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AN EXPLORATORY STUDY OF THE NONVERBAL COMMUNICATION OF TEACHERS AND CHILDREN: SOME THEORETICAL AND METHODOLOGICAL CONSIDERATIONS

by

Virginia Elaine Johnson Rezmierski

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
1973

Doctoral Committee:

Professor William C. Morse, Chairman
Associate Professor Charles M. Galloway,
Ohio State University
Professor William C. Rhodes
Assistant Professor Joseph G. Teresa
Dr. Frank B. Bruno,
Director of In-Service Training
Ingham County Intermediate School District

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CHAPTER I

INTRODUCTION

This study focused upon a phenomenon in which every person participates but few have carefully examined; the habitual activity of nonverbal communication. The complexity of this form of human interaction is illustrated by numerous daily incidents which are so natural and common in their occurences that they are difficult to capture consciously for verbal description. The participants understand the incidents, even though they may or may not be aware of their part in the silent communication which occurs. Thus is the nature of nonverbal language. It may be defined to include all non-word signals or signs which hold meaning for another person, such as glances of an eye, smiles, head nods, tenseness in the brows, finger taps, and body movements. Koch (1971), defined it as,

> "Any message sent or received, independent of the written or spoken word,...It can be distributed among and around the very words themselves, as loudness or silences."

The following narrative presents one such nonverbal encounter which was the result of this author's interaction with two other students. It illustrates some of the commonly shared elements of non-verbal language, the differential and yet common impact which some behaviors elicit and the extensive information which can be transmitted by a behavior composite.

I sat one carrel away from a student who I barely noticed as I sat down. Soon, the carrel between us became occupied by another male student. I was immediately aware of his rather halting and hesitating approach to the study area. This awareness was dismissed however until my own uneasiness again became noticeable to me. The student was shuffling papers, shifting his posture and turning book pages too quickly. His attention seemed to be outside of the carrel though his physical presence was within it. I had to consciously redirect my attention to my own books. In the next few minutes the student left his seat and returned several times without additional books or supplies. I noticed an increasing anxiety, even a slight apprehensiveness, in my response to this unexpected behavior. As the student exited again, the other student turned to me, shrugged his shoulders, lifted his eyebrows, smiled and turned the palms of his hands upward. Without thought, I reciprocated with similar gestures. The impact of this shared non-verbal experience was fascinating. We both blushed. "What is he doing?" I asked. "Nervous" was the answer with appropriate hand shaking and facial expression. We both quickly let our focus drop to our own books as the student again returned to his seat. The moment he again left and was out of sight, we both looked up at each other and knowingly smiled as if to say, "There he goes again". Both had been using peripheral vision. Both knew that the other was doing the same. We shared five words spoken but a hundred words understood. As I was leaving the library, I saw the "nervous" student meeting a young woman and walking toward the lounge.

As man has sought to analyze and understand the process of communication, the focus has been upon his verbal productions because these are most easily acknowledged by the persons within an interaction. They may be monitored by the person who produces them, through hearing. They are easily recorded. The non-verbal are not so accessible. They are not always consciously produced or responded to. Yet, they comprise a huge portion of the total interaction. Humans communicate non-verbally continuously during interactions with others. Galloway (1971), has stated:

> "The non-verbal is so complicated that it can convey an entire attitude, yet so simple that when a head nods or shakes everyone understands. All human relationships involve meanings that are more than words, and the non-verbal exposes the truth of these relationships."

In the field of education, as in many other areas, verbal communication has been the basis of the analysis of significant interactions. The influence of Flanders and the "Interaction Analysis", is well known for analyzing teacher verbal behavior. Flanders and others have recognized, however, that the teacher verbal behavior provides an incomplete picture of the total interaction process. Galloway has suggested that the addition of information concerning the non-verbal component of this process would be of great significance.

> "The research challenge facing students of non-verbal behavior is the collection of data showing that non-verbal cues provide crucial information unobtainable from the observation of verbal behavior." (Galloway 1971)

Regarding nonverbal communication, Knapp stated:

> "We are just beginning to understand the role of this often subtle and sometimes very influential system of communication, but it is clear that the study of the dynamics of the classroom learning process must include this important dimension." (Knapp 1971)

Milton Hahn and Malcolm MacLean have said:

> "Our biggest criticism of counselors and teachers is that they either talk too much or too little, ignoring the highly significant elements of nonverbal (both their own and the students') cues which are as basic to communication as words." (Hahn, MacLean 1955 in Koch 1971)

Other authors have underscored the significance of non-verbal communication.

> "Verbal language can deal only with surfaces...reality begins where verbal language leaves off." (Stein 1965

in Koch 1971)

Halpin (1960) criticizes teacher training stating that most,

> "ignore the entire range of non-verbal communication, the muted language in which human beings speak to one another more eloquently than with words."

The inclusion of non-verbal aspects of communication to the analysis of teacher-child interactions promises a more complete system for the analysis of teacher-child relationships and the teacher-learning process. It is an aspect which needs to be studied; having the potential to greatly increase our understanding of the humanistic elements of the educational process.

The research information regarding nonverbal communication is not extensive. However, interest in the area dates back to the late 1800's. Since that time the area has developed slowly and has emerged as one which has stimulated research by psychologists, psychiatrists, sociologists, anthropologists, linguists, and educators. Charles Darwin is accepted as the originator of such ideas as "human nonverbal expression of emotions". In 1872, with the writing of The Expression of Emotions in Man and Animals, he was instrumental in stimulating other researchers into years of comparisons between the various levels of animals including man. His premise was that emotions were an outward expression of an inner state. Emotional expression was described as being determined by heredity and similar among the higher order animals. In the 1920's, two well known theorists, Kretschmer and Freud, further influenced the area of

emotions and personality. Kretschmer conceptualized particular personalities as being associated with physical body types; personality and expression of emotions determined genetically with body type. At this time, Freud introduced the concept of the unconscious as determinant or part controller of the expressed emotions.

In 1939, reflecting the German influence of the time, Gunther developed a race theory of personality, emotions and their expressions. This was directly contradicted in 1941 by Efron in a dissertation showing the learning and/or cultural determinants of particular gestural expressions of emotions among Jews and Italians. In the late thirties, Mead developed the concept of cultural forces shaping the expressions of emotions in man. He emphasized the role of nonverbal communication in the following:

> "There are an indefinite number of signs and signals which may serve the purpose of what we term 'language'. We are reading the meaning of conduct of other people when perhaps they are not aware of it. There is something that reveals to us what the purpose is...just the glance of an eye, the attitude of the body, which leads to the response. The communication set up in this way between individuals may be perfect. Conversation in gestures may be carried on which cannot be translated in articulate speech." (Mead 1934, in French 1970)

Theoretical and research activity in this area has increased dramatically in the last ten years. The nonverbal elements of communication have been increasingly recognized as significant factors in the total interaction process.

> "The study of silent adaptive behavior as a form of language has only recently come to be emphasized. Traditional pre-occupation with such concepts as intention,

> volution, will and consciousness led students to an over evaluation of the elements of interaction that are explicitly pertinent to communication-spoken and written word and gesture, although novelists, actors and dancers have never lost sight of the idea that silent actions might have communicative value." (Ruesch and Kees 1969)

In a 1964 study, Davitz concluded that,

> "although individuals indeed differ in their ability to communicate...the results demonstrate incontrovertibly that non-verbal emotional communication is a stable, measurable phenomenon." (Dunning 1971)

Yet the area of study is much like a seedling, barely above ground and anchored, too easily rotated by the sun of new insights and the wind of research techniques. As this characterizes the area of study in general, within the educational setting, the consideration of nonverbal language and its importance can be shown to be a seed barely planted. Little or no theory has been proposed in the area of nonverbal communication. Indeed no general theoretical structure exists which can be applied specifically to the area.

> "The task of non-verbal communication research has been to discover the unwritten rules established by centuries of communication through language without words." (Dunning 1971)

A review of the literature which relates to nonverbal communication reflects four major areas in which research seems to be needed. Two of these areas represent theoretical weaknesses of the existing work, showing a need for (1) an integrative exploratory effort involving multiple expressive channels (e.g. face, hands, eyes) and (2) an approach which emphasizes the reciprocal nature of nonverbal communication. Two other areas represent methodological needs for (1) a method to gather spontaneous data within a

natural setting and (2) an instrument which integrates affective and behavioral components of interaction. On the basis of these areas, the problem was formulated, the theoretical structure was selected, and the methodology was designed for this study. Each of the four areas is discussed more completely in what follows.

Need for Research

AREA: I

Nonverbal research tends to be greatly reductionistic in that pockets of information have developed, each concerning the phenomenon in only one expressed channel at a time, e.g. eye contact, proxemics, facial affect, and body movements. Perhaps this is the most logical way to approach such a complex area. Yet, this trend has made an integration of the findings nearly impossible. The procedures, samples, and findings, are largely incomparable. Ekman (1965) stated:

> "Most past research on nonverbal behavior has focused on the interpretation of only one set of nonverbal cues, usually those provided by the face. A few studies have shown that information is also communicated by the body: studies of posture, gait, and the hands. Yet no direct comparison of these different nonverbal cues in terms of the type of information each might communicate has been possible, since the stimulus persons, the observers, and the type of inferences measured have varied widely."

In his 1965 work and again with Friesen in 1967, Ekman attempted to examine the differential types of communication from two expressive channels, head and body. From this work they concluded that the face and body contributed different pieces of information to the understanding of an act; the

face displaying the affect which was experienced and the body displaying adaptive attempts to deal with the affect. This approach which examines the communicative behaviors from several expressive channels as parts of one whole interaction, fosters the building, comparison and integration of research efforts. Research is needed which explores the nature of nonverbal communication from data which include the integration of more than one expressive channel.

AREA: II

Most nonverbal research has involved contrived experimental stimuli and artificial settings. Researchers have sought the identification and judgement of emotions by presenting judges with photographs, (Schlosberg 1957), drawings, (Hanawalt 1944), candid pictures which were taken during the experiment (Coleman 1949) and even sculptures (Hanawalt 1942). All were non-continuous expressions of emotions. They were without the dimensions of duration and subtle fluid-like change. In this sense then, they were contrived, incomplete and artificial; perhaps even destructive of a most important element of the total interaction. Where researchers have examined communication during interactions, the settings have been unnatural. For the most part, interview arrangements have been designed to stimulate interaction between participants. (Exline 1965) These limitations of the research, have been partly caused by technological problems. Until the last fifteen years, technology as a whole for the study of nonverbal communication was a sore

limitation. No doubt, the availability of less costly filming and videotaping equipment has been largely responsible for the recent increase of research activity in this area.

The results of the existing studies have been extremely contradictory, disjointed and confusing. Regarding the past findings in nonverbal research, Ekman and Friesen state:

> "We have suggested that the positive results obtained in recent years have been due in part to a shift in focus from posed to spontaneous interactive non-verbal behavior, where the behavior is sampled during a verbal conversation." (Ekman and Friesen 1968)

In order to protect the phenomenon of nonverbal communication from the destruction which it might suffer from contrived experimental stimuli and unnatural experimental settings, Research is needed to develop a methodology, a set of planned procedures, which will allow for the gathering of spontaneous non-verbal data within a natural setting.

AREA: III

In the field of education, nonverbal research has been stimulated and greatly influenced by Charles Galloway's work reported in 1962. The developmental direction which this area of study has taken can be traced also to Galloway and his direct and indirect influence upon several doctoral students, Heger 1969, French 1970 and others. There are fewer than twelve major studies of nonverbal communication in education, most of which have been dissertation efforts. Each have concentrated upon the development of an observa-

tional instrument for the coding of non-verbal communication within the school setting. The focus upon an observational instrument, and the limits implicit in dissertation efforts, has limited the growth of exploratory work in the area. As yet, researchers have been unable to extend beyond instrument development and contribute much information regarding the nature of nonverbal communication between teacher and child. The observation instruments have tended to elicit judgements of either (1) teacher tasks and activities such as "calling role, demonstration..." (French 1970), "lectures, asks questions..." (Galloway, French 1968) or (2) teacher affective and behavioral expressions of attitude such as "encourages, praises,..." (Galloway, French 1968), "supportive, insincere, non-supportive,..." (Heger, 1969). Only one, Victoria (1970), has attempted to integrate the specific behavioral aspects of an interaction, i.e. nods, stands, grins, with the behavioral composites which signify the affective nature of the communication, i.e. receptive-helpful, clarifying-directive, enthusiastic, disapproval. If research is to clarify the process through which affective meaning is derived from specific nonverbal behaviors, both elements of the total communication should be integrated within efforts to analyze the total interaction. Research is needed which will contribute information regarding the nature of teacher-child nonverbal behavior through the development of instruments which measure both the affective and behavioral components of the interaction.

AREA: IV

The most significant need which seems to exist in nonverbal research is the recognition of reciprocity in dyadic interactions and its reflection in research efforts. This will necessitate the development of a methodology for gathering reciprocal nonverbal communication data. The communication process generally has been investigated as though it were a "uni-focused" process of one individual. It is clear that signals and signs are exchanged between persons in an interaction. Yet, when this process is subjected to investigation, the tendency has been to stop the exchange and truncate the focus to favor one of the persons within the interaction. Attention must be given to the two-way exchange of signs and signals. Harman (1971) stated:

> "Attention should not be focused only on the nonverbal behavior of the client. If we accept the fact that the client's nonverbal behavior can convey certain psychological meaning, we must also accept the fact that the counselors' nonverbal behavior will convey certain messages to the client."

Buehler and Richmond (1962) stated:

> "While communication is repeatedly referred to as a social interpersonal process, much of the assumption context and data pre-occupations of current research removes the variables being studied from their social settings and as a consequence, the human with human character of communication is omitted"...

These authors define interpersonal communication as:

> "initiated by a signal act by an individual. The sequence of communicative acts which follow the initial signal act is the interpersonal communication process."

Supporting the need to research the reciprocal features of communication, they state:

> "The process of interpersonal communication, regardless of the message, its purpose and effects or the personality characteristics of the communicator and/or recipient has not be documented to date."

Two other authors seem to document the reciprocal nature of nonverbal communication in their discussion of "external feedback".

> "External feedback refers to the information regarding a nonverbal act which the observer or receiver provides to the sender. Such feedback may consist of direct verbal comments on the sender's activity or obvious visual attention to a particular nonverbal act, or to the receiver's verbal and nonverbal behavior which clearly is reactive to the sender's nonverbal actions." (Ekman and Friesen 1969)

The authors state emphatically the need for research which includes this component of interaction as reflected by their own research. They have written:

> "A further problem is the distortion resulting from our treatment of nonverbal behavior as isolated units; we have attempted to map the elements of non-verbal behavior and have yet to specify the sequential interrelationships either for the flow of an individual's behavior or for the interaction of two or more persons."

Research is needed which incorporates the reciprocal nature of communication. This includes data gathering, codification, analysis and interpretation.

Issues of the Study

The present study has been undertaken in response to the areas of research needs which were highlighted in the previous review, and which will be elaborated in the literature review. This study was based on the accepted condition that teachers and children are continuously involved in the process of non-verbal signal sending and

receiving. It was further assumed that natural cohesive groupings or sets of signals would mark a mutual encounter between teacher and child and could be recognized by an observer. While it was theorized that individuals have unique styles of signalling (Scheflen 1969), the present study assumed that some particular types of children were more active signallers, with a higher frequency of signals than others. These were therefore selected as the study child population. The study was based on the belief that reciprocal signalling occurs within classrooms, and that such signalling must be recorded within that setting to be fully captured. Further, it was assumed that the signalling between a teacher and a particular child is at times continuous through an unknown duration and with unknown signalling frequency.

The study was designed to contribute information regarding the following questions:

1. Can nonverbal mutual encounters be recognized by an observer as they occur between teacher and child?
2. Is there a natural grouping or cohesiveness to these signals which can be agreed upon by observers?
3. Can a method be devised to record the nonverbal behaviors which two persons produce at the same time?
4. To what extent can data gathering be accomplished within the classroom setting without contaminating the spontaneity of the interaction between teacher and child?
5. Are teacher and child mutually and observably involved in nonverbal behavior?
6. Can an instrument be devised to allow for the codification of data from more than one expressive body

channel of the teacher and of the child?

7. Do judges agree on the codification of behaviors which occur during these interactions?

The four areas which were identified within the literature as reflecting a need for further or altered research have contributed directly to the theoretical and methodological design of the present study, and therefore the statement of its problem.

The Problem

The problem of this study was to investigate and describe the nature of the non-verbal behavior of teachers and selected children within a natural setting, the classroom. For that purpose, a methodology was designed which would allow for the gathering of reciprocal nonverbal behavior of teachers and children during spontaneous interactions. An observational instrument was constructed which integrated the behavioral specifics and the affective aspects of communication as seen in multiple expressive channels; head, body-torso, arms-hands, and face. The following definition of terms are relevant to issues and methods which will be discussed.

Definition of Terms

1. non-verbal - not verbal, i.e. signs and signals
2. nonverbal behavior - all behaviors which are not verbal in nature. This term usually includes behaviors such as; facial expressions, body movements, postural positions, head movements, hand, arm and foot, leg gestures or motions, eye directions, and gaze, cosmetic effects such as dress, style, make-up, and language components such as

speed, tone, pitch and inflection. For the purpose of this study, the term will refer to movements of head, body, face-eye, hand-arm.

