Paralanguage

Paralanguage is the nonverbal component of speech and deals with how something is said and not with what is said. Paralanguage is the factor which allows people to make inferences about a speaker whom they have heard, but not seen. These inferences might include such things as the speaker's sex, age, nationality, and emotional state.

Structural Studies in Paralinguistics

The components of paralanguage which have been isolated are voice qualities and vocalizations. Voice qualities are "modifications of all the language and other noises," while vocalizations are "variegated...noises, not having the structure of language" (Trager, 1958, p. 4). Both components of paralanguage include the following subdivisions:

I. Voice Qualities

A. Pitch Range - varies from a wide range of pitch to a narrow range approaching a monotone
B. Control
1. Lip control - produces smooth transitions as opposed to short transitions
2. Rhythm control - produces smooth, flowing rhythm as opposed to broken, jerky rhythm
3. Articulation control - produces a forced as opposed to a relaxed stream of sound

C. Resonance - ranges from a thin, reedy voice to a big, booming voice

D. Tempo - ranges from very fast to very slow

II. Vocalizations

A. Vocal Characterizers
1. Sighing
2. Crying
3. Groaning
4. Laughing
5. Sneezing

B. Vocal Qualifiers
1. Intensity - very loud to very soft
2. Pitch height - very high to very low
3. Extent - extreme drawl to extreme clipping

C. Vocal Segregates
1. Uh
2. Ummm
3. Uh-huh
4. Ah

External Variable Studies'

Research in paralinguistics has had as a major focus the study of hesitation phenomena. Hesitation phenomena include pauses and nonfluencies, such as repetitions, stutters, and false starts. Pauses have been the subject of more investigations than any other paralinguistic behavior.
Pauses can be classified according to length, location, and type. The length of pauses ranges from milliseconds to minutes. In interviewing situations, pauses can usually range between one and two seconds (Matarazzo, Wiens, & Saslow, 1965). However, the interviewer can influence the duration of pauses by controlling the length of his own pauses.

The location of pauses in speech are unevenly distributed. Pauses can occur at grammatical or nongrammatical junctures. Pauses at grammatical junctures include those made at the end of a sentence, before a conjunction or adverbial clause, or when a parenthetical reference is made. Examples of pauses at nongrammatical junctures are gaps in the middle of a phrase, false starts, and gaps between words or phrases that are repeated (Goldman-Eisler, 1968).

The two major types of pauses are unfilled (silent) and filled. Pauses can be filled with vocal segregates such as um, ah, or uh. Filled pauses also include stutters, repetitions, false starts, and slips of the tongue (Mahl, 1956).

Filled pauses have been associated with a number of undesirable characteristics. Speech which follows a filled pause has been characterized as inferior to speech following an unfilled pause in terms of imagination, spontaneity, and
More time is needed to solve addition problems by persons when they use filled pauses than when they are silent (Livant, 1963). A higher number of filled pauses characterizes the speech of both client and therapist in therapy hours classified as "poor" by the therapist. Filled pauses are absent from therapy hours termed by the therapist as "peak" hours (Duncan, Rice, & Butler, 1968).

Research in hesitation phenomena has been used to clarify the processes of speech encoding and decoding. A significant proportion of filled and unfilled pauses occur at the beginnings of phonemic clauses, lending some credence to the theory that speech encoding uses units larger than words (Doomer, 1965). The phonemic clause is a group of words, averaging five in length, which has one primary stress and ends in a juncture. The phonemic clause has been proposed as the basic unit which the listener uses in decoding speech, since listeners' head nods and vocal responses are found to occur almost exclusively at the ends of speakers' phonemic clauses (Dittman & Llewellyn, 1967, 1968).

Kinesics

Kinesics is body movement and includes posture, gesture, facial expressions, eye behavior, and movements of the hands,
feet, limbs, body, and head. No single gesture or facial expression can be used to determine a person's affect or attitude. Nonverbal behavior must be viewed within a situational context. The various components of nonverbal behavior are integrated with each other and with the verbal content inherent within each specific situation.

Structural Studies

In Anthropology. The model and methodology developed by American structural linguists is used to analyze body motion. Kinesics states that body and facial behaviors can be viewed as a communication system comparable to spoken language. The phoneme, morpheme, and syntactic units of linguistics have analogous counterparts in kineme, kinemorph, and kinemorphic constructions of kinesics.

The smallest unit of analysis in kinesic behavior is the allokine. However, allokines are such small, differentiated units of movement that to use them to analyze kinesic behavior would result in an infinite number of categories. Allokines are combined into larger groups called kines which, in turn, are further combined to form kinemes. A kine is a category of movement which includes all the allokinic variations of a given movement, such as all the possible positions of the eyelids. Kines are combined to form a kineme which is a group of movements that
can vary among themselves without affecting the larger units of which it is a part. American movement consists of 50 to 60 kinemes, of which 33 are associated with the face and head. Some examples of kinemes are three head nods (single, double, and triple) and four brow movements (lifted, knit, lowered, and single brow movement) (Birdwhistell, 1970).

These kinemes combine to form kinemorphs, which are further analyzable into kinemorphemic classes which behave like linguistic morphemes. These, analyzed, abstracted, and combined in the full body behavioral stream, prove to form complex kinemorphs which may be analogically related to words. Finally, these are combined by syntactic arrangements, still only partially understood, into extended linked behavioral organizations, the complex kinemorphic constructions, which have many of the properties of the spoken syntactic sentence (Birdwhistell, 1970, p. 101).

In Psychiatry. The structure of communication behavior has been studied by a method called context analysis. In context analysis, behavioral components are organized into structural units which, in turn, are parts that are integrated into a larger system. The varied elements of behavior are analyzed to find their structural configurations as they appear in the stream of behavior. After a unit has been identified, each recurrence of it is examined in the situational context in which it occurs. The function of the behavioral unit in the larger system is decided by comparing what happens when it does and does not occur.
Thus, communication consists of a hierarchy of inclusive behavioral units (Scheflen, 1965).

The hierarchical system is used to study postural communication. The basic unit in postural communication, termed a point, consists of the position of a person's head and eyes as he talks with another. At the conclusion of making a point, the speaker shifts his head-eye posture. Several points taken in sequence comprise a larger unit of communication known as the position, which is marked by a gross postural shift involving at least half the body. The largest postural unit is called the presentation, which constitutes all the person's positions in a given interaction. In the hierarchical system, a postural shift signifies a communicative structural event (Scheflen, 1964).

External Variable Studies

Research in kinesics has focused upon three channels: face, body, and eyes. Data from each channel have been gathered largely in isolation from other channels. There has been a tendency to neglect the ways in which information from the three channels are integrated. The use of different research methodologies and the exploration of different external variables in each channel have made an integration of the findings difficult to achieve. Thus, the research findings from each channel will be discussed separately.
Facial expressions have been the subject of psychological research since the early part of the twentieth century. Research in facial expression has been concerned with two major issues: face as an indicator of emotion and cross-cultural generalities in facial expressions. The two aspects of facial expressions will be discussed in turn.

**Face as an Indicator of Emotion.** Two judgment procedures have been used in research concerning the face as an indicator of emotion. The first judgment procedure is an emotion category task in which the observer selects one category for each example of facial behavior. The second judgment procedure is a dimension task in which the observer rates each face using a series of scales (Ekman, Friesen, & Ellsworth, 1972).

Investigators using the emotion category approach have had varying degrees of success in their experiments due to methodological deficiencies (Allport, 1924; Osgood, 1966; Tomkins & McCarter, 1964; Woodworth, 1938). However, research on emotion categories using still photographs has consistently isolated the following seven affects: (a) happiness, (b) surprise, (c) fear, (d) anger, (e) sadness, (f) disgust/contempt, and (g) interest. Since only still photographs of posed behavior have been studied, the seven emotion categories can only be applied to judgments of
emotion in this area, and not to judgments of emotion from facial expressions in general.