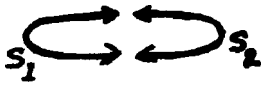
3. nonverbal expressive channels - any one area of nonverbal behavior such as: eye contact and direction of gaze, etc.

4. behavioral signal - any non-verbal behavior which appears to be directed, either consciously or unconsciously, toward another person.

5. reciprocal - mutual, shown by both persons in an interaction, corresponding to each other; exchanged.

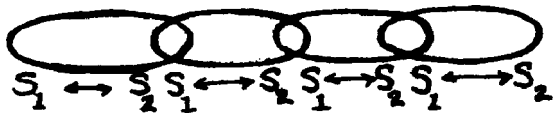
6. communication links - those nonverbal signals from one person which receive an immediate reciprocal signal from the other person to whom the signal was directed.

7. S_1 = signal from person #1 to person #2



S_2 = signal from person #2 to person #1

8. communication chains - a series of linked signals (reciprocating nonverbal behavior) between two persons which continues until the signalling from one person is drastically changed or terminated.



The chain shows both the receiving and sending nature of the communication exchange.

9. stream of behaviors - the continuous production of behaviors within a specified time period.

10. nonverbal communication - any exchange of information through non-verbal means, whether intentionally or unintentionally sent and/or received.

11. methodology - method or arrangement of procedures.

CHAPTER II

LITERATURE REVIEW

This review of the literature on nonverbal communication is presented in two major parts. The first section focuses on the state of theory-building in this area of study. In the second part, the four areas outlined in the Introduction which present the need for further research will be more fully described. A review of selected literature is included in each of these parts, as the literature demonstrates the issue and has particular meaning for the present study.

The significance of nonverbal communication has been recognized for many years. References which include material on the non-verbal aspects of behavior date back to the late 1800's. Yet, the student of nonverbal communication finds that a search for literature in this area of study at first, resembles the search for the well known illusive "needle in the hay stack." However, he soon discovers that there is an entire "cushion of needles in the newest layers of the stack." Research efforts in this area have significantly increased within the last fifteen years. A simple annual tally of the number of references which appear in the literature review indexes will attest to this fact. No full integration of the material exists however; no general schema within which the literature has developed or is currently compiled. No basic statements

of theory have been agreed upon to guide the developing research.

Theory of Nonverbal Communication

Several authors are attempting to generate strands of theory. Some of these are imbedded within statements of a general academic area; e.g. anthropology, sociology, or psychology. Little attempt is evident of an effort to construct a specific theory of nonverbal communication structure, usage and patterns. For instance, Goffman (1959) wrote:

> "While in the presence of others, the individual typically infuses his activity with signs which dramatically highlight and portray confirmatory facts that might otherwise remain unapparent or obscure. For if the individual's activity is to become significant to others, he must mobilize his activity so that it will express during the interaction what he wishes to convey."
>
> "Front, is the expressive equipment of a standard kind intentionally or unwittingly employed by the individual during his performance. As part of personal front we may include: insignia or effice of rank; size and looks; posture; speech patterns; facial expressions; bodily gestures; and the like."

Nonverbal behavior as "signs" presented to a viewer is a potentially important concept in regards to an understanding of nonverbal interaction. It leads to considerations of sign patterns, exchange of signs and the communicative value of signs. Yet it remains an isolated theory-like statement regarding nonverbal behavior, imbedded within Goffman's conceptions of roles and social patterns and as yet not submitted towards an integrated theory of nonverbal communication.

The methodological problems of this area have masked the theory-like productions of other authors. Birdwhistell is by far the most specific in his attempts to define and codify the system of non-verbal behaviors. He, Sheflen (1969) and others have focused their efforts upon the definition of the parts of non-verbal communication. In 1960 and later works, Birdwhistell distinguished between three aspects of kinesics (body motion and gesture). He defined pre-kinesics as "physiological, pre-communicational aspects of body motion". Micro-kinesics is presented as the "derivation of the least particles of isolatable body motion into manageable morphological classes" and social kinesics as the "relationship of morphological constructs to communication". He developed a system of analysis which allows for the recording of very specific behaviors. Though he has emphasized the analysis of the smallest of nonverbal behaviors, Birdwhistell stated:

> "For us, 'meaning' lies in the interdependent system and in the particular context of performance rather than in the item itself...until we know how people communicate and the structure of the system through which they communicate, we shall be unable to determine the significance of particular items that are somehow component elements of this process." (1963)

These attempts to define the specific parts of nonverbal communication and the concept that these parts comprise a greater whole, is again of theoretical importance. However, much of what Birdwhistell and the others who have taken this approach apparently wish to say about the broader "process", has been masked by the necessary emphasis upon

methodology, and the "behavior specifics" approach they have taken.

As the literature regarding nonverbal communication can be divided into three major groupings; references regarding: (1) the social and cultural considerations of nonverbal interactions, (2) the systematic codification of specific nonverbal behavior, and (3) the judgement and interpretation of meaning from nonverbal behaviors, Ekman and Friesen clearly represent the last grouping. It appears that they have made the most inclusive and directed attempt to construct a theory of nonverbal communication. They have assembled a schema called "The Repertoire of Nonverbal Behavior".

> "If we are to understand fully any instance of a person's nonverbal behavior--that is, any movement or position of the face and/or the body--we must discover how that behavior became part of the person's repertoire, the circumstances of its use, and the rules which explain how the behavior contains or conveys information". (Ekman and Friesen 1969)

The authors call these "fundamental considerations", origin, usage and coding. They have stated:

> "The interrelationships among and the differences within these three aspects of non-verbal behavior are extremely complex. The task of unraveling non-verbal behavior in these terms is enormously difficult; and it becomes impossible if we fail to consider the possibility of multiple categories of nonverbal behavior."

This work has helped to expand the understanding of nonverbal communication. Nevertheless, it can be seen to fall somewhat short of theory building due to the extensive emphasis upon classification and organizational activity. Perhaps this again is a reflection of the reactions of many

researcher's to the methodological complexity of this area. Perhaps too, it is the most logical approach to the many facited area of nonverbal communication.

The present study has drawn upon the constructs of various authors for theoretical and methodological direction. For instance, the importance of the concept of nonverbal "signs" within the total behavioral interaction has been accepted as a significant and guiding theoretical concept. (Goffman 1959, Hall 1959) The wisdom of capturing behavioral "specifics" in order to gain insights into patterns of nonverbal behavior gave methodological direction to this study. (Birdwhistell, Scheflen) The recognition that classifying behavior according to several "levels of meaning" is important, also affected the design of this study (Ekman et al).

However, with evidence that as yet, no integrated theory of nonverbal communication has been assembled and agreed upon, the literature then was examined to determine major research needs in the study of nonverbal communication. In the Introduction of this paper, four areas were identified in which further research appears needed.
In the section that follows, they will be reviewed in some detail. Each study which has been selected for review reflects one of the particular research needs and/or has contributed to the conceptual or methodological development of the present study.

Research Areas

Area: I

Research is needed which explores the nature of nonverbal communication from data which include the integration of more than one expressive channel.

Most of the research focuses upon only one or two expressive body zones (channels) e.g. head, eyes, or face. This tendency to isolate an area for the study of nonverbal communication rather than to gather information about the individual as a total sending and receiving system, a gestalt, has made comparative efforts between channels essentially impossible. Each body zone has been studied under different experimental situations, with different populations, and with different experimental variables. Therefore an integration or description of the findings, toward a statement of the nature of nonverbal communication as each channel contributes a part, is extremely difficult or impossible to achieve, since data regarding each channel has not been collected within the same study.

Studies Regarding Face

There is a group of studies concerning the face and emotions transmitted from that channel. Four conceptual approaches are represented within this group. They reflect the development of study in this area across time and the incorporation of increasingly valuable technological advances. They include: (1) attempts to demonstrate the connections between facial muscle reactions and the expressions of emotion (Boring and Titchener 1923, Landis 1924,

and Davis 1934); (2) attempts to determine the source of emotional information; face vs. situation (Munn 1940, Frijda 1958); (3) attempts to separate the facial zones (eyes, mouth, brows etc.) in studies to find the greatest source of information. (Hanawalt 1942, 1944, Coleman 1949) and (4) attempts to determine the dimensions of judgement from the face (Schlosberg, 1952, 1954, 1957, Frijda and Philipszoon 1963, Williams 1965, Gladston 1962).

Prior to the time in which the "dimensions of judgement" approach was taken to the study of facial emotion, the results of studies had been extremely contradictory. There has been more agreement in the results of the later studies however. In the Schlosberg work (1957), subjects were asked to sort pictures on the basis of several seven point scales. Dimensions were extracted. Later, subjects were asked to sort pictures of facial expressions on the basis of the dimensions. Schlosberg, Frijda and Philipszoon have found three basic dimensions in the judgement of facial expressions, pleasantness, sleep-tension, and attention activity-rejection. In their studies of dimensions of judgement from the face, Frijda and Philipszoon discovered four dimensions which accounted for 80% of the total variance in judgements. These dimensions were, pleasantness vs. unpleasantness, intensity vs. control, attention vs. disinterest, and submission vs. condescension. The similarity between this and the work of Schlosberg is readily noted. These dimensions appear to be

useful tools for the study of facial emotion. For the present study they were taken to represent dimensions concerning the "nature" of the communication, which should be incorporated into a coding instrument.

A summary of findings from these studies will, of necessity, be confusing since that is the characteristic of the evidence, probably due to the variance which existed in the research technologies which were employed. However, it is briefly presented here to give some indication of the nature of these findings.

1. Observers can discern the affective tone of an expression from the face alone. (Munn 1940)

2. The nature of the attitude or activity expressed facially can only be specified by knowledge of the situation. (Frijda 1958)

3. The lower half of the face contributes more to the judgement of happiness type emotions and the upper half of the face to the group of surprise and fear emotions. (Hanawalt 1944)

4. Neither the upper half nor the lower half of the face contribute more reliably to the judgements of faces. (Coleman 1949)

5. Four basic dimensions are involved in the judgement of emotions from facial expressions. (pleasantness-unpleasantness, attention-nonattention, sleep-tension, and submission-nondesension) (Frijda, Philipszoon 1952, Schlosberg 1957)

6. There appear to be pan-cultural elements in human affect displays (facial). (Ekman et al 1969, Izard 1970)

Regarding the study of facial emotions, Ekman and Friesen have stated:

> "Because of the lack of an orderly progression in development of research issues, concepts, methods, and findings, no framework has emerged within which a survey of findings might have meaning." (1972)

In their new book, the authors attempt to bring some order to the area by discussing the conceptual ambiguities which have existed in the study of the face. The area has been studied primarily by itself, not in combination with data from other expressive channels. The results therefore, are difficult to integrate with those from the study of other channels.

Studies Regarding Body

This is somewhat less the case with the literature which focuses upon the body. Here, two conceptual approaches seem to exist. They are: (1) study of posture (Deutsch 1940, Scheflen 1964); and (2) study of face vs. body as a source of information regarding emotion. (Ekman 1964, 1965, 1967, Dittman et al 1965) This latter approach provides the only, albeit partial attempt to integrate or combine body zones in data gathering efforts represented in the literature. The major question which has been asked is, "Can the body or the head reliably communicate information to observers regarding emotional and interpersonal states?"

In studies reported by Ekman, groups of undergraduates and professional dancers were asked to select the photo which corresponded to part of the transcript of an interview in which stress was experimentally introduced. The author stated:

> "These experiments indicate that body position and facial expression spontaneously shown during an interview are not random activity or noise, but have specific communicative value related to the verbal behavior. Furthermore, this relationship is not obscure or

> available to only the privileged few but can be detected by untrained observers." (1967)

Of another experiment, Ekman noted that there was a higher agreement on pleasantness-unpleasantness dimension when the head was judged and a higher agreement on the sleep-tension when the body was judged. Ekman and Friesen concluded that:

> "the face usually is an affect display system, while the body shows the adaptive efforts of the organism to cope with the affect state." (1967)

Dittman et al (1965), constructed an experiment to find whether observers differentiate and respond to bodily cues as distinct from facial cues. They used three series of film in which face and body communicated either the same, (pleasantness-unpleasantness) or one channel communicated one and the other, the opposite. They found that all judges were influenced more by the face than by the body.

The conclusions of studies regarding face and body cues in non-verbal communication seem to be:

1. Body position and facial position have specific communicative value to observers. (Ekman 1967)
2. The head provides more information regarding the type of emotion experienced, the body, the intensity of the emotion. (Ekman and Friesen 1967)
3. The face influences judgement of emotion more than does the body. (Dittman 1965)
4. Head orientation is significant in determining a person's attitude toward the receiver, body is not. (Mehrabian 1967)
5. Posture seems to be used in interaction to mark the units of communication and the ways in which individuals are related to each other in the interactions. (Scheflen 1968)

Studies Regarding Eyes

A third group of studies involves eye contact and gaze direction. The researchers who have studied this area have taken three approaches. First, some have examined the stimulating qualities of eye contact (Kendon 1967, Argyle and Dean 1965, Hutt and Hutt 1969, and Attman et al 1970). These studies have been accomplished using autistic, retarded and/or normal subjects. The concept of interpersonal signalling has been used in these studies. Regarding the interpersonal regulating quality of gaze, Kendon noted:

> "In withdrawing his gaze, a person is able to concentrate on the organization of the utterance, and at the same time by looking away he signals his intention to continue to hold the floor, and thereby forestall any attempt at action from his interlocuter. In looking up, he can at once check on how his interlocutor is responding to what he is saying, and signal to him that he is looking for some response from him." (1967)

Others have discussed this concept of signalling in connection with eye contact and gaze direction. Argyle and Dean (1965) and Hutt and Hutt (1961) have shown differences between children and adults in the distance which they are willing to stand in relation to another person under conditions of open and closed eyes. They hypothesized an equilibrium tendency between eye contact and proximity with eye contact and the length of glances decreasing as the spacing distance between subjects decreases. Hutt and Hutt (1969), in studies with autistic children, have hypothesized that eye contact signals affiliation which the autistic children wish to avoid and therefore turn away from. In the conceptualization of the present study, this concept of interpersonal

signalling was taken as a central assumption. It was felt that non-verbal behaviors have interpersonal signalling quality in each channel, not only eyes.

In conjunction with the studies of eye contact, a second group of authors have written about the dynamic nature of the human interaction as it is reflected by changes in eye movement. The phenomenological nature of this interaction was studied by Heron (1970) and in part by Champness (1970). Heron suggested that the encounter of the interpersonal gaze has a "light" which reveals the presence of the person to the other. It further was described to have "streaming into" quality and to have emotional content in itself. Regarding the significance of the mutual glance, Champness has stated:

> "...this direct mutual glance represents the most perfect reciprocity in the entire field of human relationships." (1970)

The research representing the third approach in this area (eye contact and gaze) is plagued by a major question of validity. Only Shaw (1971) has addressed this issue. Many of the studies have been accomplished in an interview situation where the interviewer has been assumed to have maintained eye contact throughout the experiment. Data regarding the other person's gaze has been gathered. This basic assumption that the interviewer is in fact able to maintain eye contact is highly questionable and weakens or invalidates the results in each of the studies. These studies have focused upon the effect of topic, affiliation

or competition upon the gaze behavior of the interviewee. (Exline 1963, Exline and Winters 1965, Modigliani 1971)

The accumulation of findings from the studies of eye contact can be categorized as follows:

1. Eye contact is used to signal the holding or releasing of control of the conversation when a person is talking. (Kendon 1967)

2. Eye contact seems to have a signalling interpersonal meaning regarding the desire to affiliate and readiness for affiliation. (Heron 1970, Champness (1970)

3. Eye contact seems to be held longer during listening than during talking. (Exline 1965)

4. Females make more eye contact than males and for longer periods. (Exline 1965)

5. There seems to be an equilibrium tendency between eye contact and distance (Argyle and Dean 1965)

6. Competition and embarrassment both seem to affect the duration of eye contact between persons, reducing it. (Exline 1962, Exline and Winters 1965 and Modigliani 1971)

The review of literature to this point, shows that very few studies have used data which has been gathered synchronously from the face, body, eyes, hands and head zones so that comparative work might be accomplished. Numerous questions remain unanswered. For example: Is there a particular body channel most used as a person cummunicates nonverbally? Can more information be gathered from one channel than from another? Do different types of information get expressed in different channels? etc. In the light of this reflected need for answers to these and similar questions, the present study was designed so that information might be gathered from four major body zones; head,

body, hands-arms, and face-eyes within one study. This approach was selected as the one which would facilitate best, comparative, descriptive and integrative exploratory work.

Area: II

Research is needed to develop a methodology which will allow the gathering of spontaneous non-verbal data within a natural setting.

The literature shows that a number of procedures have been devised to elicit judgements of the meaning of nonverbal behaviors. Boring and Titchener 1923 used a model of the face and pictures to demonstrate their hypothesized muscle zone-emotional expression linkage. Coleman, 1949, elicited emotional reactions from subjects, photographs to identify the expressed emotions. Frijda and Philipszoon, 1963, had subjects sort pictures of facial expressions on the basis of the dimensions of emotion.

The studies of head and body involved photographs, films, drawings and observations through one-way-vision mirrors. Ekman (1964, 1965, 1967) had subjects select photos which corresponded with interview transcripts. Dittman et al (1965) produced three film series from which to gather judgements of the dimensions of emotion. Scheflen (1964) utilized films of therapists which were content analyzed to determine the significance of posture within communication. Mehrabian, (1967), had observers through a one-way-vision mirror, record the duration of experimentors head and body orientation toward subjects.

Within the literature which reports eye contact and

gaze direction studies, observations were made with the subjects in an interview situation, with the observers behind a one-way-vision mirror. The interview situations were usually characterized by different experimental inducements such as competition (Exline 1963), affiliation issues, (Exline and Winters 1965) and embarrassment, (Modigliani, 1971).

If nonverbal behavior is considered to be a natural semi-unconscious characteristic of humans, it must be recognized that the studies which attempt to examine the phenomenon via contrived, discontinuous procedures may be altering or even destroying the phenomenon itself. The stimuli from which judgements of emotion have been made have largely been posed, stopped, exaggerated and segmented. The settings within which interaction has been studied have been almost entirely experimental; the interactions artificially initiated. Most probably this has been due to the absence of advanced technological assistance for a study conducted within a natural setting. Within the last ten years, the availability of less costly equipment, video taping, split screen viewing and other advances has allowed for more observations to be made within the situation. Birdwhistell and several of the educational researchers (French 1970, Evans 1970, Heger 1969), have taken advantage of these improved means.

French (1970) stated:

> "Observation of classroom communication events and of teacher verbal and non-verbal behavior can be conducted through on the spot observation accompanied by appropriate tallying of events and behaviors, or it can be

> conducted by observing and analyzing filmed or videotaped segments of classroom activities. The latter method offers the desireable features of permanency, opportunity for repetition, and opportunity for application of several research techniques."

French video taped three class periods in each of twelve classrooms, at the junior high level. The contents of the tapes were coded using two independent observational procedures. The author proposed to evaluate two instruments for gathering various types of information regarding classroom interaction; the I-P-T model for coding institutional personal, and task events, and the IDER system for coding indirect, direct, encouraging and restricting behaviors. He found the instruments effective in this regard. This study illustrates the more natural data collection approaches being currently taken.

There is a significant increase in collection of data within the natural setting. It appears that for exploratory studies to be most valuable efforts must be made to gather data from natural interactions as well as within such natural settings. These efforts will allow researchers to learn about the nature, dimensions and patterns of nonverbal communication with the most assurance that the phenomenon has not been altered by the research itself.

Area: III

Research is needed which will contribute information regarding the nature of teacher child nonverbal behavior through the development of instruments which measure both the affective and behavioral components of the interaction.

In the field of education, the literature which

focuses upon nonverbal behavior is strikingly general in comparison to the nature of the psychological literature which has developed according to individual specific channels. Perhaps this is due to the relatively recent appearance of this topic in education. A number of authors have stressed the need for more attention paid to the non-verbal aspects of communication in the educational setting. The most comprehensive discussion of the role of nonverbal communication, research, the nature of nonverbal behavior, the importance of nonverbal communication in the educational setting etc., has appeared in the 1971 issue of Theory Into Practice edited by Frymier, Galloway, Smith and Fox. The entire issue is devoted to "The Challenge of Nonverbal Awareness". This issue is an excellent resource for the person beginning to study the importance of nonverbal communication as well as the student well into the issues and problems of this area of study. It is no chance occurrence that the first and last article in this issue are written by Charles Galloway. Galloway described the significance of non-verbal communication, the basic assumptions which underline the current approaches and the problems inherent in the study of this form of behavior. His influence upon the development of the study of nonverbal communication in education has been very significant.

In 1962, in his doctoral thesis, Galloway proposed an elaboration and extension of the Flanders system for the analysis of teacher-child interaction within the classroom.

This extension included the addition of nonverbal categories to the observation instrument. The category system consisted of seven items ranging from encouraging communication to disapproval. Each item had specifically defined facial, action and vocal language components. Galloway used three independent observational procedures, (1) observer judgement of verbal and nonverbal categories, (2) narrative descriptions by trained observers, and (3) judgements of episodes within the observational records by three experts, to determine which "was most useful and valid for gathering data about a teacher's nonverbal behavior". While he did not find any clear results to indicate one procedure superior to another, he did conclude that the "teacher's communicative behavior could be identified...by either procedure" on the basis of the nonverbal categories specified.

In education, several researchers have taken an "instrument development" approach to the study of nonverbal communication. Following Galloway's lead, they have focused their efforts primarily upon the development, verification and reliability testing of category systems (items for coding behaviors) for the analysis of teacher-child verbal and non-verbal interactions.

The development of these instruments of category systems for coding non-verbal behaviors remains limited however. Victoria (1970) stated:

> "In an anthology of twenty-six major classroom observation instruments, Simon and Boyer report that twenty-five of these instruments deal exclusively or primarily with the analysis of teacher's verbal communication.

> Seven of the instruments are designed to observe some aspect of non-verbal behavior. Those items classified as non-verbal refer to such behaviors as non-verbal writing, seat work, demonstrations, and illustrations. Only one instrument deals with the identification of gestural behavior as a mode of communication of an encounter."

A category system might be reflective of one of three aspects of the teacher-child behaviors. It might require the observation and coding of a range of specific behaviors from those reflected by Birdwhistell e.g. head up, eyes slanted, mouth open, to grosser categories such as teacher talks, questions, moves away, or laughs. Second, such a system might require the tabulation of the nature of communication events such as behaviors generic to role, passing out papers, giving directions, behavior management, demonstrations or communication dimensions such as tenseness or alertness. Third, such a system may require the judgement of the interpersonal nature of the interaction. Such items as enthusiastic, support, and rejection should be included.

For the most part, the last two types of category systems have been developed and examined in the educational literature. Heger (1969), French (1970) and Evans (1970) developed such systems. Heger (1969) developed an observation system which he called the MINI-TIA (Miniaturized Total Interaction Analysis) system. This system consists of seven verbal categories each with two nonverbal categories. The observer was required, every three seconds, to select the verbal category which was occurring and to judge the

nonverbal category as it related to the verbal. The non-verbal behaviors were to be judged congruent or incongruent with the verbal categories. Heger's items are modified from the Flanders-Galloway combination of verbal and non-verbal categories. He concluded that the MINI-TIA System provided a balanced perspective between verbal and non-verbal aspects of the observed communication. Basically the category items required the observer to make judgements regarding the "nature of the interaction" and very generally the "type of behavior performed" rather than to describe the "behavioral specifics" of an action.

French (1970) attempted to examine the usefulness of the Indirect-Direct, Encouraging-Restrictive (IDER) observational system devised by Galloway-French (1968) in describing the types of interactional events (I-P-T) which occur within classrooms. Interactional events were identified on the basis of a three part model indicating institutional events, (I), i.e. role calling, reprimand misbehavior, personal events, (P), i.e. expressing interest, concern and task events, (T), i.e. teaching, demonstrating. Basically, the IDER category system is a series of ten verbal items which range from indirect to direct teacher verbal behaviors and a series of nine nonverbal items which range from encouraging to restricting behaviors. French gathered data by means of video tapes of twelve classes. These were coded using the IDER and IPT systems. He concluded that,

"the IDER system of behavioral analysis is useful in

> describing institutional, task, personal and mixed events and/or a particular teacher's involvement in these events." (1970)

The emphasis of this category system was upon the "nature of the interpersonal communication" and the "type of communication event". The specific behaviors from which these judgements regarding nature of communication were made, were not coded or the focus of the judgements.

In 1971, Teresa reported a study which directed more attention to the specific behaviors from which affective meaning is drawn. He explored the awareness of teachers and students of

> "specific non-verbal cues from the face, arms, hands, and the torso and the ability of the teachers and students to assign meaning to the combination of these cues presented in overt nonverbal gestural expressions."

Teresa used a series of movies in which an actress, as teacher, portrayed nine nonverbal emotional expressions. The teachers and students, fourth, fifth and sixth graders, were asked to rate these behaviors on a semantic differential instrument. The author concluded that:

> "teachers and students are capable of correctly identifying the non-verbal emotional expressions with respect to categorizing affective meaning of the emotional expressions."

As in the previously reviewed efforts, judgements in this study were made on the basis of "affective qualities" of the behaviors observed. However, more emphasis seemed to be directed toward the behavioral composite responsible for such affective judgements.

This author was able to locate only one study using

a coding system which reflects an integration of items for the judgement of "behavioral specifics" and the "affective qualities" of an interaction. Victoria, 1970, reported a study, the objective of which was to "develop a typology of nonverbal behaviors and terms descriptive of qualities evoked by that behavior. The study involved student teachers within an art teaching-learning situation. Seven categories of nonverbal behavior were selected; eye contact, facial motion, head motion, body posture, body motion, arm-hand-finger motion and directed arm-hand-finger motion. Each nonverbal gestural behavior was observed and rated in accordance with one of seven affective qualities reflected. (1) enthusiastic, (2) receptive-helpful, (3) clarifying-directive, (4) neutral, (5) avoidance and insecurity, (6) unattentive and (7) disapproval. An extensive list of specific behaviors was used. Student teachers were video taped in three contextual situations; process task setting, process demonstration, and process evaluation. The tapes were coded with a reported 81% recorder agreement. The author concluded that

> "body posture, head motion and body motion account for the highest mean percentages of agreement in the categorization of gestural behavior."

The following two studies have been included, not because they have contributed directly to the development of an observational coding instrument of teacher-child interaction, but because they provide two alternative approaches to the coding of nonverbal behaviors from those used by edu-

cational researchers. The first has been previously cited in the review section regarding facial nonverbal inputs, the work of Schlosberg 1952, 1954, 1957, and Fridja and Philipszoon 1963. This group of authors has sought to identify dimensions of emotion which might be judged from the human face. They have extracted a total of four dimensions which they report as accounting for 80% of the total variance between facial displays of emotion; attention vs. disinterest, intensity vs. control, submission vs. condescension, and pleasantness vs. unpleasantness. These authors do not specify the behaviors which lead to the judgement of these dimensions. The dimensions seem to add important considerations regarding the "nature of the communication," however.

Also referred to earlier in this review, the work of Ekman and Friesen (1969), provides a categorization of nonverbal behaviors and the dimensions for this organization. The "repertoire of nonverbal behavior" which is presented by these authors is not meant to be a coding system, but provides valuable constructs for such an effort. Ekman and Friesen have classified nonverbal behaviors on the basis of usage, origins and coding.

Usage refers to "regular and consistent circumstances surrounding the occurrence of a nonverbal act".

Origin refers to "how the nonverbal behavior originally became part of the person's repertoire".

Coding is the "principle of correspondence between the act and its meaning".

Specific nonverbal behaviors have been described in this system as well as the more general aspects of interactions. The authors have defined five groups of nonverbal behaviors.

1. emblems are "those nonverbal acts which have a direct verbal translation"

2. illustrators are "movements which are directly tied to speech, serving to illustrate what is being said verbally"

3. affect displays are "defined in terms of the face as the major site of emotional displays". The authors list happiness, surprise, fear, sadness etc. as primary affects.

4. regulators are acts which maintain and regulate the back-and-forth nature of speaking and listening between two or more interactants."

5. adaptors are described as movements which "were first learned as part of adaptive efforts to satisfy self or bodily needs, or to perform bodily actions, or to manage emotions, etc."

They have attempted to classify nonverbal behaviors on the basis of the categories of behavior e.g. adaptor, regulator, on the basis of origins, usage and coding. While this effort is stated as incomplete, it seems to hold promise as an integration of "specific nonverbal behavior", "communication events" and affective messages". The concept of "dimensions of emotion" particularly that of "attention vs. disinterest" contributed to the construction of the category system used in the present study. The work of Ekman and Friesen was not used however due to its still incomplete development and the researchers late discovery of the work.

For the purpose of the present study, a coding system was needed which incorporated the three identified aspects of teacher-child behaviors; with items reflecting

"behavioral specifics", the "nature of communication signs", and the "affective interpersonal nature of the interaction". Therefore, one which offered only categories of specific behaviors was considered incomplete. So also was one which focused solely upon communication events or judgements of the nature of affects. The specific nonverbal behaviors such as smile or stare were considered necessary to an understanding of the communication dimensions, e.g. awareness, sleep, tension, which in turn were seen as significant to an understanding of affective judgements, e.g. accepting, rejecting, supporting. The need for recognition of research efforts to further the development of a coding system which integrates the behavioral and affective components of nonverbal communication, gave direction to the methodological design of this study.

Area: IV

Research is needed which incorporates the reciprocal nature of communication. This includes data gathering, codification, analysis and interpretation.

Based on the literature reviewed, this need seems to be most pressing. No studies were found within the educational literature of nonverbal communication which take into account the reciprocal nature of the communication process and reflect this concept in the theoretical and methodological research structures. Most authors state the problem of their research in terms which imply a two way analysis of the communication, yet the procedures focus upon the teachers behavior and perhaps the consequent per-

ceptions of the student. No studies have been reported which represent both the teacher and student, as sender and receiver of communication messages, verbal and/or nonverbal. Though Heger (1969) strived "to provide a balanced perspective of teacher behavior and student behavior" in his study, the coding system which was utilized contained four categories of teacher behavior, two categories of student verbal behavior and one of silence. The effects of teacher behavior upon students is most often coded. The reciprocal effect of students' behavior and its effect upon teacher behavior seems to have been ignored by most authors. French (1970), stated one problem of his study to "develop and test a meaningful conceptual model for viewing teacher-pupil interactive relationships in the classroom". Both of the instruments which were used in this study seem to focus almost entirely upon the teacher. The IDER is a system for "categorizing both teacher verbal and nonverbal behavior simultaneously." The I-P-T model focuses the coding almost entirely upon the teacher's behavior in relation to institutional, task or personal type communication events.

The focus upon one participant within the interaction is not a characteristic only of educational research. Indeed, one of the greatest weaknesses in the psychological literature reviewed, regarding gaze direction and eye contact, seems to be the lack of attention paid to the concept of reciprocity within an interaction. The Exline et al studies (1965), gathered data regarding the gaze direction

and eye movements of an interviewee under the assumption that the interviewer had maintained unbroken eye contact during the experiment. Since the researchers were investigating the effects of topic upon the eye movements of the subject, it seems reasonable to believe that the interviewer may also have responded periodically to his concentration upon the topic, or to the behavior of the other person in the interaction, and wavered or indeed broke eye contact during the experiment. The concept of interpersonal signalling, as used by Hutt and Hutt (1961) seems to recognize most clearly the potential of this two way communication process.

The interesting fact remains that, while author's statements acknowledge the importance of the interactive nature of communication, verbal and non-verbal, this recognition rarely has been translated into action as the research is designed. Without this dual focus on communication as a fluid and ongoing process between two persons, each capable of affecting the communication behavior of the other, it is apparent that the research efforts will continue to dissect the phenomenon and thereby distort it. The concept of reciprocal behaviors comprising the nonverbal communication process, has been taken as a central theoretical concept in the present study. An attempt has been made, through this recognition of needed research, to design a methodology which would reflect the importance assigned to the concept.

This review of the literature regarding nonverbal communication, has: (1) demonstrated the state of theory building in the area; and (2) demonstrated four areas in which altered, extended or newly conceptualized research efforts are needed. The material reviewed has led the author to conceptualize nonverbal communication as a rapid, reciprocal exchange of behavioral signs or signals between two or more persons. These signals are produced from multiple expressive body channels e.g. hands, eyes, body. They are thought to transmit messages at several levels of meaning. First, as meaningful specific behaviors, behaviors such as a wave of the hand or the vertical shaking of the head, may hold a specific understood meaning of their own. This level corresponds to behaviors which Ekman and Friesen (1969) have referred to as "emblems or illustrators". Second, as behaviors or composites signifying something regarding the communication process itself, about the type of signal, its intensification , or termination. Ekman and Friesen (1969) call the behaviors represented at this level of meaning, "regulators". Third, as behaviors or composites signifying something regarding the affect or attitude between the participants. The behaviors which are contained by this level are called "affect displays or adaptors" by Ekman and Friesen (1969).