Investigators of the dimensions of emotion have avoided the use of separate affect entities, such as fear and anger, and have concentrated instead on locating emotions on a set of continuous scales. Two scales that have been used are the three dimensions of pleasant-unpleasant, attention-refection, and sleep-tension (Schlosberg, 1954) and the three factor scale including pleasantness, control, and activation (Osgood, 1966). The emotional dimensions that observers can judge from still photographs of posed behavior are pleasantness-unpleasantness, activation, and intensity. Aside from these three dimensions, there is little consensus among investigators concerning the reliability of other dimensions as a result of limited sampling and dissension concerning which dimensions should be included in the experiments.

Cross-cultural Generalities in Facial Expression. There is a long-standing controversy concerning whether there are universal facial expressions of emotion or whether facial expressions of emotion are specific to each culture. Universalists maintain that there is an innate relationship between specific facial expressions and particular emotions or that this relationship is the result of certain learning experiences which are common to all men regardless of
culture (Allport, 1924; Asch, 1952; Darwin, 1872; Tomkins, 1962, 1963). Advocates of the culture-specific position claim that facial expression is learned in a manner which varies from culture to culture (Birdwhistell, 1963; LaBarre, 1947).

Until very recently there has been a dearth of quantitative research to resolve this dispute. Experiments that have been conducted on facial behavior in different cultures have provided evidence to support the existence of universals in facial expression (Ekman, 1972; Ekman & Friesen, 1971; Ekman, Sorenson, & Friesen, 1969; Triandis & Lambert, 1958). Although the data point to evidence of a pan-cultural element in facial behavior and emotion, cultural differences are still apparent in the conditions which elicit a particular emotion, the consequences of displaying an emotion, and the display rules which determine the facial behavior in specific social settings (Ekman, Sorenson, & Friesen, 1969).

Studies Regarding the Body

Research on the body has developed in two directions: the study of posture (Mehrabian, 1969; Scheflen, 1964) and the study of face vs. body in determining affect (Dittmann, Parloff & Boomer, 1965; Ekman & Friesen, 1967; Shapiro, Foster & Powell, 1968). Studies in the latter category
represent an attempt to integrate findings from two channels.

Posture viewed as a regulative function in communication to indicate beginnings and endings of units of communication behavior has been discussed in a previous section under structural studies (Scheflen, 1964). Posture has been related to the communication of positive attitude by a communicator to an addressee. Postural indices which indicate the communication of positive attitude are greater relaxation, forward lean of trunk towards the addressee and absence of the arms-akimbo position (Mehrabian, 1968, 1969; Mehrabian & Friar, 1969).

Head and body cues provide different affective information (Ekman, 1965). Head cues carry information about the particular emotion which is being expressed, while body cues communicate the level of intensity of that emotion. A later reformulation of this position states that observable body movements can convey the type of emotion being experienced, while lack of body movement can disclose the gross affect state, such as pleasant-unpleasant (Ekman & Friesen, 1967).

When head or face cues are contrasted with body cues to determine which of the two are used to identify particular emotions, investigators have found a greater reliance upon facial rather than body cues. Thus, facial cues are
easier to use than body cues in the identification of particular emotions (Ekman & Friesen, 1967; Shapiro, Foster, & Powell, 1968). Although the above finding holds true for trained judges, psychotherapists, and professional dancers, the professional dancers are more alert to affective information available in body cues than are the psychotherapists (Dittman, Parloff, & Boomer, 1965).

Studies Regarding the Eyes

Research on eye behavior has been known by such terms as eye contact, mutual glances, gaze direction, visual interaction, and line of regard. Gazing has four functions: (a) cognitive: a speaker will look away when he is having difficulty formulating his thoughts; (b) monitoring: a speaker will look at his listener to show that he has concluded a thought unit and to see how attentive the listener is; (c) regulatory: a speaker will look at the listener to demand or suppress a response; and (d) expressive: a speaker will look at a listener to signal his level of involvement or intensity of arousal (Kendon, 1967). Aside from the functions of visual interaction, eye contact has been studied in relation to such variables as sex of interactants, the nature of the interaction, and the distance between the interactants. The findings on visual interaction
from different investigators have been remarkably consistent.

**Sex.** Males and females reveal different patterns of eye contact. Females look more in general (Exline, Gray & Schuette, 1965). Women look at one another more than men do (Exline, 1963). In an interaction which is positive in nature, males decrease their looking, while females increase it (Exline & Winters, 1965). Both males and females make more use of eye contact when listening than when speaking (Kendon, 1967).

**Nature of the Interaction.** Eye contact is an indicator of the type of relationship which exists between the participants. Frequent eye contact is associated with a positive attitude between the interactants (Brown & Parks, 1972; Mehrabian, 1969). An interviewer who delivers a positive message coupled with frequent eye contact is rated more positively by an interviewee than an interviewer who delivers a negative message coupled with frequent eye contact (Ellsworth & Carlsmith, 1968). Interviewees engage in more eye contact with interviewers who discuss innocuous material than with those that discuss embarrassing material (Exline, Gray, & Schuette, 1965). Persons who look in long gazes are liked more than persons who look in short frequent gazes (Kendon & Cook, 1969). A person will engage in more eye contact with another when he has just had a
friendly conversation with that person (Efran & Broughton, 1966).

**Distance.** Distance between the interactants is a factor in the frequency of eye contact between them. The distance-equilibrium hypothesis is that eye contact and physical proximity are components of intimacy which are governed by both approach and avoidance forces and are in a state of balance between any two people (Argyle & Dean, 1965; Patterson, 1973). Eye contact decreases as the actual physical distance between two persons decreases, so that the closer two people are placed to each other, the less eye contact they have. The effect is greatest for opposite-sex pairs.

**Multichannel Research**

Although investigators who use the structural approach are interested in multichannel communication, much of the external variable type of research has employed an atomistic approach to nonverbal communication as a result of statistical and methodological considerations. Most of the literature which has been reviewed thus far has had as its focus one area or channel of nonverbal communication. There have been research studies regarding facial expressions, eye contact, body movements, interpersonal distances, and hesitations in speech. However, a living, communicating
individual does not transmit messages in such discrete channels, each of which can be studied in isolation by an investigator. Instead, a communicating person transmits many messages simultaneously from diverse channels. Multichannel research in nonverbal communication is needed to integrate the information which flows from various channels as a person communicates.

Several investigators are conducting external variable studies in two or more channels in an attempt to integrate nonverbal findings. Multichannel research has been conducted in three areas: (a) deception, (b) credibility of conflicting messages, and (c) communication of positive attitudes.

Deception

Attempts to deceive oneself and/or others produce particular types of body movements and facial expressions which betray the dissimulation by means of nonverbal leakage or deception clues (Ekman & Friesen, 1969). Since the head and face are easier to control because they provide better external and internal feedback than the hands and body, nonverbal leakage is more apt to occur from body cues, especially the legs and the feet. Observers who attend to body cues rather than face/head cues are more likely to be aware of concealed information than observers
who focus on face/head cues. In addition to the fact that body cues "leak" more information than facial expressions in a deception situation, deceitful communicators exhibit less frequent movements, take less immediate positions relative to their addressees, talk less and more slowly, have more speech errors, and smile more than truthful communicators (Mehrabian, 1971).

Credibility of Conflicting Messages

Some investigators have addressed themselves to the situation that occurs when nonverbal and verbal messages are in conflict. When the content of a message is contradicted by the tone of voice, it is the tone of voice that is believed, especially if the speaker's intonation is spontaneous (Bugental, 1974; Mehrabian & Wiener, 1967). For example, if the content of a message is evaluated as positive, but the tone of voice is negative, the total message is judged as communicating a negative attitude.