Nonverbal communication is conceptualized for purposes of this study according to the model presented in figure 1. Only four channels are represented on this model

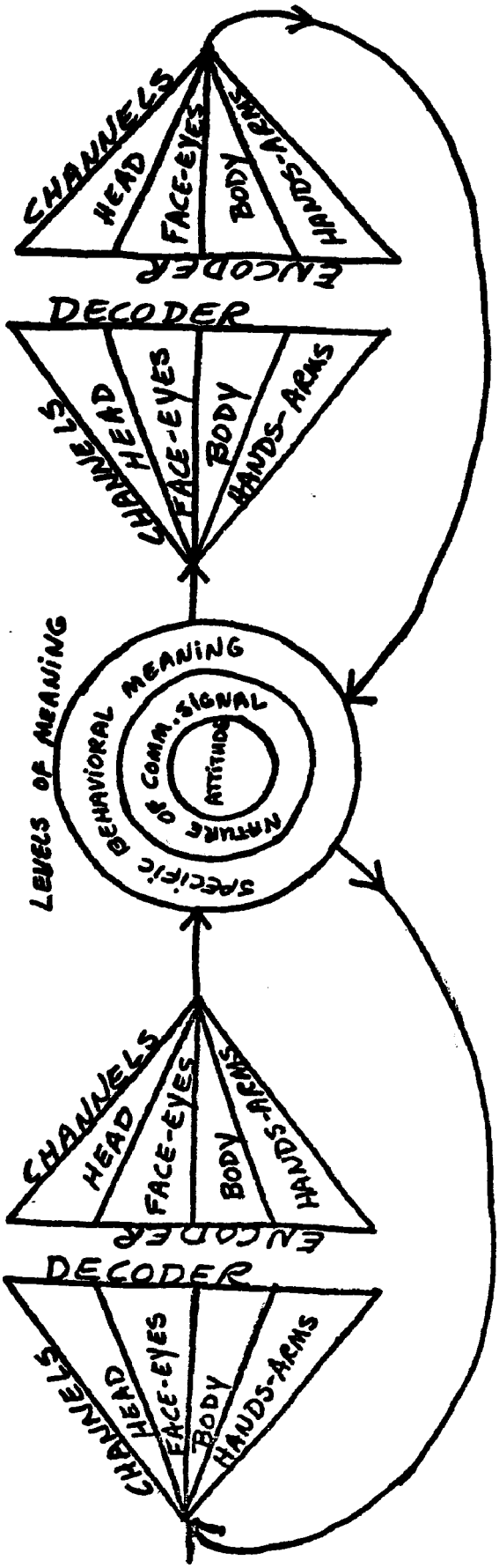


Fig. 1. Model of nonverbal communication

though there may be other sources of behavior which are involved in nonverbal communication. Style of dress, proximity and gait are a few of the sources not represented. This model depicts the reciprocal relationship between two persons. The role of encoder and decoder are exchanged as nonverbal signals are sent and/or received. The model presents three possible levels of meaning contained within a signal; the behavioral level, the nature of the signal and the affect or attitudinal level. Most probably, a signal from one or more expressive channels contains some meaning for a decoder at each of the signal levels. The model allows for the possibility however, that one signal may have meaning primarily at the "nature of communication level", while another, primarily "affective" meaning and so on. It also allows for the possibility that a signal contains impact (meaning) at all levels at one time and cannot effectively be broken down into parts to be understood. This possibility that a nonverbal communication encounter is actually greater than the sum of its parts, in its entirety holding an impact beyond the meaning of the specific behaviors involved, is not denied by the model which is presented, and will be discussed later in this thesis.

In previous sections, the status of theory and the research needs have been reviewed to show the effect which they have had upon the conceptualization and/or design of the present study. The following chapters describe the data gathering and the data codification methodologies which were

used in this study. They are presented as they have been influenced and/or determined by the literature reviewed.

CHAPTER III

DATA COLLECTION METHODOLOGY

The research design of this study was determined by the criteria identified in the four recognized areas of needed research. They were discussed in the review of the literature. Two of these areas had direct influence on the "Data Collection Methodology". They highlighted the need for a methodology which: (1) would allow for the gathering of spontaneous non-verbal data in a natural setting; and (2) which would recognize the reciprocal nature of communication. The two other areas of needed research influenced the "Data Coding Methodology". They reflected the need for: (1) the integration of more than one expressive channel in data analysis; and (2) a category system which would allow for the coding of more than one level of nonverbal communication including the specific behaviors as well as the affective meaning of the interactions.

The researcher believes that (1) teachers and children are continuously involved in the process of nonverbal signal sending and receiving; (2) natural cohesive groupings or sets of signals mark a mutual encounter between teacher and child; (3) these sets of signals can be recognized by an observer, and (4) some particular types of individuals signal more actively than others. The data collection and coding methodologies were designed for this

study to provide some information regarding these issues also.

The Data Collection methodology which follows reflects the emphasis which was placed upon reciprocal data in this study. (See Figure 1) During pre-data collection procedures, the research issues and assumptions were formulated further. They were incorporated into the study design during data collection and post data collection procedures.

Pre-Data Collection Procedures

The data gathering was influenced first by the observation that when a child communicates non-verbally, there is a continuous observable exchange of non-verbal signals. To gain more information regarding this condition, discussions were held with three different groups of professional educators to assist in the clarification of conceptual issues. Then classroom observations were made to verify the observability of the teacher-child non-verbal encounters. The three educator groups consisted of approximately 10 teachers of institutionalized emotionally disturbed children, 20 teachers of a regular middle school (grades 5-8), and a small number of teacher consultants. Each group met with the researcher in separate discussion sessions. The objective was to determine what cues teachers use in recognizing a child's needs, i.e. when he is sad, confused, frustrated. The following questions were asked:

- Can teachers determine when a child is having some sort of difficulty?
- What relates this information to the teacher?
- What specifically does the child do?
- Are there specific individual patterns which a teacher learns or are there general signals of difficulty common to a number of children?

There was a concensus within each group that signals do exist which teachers can distinguish and which indicate a need for some teacher-child interaction. To describe these signs verbally proved to be a very difficult task for the majority of the teachers. The discussions were marked by one phrase: "You can just feel..." In general, the researcher felt that the teachers of disturbed children were more sensitized to the nonverbal behaviors of the children, and used a wider range of verbal description in relating the cues which they perceived, than did the other teachers.

From these discussions, it was concluded that: (1) teachers recognize some of children's nonverbal behaviors as meaningful signs, (2) teachers describe only the most obvious of these behaviors e.g. large body movements and extreme facial expressions; (3) certain behaviors in children indicate to teachers a need for interaction; and (4) teachers have difficulty describing their own nonverbal behaviors.

As a result of the above information, three classrooms were observed to determine if nonverbal mutual (teacher-child) encounters could be identified; two regular elementary (third and fourth grade) classrooms and one

class of fourth grade institutionalized disturbed children. In the regular classrooms, the researcher attempted to record manually any instances in which the teacher and a particular child communicated nonverbally. Gross behaviors were observed such as: Did the teacher glance at the child? Did the child change his behavior? Did the child tap a pencil on the desk, wriggle in his chair, walk toward the teacher, raise his hand? Did the teacher respond?

Recognizable nonverbal signals between teacher and child were not identified in the first regular classroom observation. The teacher and particular child who was being observed were not interacting with each other. In the second regular classroom, the process of nonverbal reciprocation between teacher and child could be identified somewhat better. Several children sent nonverbal signals to the teacher and he, in turn, changed his position, posture, facial expression and gesture, in what seemed to be a response to them. Two questions remained: Had it been a lack of practice in observing the nonverbal aspects of communication consciously, which had made them appear to be non-existent in the first classroom or had the reciprocation of nonverbal communication between teacher and child occured with such a low frequency or intensity in the regular elementary classroom that it was difficult to identify?

In the classroom of emotionally disturbed children, nonverbal reciprocal communication was more pronounced.

Several explanations for this intensification of nonverbal signals between emotionally disturbed children and teachers might be suggested. Perhaps special teachers are trained to be more aware of and responsive to, nonverbal behaviors. This responsiveness of the teachers may stimulate nonverbal responses from the children. Also, emotionally disturbed children might use behaviors as means of expression more actively than nondisturbed children. In this setting, with many fewer children per teacher and more intensified behaviors, nonverbal mutual encounters were easily observed. As a point of illustration, in one instance, when a child became more active, the teacher's hand slowly moved closer to the child's hand and his body became oriented toward the child. As the child again shifted into a more relaxed position, the teacher rotated his orientation toward the other children in the class. A one-way vision mirror was available for this observation in this room which allowed greater recording latitude. Using an audio recorder, two persons dictated a description of the reciprocal nonverbal behaviors which occured between teacher and child; one described the teacher, the other, the child. Both observers felt certain that nonverbal sets of signals occured in this setting, in this class, with this teacher.

Based on the observations, the researcher concluded that nonverbal mutual encounters could be identified between disturbed children and their teacher and between regular elementary teachers and children as well, though

with lower frequency. Though the phenomenon was more readily observed in the special education classroom, it was decided that the study would take place within the regular elementary school setting. It seemed important to show the existence or non-existence of nonverbal reciprocal communication within a "normal" teacher-child relationship, rather than between a disturbed child, whose communication may also be considered by some to be abnormal and a teacher, whose sensitivity and tolerance for extreme and unusual behaviors had been carefully honed. Moreover, there is no evidence that nonverbal communication between teacher and child is a phenomenon confined to the relationships between teachers and disturbed children. The researcher therefore, sought to examine the existence and nature of nonverbal communication between elementary teachers and children in regular classes.

Population

Selection of Teachers

Initial discussions of the entire project were held with various elementary school principals in the Ann Arbor and Dexter Public Schools. The principals gave preliminary approval and invited several teachers to meet with the researchers to discuss the project. Several meetings were then scheduled in which the study was discussed with the third and fourth grade female faculty members of the schools. The term "non-verbal" was not used, to prevent the teachers from becoming sensitized to this aspect of the study. Only female teachers were sought in order to limit the variables

of the study. They were not selected on the basis of age or experience, but rather, their willingness to participate. They were told that the study concerned the behavior of aggressive boys at the third and fourth grade level. They were not told the names of the target children or that teacher behavior would also be a focus of the study. The researcher assured the teachers that all data would be made available to them immediately following its collection in their classroom. Teachers participated in the study on a voluntary basis.

Table 1 indicates the number of third and fourth grade teachers who participated in the study and in whose classrooms data were gathered. It also represents the third and fourth grade representation from each of the two participating school districts.

TABLE 1

Classrooms Involved in Study

	Grade Level	
	3	4
Number of classrooms from Ann Arbor Public Schools	1	1
Number of classrooms from Dexter Community Schools	3	3
Total number of classrooms involved	4	4

Selection of Children

Discussions with teachers indicated that some children are more active signallers than others i.e. produce more nonverbal signals which have meaning to the teacher and have a higher incidence of nonverbal communication with the teacher. Some children are probably better signallers also, their signals better understood by children and teachers. However, the issue of accuracy leads to questions of intent and mutual understanding of signals. The focus of this study was upon children whose frequency of signalling seemed to be higher than that of other children. The researcher believes that children who are usually designated as attention seekers, and/or aggressive by teachers, may be the same children who might be designated as more active nonverbal signallers within a classroom. Teachers often refer to a given child as "aggressive on the playground" and as "showoff or dependent or attention seeker" in the classroom. This may reflect the restrictions which they place upon children's behavior through expectations or definitions in the classroom, i.e. "children may not hit in school..." These restrictions may cause the style of behavior to change with the setting.

Winder and Wiggins (1961) reported a significant interaction between two scales within a particular sociometric instrument; one designated aggressiveness and the other referred to immaturity and dependence. This interaction led them to question the conceptual distance between

"aggression and immaturity" as seen by teachers. Perhaps the "active signaller" merely uses different forms of communication in different settings, and is therefore called "attention seeker" in one and "aggressive" in another. The researcher assumed that this actively signalling, noticeable, child would provide the greatest opportunity for the collection of nonverbal data. Therefore, a population of boys, defined as aggressive by the instruments to be described below, was selected for the present study.

Boys rather than girls were selected since boys are described more frequently as "acting out", "disruptive" and "aggressive" by teachers. Third and fourth graders were selected because (1) more acting out is recognized in this age group than in earlier grades, (2) the children in these grades are mature enough to be aware of their behavior yet young enough not to be overly conscious of it, and (3) at this age verbal ability is well enough developed to be an active mode of communication but not a dominator of it. No attempt was made to match school or classroom populations.

Instruments

Selection

Within each classroom, selected boys had to be identified from whom the nonverbal data would be gathered. Aggressive boys were sought. Two measures of aggressiveness were used for this selection, (1) the "Teacher Behavior Problem Checklist" developed by D. R. Peterson and H. C. Quay, and (2) the "Peer Nomination Inventory" developed by

L. O. Walder, L. D. Eron, R. P. Abelson, T. J. Banta and J. H. Laulicht. These instruments were selected because of previously reported work using the devices with similar populations, and reliability and validity data which have been presented in the literature.

The "Behavior Problem Checklist" is a three point rating scale, containing fifty-five items for the teacher's judgement. The items consist of frequently occuring and described behavior problems of children. They reflect four major dimensions: conduct disorder, personality disorder, inadequacy-immaturity, and subcultural delinquency. A copy of this instrument appears in Appendix 1.

Efforts to verify and analyze the four factors have been made using various populations including, public school children (grades K-8) (Peterson, 1961, Quay and Quay, 1965), institutionalized juvenile delinquents (Quay, 1964, 1966), students in public school classes for the emotionally disturbed (Quay, Morse and Cutler, 1966), children seen in a child guidance clinic (Peterson, Beker, Shoemaker, Luria and Hellmer, 1961), and children with special learning disabilities (MaCarthy and Paraskevopoulos, 1970). Peterson, (1961), found teacher rating reliability on factors I (conduct problems) and II (personality problems) to be .77 and .75 respectively. Quay, 1965, found the three major factors of the instrument accounted for 73 percent of the total variance. Peterson, noted:

> "Considering all studies together, age has varied from early childhood to adolescence, problem status has

> varied from none, through clinic attendance, to incarceration for delinquency, data sources have varied from case history records to standard ratings, to questionnaire responses; methods of factor extraction have varied from none, through visual shifts to both orthogonal and oblique solutions, to analytic techniques. Through it all, the factors have stayed the same and their definition at last seems adequate." (Peterson 1961)

The "Peer Nomination Inventory" consists of thirty-eight items used to identify aggression, aggressive anxiety, popularity and rejection. The dimensions of aggression which are identified in the instrument are: socially undesirable aggression, socially undesirable non-aggression, socially desirable aggression, and socially desirable non-aggression. A copy of the instrument and the directions for administration and scoring appears in Appendix 2.

In 1961, Walder, Abelson, Eron, Banta and Laulicht, published an extensive collection of studies and investigations regarding the usefulness, reliability and validity of this instrument. In the preparation of the instrument, a number of different types of validity were demonstrated. Content validity was shown in that there was agreement between several judges that the items of the inventory represented various types, objects and provocation levels of aggression. Inventory items were first submitted by various types of experts as representing descriptions of aggressive behaviors. The items were next judged by a group of experts and classified as to the type and object of aggression which they represented. Only those items with sufficient judge agreement were selected for inclusion in

the instrument.

Construct validity was demonstrated by correlation between the selection of children on the basis of the Inventory and three other indices of aggression, first, parents were interviewed regarding the aggressive behavior of their children, second, a study of children's television preferences for aggression. (Eron et al (1971) found: "There was a significant positive relation between the violence ratings of children's favorite programs and aggressive behavior in school.") Third, the families of selected children were identified through newspaper accounts. ("13 boys and 15 girls in the study had parents who had some kind of anti-social behavior reported in the newspaper. Twelve of the thirteen boys had aggression scores above the median for the entire group of boys. Twelve of the 15 girls had scores above the median...").

Walder et al demonstrated the empirical validity of the instrument through a controlled laboratory study of aggression. There was a positive relationship found between the subjects who expressed strongest aggression in the laboratory setting and those who received the highest peer rating of aggression.

Walder et al established the reliability of the instrument by examining the effects of (1) examiner, (2) sex of child selected, as aggressive, (3) sex of child doing the selecting, and (4) classroom, upon the aggression score. They found only one factor which had consistent

effect upon the aggression scores. The scores were higher for the children who were present the day the peer ratings were made than for those who were absent. The authors did not use the scores of children absent on the day of the peer ratings.

Lefkowitz, Eron, Walder, and Huesmann (1972) presented the results of a follow-up study of the original population of children involved in the development of this instrument. The instrument was slightly modified to be used with the, now adolescent, subjects. This was the final phase of a longitudinal study of the "psychosocial development of aggressive behavior". "Peer nominations provided the primary measure of aggression for these thirteen grade subjects... Self ratings and psychological tests provided secondary measures of aggression." The authors stated:

> "The relation of peer rating measures to performance on the Iowa Aggression Machine to such other independent events as clinical referral and the content of the clinical request and to teachers ratings, revealed that the investigators had developed a psychometrically sound measure of important aggressive behaviors." (1972)

Instrument Scoring

In the present study, both instruments were administered and scored according to standardized procedures for each instrument. Each instrument had one dimension of particular interest for purposes of this study: "conduct disorders" on the Behavior Problem Checklist and "socially undesirable aggression" on the Peer Nomination Inventory. The boys in each class who ranked highest in each of the two

scored dimensions were considered to be children with the highest potential for active, nonverbal signalling with the teacher, therefore, potential subjects for the study. When the scores on these two dimensions were ranked for each boy, each class reflected an individual profile.

Table 2 indicates the range in scores regarding aggression as perceived by teacher and by children in each class. The researcher found on the basis of classroom observation, that the scores from the two instruments gave an indication of the level of signalling in a given class. Some groups of children clearly fit the items on the aggression scales of both instruments and were therefore, rated higher. Some classrooms had fewer such children and were reflected as such.

TABLE 2

Scores of Behavior Problem Checklist (BPC) and Peer Nomination Inventory (PNI)

Classroom	BPC Maximum Possible Score	Teachers Ratings Behavior Problem Checklist			
		Range	Mode	Median	Mean
1	34	0-18	0	0	4.0
2	34	0-6	0	1	1.8
3	34	0-16	12	4	5.5
4	34	0-30	0,1	2	5.2
5	34	0-18	0	0	2.2
7	34	0-10	0	0	2.3
9	34	0-23	1,4,11	14	6.0
8	34	0-22	2,6,7, 11	7	8.9

TABLE 2--Continued

Classroom	PNI Maximum Possible Score	Childrens Ratings Peer Nomination Inventory			
		Range	Mode	Median	Mean
1	208	0-130	1	4	35.9
2	216	0-91	13	13	23.9
3	240	10-151	10,25	33	47.0
4	224	1-170	2,5,1, 19	16	23.7
5	192	2-78	3,5,1, 19	15	22.3
7	232	4-107	5	16	26.0
9	232	32-164	60	61	73.5
8	232	17-185	17,48	48	58.8

There was little variance between these instruments in the selection of the top scoring boys. Seventy-seven percent of the time there was perfect agreement regarding the four top scoring boys between teacher and peer ratings; 76 percent of the time, regarding the top three and 73 percent regarding the top two boys in all the classes. The rank order of the boys frequently differed between teacher and peer ratings. Only 50 percent of the time did the teacher and peer ratings agree in the selection order and in the scoring of the two most aggressive boys in the class.

At times, a variance between teacher and peer score was noticed for one particular child. This variance never occurred with a teacher rating the child high and the chil-

dren rating the same child low; indicating that the teacher perceived a child as highly aggressive but the children did not. This probably is not too surprising since a certain amount of teacher influence upon the children's perception of aggression must be assumed. This variance did occur in several classrooms where the children rated a child high on these behaviors, according to the Peer Nomination Inventory, and the teacher rated the same child as only moderately displaying these behaviors within the range of the class according to the Behavior Problem Checklist. When this pattern was observed, the author's judgement, based upon observation within the classroom, agreed with the teacher's rating. The researcher explored this issue with the teachers after data gathering was completed. It was found that the children who displayed this pattern of scoring were known to be constantly in "trouble" on the playground or on the buses but rarely within the classroom. This seemed to explain the major part of the variance between instruments in the selection of signalling children; aggression seen by peers but not by teacher. When a discrepency between teacher and peer scoring was identified, in the pattern previously discussed, the teacher score was taken as the preferred indicator of aggression since it was made within the classroom setting, and might best indicate the amount of aggression which could be observed there.

The instruments were used as one means of identifying target children. No predetermined number of children

was selected from each classroom. The number was determined by the scores received on the instruments and by the researcher's inspection of the classroom group. If at the time of data collection, only two of the top scoring children were actively signalling and communicating nonverbally, only the interactions of those children with the teacher were focused upon. This was done to maximize the efficiency of the time spent in each classroom.

In summary, it was proposed that non-verbal signals exist between teachers and children. Discussions were held with various groups of teachers to explore the strength of this proposal and teachers awareness of such signs in children's behavior. There was teacher consensus as to the existence of behavioral signs from children. It was felt that these reciprocal nonverbal signals between teachers and children could be systematically observed. While these nonverbal behaviors could be observed between teachers and both normal and disturbed children, the process was found to be more evident with acting-out disturbed children. The decision was made to focus on nonverbal communication between female teachers and those third and fourth grade boys who were described as the most "aggressive, acting out, attention seeking"; as these youngsters were seen as having the greatest potential for engaging, with the teacher, in nonverbal communication. Boys were selected who received the highest rating on two instruments measuring these characteristics called aggressiveness; the Peterson-Quay "Behav-

ior Problem Checklist" and the Walder et al "Peer Nomination Inventory". Eight third and fourth grade teachers participated on a voluntary basis from two elementary schools.

Data Collection Procedures

Because of the emphasis upon reciprocal communication, it was necessary to design a data gathering method which the synchronized nonverbal communication of teacher and child would be captured during spontaneous interactions, within the classroom. Various methodologies which are discussed in the literature, were not employed in this study for the following reasons: (1) Time sampling techniques were considered inappropriate because a coherent "stream of behavior" was the focus of this study. A sampling technique, it was thought, would segment the behavior as it occured, thus eliminating or at least altering its continuous nature. Significant data would be lost. (2) Techniques which require the observer to code the behavior immediately upon observation, either from behind a one-way vision mirror or within the behavior setting, were also considered inappropriate. The criteria set by the issues of this study, two persons being observed at one time and more than one nonverbal channel being attended to simultaneously, rendered these techniques subject to extensive data loss also. A methodology was designed using video taping equipment which met the criteria of the study. The issues of the selection of equipment, desensitization of subjects and video taping procedures are discussed in the following section.

Equipment

Investigating reciprocal nonverbal communication in a natural setting posed a number of problems to the researcher. Though the importance of understanding the relationship between verbal and non-verbal behaviors is a significant one, in this study, only the non-verbal behaviors were recorded in order to further reduce the mass of data to a workable level. Video tape was selected as the media for capturing the nonverbal communications because it provided: (1) a permanent record of a behavior; (2) a recording of a continuous behavior sequence; (3) a complete record of behavior composites (not segmented by the categories of an observation instrument); (4) the potential for repeated viewing and analysis of behaviors; and (5) on-the-spot monitoring of the collection of data.

The use of video tape equipment has been reported with increasing frequency in educational research literature. Most of the studies have not concentrated upon the reciprocal features of the communication process. Several authors have used one video tape camera to gather recordings of the class as a whole or of the teacher's behavior. (French, 1970, Heger, 1969, Evans, 1970, Grant, 1970, Dodge, 1970, Korvola, 1970, and Lewis, Newell and Whithall, 1961) For the most part the teacher's behaviors have been the focus of the analysis in these studies. Only one study was found in which two cameras were used. (Kounin, Friesen, and Norton, 1966) In that study, the authors used one camera to

record data from the entire classroom and a second camera to focus upon the teacher or an emotionally disturbed child when not included in the larger picture. The authors studied teacher and child behaviors with primary emphasis upon teacher managerial technologies.

In the present study equipment which was compact for easy portage and use was selected. Two Sony AVC #3200 cameras with tripods were used; one focused upon the teacher and the other upon a target child. They had attachable lenses with zoom capabilities. A Sony special Effects Generator carried the two pictures to a split screen, eleven inch Sony Monitor, CVM-112. One half inch 3M recording tape was used on a Sony AV #3600 recorder to complete the taping process. The behavior of the teacher and target child could thus be recorded simultaneously, viewed on one screen as they both occured, and helf for later viewing and analysis.

Three persons were needed to operate this equipment; two cameramen and one person to view the monitor and direct the taping procedures. This arrangement necessitated a line of communication between the cameramen and the primary investigator. Telex headsets were used. Two qualified education graduate students were employed as cameramen. They received stipends and research experience for their involvement in the study. The team including the researcher, was trained in the use of the equipment and supported in solving technical problems by Mr. Jesse W.

Barr, Head, Instructional Technology Unit of the Institute for the Study of Mental Retardation and Related Disabilities of the University of Michigan. Figure 2 provides a pictorial representation of the placement of equipment in a typical classroom.

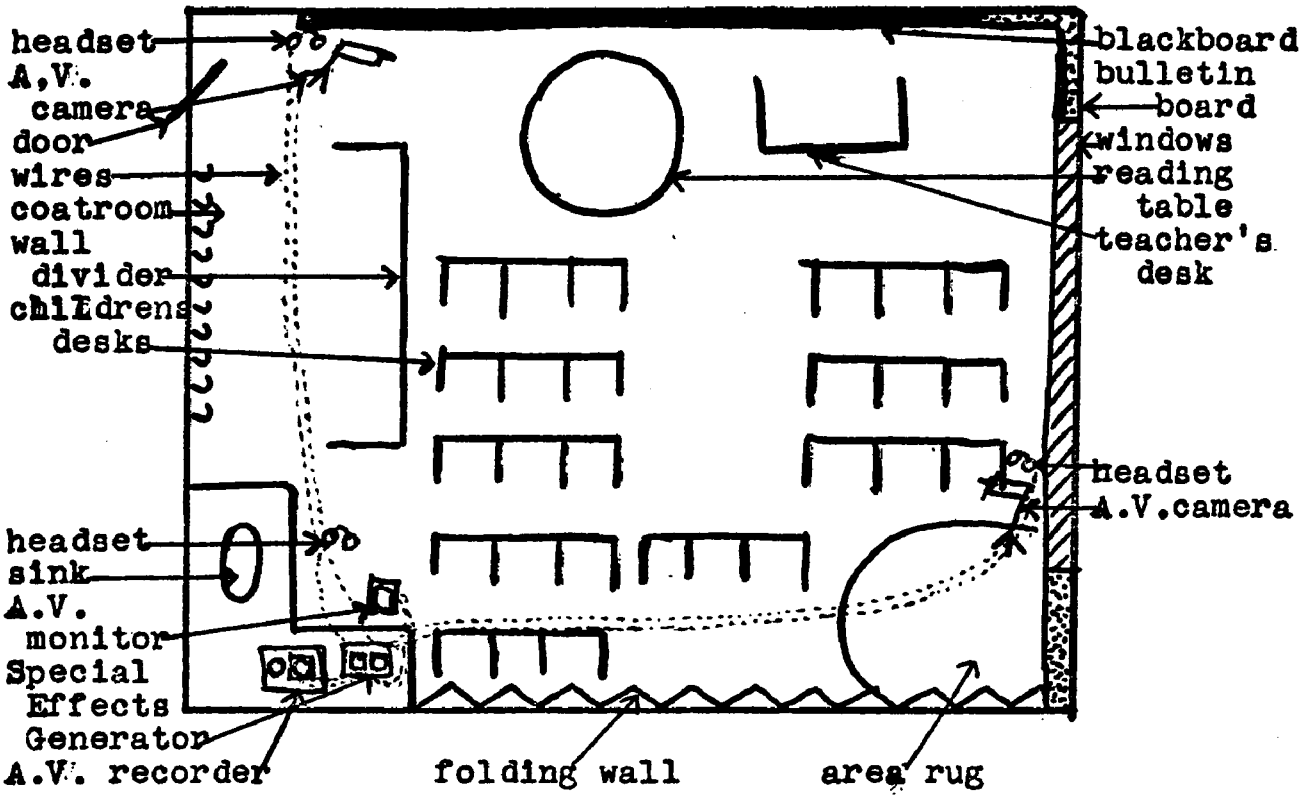


Fig. 2. Placement of Equipment

Equipment Trial

After the technological capabilities for capturing reciprocal nonverbal communication were assembled, it was necessary to determine if non-verbal interactions between teacher and children could be gathered by these means. The first four days of the data collection were spent gath-

ering video tapes which were examined to ascertain if the equipment and procedures could provide the necessary data. An examination of the tapes recorded during this data gathering pilot indicated that the method was valuable for gathering synchronized nonverbal behaviors of teachers and children during communication within the classroom and would meet the specific requirements of this study.

Desensitization

It was important that this methodology allow for the gathering of spontaneous interactions within the natural setting. Desensitization was needed. Various procedures were included to diminish the effects of the experimentor and equipment upon the school, the classroom environment and the subjects, and to maximize the availability of spontaneous data. The desensitization procedures were of two basic types; discussion and exposure.

The basic aspect of the desensitization procedures was an attempt to eliminate the mystery and intrigue which surrounded the video taping process for the teachers and children. For the teachers, it was necessary that they be made aware of the probability that at times the cameras would be focused in their direction. The following statement served this purpose:

> "In the course of your movements around the classroom, you will be within the cameras' focus so don't be alarmed if you look up and see this."

In discussion with the children in each classroom, they were told briefly that, "we are trying to learn more about

the classroom activities of third and fourth graders." The responsibilities of the cameramen and the researcher were also explained as was the use of the equipment.

There were several procedures which were designed to increase the subjects comfort with the experiment through exposure. (1) The children were shown the split screen reproduction on the monitor and told that they would be able to view some of the recordings at the completion of the experiment. (2) They were allowed to assist in carrying wires, spools or other small items, to or from the classroom each day. (3) Efforts were made by the research team to diminish the stimulation caused by setting up the equipment e.g. equipment was assembled and wires hidden each day prior to the children's entry into the classroom, and cameras were positioned without rearranging the room furniture and supplies. Regarding the stimulation inherent in the normal operating of the equipment, however, the team attempted to exaggerate its initial effect. The preliminary taping activities provided the research team with the opportunity to observe the behavior of the entire class and, since the teachers could not designate the child targets to the researchers, to use various means to identify the children whose names had been indicated by the study instruments. During this time, the cameramen actively and obviously changed the focus of their cameras and the author turned equipment on and off in an effort to quickly expose the children and teacher to the maximum of distraction which

would occur, related to the research. This technique was found to be more effective in rapidly desensitizing subjects than one where efforts were made to operate the equipment silently. The removal of mystery or "secretive behavior" reduced the curiosity of the participants.

The researcher found that the split screen technique was valuable in itself, in aiding the desensitization process. Each camera was focused upon only one target, teacher or child. Only one half of the viewfinder was utilized so that the double image on the monitor would not be overlapped i.e. camera A used the left side of the camera viewfinder and camera B, the right. To the subject, the camera appeared to be aimed slightly to the right or left. This feature made it nearly impossible for a subject to be aware of the camera's exact focus.

With attention to this desensitization phase of the research, the research team was able to decrease their effect on the classroom, and classroom activities quickly consumed the attention and concentration of the teacher and children. The success of these efforts was highlighted in one classroom, where a fourth research person entered the room, made an audio reliability recording for approximately one hour and left, without the teacher knowing when the person had arrived or departed. Teachers reported that they periodically looked up and were somewhat startled by the forgotten presence of the researchers in the room.

Desensitization activities continued until the

research team agreed that the teacher and children were no longer noticeably reacting to the presence of equipment or researchers. The following behaviors were used to indicate continued awareness of the research activity:

1. teacher avoids stepping in front of equipment
2. teacher smiles at researchers in response to a child's behavior
3. teacher glances at camera when making presentation to the class
4. child looks to see upon whom camera is focused
5. child whispers to peer and looks at researchers
6. child tries to walk behind camera to look through lens.

The absence of these and like behaviors for an extended period of time, was taken as an indication that the desensitization process had been successful. In addition to this team decision, the teacher was asked, at a convenient time, if she saw any effects of the equipment or researchers upon the functioning of the class. If she also felt that the class was no longer noticeably reacting, data gathering was begun. Each class varied in the time it took to desensitize. In general, each class was judged to be desensitized to the research activity within one hour after taping began.

Two facits of the desensitization process were identified which should be noted. The first was seen as a general awareness of the equipment and people and a curiosity regarding its functioning. The researcher found that this facit could be nullified satisfactorily within approximately one hour of taping. The second, was seen as a more fleeting, yet extremely weak recognition of equipment and people

and a momentary awareness of their presence. This occured each time an activity level in the classroom waned or the children re-entered the classroom and was seen to effect the behavior of the individual only momentarily.

The desensitization phase of this study was very important to the successful gathering of spontaneous, reciprocal nonverbal data. It was accomplished through discussion with the subjects, and through exposure of the subjects to the experimental equipment and study personnel prior to the collection of data. Criteria were set to indicate the point at which data collection could begin. Agreement was obtained between members of the research team and the teacher that the effects of the study were no longer obvious within the classroom, before the actual data of the study were collected.

Video Taping

The mechanical potential for gathering synchronized records of teacher and child behaviors was established, measure of assurance was obtained regarding the spontaneity of the behaviors through the desensitization procedures, and then data collection was begun. It was accomplished via continuous video taping of the teacher through one camera and a target child through the other. Several issues which appear to be inherent in this type of data collection were identified during this process. They concern: (1) method for designating mutual encounters, and (2) location of cameras.

It was thought that cohesive sets of signals would mark the mutual encounters between teacher and child. The technique for video recording of teacher and child behaviors did not include the designation of these essential units on the final tapes. Without an audio record to indicate the exact moment of a mutual encounter between teacher and target child, the video tapes would be useless. They were continuous and therefore they included all the communication behaviors of both the teacher and of a child. From final silent tape record, it was not possible to distinguish those behaviors which were between study targets and those which involved other children.

It was possible to remedy this condition by placing an audio recording on the tape. Only the video track of the tape was used for data gathering since only nonverbal data was to be collected. The researcher therefore, recorded a verbal notation of the beginnings and endings of mutual encounters between teacher and target child onto the audio track of the video tape as the data was being gathered. It was possible to make the recordings without being heard by any one within the classroom.

The reliability of these recordings was periodically checked by two additional persons. Both were teachers; one male, the other female. Only one judge checked this reliability with the author at a given time. A double microphone connection allowed both the judge and the author t enter independent recordings onto the audio track simul-

taneously. Eileen R., the first judge, participated in discussions and two practice sessions with the author. She was not thought to have any unusual sensitivity to non-verbal communication by way of training, prior to these sessions. In 84 recorded teacher-child mutual encounters in four classrooms, during the reliability checks, Eileen and the author agreed on their occurrence, beginning and ending, 70.2% of the time. The judges recordings of non-verbal mutual encounters had to be made within 5 seconds of each other to be tabulated as an agreement. Henry D., the second judge, a teacher of emotionally disturbed children, did not participate in practice sessions. He received only brief instructions as to recording technique. Henry and the author jointly viewed 26 teacher-child mutual encounters during the reliability checks in one classroom. There was agreement on the occurrence of mutual encounters 80.8% of the time. The total inter-rater reliability thus judged was 73%. This issue is further discussed in the discussion section of this thesis.