When facial expression and vocal cues are in conflict, facial expressions receive more weight than vocal cues in judging the feelings of others (Bugental, Kaswan, & Love, 1970; Mehrabian & Ferris, 1967). In situations where nonverbal and verbal messages conflict, the face is relied upon for the truth more than the voice which, in turn, is relied upon more than the verbal content.
Age differences have appeared in the interpretation of conflicting messages. Children weigh negative information more heavily than positive information, so that positive input in one channel (verbal, vocal, or facial) is discounted if the other channel is negative. Joking messages, especially, are interpreted more negatively by children than by adults (Bugental, Kaswan, & Love, 1970). When men and women produce conflicting messages, children rate only the women as more negative and unfriendly (Bugental, Kaswan, & Love, 1970), which dovetails with the findings that females are better than males at communicating negative attitude (Zaidel & Mehrabian, 1969) and that children see male smiles as more indicative of a friendly, approving attitude than female smiles (Bugental, Love, & Gianetto, 1971).

Communication of Positive Attitude

Certain behavior complexes have been identified as conducive to conveying positive affect and attitude on the part of a communicator toward an addressee. More smiles and gesticulations are present when a person is attempting to communicate liking (Rosenfeld, 1966). The variables of closer distance, more eye contact, forward trunk lean, and direct body orientation are associated with a positive evaluative attitude (Kelley, 1972;
Mehrabian, 1970). Smiles, positive head nods, high eye contact, hand gestures, forward body lean and direct orientation are factors that indicate a positive climate (Brown & Parks, 1972).

The multichannel studies are important in adding information to the interpretation of the totality of a person's behavior. Nonverbal behavior is rarely encountered in a compartmentalized manner. Since nonverbal behavior is just one facet of the total communication process, it must be placed in a situational context. Nonverbal behaviors are integrated with each other and with the verbal aspects of the communication process in which they occur. Since the raison d'etre for research in nonverbal communication is to add to the knowledge of the total communication process, nonverbal behavior needs to be studied in conjunction with verbal behavior. Just as the use of both structural and external variable studies is appropriate for the advance of nonverbal research, so the study of both verbal and nonverbal behaviors is necessary for the growth of the total communication process. Therefore, a reliance solely on the holistic structural studies or the atomistic external variable studies defeats the development of an integrated approach to nonverbal communication, just as surely as a reliance on nonverbal messages to the
exclusion of verbal behaviors, or vice versa, defeats the understanding of the communication process as a whole.

Summary

The accumulated research findings in proxemics are:

1. Man's use of informal or personal space depends on cultural factors (Hall, 1959, 1966).

2. An individual's use of space in public is guided by a special set of rules (Goffman, 1963).

3. Females have smaller personal space zones than males (Willis, 1966).


5. Pairs of whites stand closer together than pairs of blacks, but when whites and blacks interact, their personal space zones are larger than when members of the same race interact (Willis, 1966).

6. Children use more personal space as they grow older (Meisels & Guardo, 1969).

7. Individuals who are more friendly with each other have smaller personal space zones than those who are strangers (Little, 1965).

8. Seating arrangements depend on the task at hand, the status of the interactants, the personalities of the individuals, and the sex of the interactants (Cook, 1970; Lott & Sommer, 1967; and Sommer, 1965).

9. Students sitting near the front and center of a classroom a) participate more, b) are more attentive to classroom activities, c) are perceived more positively by their teachers and peers, d) evaluate themselves
more positively, and e) have higher grades than students sitting in the rear or at the sides (Schwebel & Cherlin, 1972; Sommer, 1969).

The major research findings relating to paralanguage are:

1. Paralanguage consists of voice qualities and vocalizations (Trager, 1958).

2. The study of hesitation phenomena, such as pauses, has been the most widely researched area in paralinguistics (Duncan, 1969).

3. The two major types of pauses are unfilled (silent) and filled (Mahl, 1956).

4. Speech which follows a filled pause has been characterized as inferior to speech which follows an unfilled pause in the areas of imagination, spontaneity, and conciseness (Goldman-Eisler, 1961).

The accumulated research data in kinesics are enumerated as follows:

1. Body and facial behaviors can be viewed as a communication system comparable to spoken language in that the phoneme, morpheme, and syntactic units of linguistics are thought to have analogous counterparts in the kineme, kinemorph, and kinemorphic constructions of kinesics (Birdwhistell, 1970).

2. Context analysis is a method for studying communication behaviors in which behavioral components are organized into structural units which, in turn, are parts that are integrated into a larger system (Scheflen, 1965).

3. Research on emotion categories using still photographs has consistently isolated the following seven affects: a) happiness, b) surprise, c) fear, d) anger, e) sadness, f) disgust, and g) interest (Ekman, Friesen, & Ellsworth, 1972).
4. Experiments that have been conducted on facial behaviors in different cultures have provided evidence to support the existence of universals in facial expression; however, cultural differences are still apparent in the conditions which elicit a particular emotion and the display rules which determine the facial behavior in specific social settings (Ekman, Sorenson, & Friesen, 1969).

5. Facial cues are easier to use than body cues in the identification of particular emotions (Ekman & Friesen, 1967; Shapiro, Foster & Powell, 1968).

6. Head and body cues provide different affective information (Ekman, 1965).

7. Both males and females make more use of eye contact when listening than when speaking (Kendon, 1967).

8. Females engage in more eye contact in general than males do (Exline, Gray, & Schuette, 1965).

9. Frequent eye contact is associated with a positive attitude between the interactants (Mehrabian, 1969).

10. Eye contact decreases as the actual physical distance between two persons decreases (Argyle & Dean, 1965).

Major findings in multichannel research are summarized as follows:

1. Nonverbal leakage during deception is more apt to occur from body cues, especially the legs and feet, than from head and face cues (Ekman & Friesen, 1969).

2. Deceitful communicators exhibit less frequent movements, take less immediate positions relative to their addressees, talk less and more slowly, have more speech errors, and smile more than truthful communicators (Mehrabian, 1971).
3. When the content of a message is contradicted by the tone of voice, it is the tone of voice that is believed (Bugental, 1974; Mehrabian & Wiener, 1967).

4. When facial expressions and vocal cues are in conflict, facial expressions receive more weight than vocal cues in judging the feelings of others (Bugental, Kaswan, & Love, 1970; Mehrabian & Ferris, 1967).

5. Children weigh negative information more heavily than positive information, so that positive input in one channel is discounted if the other channel is negative (Bugental, Kaswan, & Love, 1970).

6. Females are better than males at communicating negative attitudes (Zaidel & Mehrabian, 1969).

7. The variables of closer distance, more eye contact, forward trunk lean, direct body orientation, more smiles and more gesticulations are associated with a positive evaluative attitude (Kelly, 1972; Mehrabian, 1970; Rosenfeld, 1966).
Chapter III

METHODOLOGY

The design and procedures of the study are presented in this chapter. This study was conducted in order to determine the efficacy of modular instruction in nonverbal communication with elementary school personnel as volunteers. The chapter is divided into six sections: (a) Description of the Module, (b) The Sample, (c) Design, (d) Data Collection, (e) Instrumentation, and (f) Procedures for Data Analysis.

Description of the Module

After an extensive review of the literature, the investigator developed a self-contained module on nonverbal communication. The module contained an overview, pre and posttest information, general objectives, a list of instructional activities, and six instructional learning units. The six instructional units were entitled: (a) An Introduction to Nonverbal Communication, (b) Paralanguage (the nonverbal, vocal components of speech), (c) Proxemics (man's perception and use of social and personal distance),
(d) Kinesics (the study of body movements), (e) Clothing, and (f) Physical Appearance. Each instrumental unit contained:

1. Objectives for the unit
2. Reading material on the unit topic
3. Exercises designed to give the learner practice with some facets of the topic
4. Thought questions on the material presented in the unit
5. Answers to the thought questions
6. References and suggested additional reading

The goal of the module was to expose the learner to research findings regarding the various types of nonverbal communication and to provide exercises and questions to give the learner an opportunity to make decisions related to the topic. Appended to the module was an instructor's manual comprised of the pre and posttests and answers to these tests. Excluding the administration of the pre and posttests, the estimated time for a learner to complete the module was three hours.

The Sample

The population from which the random sample was drawn were personnel who were employed within three public school systems in Franklin County, Ohio. In total, eight elementary schools from three districts were included in the sample. The sample consisted of a pool of 60 school personnel from which 30 were randomly assigned to the experimental group and 30 were randomly assigned to the control
group. The sample was determined in the following manner:

1. The three school districts, Columbus Public Schools, Southwestern City Schools, and Reynoldsburg City Schools, were chosen to give representation to the sample on the basis of size of school district.

2. Each elementary school in a district was assigned a number from one through the size of elementary schools in the district. For example, there are four elementary schools in Reynoldsburg; therefore, schools in this district were assigned numbers one through four.

3. In each district the schools which were used in the study were selected by use of a table of random numbers.

4. After obtaining the principal's permission to include his/her school in the study, the investigator went to each randomly selected school to determine which school personnel would volunteer for the study. Volunteers were used because the investigator thought they would have more interest in completing the module than school personnel who might have been coerced into participating in the study. Those school personnel who volunteered in each of the randomly selected schools constituted the sample. These volunteers were then randomly assigned to the experimental or control group (See Table 2).

Design

A variation on the pretest-posttest control group design was used. In the usual pretest-posttest control group design, both the experimental and control groups are administered the pre and posttests, but only the experimental group undergoes treatment. In this study since subjects who were in the experimental and control groups
were in the same school, it was necessary to vary the design so that subjects would not know to which group they had been assigned. The resultant design might be termed a pretest-posttest-posttest control group design.

Both the experimental and control groups were administered the pretest. After the experimental group received the treatment, both groups were given a posttest. Then, the control group received the treatment followed by a second posttest of only those subjects in the control group.
However, for purposes of data analysis the pretest and only the first posttest of both groups were used. The second posttest, which was administered to the control group alone, did not enter into the data analysis since its purpose was to serve as a blind.

Data Collection

The investigator went to each school in the sample in order to administer the pretest to the school personnel who had volunteered to participate in the study. At the time of the pretest, each subject was given a briefing letter to read which explained the necessity for silence among the participants in the study concerning discussion of the material contained in the module or the tests (See Appendix A).

Following the administration of the pretest, the subjects in each school were randomly assigned to the control or the experimental group. Three days after the administration of the pretest, the modules were delivered to those subjects assigned to the experimental group accompanied by a letter of explanation (See Appendix B). On the same day the subjects in the control group received a different letter informing them of the posttest date and ensuing procedures (See Appendix C).
Two weeks after the pretest, both the experimental and control groups were administered the posttest. At this posttest session, those subjects in the control group were given the module and a date was arranged for a posttest session for their group. All pre and posttests were administered and scored by the investigator. At the conclusion of the study, all participants were sent a debriefing letter explaining the results of the study (See Appendix F).

Instrumentation

The pre and posttests used in the study were developed by the investigator and were based on information found in the module. The same 36 items were used on both tests. However, the order of the items was changed on the posttest so that it appeared to be different from the pretest (See Appendix D).

The tests and the module were piloted on beginning graduate students in School Psychology at The Ohio State University. After the results of the pilot study were tabulated, the pre and posttests were modified and administered to volunteer research assistants in education at The Ohio State University. The tests were then modified a second time and administered to volunteer school personnel at the Reynoldsburg Middle School to establish a reliability
coefficient. The reliability coefficient between the pre- and posttests from this group was .71. Since the items on the tests were based solely on information found in the module, the tests would appear to have face validity.

Procedures for Data Analysis

To determine whether the treatment was statistically significant, an analysis of covariance was computed using the pretest scores as a covariate and the posttest scores as criterion. When using the pretest-posttest control group design, an analysis of covariance is preferable to simple gain-score comparisons because it offers a more precise analysis (Campbell & Stanley, 1971). Only the first posttest scores were used in the data analysis, since the second posttest scores from the control group alone were gathered to help insure that the subjects would be unaware of the group to which they were assigned.

A test for heterogeneity of regression preceded the analysis of covariance to give credence to the assumption that differences among the within-group regression coefficient were due to sampling error and not to true differences.
Chapter IV

RESULTS AND DISCUSSION

A sample of 60 elementary school personnel volunteered and were chosen from three public school districts in Franklin County, Ohio. From these 60 subjects, 30 were randomly assigned to the experimental or treatment group and 30 were randomly assigned to the control group. The 60 subjects were chosen from eight elementary schools in the districts of Columbus, Southwestern, and Reynoldsburg.

A variation of the pretest-posttest control group design was used. Both the treatment and control groups were administered the pretest on the same day. The treatment group then received the module on nonverbal communication while the control group did not. Two weeks after the pretest, both the treatment and control groups were administered the posttest. After the administration of the posttest, the control group received the materials on nonverbal communication and returned for a second posttest twelve days later.

The data analysis described in this chapter consists of the results from the pretest and first posttest only. A second posttest, which was administered only to the
control group, was a blind. Since this second posttest was used to help insure that subjects did not know to which group they had been assigned, its results were not included in the analysis.

This chapter is divided into five sections as follows: (a) Success of the Data Collection, (b) Choice of Statistical Method, (c) The Question, (d) Evidence, and (3) Discussion.

Success of the Data Collection

All of the 60 subjects in the study completed the pre-test and first posttest. As a result of absences at the first posttest session, four subjects in the treatment group and one in the control group had to have the posttest administered at a later time than the other 55 subjects. Thus, the two week period between pre and posttests was not maintained for five subjects. However, it should be noted that the extra time these four treatment group subjects had to complete the module did not appear to affect their posttest scores since none of them achieved a criterion score of 75 or more per cent correct on the posttest.

Choice of Statistical Method

An analysis of covariance was used to analyze the pre and posttest data from both groups. The pretest scores were
used as the covariate while the posttest scores were the criterion. Analysis of covariance is frequently used to compare groups that are initially unlike on the variables related to the study being conducted and which cannot be equated through randomization, matching, or pairing (Garrett, 1967; McNemar, 1962). However the primary and least controversial use of analysis of covariance is to increase the efficiency of randomized experiments when blocking is not possible (Kennedy, 1974). The choice of analysis of covariance as the statistical test of significance is also supported by Campbell and Stanley who recommend that when analyzing data from a pretest-posttest control group design the investigator should use randomized blocking on pretest scores as the covariate in preference to simple gain-score comparisons (1971). Since the investigator had randomized the assignment of subjects to treatment and control groups, but was unable to use a randomized block design because of unequal numbers of subjects in three of the eight schools, data were analyzed by analysis of covariance.

In order to use analysis of covariance, some assumptions applying to the covariable must be met. These assumptions are that:

1. the covariable and treatment are independent
2. the relationship between the covariable and criterion is the same for all treatment groups (homogeneity of regression)
In the present study since the pretest was administered prior to treatment, there was no possibility that the pretest scores were influenced by the treatment. Therefore, the assumption that independence between the covariable and treatment existed was upheld.

To test the assumption that homogeneity of regression existed in the present data, a Test for Heterogeneity of Regression was used. The results of a nonsignificant F ratio in the Test for Heterogeneity of Regression (F = 1.68; df = 1/56; nonsignificant) supported the assumption that in the present study homogeneity of regression existed (See Table 3).

The Question

The study was designed to determine the effectiveness of modular instruction in nonverbal communication. The question the study set out to answer was:

Will elementary school personnel who volunteer to use the investigator's module on nonverbal communication make statistically significant gains in their knowledge of nonverbal communication as compared to those school personnel who do not receive the module?

Stated in the null hypothesis form, the question becomes:

There will be no statistical difference between the means of the treatment and control groups.