These segments of data were extracted from the other recorded behaviors by means of a second AV recorder, #3650, with editing capabilities. The portions of the original tapes on which mutual encounters between the targets of the study were recorded as noted by the researchers audio cues, were transferred to another video tape to be used as study data. Through this relatively simple process, the editing of the data was accomplished without judgements

being necessitated at the time of editing. Three seconds, "lead" and "trail" time, was transferred onto the final tape as well as the actual designated "mutual encounter", to insure that the beginning and endings of the encounters as noted by the audio signal, were in fact captured on the final data tape. In this way, approximately ninety hours of video taping was reduced to three and one-quarter hours of data.

A second issue in this type of data collection concerned camera position. The research team found that, since the camera never appeared to be directly focused upon the child, due to the split screen off-center focus, a child could never be sure that the camera was focused upon him, unless each time he looked up, it moved rapidly away. When this did occur, the child was again sensitive to the equipment for a short period. Though it was difficult not to move the camera as the child looked directly into it, the researcher found that best results were obtained, when the camera remained focused upon the target.

The researcher suspected that if the camera was positioned too close to the subject, he would always be aware of its focus upon him. This was not the case. It was found that the cameraman's behavior, rather than the actual proximity and/or focus of the equipment, contributed most to the distraction of the target. Quick or exaggerated movements were noticed whereas more casual and relaxed behaviors did not draw the subjects attention.

There are difficulties in collecting this type of data. They include: (1) physical fatigue. The researchers must stand in one place, with a minimum of movement, observing one subject intensively, for long periods of time. The periods of continuous taping average one to two hours. (2) mental fatigue and boredom. Hours and even entire days were spent taping without more than a sparce number of unconnected mutual encounters between teacher and a given child. In this study, a total of approximately 90 hours of video taping was edited to three and one-quarter hours of data. (3) difficulty in systematic gathering of replications. At times a series of encounters were readily available, the data gathered, the desired number of replications of teacher-child interaction recorded, and the next target observed. At other times however, while an attempt was being made to record interaction between one subject and the teacher, another target child in the room would begin a series of interactions with the teacher. The tendency initially, was to switch from one target to another as quickly as possible. After a few such episodes, this totally unproductive activity was avoided, as the series of interactions thus recorded were always incomplete and confusing when viewed. Though it proved frustrating to observe interactions which were not being recorded, it was impossible to successfully switch the focus of the cameras after an interaction had begun.

Post Data Collection Procedures

During the last hour in each classroom, the children were shown approximately fifteen minutes of video tape including segments of each class member. All other post-data collection activities involved the teacher. Each teacher was informed of the full nature of the study. Each was told that her behavior had been video taped. Permission to use the tapes was requested. None refused permission. It was necessary to ascertain if the teachers were aware of which students were the camera targets, also to gather the teacher's thoughts about the nature of her non-verbal communication with a particular child, and his with her. This information was recorded on an audio recorder. The teachers were also given the opportunity to view and discuss as many of the tapes as they wished. The scores of the measurement instruments were also discussed with each teacher. From these activities, the researcher found that:

1. Every teacher was interested in the study.
2. Of the eight teachers who participated, only two expressed an awareness of the cameras in their direction more than expected.
3. Each teacher was amazed at the activities of some of the study children and some of her own behaviors when viewed on the video tapes.
4. The teachers were unable to say which of the boys in their room had been the focus of the study. They indicated that they had not seen the cameras focus upon a particular child. When asked who they thought were the most "active signallers" in the class, most named the subjects of the study.
5. Each was appreciative of the information and glad that they had participated in the study.

It is impossible to determine if the teachers' behaviors and their subsequent interactions with the children were

diminished or in other ways effected by the research equipment and personnel. From teacher reports and observation of the process, the researcher concluded that awareness of the camera targets was minimal and that even this, had only momentary influence on the behavior of the participants.

In summary, a data collection methodology was designed and employed which allowed for the collection of reciprocal nonverbal communicative behaviors between female teachers and specific boys in selected third and fourth grade classes. The methodology provided a continuous recording of cohesive groupings of behaviors designated as mutual encounters. In regards to the questions which were formulated in the early stages of the research, the researcher has concluded the following:

1. Can nonverbal mutual encounters be recognized by an observer as they occur between teacher and child? Yes, observers are able to identify mutual encounters and appear to be able to agree on their beginnings and endings.

2. Is there a natural grouping to these signals which can be agreed upon by observers? The experience of this research indicates that these sets of nonverbal behavior can be identified by observers.

3. Can data collection be accomplished within the classroom setting without contaminating the spontaneity of interactions? The researcher has concluded in the light of the desensitization procedures of this study that most of the effects of the experimentor and equipment can be nullified for the collection of spontaneous data. This is discussed further in the Discussion Section of this thesis.

A discussion of the method used for the coding of this data is provided in the following section.

CHAPTER IV

DATA CODING METHODOLOGY

The model of nonverbal communication which was presented in Figure 1 represents the reciprocal exchange of nonverbal signals from the multiple expressive channels of an encoder to the multiple channels of the decoder. This exchange was shown as a continuous communication process, the interpretation of which, may involve several levels of meaning; from meaningful specific behaviors to inferred attitudes. The reciprocal emphasis of this conceptualization was demonstrated in the design of the data collection methodology. The review of the literature indicated the importance of analyzing both the multiple channels from which signals are sent and also the various levels of meaning which might be incorporated in these signals. These parts of the model have been reflected in the construction of the coding instrument and in the data coding procedures of this study.

The following material describes the three methodological procedures which were undertaken for coding the data, recorded on video tape. They are: (1) development of a coding system, (2) selection and training of judges, and (3) coding of the data.

The Coding System

In the Review of the literature, the author noted

that:

> "In education, several researchers have taken an 'instrument development' approach to the study of nonverbal communication... They have primarily focuses their efforts upon the development, verification, reliability testing, of category systems for the analysis of teacher-child verbal and nonverbal interactions." (page 33)

The various emphases which researchers have placed upon different aspects of communication were shown. Some authors have emphasized specific behaviors; others, communication events. Still others have constructed coding items which focus upon the interpersonal nature of the interaction. Many of the coding systems are dependent upon the inferences of the coder who must infer the meaning of the behavior to another individual; i.e. the meaning of teacher behavior to students. An integration of the facits of nonverbal communication, i.e. behavioral and affective, into one coding instrument is needed. If the coder is required to make judgements regarding what specific behaviors have occured, what type of communication events, and the meaning of the interpersonal message, the coding items within such an integrative instrument must be ordered carefully so that relationships between these facits of communication might be examined. A more integrated approach to the coding of nonverbal data would allow for the exploration of relationships which may exist between specific behaviors and their meanings; between the signal and the interpretation.

The only effort to construct such an observation instrument was that of Victoria (1970). He devised a typol-

ogy of nonverbal behavioral specifics which he referred to as "gestural behaviors" and also a set of terms descriptive of qualities evoked by the behavior, (affective aspect of communication). The goal of this study was to identify and describe nonverbal gestural behaviors and to categorize them into neutral, supportive, or unsupportive affective qualities. The behavioral items were extensive. They included such specifics as: facial movements-eye focus upon board, upon group, upon individual, upon object, grin, slight smile, full smile; body movements, sits, slouches, stoops, and so on. Using video tapes of student teachers in art lessons, the judges were asked to first observe each nonverbal gestural behavior and then rate it in accordance with seven affective qualities. The affective items were: (1) enthusiastic, (2) receptive-helpful, (3) clarifying-directive, (4) neutral, (5) avoidance and insecurity, (6) inattentive and (7) disapproval.

At least three aspects of nonverbal communication exist, (1) behavioral specifics, (2) quality or nature of the communication signal and (3) the interpersonal meaning of the communication. The behavioral specifics are clear in Victoria's study. However, a mixture of aspects two and three seemed to occur in the construction of the seven affective qualities. "Receptive", "inattentive", and "enthusiastic" seem to be items which require coding of the "quality or nature of the communication signal", whereas, "disapproval", "insecurity" and "helpful" are related to

judgements of the interpersonal meaning of the communication. As Victoria's work illustrates, educational researchers have not yet been able to specify the parts of nonverbal communication which they feel are most pertinent to an understanding of this teacher-child process, or to examine the integration of these parts.

Criteria

The coding system which was devised for the present study, integrated the three aspects of nonverbal communication without mixing the items within each category. The following criteria were devised for the construction of the instrument.

1. <u>The items of the instrument must be applicable for observations of both teachers and children</u>.

   To investigate reciprocal behaviors of teachers and children, the coding categories and items must deal with behaviors and with communications which are appropriate for both subjects.

2. <u>The instrument must include multiple nonverbal channels of data</u>.

   Many studies have limited their scope to one channel or another. Victoria reported:

   > "The mean percentages based on the frequency of observations reveal that the gestural behaviors, body posture, head motion and body motion account for the highest mean percentage of agreement in the categorization of gestural behaviors."

   The methodology of this study allowed for an integration of channels. Four were identified; head, body, face-eyes, and hand-arm. Extensive data

regarding eye contact and leg movements were unavailable for this sample. Therefore, these behaviors were included in categories entitled face and hand-arm, respectively.

3. The instrument must focus upon interactional elements in an encounter rather than upon non-interactive behaviors.

The reciprocal focus of this study necessitated the elimination of coding categories which describe non-integrative behaviors. Behaviors which were solely self involving were not categorized in this system.

4. The instrument must be useable by judges without extensive training.

The category system must be sufficiently short and simple to be used by experienced teachers, as judges, with no more than ten hours of training and practice.

5. The items of the instrument must elicit judgements regarding various levels of meaning.[1]

In the construction of this coding system an attempt was made to combine the "behavior descriptions" emphasis of many psychologists with the "meaning of the behavior" emphasis of many educators and psychiatrists, and the "nature of the communication" emphasis of many anthropologists.

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[1]The term "levels of meaning" is meant to represent those different facits of communication from which a person derives meaning regarding the communication. Meaning may be contained in a specific behavior or in the total composite of non-verbal signals.

6. The coding items within each level must be mutually exclusive.

7. The coding items within each level must be all inclusive.

The system contains coding items at three levels which are labeled as level #1 - Behavior Descriptions, Level #2 - Nature of Signal, and Level #3 - Inferred Attitude. Table 3 shows the coding items which were included in each of the three levels for four expressive channels; head, body, face-eyes, and hand-arms. A brief discussion of each of the levels follows.

Clarification of Coding System Levels

Level #1 - "Behavior Descriptions"

The coding system at this level requires judgements to be made regarding the specific behaviors which have occured in each of the four nonverbal channels. For example, the head might be judged to be "up, down, level, up turned". These categories were designed to elicit judgements which physically described the behavior which occurred. Victoria (1970), and Island (1966) have used this type of behaviorally specific category item in the coding systems which were used in their work. A sub-category was included in order to also describe the direction of the behavior in relation to the other target; "toward other target" and "away from other target". These items were coded (+) and (-) respectively. Therefore, at this level, a judge was asked to select the number of the specific behavior which

occurred and a subscript of (+) or (-) to indicate the direction of the behavior. Subscripting was used by Heger (1969) to indicate the congruence or incongruence of nonverbal with verbal behavior.

TABLE 3

Category System for Coding Nonverbal Communication

LEVELS	HEAD	BODY
#1 BEHAVIOR DESCRIPTIONS (Direction of Signal)	1 - up 2 - up, turned (L,R) 3 - level 4 - level, turned (L,R) 5 - down 6 - down, turned (L,R) + = toward other target - = away from other target	1 - standing 2 - standing, turned (L,R) 3 - sitting 4 - sitting, turned (L,R) 5 - walking 6 - standing or walking (3'-5') from other target + = toward other target - = away from other target
#2 NATURE OF SIGNAL (Sign of readiness for other communication)	9 - unattentive to other target 10 - head being used to communicate a message 11 - head not being used to communicate a message + = readiness or open to further communication - = lack of readiness or closed to further communication	9 - unattentive to other target 10 - body being used to communicate a message 11 - body not being used to communicate a message + = readiness or open to further communication - = lack of readiness or closed to further communication
#3 INFERRED ATTITUDE	12 - accepting, affectionate 13 - neutral 14 - rejecting, disliking	12 - accepting, affectionate 13 - neutral 14 - rejecting, disliking

TABLE 3--Continued

LEVELS	FACE-EYES	HANDS-ARMS
#1 BEHAVIOR DESCRIPTIONS (Direction of Signal)	1 - smiling 2 - straight, neutral 3 - staring 4 - pursed 5 - downcast 6 - frowning + = toward other target - = away from other target	1 - up, touching object 2 - down, touching object 3 - up, touching self 4 - down, touching self 5 - up, touching other 6 - down, touching other 7 - up 8 - down + = toward other target - = away from other target
#2 NATURE OF SIGNAL (Sign of readiness for other communication)	9 - unattentive to other target 10 - face being used to communicate a message 11 - face not being used to communicate a message + = readiness or open to further communication - = lack of readiness or closed to further communication	9 - unattentive to other target 10 - hands being used to communicate a message 11 - hands not being used to communicate a message + = readiness or open to further communication - = lack of readiness or closed to further communication
#3 INFERRED ATTITUDE	12 - accepting, affectionate 13 - neutral 14 - rejecting, disliking	14 - accepting, affectionate 15 - neutral 16 - rejecting, disliking

Level #2 - "Nature of the Signal"

Judgements at the second level of the coding system were designed to capture the nature of the communication signal. For instance, the face might be "used to communi-

cate information", "not used to communicate information" or "inattentive to the other target". At level two, a subcategory was also needed to indicate the "power of the" signal to show readiness or non-readiness to further communicate. "Open to further communication" was designated by a (+) following the numeral; "closed to further communication" by a (-). This category was not seen in the literature though it was suggested by various items which have been used in other coding systems. Heger (1969), Galloway and French (1968), Galloway (1962) and Victoria (1970) included items of this type within coding systems used in their work.

Level #3 - "Inferred Attitude"

Each judge was asked to attend to and judge only one non-verbal channel. It was thought that this task would be most possible at Level #1 where the behaviors were specific, and least possible at level #3 where the judgements of attitude would probably draw the judges automatically into reactions to the subject as gestalt. Therefore, only three items were selected for each nonverbal channel at Level #3; "accepting or affection, neutral, and rejecting or dislike". Many authors have developed coding systems which include affective items, Victoria (1970), Heger (1969), Galloway (1962) and French (1970).

Judge Selection and Training

Having constructed a coding system designed to

elicit judgements at three levels of meaning for each of four nonverbal expressive channels, a group of persons were selected and trained to make judgements of the nonverbal data which appeared on the video tapes.

Persons experienced in communication with children were selected for training. Six female and six male judges were selected; each having some professional university training and experience in understanding the needs and behaviors of children. The group was composed of educators of disturbed children, teacher consultants, educational psychologists, psycho-linguists, occupational therapists and special education administrators. Table 4 shows the way in which these judges were grouped for the data coding process. Four coders were assigned to code total data based on their interest in the study and their willingness to commit a larger number of hours to the coding process.

TABLE 4

Coder Groupings by Assigned Channel

	Head	Face-Eyes	Body	Hands-Arms
Number of coders assigned to code total data - "major"	1-M	1-F	1-M	1-F
Number of coders assigned to code one-third of data "reliability"	2< 1-F / 1-M	2< 1-M / 1-F	2< 1-F / 1-M	2< 1-M / 1-F

M = Male F = Female

All judges were arbitrarily assigned to code data from one of four body channel groups; however insuring that males and females were distributed evenly. They made observations and judgements regarding that channel only. They were informed that their task was "to make judgements about the nonverbal communication of teachers and children who would appear on video tape". They were encouraged to add comments, criticisms and suggestions regarding the coding system in order that final revisions of the system might be made.

All judges were trained on only their assigned channel. All were trained together according to a three part sequence. Table 5 illustrates these parts and the major goal of each phase.

TABLE 5

Coder Training Agenda and Goals

TRAINING	TIME	TASKS	GOAL
I	minimum two hours	-slow motion simulation of behaviors by the researcher, coded by the judges -discussion of category system -role playing in dyads (one coding)	-to begin familiarity with the coding system -begin sensitivity to nonverbal behaviors -focus judge attention on particular body channels of communication
II	minimum two hours	-viewing and coding nonverbal behaviors from television	-to gain proficiency and speed in using the coding system -to further sensitize and increase concentration upon the nonverbal behavior of a particular body zone

TABLE 5--Continued

TRAINING	TIME	TASKS	GOAL
III	two to six hours	-coding every seven seconds from practice video tape segments -discussion	-gain clarity between judges regarding categories and items -establish proficiency in coding with this system -sufficient coding agreement

The practice segments were taken from video recordings which were non-data portions of the original tapes.

A time sampling procedure was not used during the gathering of the data since it was thought that such a procedure would destroy the continuous, cohesive nature of the nonverbal mutual encounters. For the codification of the data, it was found that the rapidness of behavioral occurrences necessitated the use of a time sampling unit in order to assure that the judges would code the same events. Three time units were tested by the researcher and two other persons familiar with the coding system. A seven second sampling unit was selected. This unit was considered sufficient to allow the recording of the required judgements; five codes (two from level one, two from level two, and one from level three), yet preclude loss of a significant quantity of data. An audio signal was recorded onto the data tape every seven seconds to indicate the moment at which judgements were to be made.