Evidence

Since homogeneity of regression existed in the present study as shown by the nonsignificant F ratio in the Test
### Table 3

**Analysis of Covariance**

#### Test for Heterogeneity of Regression

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterogeneity of Regression</td>
<td>1</td>
<td>64.4276</td>
<td>64.4276</td>
<td>1.68</td>
</tr>
<tr>
<td>Within-Group Error</td>
<td>56</td>
<td>2148.2385</td>
<td>38.3614</td>
<td></td>
</tr>
<tr>
<td>Total Residual Error</td>
<td>57</td>
<td>2212.6661</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### The Analysis of Covariance

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Means (Adjusted)</td>
<td>1</td>
<td>4641.4529</td>
<td>4641.4529</td>
<td>119.57*</td>
</tr>
<tr>
<td>Error (Residual)</td>
<td>57</td>
<td>2212.6661</td>
<td>38.8187</td>
<td></td>
</tr>
<tr>
<td>Total (Adjusted)</td>
<td>58</td>
<td>6854.1190</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P < .001
for Heterogeneity of Regression, the formal part of the analysis of covariance could be relied upon with greater ease (See Table 3). The analysis of covariance revealed a statistically significant difference between the adjusted group means of the treatment and control groups ($F = 119.57; df = 1/57; p < .001$). An $F$ Distribution Table revealed that for degrees of freedom 1/40 an $F$ ratio greater than 12.61 was needed for significance, while the degrees of freedom 1/60 an $F$ greater than 11.97 was needed (Bruning & Kintz, 1968). Since the degrees of freedom associated with the present study was 1/57, the $F$ needed for statistical significance derived by extrapolation was 12.07. Since the obtained $F$ in the study was 119.57, the $F$ needed for statistical significance was exceeded. Therefore, the null hypothesis that there was no difference between the treatment and control group means was rejected. In rejecting the null hypothesis, elementary school personnel who volunteered to use the investigator's module on nonverbal communication made statistically significant gains in their knowledge of nonverbal communication as compared to those personnel who did not receive the module.

Discussion

Although very little appears in the literature regarding modular instruction, it is strikingly similar to the
Personalized System of Instruction (PSI), which stresses mastery of course objectives by students who pace themselves through appropriately sequenced units or modules (Keller, 1968). Research studies have revealed that PSI students learned more as measured by a final examination, received higher final grades, and remembered significantly more information 44 weeks after the course ended than students in the traditional lecture-discussion format (Corey & McMichael, 1974; McMichael & Corey, 1969; Protopapas, 1974). PSI produced superior examination performance, higher student course ratings, and more regular patterns of study than the lecture-discussion format (Born & Davis, 1974; Kulik, Kulic, & Carmichael, 1975). The modular instructional approach was found to raise the level of student comprehension and competency in a particular subject area (Hird, 1973).

With the success of PSI, a modular approach to instruction, demonstrated in the literature, this investigator decided to use modular instruction in the present study. However, since the existence of modular instruction in nonverbal communication did not appear in the literature, this investigator had no way of knowing what information might be included in a module of this type. Several investigators who are concerned with developing teacher awareness in nonverbal communication emphasized the importance of introducing
school personnel to this area of study through reading assignments (French, 1971; Knapp, 1971; Love & Roderick, 1971). However, none of these investigators suggested modular instruction as a way to coordinate the reading assignments. Included in this investigator's module were many of the reading assignments suggested by the above investigators. In addition, other research findings not mentioned by them were discussed.

Results of the study were statistically significant suggesting that those subjects in the treatment group achieved significantly higher scores on the posttest than those in the control group. It might be assumed from these results that the significantly higher posttest scores of subjects in the treatment group reflected a significant gain in their knowledge of nonverbal communications as compared to those in the control group. However, since the module was based on selected research findings in nonverbal communication from various publications, it should be specifically stated that the subjects in the treatment group showed a significant gain in their knowledge of the research findings in nonverbal communication which appeared in the module.

Although results of the study were statistically significant, it should be noted that of the 30 subjects in the treatment group, only 15 achieved criterion, which was a
posttest score of 75 or more per cent correct. This statistic indicates that on the 36 item posttest, only 15 subjects correctly answered 27 or more items (See Table 4).

One explanation for these results is found in the answers given to two questions which were asked of subjects in the treatment group. At the posttest session, subjects in the treatment group were asked to answer the following two questions on a questionnaire (See Appendix E):

1. Did you complete the module?
2. Do you feel adequately prepared to take the posttest? (If not, explain briefly.)

Results of these two questions provide a partial answer to the fact that only 15 of the 30 subjects in the treatment group achieved a criterion score of 75 or more per cent correct (See Table 4). Ten subjects did not complete the module. None of these ten subjects achieved a criterion score. From the remaining 20 subjects, all of whom completed the module, four subjects said they were not prepared to take the posttest. None of these four subjects received a criterion score. Only one subject said she had completed the module and felt prepared to take the posttest but did not achieve the criterion score. Fifteen subjects, who had completed the module and felt prepared to take the posttest, achieved scores of 75 or more per cent correct. Thus, completion of the module and a feeling of being
Table 4

Completion of the Module and Preparedness to Take the Posttest as Compared to Raw Scores and Per Cent Correct on a 36 Item Posttest for Subjects in the Treatment Group

<table>
<thead>
<tr>
<th>Subject</th>
<th>Raw Score on Posttest</th>
<th>Per Cent Correct</th>
<th>Completed the Module</th>
<th>Felt Prepared to take the posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>31</td>
<td>86</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S2</td>
<td>26</td>
<td>72</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>S3</td>
<td>21</td>
<td>58</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S4</td>
<td>11</td>
<td>31</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S5</td>
<td>31</td>
<td>86</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S6</td>
<td>33</td>
<td>92</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S7</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S8</td>
<td>15</td>
<td>42</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S9</td>
<td>22</td>
<td>61</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S10</td>
<td>17</td>
<td>47</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S11</td>
<td>23</td>
<td>64</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S12</td>
<td>18</td>
<td>50</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>S13</td>
<td>13</td>
<td>36</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S14</td>
<td>33</td>
<td>92</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S15</td>
<td>27</td>
<td>75</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S16</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S17</td>
<td>17</td>
<td>47</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S18</td>
<td>8</td>
<td>22</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S19</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S20</td>
<td>18</td>
<td>50</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S21</td>
<td>19</td>
<td>53</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>S22</td>
<td>13</td>
<td>36</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S23</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S24</td>
<td>30</td>
<td>83</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S25</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S26</td>
<td>22</td>
<td>61</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>S27</td>
<td>34</td>
<td>94</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S28</td>
<td>29</td>
<td>81</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S29</td>
<td>35</td>
<td>97</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>S30</td>
<td>28</td>
<td>78</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
prepared to take the posttest appeared to be important factors in the achievement of a criterion score.

Among the 15 subjects who reached criterion on the posttest, the scores ranged from 75 to 97 per cent correct. Possible reasons for these differences in scores may be variations in the amount of time spent on the material, individual differences in retention of learned material, and diverse abilities in test taking.

One factor which may have influenced the posttest scores of several of the subjects in the treatment group was the quality of the print on some of the pages of the module. Offset printing was used because the printer recommended that method as the one which would give the best copy. However, ten of the module's 75 pages were legible but very light.

From the 15 subjects who achieved a criterion score on the posttest, only one person mentioned the quality of the print. From the 15 subjects who did not achieve a criterion score, only three people mentioned the print. Since 12 subjects who did not reach criterion did not mention the print, it cannot be considered a detrimental factor in their completion of the module or their performance on the posttest with any degree of certainty. One can speculate about the quality of the print as a possible causal factor in non-completion of the module which was simply not mentioned by
the 12 subjects in question. However, it is not known for sure if the quality of print on ten pages of the module was indeed a factor in these 12 subjects' failure to complete the module.

What is known is that four subjects in the treatment group mentioned that the print on some of the pages needed to be darker (Ss 10, 11, 19, and 20 from Table 4). Only one of these four subjects (S19) achieved a score of 75 or more per cent correct on the posttest. However, she was also the only subject from these four whom completed the module and felt prepared to take the posttest.

The question remains whether the other three subjects might have completed the module if the print on the ten pages in question were clearer. In attempting to answer this question, it should be noted that the print was not the only factor mentioned by two of these three subjects. Subject 11 said she did not spend enough time on the module, while Subject 20 said she was ill during the time she had the material. Thus, the print appeared to be a sole factor in noncompletion of the module for only one subject in the study (S10). It should also be pointed out that even if these three subjects had completed the module, this fact alone would be no guarantee that they would have achieved a criterion score.
A major factor which determined the posttest scores of the treatment group appeared to be the time each subject spent on the module. Among the subjects who gave reasons for noncompletion of the module, time was frequently mentioned as a factor. The following are written comments by some of the subjects who did not complete the module or who completed it but did not feel prepared to take the posttest:

I wish I had spent more time reading and re-reading the material.

I've only had time to briefly skim the materials—about 15 minutes time.

I've not studied in depth.

I was ill during the time I had the materials.

Didn't spend as much time as I would have liked.

Would like to have taken more time to study subject. Very worthwhile and intriguing topic.

Didn't study.

I did not have the time.

Estimated time for completion of the module was three hours. Since 26 of the 30 subjects in the treatment group had 12 days in which to complete the module, they needed to spend an average of 15 minutes each day in order to finish the module in the allotted time period. Although 15 minutes a day for 12 consecutive days did not seem to be an unreasonable demand to make on volunteers, the investigator checked this assumption by asking the subjects at the first school to be posttested about the adequacy of the
allotted time period. The consensus of opinion of the 13 subjects present at this first posttest session was that if they were going to complete the module, 12 days would be a long enough period in which to do so. In addition, this investigator recalled that during the pilot study the volunteers completed the module in seven days. Furthermore, this investigator invited any subject in the treatment group who felt that he or she did not have enough time to complete the module before the first posttest session to take this first posttest and then to attend the second posttest session for the control group. Although this investigator intended to use only the first posttest score for purposes of data analysis, this invitation would have given the subjects in the treatment group an additional 12 days, or a total of 24 days, in which to complete the module. Only one subject availed herself of this opportunity to have extra time in which to complete the module.

On the basis of the information cited above, this investigator hypothesized that the time factor mentioned by some of the 14 subjects who did not achieve criterion on the posttest might not have been the length of the time period allotted for completion of the module, but the subjects' own priorities in organizing the time available to them. This hypothesis is supported by Shore who says that the freedom involved in modular instruction bears with it the
specific implication that each student must be able to arrange his own timetable (1973). This hypothesis was also supported by the fact that four people in the treatment group had an extra week in which to complete the module because they were absent from the posttest session. However, none of these four subjects achieved a score of 75 or more per cent correct on the posttest despite the extra time they had. Therefore, twelve days appeared to be an adequate time period for module completion as long as each subject organized his time in such a manner that the module had a place in his schedule.

No incentives were offered to participants in the study to complete the module. However, 15 of the subjects in the treatment group not only completed the module, but also spent enough time on it to reach a criterion score of 75 or more per cent correct on the posttest. Differences in interests, values, attitudes, and personality might have existed between these 15 subjects and the other 15 subjects who did not reach criterion which may have accounted for posttest success or failure. The following are some hypotheses about the differences which may have existed between the subjects who reached criterion on the posttest and those who did not. These hypothesized differences may have influenced the time spent on the module and, thus, the posttest scores.
Since all of the subjects volunteered to participate in the study, the investigator assumed that they had some interest in learning about nonverbal communication. Even if this assumption is correct, the intensity of interest in the topic may have varied among the subjects. Other activities occurring in the 12 day study period may have interested some of the subjects more than modular instruction in nonverbal communication did. Other interests taking precedence over studying the module would account for lack of time to complete the materials.

Responsibility to finish a task for which one has volunteered might have played a role in whether a particular subject completed the module or not. Some of the subjects who did finish the module might have felt more responsibility to do so than those who did not.

Even more intriguing is the hypothesis that the individual attitudes of each of the participants towards learning was a factor in time spent on the module. Several of the people who did not complete the module mentioned that if they were going to get a grade on the posttest, they would have spent more time in studying the material. Their attitudes appeared to be that a person needed to be forced into learning some information, as by the specter of a failing grade. Since no grade was given in the present study, learning the material for these subjects was not necessary.
Learning for one's own satisfaction did not appear to be a motivating factor to them.

The above line of thought introduces the hypothesis that intrinsic vs. extrinsic satisfaction and/or motivation might have been a factor in whether or not the subjects spent the time necessary to learn the material. A subject who was intrinsically satisfied by learning, that is, a subject who learned for the sake of learning, might take the time necessary to complete the module. However, subjects who were extrinsically motivated or satisfied might need some external factor, such as a grade, to learn the material.

Finally, there is the hypothesis that no single factor discussed above was responsible for a particular subject's posttest score. Instead the factors might have been combined in various ways for individual subjects. For instance, a particular subject might have been one who was extrinsically motivated so that he would usually need a grade as an incentive to learn new material. However, at the same time he was so genuinely interested in the material and had such a high level of responsibility to finish any project which he undertook, that he spent the time necessary to achieve a criterion score on the posttest.
Chapter V
SUMMARY AND CONCLUSIONS

Summary

Literature on nonverbal communication indicates that it is an important factor in human interaction. Although research studies in nonverbal communication are common in the disciplines of anthropology, sociology, and psychology, it is a relatively neglected area in education. Yet nonverbal behaviors exist in all classrooms, teachers' lounges, and staff meetings. School personnel need to be trained in the awareness of the impact of nonverbal communication in their personal and professional lives.

The present study was designed to investigate the effectiveness of modular instruction in nonverbal communication. Its purpose was to develop awareness and increase knowledge in nonverbal communication on the part of elementary school personnel who volunteered to study the module. The research was directed toward the following question:

Will elementary school personnel who volunteer to use the investigator's module in nonverbal communication make significant gains in their knowledge of nonverbal communication?
Procedure

A random sample of 60 volunteer school personnel was selected from eight elementary schools in three school districts in Franklin County, Ohio. Thirty volunteers were randomly assigned to the treatment group and 30 were randomly assigned to the control group. Subjects in both the treatment and control groups were administered a pretest on the instructional material which was in the module. Then the subjects in the treatment group received the module on non-verbal communication. Two weeks after the administration of the pretest, the subjects in both groups were administered a posttest on the instructional material. The control group then received the module and, after being given sufficient time to study it, returned for a second posttest. Since the second posttest was included in the design of the study to prevent subjects from knowing to which group they had been assigned, its results were not included in the data analysis of the study.

An analysis of covariance was used to analyze the data. Prior to the analysis of covariance, a test for heterogeneity of regression was computed to insure the existence of homogeneity of regression in the data. Homogeneity of regression means that the strength of relationship between the pre and posttests was the same in both the treatment and control groups in the present study.
Limitations

One limitation in the present study was related to the nature of nonverbal communication. Nonverbal behavior is just one part of the total communication process and, as such, cannot be isolated from verbal and situational aspects. Therefore, a module dealing with nonverbal communication must delineate facets of nonverbal behavior as part of the total behavior complex, while at the same time clarifying the nonverbal elements involved in the process.

Another limitation was that the module was developed solely by the investigator based on specific research findings collated from various publications. Consequently, any gains made in their knowledge of nonverbal communication by the volunteers involved in the study were probably limited to the instructional materials.

A third limitation was that the school personnel who participated in the study were volunteers. They were chosen because the investigator thought volunteers would have more interest in completing the module than school personnel who might have been coerced into participating in the study. Therefore, the findings of the module's effectiveness in teaching various aspects of nonverbal communication must be confined to volunteer school personnel.
Findings

The result of a nonsignificant $F$ in the Test for Heterogeneity of Regression ($F = 1.68; \ df = 1/56; \text{ nonsignificant}$) supported the assumption that in the present study homogeneity of regression existed. Thus, results of the formal part of the analysis of covariance could be relied upon with greater assurance. An analysis of covariance revealed a statistically significant difference between the adjusted group means of the treatment and control groups ($F = 119.57; \ df = 1/57; \ p < .001$). These results indicated that school personnel who volunteered to use the investigator's module on nonverbal communication made statistically significant gains in their knowledge of nonverbal communication as specified in the module when compared with those school personnel who had not received the module.