When the coders were sufficiently familiar with the

coding system, able to make the required number of judgements every seven seconds, and seemed to be agreeing sufficiently on their judgements, two data segments were selected at random from the data sample. These segments contained approximately fifteen minutes of video data and were designated as practice clips. The coders viewed and coded the first of the data segments independently. The goal was to determine to what degree the three judges assigned to each channel agreed with each other in their judgements of the nonverbal data. A .75 confidence level was set prior to these calculations. The percentage of agreement was calculated for the three judges using the statistic called "alpha" by Cartwright (1956). The number of agreements of two judges is divided by the total number of agreements and disagreements; representing a percentage of agreement for the pair of judges.

Two coder groups, those who judged "head" and those who judged "body" fell below this level. All groups fell below this level regarding to level #2 of the coding system, nature of the signal. Additional training and discussion was pursued. The second training data segment was viewed and coded. The resulting reliability scores were above the set confidence level.

The strength of the agreement scores were further examined in light of five potential contributants. (1) Were the judgements actually non-independently made? During the coding, the judges were not permitted to discuss

their judgements. These judgements were therefore, accepted as independent. (2) Were the judges homogenous and agreement therefore inherent in the selection of the group? By selection design, the judges were considered to be sensitive to and experienced with children. In this way they were homogenous. However, they were of both sexes and of various training backgrounds and in many ways considered a heterogenous group. This issue and its effect upon the judges ability to agree in judgements of nonverbal data was considered to be indeterminable within the scope of this study. (3) Were the data samples atypical of the total data sample and perhaps more easily judged? The segments were selected randomly from an arbitrarily chosen reel of data. Beyond this procedure, the atypicalness of the sample cannot be determined within the scope of this study. (4) Had the coders established rules during the training sessions which effectively assured their agreement? The researcher and a faculty member examined the informal rules which had been established during discussions with each coding group. These rules appear in appendix 3. It was agreed that the rules which were made by the judges aided orientation rather than predetermined judgements. For example, the coders who were judging the head-neck channel, ruled that whenever the head left the plane parallel to the floor or perpendicular to the body, it should be considered for judgements of "up, down, or turned" and that movements of eyes should not be allowed to effect these judgements.

The training judgements of the coders then, were accepted above the .75 range of confidence. They were considered to have been independently made from a randomly selected segment of data, with rules which would not predetermine such agreement. On the basis of these factors coding of the data was begun.

III. DATA CODIFICATION

The data sample for this study consisted of two hundred and fifty (250) video taped segments of nonverbal communication behavior between eight teachers and eighteen children presented on split screen image. The term data segment represents one non-verbal teacher-child contact, i.e. an exchanged glance, a nod. Data set, represents a combination of segments which is a judged mutual encounter or interaction between teacher and child i.e. the child throws down pencil, teacher looks up, child frowns, teacher moves in child's direction, child picks up pencil and returns to work. From one to four encounters between a particular teacher and child were collected. Each teacher-child combination has been termed a dyad. The following table shows the sources of this data.

The data represents nonverbal behaviors in third and fourth grades with 21 data segments at the third grade, and 25 at the fourth. The mean number of data sets per dyad which were studied in the third grade was 2.6 and in the fourth, 2.5

TABLE 6

Data Sources

	Grade Levels	
	3	4
Number of classrooms i.e. (teachers)	4	4
Number of children i.e. teacher-child dyads	8	10
Mean number of dyads	2.0	2.5
Number of data sets i.e. (mutual encounters)	21	25
Mean number of data sets per dyad	2.6	2.5
Mean number of data segments per set	5.4	5.8

The major judges coded this entire data sample; three and one-quarter hours of video tape. The "reliability" judges each coded one third of that sample; approximately one hour of video tape. An illustration of the arrangement of equipment and personnel which was used for the codification task, appears in Appendix 4. Each judge was trained and instructed to judge only the behaviors within his assigned channel. Each coded the three levels and two subscripts of the coding system every seven seconds upon audio cue. Judges were allowed to review the segment if they needed more time to make judgements on a particular behavior. The entire data set, or chain of behavior, was first viewed for codification of the teacher's behavior and then reviewed for codification of the child's behavior. The data were viewed on a large television monitor. The researcher operated the equipment and observed the coders for the effects of fatigue. It was found that continuous

coding could be accomplished for a period of one and one-half hours without obvious effects of fatigue.

An orientation plate of each new data set was shown to the judge by a research assistant prior to the coding of that set. This was done to assist the coders in identifying the target child, quickly, and in understanding the location of targets in relation to each other. It was found to be impossible to understand and judge the movements of the subjects without some overall physical orientation. An illustration of the orientation plates is shown in Appendix 5. Each consisted of a piece of poster board on which a floorplan of the classroom was drawn and tissue paper overlays which showed the location of teacher and target child within that classroom, direction in which teacher and target child were facing at the beginning of the taped segment, and arrows indicating any major movements which occurred during the encounter.

A sample of the coding sheet appears in Appendix 6. The sheet used for coding the judgements of a particular set contained a complete identification number signifying the number code of teacher, child, coder, school, grade, and data set. The first seven seconds the judge entered five codes in the first column of the data sheet; the second seven seconds in the number two column and so on. The coding of the reliability segments, one-third of the data sample took six and one-half hours, for each of the two "reliability" coder groups. The coding of the entire

data sample by the "major" coders was accomplished in eighteen hours.

In summary, the task of the data codification methodology was: (1) to design an instrument which would contain items for the judgement of three aspects of communication; behavioral descriptions, nature of the signal, and inferred attitude; (2) to design a procedure for coding data which had been gathered from four expressive channels of teacher and child; head, body, hands-arms, and face-eyes.

The instrument which was used, represented three communication levels. The codification procedure allowed for the judgement of behaviors in each of four expressive channels. The codification methodology was designed to organize the data in accordance with the issues and emphasis of the study. The researcher concluded that a useful methodology had been devised for the recording of reciprocal nonverbal behaviors from teacher and child and for the coding of those data for more than one expressive channel and for more than one level of meaning.

CHAPTER V

ANALYSIS OF DATA

Four major issues are presented in this chapter. Each is described, and for each, suggestions given for alternative methodological approaches which might be taken by researchers. The first two describe the analysis of the data of this study; the "content". They are termed "formal measures" since they have been empirically derived. The first concerns the judges ability to agree on the coding of nonverbal data. The second, concerns the nature of nonverbal communication between teachers and selected boys according to the responses which were collected and coded.

The author has included also, in this chapter, a discussion of two other issues which are considered germane to the process of collection and analysis of nonverbal data and about which this study has provided "informal" observations. The observations are termed "informal" since they are derived from a non-empirical analysis which does not make use of the traditional research design and analysis techniques. The first of these issues concerns the existence of sets of nonverbal signals; the second, the conditional quality of "aggressiveness" vs. "active nonverbal signaller".

The Ability of Judges to Agree on the Coding of Nonverbal Data

The data of this study coded by two groups of

judges; four "major" coders who judged the entire data sample and eight "reliability" coders who judged one-third of the sample. The judgements made by all of these coders were analyzed in three ways: (1) as percentages of agreement for the overall coding system; (2) as percentages of agreement adjusted for missing data and for effects of probability; and (3) as percentages of agreement when an item-by-item analysis of the coding system was done. An abbreviated form of the coding system which was devised for this study is presented below to clarify the discussion of the reliability studies which were done. The complete coding system appears on page 85 and 86 of this paper.

TABLE 7

Abbreviated Form of Study Coding System

Level Numbers	Level Titles	Channels: Number of coding items at each level			
		HEAD	BODY	FACE	HANDS
Level #1	"Behavior Descriptions"	6	6	6	8
Level #1a	"Direction of Behavior"	2	2	2	2
Level #2	"Nature of Signal"	3	3	3	3
Level #2a	"Readiness for Communication"	2	2	2	2
Level #3	"Inferred Attitude"	3	3	3	3

Three coders, one "major" and two "reliability" were assigned to judge the data in each of the expressive channels; Head, Body, Face-Eyes, and Hands-Arms. The coding system required judgements of the data every seven seconds at each of the five conceptual levels; three major category levels and two subcategories, which for purposes of clarity have been labeled 1, 1a, 2, 2a, and 3. For one-third of the entire data sample therefore, there were five judgements made every seven seconds by all three of the judges who were assigned to each nonverbal channel.

Three questions are related to this issue. (1) To what degree can three judges agree in the coding of data which is seen in one nonverbal channel, (channel reliability)? (2) To what degree can three judges, viewing one nonverbal channel, agree in the coding of data at any one level or subcategory level of the coding system, (cell reliability)? (3) To what degree can all judges, coding the four nonverbal channels agree in the coding of data at any one level or subcategory level of the coding system, (level reliability)?

Overall System Reliability

An analysis of the reliability of the overall coding system, by channel, by level and by cell is the first step in the analysis of the reliability of judgements of nonverbal data. The results of this type of analysis are shown in Table 8.

TABLE 8

Percentages of Agreement for Overall Category System

	HANDS		FACE-EYES		BODY		HEAD		TOTAL	
	2 way	3 way	2 way	3 way	2 way	3 way	2 way	3 way	2 way	3 way
Level #1	.78	(.63)	.56	(.52)	.86	(.88)	.50	(.49)	.66	(.63)
Level #1a	.92	(.90)	.64	(.58)	.81	(.77)	.74	(.70)	.74	(.74)
Level #2	.67	(.55)	.47	(.48)	.66	(.56)	.38	(.69)	.51	(.51)
Level #2a	.81	(.84)	.74	(.74)	.94	(.96)	.73	(.63)	.79	(.79)
Level #3	.92	(.91)	.80	(.71)	.74	(.77)	.60	(.66)	.78	(.76)
Total	.78	(.76)	.62	(.61)	.79	(.79)	.59	(.59)		

The percentages which are given without parenthesis represent the mean percentage of agreement for each cell when the two pairs of coders (each of which involved the major coder), were taken together. i.e. In the first channel, "hands" there were three coders #col, co6, and col2. Col was the major coder, co6 and col2 were reliability coders. When the percentage of agreement of pair col:co6 and col:col2 were taken together, the mean percentage of agreement was .78 at level #1, and .92 at level #1a. This has been termed two-way pair-wise agreement since two pairs of coders are involved. The percentages which are enclosed by parentheses represent the mean percentages of agreement, three-way pair-wise agreement, when all three pairs of coders for each

channel are taken together. In terms of the above example, when col:co6, col:col2 and co6:col2 are taken together, the mean percentage of agreement for level #1 was .63. Since a greater part of the data was judged by the major coders than by the reliability coders, the pairs which involve the major coders are considered most important and will most often be referred to in this analysis of the data.

It can be noted from these scores that in relation to .60 level of confidence, the majority are above that point; representing percentages of agreement among pairs of coders beyond that expected by chance alone. For all channels, however, "level reliability" indicates that judgements at level #2, "The Nature of the Signal", were the least reliable. The items at this level are: 1 - unattentive to other target, 2 - (channel) being used to communicate a message, and 3 - (channel) not being used to communicate a message. Three possible explanations may be offered regarding this result. (1) The first and most obvious is that judges cannot determine if a signal is being sent, ie. "channel being used to communicate". Perhaps behaviors are so constant within a channel that an observer cannot extract <u>one</u> behavior, at a seven second cue, and determine if it is communicating a message or is not being used to communicate a message. (2) Perhaps channels cannot be teased apart from the whole complex of a message to facilitate these channel specific judgements. It may be that a message is only communicated by a combination of channels and this judgement regarding any

one channel taken by itself, is irrelevant. (3) Perhaps also, this level of judgement requires more practice and training or more sensitization to nonverbal communication than was obtained by the judges of this study.

A second result indicated by these scores is that judgements of the "head" are the least reliable overall of the channels when judgements were made according to this coding instrument. They are least reliable at level 1, 2, 2a and 3. The differences between the scores in this channel and those representing the other channels were examined in relation to exaggerated individual coder variance, and coding system deficiency. Regarding coder variance, only at level two was there a large difference between the mean percentage of agreement of two pairs and that of three pairs of judges, .38 as opposed to .69; suggesting that at this level, the major coder contributed to the low score. The researcher found that during the training activities, the judges had particular difficulty making judgements regarding "attitude" and the "nature of the signal". The category items appeared to be inappropriate when applied to this channel thus, a coding system deficiency for this channel. As an illustration, when only the head may be judged, without the eyes or mouth, the criteria for judging affection vs. rejection become unclear. Perhaps, this is not an appropriate channel to be judged in the context of the existing coding system. Perhaps also, it may be a judgement which can only be made from a behavior composite, or behaviors from a combination

of channels. Yet it should be noted that .73 agreement at level 2a seems to indicate a very good ability to agree on judgements concerning the "readiness to communicate". The research of Ekman (1965) suggests that head and body communicated different types of information. Face was included in the "head" designation for the Ekman study. One must consider the possibility that according to the reliability analysis of the present study, various types of information may again be appropriately judged in regards to particular channels and not others. The direction of the signal, and the signals indication of readiness for further communication seem to be two areas reliably judged in the channel designated as "head".

The analysis of the reliability of the overall coding system indicated that the judges were able to reliably judge each of the five levels of the coding system in each of the four designated channels. Level #2 and #2a are the least reliably judged. The Head channel, though approaching acceptable reliability, is considered least reliably judged of the nonverbal expressive channels when coding is done using the category system described.

Within System Comparisons

A more thorough examination of the coding system causes one to question the comparability of these mean percentages of agreement. Two variables effected these scores and caused comparisons across channels or across levels within a channel to be inappropriate. The first concerned

the number of choices which were available at each level of the coding system. Level one, contained six or eight category items depending upon which channel was being judged. Level 1a contained only two items. There is a greater probability of agreement at a level with two choices than at one with eight choices. The second variable which effected these scores concerned (N), the total number of data segments which were judged by the coders in each channel. The (N), which was judged at each coding system level was equal since each coder was required to make five judgements of every data segment seen; a judgement at each level. However, due to imperfect video taping, some channels were unable to be judged for given data segments because they were not shown on the video tape. Therefore, the (N) differed from channel to channel. This particularly effected the judgements of the Hand-Arms channel. Judges who made fewer judgements had the potential for a higher mean percentage of agreement than those making 400-500 judgements.

The researcher employed a statistic developed by Cohen (1960) to adjust these scores and to compensate for these two variables. The calculation of "kappa" scores for each of the pairs of judges provided the researcher with a coefficient of agreement which was free of probability.

> "The coefficient (k) is the proportion of agreement after chance agreement is removed from consideration." (Cohen 1960, pg. 40)

It is calculated by dividing (Po), the proportion of units agreed upon minus (Pc) the proportion of units of expected

agreement, by one minus (Pc). $k = \frac{Po-Pc}{1-Pc}$

This coefficient is not directly relatable to the percentages of agreement which were shown on Table 8 because it is without considerations of probability. The same general trend seems to be substantiated by these figures however. It appears that the Hands and Body channels are more reliably coded than the Face and Head channels.

This coefficient of agreement, (k), may be transformed into a Z-score to test the significance of the amount of agreement of any one pair of coders. In this transformation, the scores were adjusted for differeing (N) of each channel. Table 9 shows these calculations where:

Po = the proportion of units agreed upon
Pc = the proportion of units where agreement is expected by chance
N = the total number of data segments which were judged

$$k = \frac{Po - Pc}{1 - Pc}$$

$$km = \frac{Pom - Pc}{1 - Pc}$$

$$\sigma k = \sqrt{\frac{Po\ (1 - Po)}{N(1 - Pc)^2}}$$

$$\sigma ko = \sqrt{\frac{Pc}{N(1 - Pc)}}$$

$$z = \frac{k}{\sigma ko}$$

95% confidence level = $k \pm 1.96\sigma k$
99% confidence level = $k \pm 2.58\sigma k$
1.00 - km = proportion of unexplained differences between two judges

A kappa maximum, (km), has been calculated for each of the pairs of judgements. This statistic indicates the maximum which k could obtain given the pattern in which the two judges distributed their choices across the coding items

(the marginals). (1-km) indicates the

> "...proportion of the possibilities of agreement which cannot be the consequence of differing marginals". (Cohen 1960, pg. 42)

Table 9 shows various calculations regarding the scores of judges col:co6. A complete table of kappa calculations appears in Appendix VII.

TABLE 9

Kappa Calculations
(Coders col:co6)

Coding System Levels	#1	#1a	#2	#2a	#3
k	.69	.56	.45	.21	.64
km	.84	.67	.83	.25	.77
95%	(.63→.75)	(.42→.71)	(.38→.52)	(.06→.36)	(.53→.75)
99%	(.62→.77)	(.37→.75)	(.36→.55)	(.01→.41)	(.49→.79)
z	24.6	5.3	11.25	2.4	7.0

In Table 9, the k = .69, indicates that approximately 2/3 of the joint judgements are agreements with chance excluded. The maximum k = .84. The difference between .69 and .84 shows that a small part of the disagreements is a function of discrepancies between marginal frequencies. 1.00 minus .84 or .16 represents the degree to which the item clarity is in question as seen by the amount of unexplained difference between two judges. These judges, at level #2 of the coding system, show k = .45, just under 1/2 of the joint judgements are agreements. km = .83 indicates that a larger proportion of the lack of agreement is considered inability

of judges to agree than discrepancy between marginal frequencies. 1.00 - .83 or .17 represents the difference between judges col and co6 which is not explained by agreement or disagreement in judgements.