Conclusions

It can be concluded that those subjects in the treatment group achieved significantly higher posttests scores than those in the control group. This conclusion indicates that instruction in nonverbal communication is possible through a modular approach.

From an examination of the individual posttest scores of subjects in the treatment group, it is concluded that only 15 of the 30 subjects achieved a criterion posttest
score of 75 or more per cent correct. Although the post-test scores of the subjects in the treatment group were statistically significantly higher than the posttest scores of those subjects in the control group, one-half of the treatment group subjects were unable to achieve a criterion score. The inescapable conclusion is that statistical significance was not synonymous with achievement of a criterion score in the present study.

Several hypotheses were discussed in the last chapter to explain possible reasons for the failure of one-half of the treatment group subjects to achieve a criterion score on the posttest. It was concluded that time spent on the module was a major factor in determining a person's posttest score. An individual's interest in the subject matter, attitude towards learning, motivation, and ability to retain material were some factors which might combine to determine how much time a person spent on the module. Even the quality of the print could influence the amount of time an individual felt like spending on the module.

Although it is concluded that instruction in nonverbal communication is possible through a modular approach, finding the time to complete the module can be a problem for some learners. If learning can be defined operationally as achievement of a certain criterion score on a posttest, the module can teach the learner some specific aspects of
Nonverbal communication, but the learner must take the time necessary to study it.

Implications

Nonverbal messages are sent and received daily in classrooms across the country. As part of the total communication process nonverbal messages can affect behavior. By becoming aware of the impact, scope, and pervasiveness of nonverbal behaviors, educators can gain new skills and increase their effectiveness in personal and professional relationships.

Nonverbal communication is a complicated field, however, and one which is not easily catalogued. No single theory of nonverbal behavior exists. Research studies are common in some specific areas such as eye contact, facial expressions, posture, tone of voice, and clothing. Although the results of individual studies have much to offer educators, compiling these results into a comprehensive whole is a difficult task.

Providing school personnel with reading assignments and instructional materials designed to inform them about nonverbal communication is just one step in the process of increasing awareness in this area. Helping school personnel become aware of how the research findings have application to education is a second step in this program.
Student and teacher nonverbal behavior checklists are available so that educators can pinpoint specific nonverbal behaviors. After educators have background knowledge of what nonverbal communication is and can recognize specific nonverbal behaviors in themselves and their pupils, a third step is to make school personnel aware of their own nonverbal messages so they can assess them and change them where appropriate. This third step can be accomplished through role playing, using an observer in the classroom, or video taping an educator while he goes about his professional tasks.

If school personnel are to accomplish the three step program outlined above, they must stress the importance of nonverbal behaviors and make school personnel desire to learn about them. School systems must provide incentives to encourage educators to increase their knowledge and awareness of nonverbal communications. Most important of all, they must take the educators' needs into consideration when planning a program to increase nonverbal awareness.

Not all school personnel may be interested in learning about nonverbal communication. Those who are interested may have various levels of understanding and proficiency in this topic. Volunteer school personnel may have to be the initial targets of a program designed to increase nonverbal awareness and knowledge. Fee waivers for those who
wish to take a university of college course in nonverbal communication can be made available. For those who do not have the time, money or inclination to return to college to receive training in this area, released time from school activities to participate in an in-service program in nonverbal behaviors may be one answer. Carefully sequenced and increasingly complex modules in nonverbal communications may serve to impart knowledge in this area to school personnel who do not wish to take formal lecture-discussion format courses.

The present study showed that instruction in nonverbal communication is possible through a modular approach. More research is needed on the role of modular instruction in nonverbal communication. Future research can contrast the performance of elementary and secondary school personnel in modular instruction. The effect of using a modular approach to teach nonverbal communication in courses where college credits and grades are given can be studied. Studies designed to determine what role values, interests, attitudes, and personality factors play in an individual's success or failure with modular instruction can be valuable.
APPENDIX A

BRIEFING LETTER

Everyone involved in the present study will have an opportunity to experience the module on nonverbal communication. However, in order to get the best results from the study, all of you who volunteer to participate in the investigation will be placed in two groups following the pretest. The first group will receive the module on nonverbal communication 12 days before the second group receives it. Everyone participating in the study will take a posttest two weeks after the administration of the pretest.

Since I am evaluating instructional material in the area of nonverbal communication, any discussion among the participants in the study about the material may jeopardize the results. Therefore, I must request that each person who volunteers to participate in the investigation does not discuss any of the items found in the pretest, module, or posttest with anyone else involved in the study until the final posttest has been administered.

I am willing to share your individual pre and posttest scores as well as the final results of the study with each of you at the conclusion of the study. Thank you for the time you will devote to the study and for your cooperation concerning the matter of silence until the study is concluded.
Dear

You have been randomly selected to be in the first group in your school building to receive the packet of materials on nonverbal communication. In your envelope you should find a copy of the module on nonverbal communication and an audio-tape entitled Exercises on Paralanguage (both sides of the tape are the same so it is necessary to listen to only part of one side).

When you come to the posttest session on __________, please bring the audio-tape with you. The module is yours to keep.

Thank you for taking time to participate in the study and for maintaining silence concerning the material found in the study until the final posttest is administered. If you have any questions relating to the study, please call me at home (486-6579) or at work (866-3751).

Sincerely,

Joan Shapiro
APPENDIX C

Dear

You have been randomly selected to be in the second group in your school building to receive the packet of materials on nonverbal communication. When you come to the posttest session on ________________________________, you will receive the envelope of materials.

Thank you for taking time to participate in the study and for maintaining silence concerning the material found in the study until the final posttest is administered. If you have any questions relating to the study, please call me at home (486-6579) or at work (866-3751).

Sincerely,

Joan Shapiro
APPENDIX D

PRE-TEST

Module - Nonverbal Communication

Name: ___________________ Date: ___________________
School: __________________ Grade Taught: __________
Criterion: 27

Directions: Read each question carefully and select the correct answer. Hand in your completed test to Joan Shapiro to be graded.

I. Write in each blank below the word which correctly completes each statement. (4 points)

A. The study of man's perception and use of social and personal space is called ___________________.

B. Facial expressions, posture, and movements of the head, body and limbs are components of the type of nonverbal communication known as body language or _________________.

C. The type of nonverbal behavior which deals with how something is said and not with what is said is called _________________.

D. The type of nonverbal communication which allows people to make inferences about a speaker whom they have heard but not seen is known as ___________________.

II. True or False. (5 points)

_____ A. Eye contact is more frequent in interviews which are personal in nature than in those which are impersonal in nature.

_____ B. Facial and vocal channels are more effective in communicating negative attitudes than in communicating positive attitudes.
C. Hall's classification system for informal space or distance applies validly to most of the people in the Western Hemisphere.

D. Two people who are competing on a task will most frequently choose to sit directly across from each other.

E. Clothing does not affect how a person's attitudes and values are perceived when the observer is well-acquainted with the person being observed.

III. In one or two sentences, briefly summarize the research findings concerning the relationship between body build (physique) and personality (temperament). (1 point)

IV. Circle the one number in front of the answer which most correctly completes each of the statements below. (4 points)

A. The distance which a speaker maintains when talking to an addressee is influenced by
   1. the culture from which the speaker comes
   2. whether the speaker is seeking the approval of the addressee
   3. the level of stress on the speaker
   4. All of the above
   5. Both 2 and 3 above

B. Paralanguage is defined as
   1. nonverbal linguistics
   2. the verbal, vocal components of speech
   3. the nonverbal, nonvocal components of speech
   4. the nonverbal, vocal components of speech
   5. None of the above
C. Some types of nonverbal communication are
1. clothing
2. physical appearance
3. vocal components of speech
4. Both 1 and 2 above
5. All of the above

D. Mehrabian's formula to measure the impact of a message in terms of verbal, vocal, and facial elements states that
1. the vocal element has the least weight in interpreting the attitude of the communicator of a message
2. the facial element has the most weight in interpreting the attitude of the communicator of a message
3. the verbal element has the least weight in interpreting the attitude of the communicator of a message
4. Both 1 and 2 above
5. Both 2 and 3 above

V. Circle the correct answer in the set of parentheses below. (1 point)

A. When the tone of a message is positive, the verbal content positive, and the facial expression accompanying it negative, the total message is likely to be judged as (negative, positive, neutral).

VI. Using Hall's four types of informal space or distance, write the name of the correct type of informal space or distance beside each situation described below. (7 points)

A. A job interview _______________________

B. A love scene in a movie _______________________
C. A speaker at a PTA meeting
D. A principal seated behind his desk talking to a visitor
E. Two friends exchanging whispered confidences
F. Some business acquaintances talking at a cocktail party
G. Several teachers in the teachers' lounge discussing vacation plans

VII. Place the appropriate letter from Column A in front of each word in Column B of which it is an example.

(13 points)

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
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<tbody>
<tr>
<td>A. Paralanguage</td>
<td>1. Resonance</td>
</tr>
<tr>
<td>B. Dynamics</td>
<td>2. Clothing</td>
</tr>
<tr>
<td>C. Proxemics</td>
<td>3. Seating Arrangements</td>
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<tr>
<td>D. Kinesics</td>
<td>4. Laughing</td>
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<tr>
<td>E. Polemics</td>
<td>5. Gestures</td>
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<td>F. No match listed</td>
<td>6. Tempo</td>
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<td></td>
<td>7. Eye Contact</td>
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<td></td>
<td>8. Physical Appearance</td>
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<td>9. Sneezing</td>
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<tr>
<td></td>
<td>10. Perfume and Jewelry</td>
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<td>11. Smiling</td>
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<td></td>
<td>12. Lip Control</td>
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<td>13. Territoriality</td>
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POST-TEST

Module - Nonverbal Communication

Name: ______________________ Date: ______________________

School: ___________ Grade Taught: ________________

Criterion: 27

Directions: Read each question carefully and select the correct answer. Hand in your completed test to Joan Shapiro to be graded.

I. Place the appropriate letter from Column A in front of each word in Column B of which it is an example. (13 points)

<table>
<thead>
<tr>
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<th>Column B</th>
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<td>12. Lip Control</td>
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<td></td>
<td>13. Territoriality</td>
</tr>
</tbody>
</table>
II. Write in each blank below the word which correctly completes each statement. (4 points)

A. The study of man's perception and use of social and personal space is called ________________________.

B. Facial expressions, posture, and movements of the head, body and limbs are components of the type of nonverbal communication known as body language or ________________________.

C. The type of nonverbal behavior which deals with how something is said and not with what is said is called ________________________.

D. The type of nonverbal communication which allows people to make inferences about a speaker whom they have heard but not seen is known as ________________________.

III. Using Hall's four types of informal space or distance, write the name of the correct type of informal space or distance beside each situation described below. (7 points).

A. A job interview __________________________

B. A love scene in a movie __________________________

C. A speaker at a PTA meeting __________________________

D. A principal seated behind his desk talking to a visitor __________________________

E. Two friends exchanging whispered confidences __________________________

F. Some business acquaintances talking at a cocktail party __________________________

G. Several teachers in the teachers' lounge discussing vacation plans __________________________
IV. Circle the correct answer in the set of parentheses below. (1 point)

A. When the tone of a message is positive, the verbal content positive, and the facial expression accompanying it negative, the total message is likely to be judged as (negative, positive, neutral).

V. Circle the one number in front of the answer which most correctly completes each of the statements below. (4 points)

A. The distance which a speaker maintains when talking to an addressee is influenced by

1. the culture from which the speaker comes
2. whether the speaker is seeking the approval of the addressee
3. the level of stress on the speaker
4. All of the above
5. Both 2 and 3

B. Paralanguage is defined as

1. nonverbal linguistics
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4. the nonverbal, vocal components of speech
5. None of the above

C. Some types of nonverbal communication are

1. clothing
2. physical appearance
3. vocal components of speech
4. Both 1 and 2 above
5. All of the above
V. Circle the one number in front of the answer which most correctly completes each of the statements below. (cont. from page 86).

D. Mehrabian's formula to measure the impact of a message in terms of verbal, vocal, and facial elements states that

1. the vocal element has the least weight in interpreting the attitude of the communicator of a message
2. the facial element has the most weight in interpreting the attitude of the communicator of a message
3. the verbal element has the least weight in interpreting the attitude of the communicator of a message
4. Both 1 and 2 above
5. Both 2 and 3 above

VI. True or False. (5 points)

___A. Eye contact is more frequent in interviews which are personal in nature than in those which are impersonal in nature.

___B. Facial and vocal channels are more effective in communicating negative attitudes than in communicating positive attitudes.

___C. Hall's classification system for informal space or distance applies validly to most of the people in the Western Hemisphere.

___D. Two people who are competing on a task will most frequently choose to sit directly across from each other.

___E. Clothing does not affect how a person's attitudes and values are perceived when the observer is well-acquainted with the person being observed.
VII. Answer both questions below on the back of the paper. (2 points)

A. State Argyle and Dean's distance equilibrium hypothesis.

B. In one or two sentences, briefly summarize the research findings concerning the relationship between body build (physique) and personality (temperament).
APPENDIX E

QUESTIONNAIRE ON THE MODULE

1. Were you able to complete the module on nonverbal communication? yes no

2. Do you feel adequately prepared to take the posttest? yes no
   If you answered no, explain briefly why not. _______

3. If you completed the module, how much time did it take you? Do not count pre and posttest time. _______

4. List below any changes you can suggest concerning the module. For example, are there any ideas that you have which would make the reading material, exercises, and thought questions more interesting or informative? Are there any changes you would make in the format of the module, the audio-tape, or the pre and posttest? Write any additional comments or suggestions which you have regarding the module.
Dear

I am writing to inform you of the results of the study on nonverbal communication in which you participated. As part of the design of the study, some of you took two posttests. If you were one of the people in the study who took two posttests, you were in the control group. If you took only one posttest, you were in the treatment group. Your pre and posttest scores are as follows:

<table>
<thead>
<tr>
<th>Pretest Score</th>
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<tbody>
<tr>
<td>_____</td>
</tr>
<tr>
<td>First Posttest Score</td>
</tr>
<tr>
<td>_____</td>
</tr>
<tr>
<td>Second Posttest Score (if applicable)</td>
</tr>
<tr>
<td>_____</td>
</tr>
</tbody>
</table>

Since there were 36 items on both the pre and posttest, you can compute the per cent correct you received by dividing by 36.

The results of the study disclosed that there was a significant statistical difference between the means of the treatment and control groups ($F = 119.57; \text{df} = 1/57; \ p < .001$). Since an F ratio of 12.07 or more was needed for significance, you can see that the derived F of 119.57 far exceeded the value necessary for statistical significance. These results mean that the posttest scores of the people in the treatment group were significantly higher than the posttest scores of the people in the control group. The results are interpreted as follows:

1. The people who studied the module before taking a posttest made significant gains in their knowledge of nonverbal communication as specified in the module as compared to those people who did not have the module before taking a posttest.

2. The module can teach the learner some specific aspects of nonverbal communication if the learner takes the time necessary to study it.
Many thanks for being a volunteer in the study. I appreciate the time you took from your personal life to participate in this project. I wish you a rewarding summer.

Sincerely,

Joan Shapiro
LIST OF REFERENCES


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