From inspection of the z-scores and the set confidence limits, it can be noted that each of the coefficients of agreement are significant at the $P < .001$ level. Cohen has noted regarding this procedure however;

> "It needs pointing out that it is generally of as little value to test (k) for significance as it is for any other reliability coefficient, to know merely that (k) is beyond chance is trivial since one usually expects much more than this in the way of reliability in psychological instruments." (Cohen, pg. 44)

When the kappa scores are examined by channel, the scores indicate, that levels #1 and #3 are most reliably judged for Hands. This level has the least amount of unexplained difference between judges which indicates more conceptual clarity in the items in this channel than in others. For the Body and Head, levels #1 and #1a are most reliably judged. Perhaps more information regarding the affective meaning of nonverbal behavior is available from Hands than from Body and Head. Level #2a appears to be much less reliably judged in accordance with these chance corrected figures than seemed to be indicated by the overall system reliability figures. This is in part, the effect which was expected since level #1a and #2a contain only 2 items and would therefore be decreased most when probability was taken into account. However, the calculation of (k_m) shows that a large difference between scores exists which is not attrib-

utable to agreement or disagreement suggesting that the category items in level #2a are quite unclear.

The calculation of kappa, (coefficients of agreement) have shown that the agreements of judges when coding channels and levels of the coding system, are highly significant (P .001). The scores show the same major trends as do the percentages of agreement of the overall coding system; that levels #1 and #3 are the most reliably judges for Hands; that #1 and #1a are most reliably judged in the Head and Body channels; that Hands and Body are most reliably judged of the channels;and that level #2 is the least reliably judged of all the levels. While there seems to be some lack of clarity and unexplained difference between judges of the Head channel, the major part of the difference between scores is attributed to disagreement.

Item-by-Item Analysis

The analysis of reliability for the overall coding system and the analysis of agreements adjusted for the effects of probability were completed. Yet, this analysis did not examine the category items of the system independently. Judges may agree completely on the selection of one of the items in a coding category, while disagreeing totally on the selection of another. This is quite different from half agreement on each of the items in a category. Without an item-by-item* analysis this condition can not be deter-

*item-by-item analysis - calculation of the percentage of agreement of coders for each item of the coding system.

mined. Kalter (1971) referred to this process as "unit-by-unit" analysis in the following:

> "It appears that unfortunate errors in logic have dominated conceptualization of reliability in classroom interaction analysis. In attending to total frequency or percentage of occurrence of categories instead of unit by unit examination, researchers have seemed to operate according to the following analogy: items of a paper and pencil test: total score on the test: specific units of behavior in a stream of behavior: total frequency of a certain type of unit." (pg. 16)
>
> "By ignoring the issue of whether coders agree on the assignment of specific units of behavior to categories, one can never know how much divergence there is between coders' understanding of the behavioral correlates of a category....The extent of this agreement is important when data analysis is non-sequential, but it becomes crucial when data analysis is in the form of sequential dependencies..." (pg. 49)

In order to examine the coders ability to agree on individual items within the coding system, the item-by-item analysis was performed. Table 10 shows the alpha scores.

$$a = \frac{\text{\# of agreements}}{(\text{\# of agreements plus \# of disagreements})}$$

Example: Item #1, Hands

\# of agreements = 214
\# of disagreements = 149
\# of disagreements + agreements = 363

$$a = \frac{214}{363} = .59$$

Inspection of the "a" scores, leaves one very important question unanswered. Are these scores indicators of the degree to which two pairs of judges can agree on the

TABLE 10

Alpha and Balanced Alpha Scores

Channels		Item Number																	
		1	2	3	4	5	6	7	8	+	-	9	10	11	+	-	12	13	14
Hands	a =	.59*	.42	.57*	.31	.33	.67*	.40	.15	.30	.78*	.46*	.35	.26	.19	.70*	.0	.80*	.45
	a' =	1.2*	.93	1.2*	.83	.75	1.4*	.80	.40	.56	1.0*	1.2*	.92	.76	.43	1.1*	1.0	1.0*	.80
Face	a =	.43*	.47*	.15	.08	.09	.11			.25*	.42	.13*	.35*	.29	.68*	.15	.10	.62*	.32
	a' =	1.3*	1.3*	.57	.0	.40	.33			.88	1.3*	.58	1.3*	1.1	1.2*	.36	.20	1.2*	.81
Body	a =	.67*	.05	.70*	.0	.52	.83*			.56*	.66*	.14	.35	.51	.91*	.03	.24	.74*	.12
	a' =	.80*	.0	.82*	.0	.75	.94*			.83*	.91*	.41	.79	1.0	.91*	.0	.47	.96*	.20
Head	a =	.13	.29	.30	.27	.44*	.23			.62*	.48	.04	.40*	.20	.58*	.15	.15	.63*	.26
	a' =	.50	.86	.85	.78	1.1*	.68			.96*	.80	.17	1.4*	.82	1.1*	.37	.38	.0*	.53

selection of a particular coding item, or are these scores reflections of agreement which is based upon the frequency which that behavior occurred for judgement. Is it possible to say that coding item #1 in Hands channel, "up-touching object", is only 59% reliable or does .59 reflect some reliability of the item distorted by the number of times that behavior occurred in relation to the other behaviors coded in that channel? A second set of alpha scores was calculated in order to adjust for the frequency of occurrence of a particular behavior. This calculation is called "balanced alpha" or (a'). It was calculated by the formula:

$$\text{balanced alpha} = (a') = \frac{\left(\frac{\#\text{ of matches at particular item}}{\text{tot. \# of matches for all items}}\right)}{\left(\frac{\#\text{ of occurrences of an item}}{\text{total occurrences of all items}}\right)}$$

Setting a confidence limit of .60 for item agreements may be seen as only the first step in understanding the data. The balanced alphas for each item must also be examined to find which items are within that confidence range*, though do not have an "a" score above .60 i.e. In the first channel, Hands, item #6, the (-) in level #1a, the (-) in #2a and #13 may be seen as reliably judged beyond the level expected by chance as set at .60. However, item 1, 3 and 9 may also be seen within that range when the "a'" is taken into account. Though the "a" scores for those items are .59, .57 and .46 respectively, when the reliability

*range - spread of numbers, the lower limit of which is determined by the lowest balanced alpha score of those items which have acceptable alpha scores.

scores are balanced on the basis of frequency of occurrence, those items may also be accepted as drawing agreement beyond that expected by chance. Acceptable scores as indicated by either the "a" or the "a'" are indicated by an asterisk.

Table 11 shows the items of the category system for each nonverbal channel which judges agreed upon beyond that percentage expected by chance alone.

TABLE 11

Items Agreed Upon

Channel	Level	Item Number	Item
Hands	1	(1)	up-touching object
	1	(3)	up-touching self
	1	(6)	down-touching other
	1a	(-)	away from other target
	2	(9)	unattentive to other target
	2a	(-)	lack of readiness to further communication
	3	(13)	neutral
Face	1	(1)	smiling
	1	(2)	straight, neutral
	1a	(-)	away from other target
	2	(10)	face being used to communicate a message
	2a	(+)	readiness or open to further communication
	3	(13)	neutral
Body	1	(1)	standing
	1	(3)	sitting
	1	(6)	standing or walking 38-58 from other target
	1a	(-)	away from other target
	2a	(+)	readiness to further communication
	3	(13)	neutral
Head	1	(5)	down
	1a	(+)	toward other target
	2	(10)	head being used to communicate a message
	2a	(+)	readiness or open to further communication
	3	(13)	neutral

The trend seems to be shown regarding the reliability of particular channels. In accordance with judgements made using the category system of this study, more agreement is achieved between judges on items in the Hands and Body channels than in the Face and Head channel. Fewer of the items in the Head channel category seem to be reliably judged than any other channel. No single level of the category system has a set of reliable items as determined by the criteria discussed above, though each level has some items which are considered reliably judged beyond chance agreement.

Summary

In summary, regarding "the ability of judges to agree on the coding of nonverbal data"; the data were subjected to three types of analysis:

1. Overall percentages of agreement were calculated for:
   a. the coders in one channel across the levels of the coding system, "channel reliability",
   b. all coders across all channels, at one coding system level, "level reliability" and
   c. the coders in one channel at one category system level "cell reliability".
2. The percentage of agreement were adjusted for the effects of probability by:
   a. calculating kappa and maximum kappa scores,
   b. testing the significance of the coefficients of agreement which resulted, and
3. An item-by-item frequency analysis of the percentage of agreement was calculated by:
   a. calculation of alpha (a) scores for each item of the category system and

b. calculation of balanced alpha (a') scores to adjust for the frequency of an items occurrence of judgement.

On the basis of these analyses, the following conclusions have been drawn:

1. When overall reliability is considered, the mean pairwise agreement of judges is beyond the level expected by chance for each level of the coding system except level #2, "Nature of the Signal".

2. When overall reliability is considered, the mean pairwise agreement of judges is beyond the level expected by chance for each channel of the coding system except Head, which approaches the confidence level of .60 with a 59% agreement score.

3. When probability is removed, the agreement of each pair of judges at each level of the coding system is found to be significant at the $P<.001$ level.

4. Levels #1, "Behavior Description" and #3, "Inferred Attitude" are more reliably judged in the channels of Face and Hands, and level #1 and #1a, "toward or away from the other target", for channels Head and Body.

5. When an item-by-item frequency analysis is performed, no single level or channel of this coding system may be found to contain a reliably judged set of category items.

The researcher concluded that coders are able to make reliable judgements in the coding of nonverbal data. However, the coding items which are appropriate and clearly conceptualized for judgements on one channel do not appear to be appropriate for judgements in all channels. The data seems to indicate that some channels provide one type of information, while other channels provide another. In this study the data showed that Body and Head channels when judged alone were most reliably coded in terms of behavioral descriptions. Hands and Face offered reliably judged data

regarding this level as well as information regarding Inferred Attitude. Some conceptual ambiguity seems to be inherent in the level of coding called "Nature of the Signal". There was a suggestion that this level could be judged reliably by judges of Face, according to the chance adjusted scores, but not the overall percentages of agreement. A large amount of unexplained difference between scores was shown in this level for all judges, indicating, questionable reliability and conceptual clarity of the items at this level. This will be discussed further in The Discussion Section.

The findings, suggested to this author that researchers could benefit from employing an item-by-item analysis of the coding system during the training of judges. A calculation of kappa and maximum kappa would also give indications of the category ambiguity which could direct the revisions of the instrument and the training of the coders. The category system which was used for this study, seems weakest in level #2. However the researcher questions the applicability of items across channels, ie.e items may not be appropriate for the judgements of behaviors in all channels alike. Each channel may need a unique coding system. This is a possible contridiction of the research goal of developing coding items which will facilitate comparisons across channels. This will be discussed further in the Discussion Chapter.

Regarding Nature of Nonverbal Communication Between Teachers and Selected Boys

In the developmental stages of this research several questions were formulated.

1. Can mutual nonverbal encounters be recognized by an observer as they occur between teacher and child?
2. Is there a natural grouping or cohesiveness to these signals which can be agreed upon by observers?
3. To what extent can data collection be accomplished within the classroom setting without contaminating the spontaneity of the interaction between teacher and child?

The researcher discussed these questions in the Data Collection Methodology, chapter III. Additional discussion appears in Issue III of this chapter. Other questions were also posed.

1. Can a method be devised to record the nonverbal behaviors which two persons produce at the same time?
2. Can an instrument be devised to allow for the coding of data from more than one expressive body channel of the teacher and of the child?
3. Do judges agree on the coding of behaviors which occur during these interactions?

These issues were discussed in the Data Coding Methodology, Chapter IV and in Issue I of the Analysis of Data. Still other questions were formulated which have not yet been discussed. It is these questions which surround Issue II in this chapter.

1. What kinds of teacher nonverbal behaviors occur most frequently during a mutual encounter with a child?
2. What kinds of child nonverbal behaviors occur most frequently during a mutual encounter with a teacher?
3. What types of teacher and child nonverbal behaviors

are most frequently seen in each of the expressive channels during these interactions?

4. What kinds of nonverbal behaviors of teacher and child are most frequently seen at each level of the coding system?

It should be restated that data for this study were recorded on video tape. The data consisted of numerous assumed mutual encounters between teachers and children. The reciprocal nonverbal behaviors of both teachers and child were recorded synchronously by means of two cameras and special effects equipment. Each occurrence of a behavior corresponding to a category item of the coding system was tallied. This resulted in frequency scores; representing the number of times a particular behavior was coded for teacher or for child in any category item or level of the coding system. Percentages were calculated from these frequencies to show the proportion of total behaviors coded into any one category item.

Prior to accepting the overall frequencies as a representation of the behaviors of the subjects as a group, the researcher examined the frequencies of two subsample populations. Purposive subsamples of the teachers and of the children were drawn from the general data sample. Three of the total group of eight teachers were selected to constitute this subsample; one at the third grade, and two at the fourth. The teachers were selected because they had the largest number of interactions with children in the overall data sample. A subsample of children, 1/3 of the study's child population of 18, was selected. The children repre-

sented five different classrooms. Three were from the third grade and three from the fourth grades. At least three replicated encounters with teachers had been recorded for these children. They were selected therefore due to the large quantities of data each contributed to the study.

The following question was asked: Is there reason to believe that the overall frequencies are skewed by single persons as opposed to being representative of the entire study population? The researcher found that the subsample scores approximated in every case, the overall frequency scores. An example of these comparative scores is given in tables 12 and 13. The first shows the overall frequencies and child subsample scores when judgements of teacher behavior were made at level #1 of the coding system. The second shows the teacher subsample scores for the same judgements. The numbers which are encircled represent the percentages of the items most frequently selected in each channel. The asteriz indicates agreements between total sample and subsample as to the items with highest percentages of selection. The researcher concluded that the overall frequencies were representative of the frequencies of behaviors of the total group of study subjects.

The frequencies of occurrence of each behavior code for the entire data sample were examined to determine the types of behaviors which were most often coded during mutual teacher-child nonverbal encounters. These frequencies should not be taken to imply that the behaviors were occur-

TABLE 12

Frequency Comparisons of Total Sample and Student Subsample

Channel	Item Number	Total Sample Frequency	Subsample Frequency					
Hands	1	.35*	.38*	.63*	.21*	.36*	.06	.21*
	2	.33*	.30*	.23*	.38*	.08	.44*	.18
	3	.15	.10	.07	.33	.08	.21*	.33*
	4	.05	.14	.01	.03	.28*	.0	.0
	5	.01	.04	.01	.01	.0	.0	.09
	6	.0	.0	.0	.0	.04	.03	.06
	7	.05	.02	.01	.03	.04	.18	.0
	8	.06	.02	.04	.01	.12	.09	.12
Face	1	.03	.07	.02	.07	.0	.0	.0
	2	.71*	.63*	.74*	.64*	.72*	.62*	.57*
	3	.22	.29	.24	.24	.12	.24	.32
	4	.01	.01	.0	.03	.0	.0	.11
	5	.02	.01	.0	.01	.0	.0	.0
	6	.01	.0	.0	.01	.16	.14	.0
Body	1	.25	.18	.07	.33	.50*	.43*	.36
	2	.01	.0	.0	.02	.03	.0	.02
	3	.16	.32	.34	.0	.0	.11	.0
	4	.0	.0	.0	.0	.0	.0	.0
	5	.04	.01	.02	.03	.01	.03	.05
	6	.55*	.49*	.57*	.63*	.36	.43*	.57*
Head	1	.01	.0	.0	.0	.03	.09	.02
	2	.02	.06	.01	.0	.0	.03	.0
	3	.16	.08	.13	.16	.19	.06	.24*
	4	.19	.20	.29*	.16	.22*	.0	.15
	5	.34*	.33*	.23	.37*	.22*	.43*	.17
	6	.29*	.34*	.34*	.31*	.33*	.40*	.41*

TABLE 13

Frequency Comparisons of Total Sample and Teacher Subsample

Channel	Item Number	Total Sample Frequency	Subsample Frequency		
Hands	1	.35*	.20*	.22*	.43*
	2	.33*	.60*	.32*	.31*
	3	.15	.08	.24	.14
	4	.05	.0	.04	.0
	5	.01	.0	.0	.03
	6	.0	.0	.01	.02
	7	.05	.03	.12	.03
	8	.06	.08	.04	.06
Face	1	.03	.02	.01	.03
	2	.71*	.75*	.66*	.80*
	3	.22	.18	.26	.12
	4	.01	.01	.01	.06
	5	.02	.06	.01	.0
	6	.01	.04	.04	.0
Body	1	.25	.24	.30	.30
	2	.01	.0	.01	.01
	3	.16	.15	.16	.0
	4	.0	.0	.0	.0
	5	.04	.01	.02	.09
	6	.55*	.59*	.52*	.60*
Head	1	.01	.0	.03	.01
	2	.02	.0	.02	.0
	3	.16	.14	.21	.17
	4	.19	.20	.09	.13
	5	.34*	.43*	.32*	.44*
	6	.29*	.23*	.32*	.26*

ing at the same point in time. Rather, they are the number of times a behavior was coded for the teachers and the children. Figures in parentheses represent the percentages at a level, when one category has been omitted. At level #2 for example, when "unattentive" was partialled out of the frequencies, the resulting percentages for the other choices are .34 and .19 and so on. The findings are presented as they appear by level of the coding system. A statement of the results follows the presentation of each part of the table.

TABLE 14

(LEVEL #1) Behavioral Frequency Table

Channel	Item	Teacher Frequency	Child Frequency
		N = 915	N = 725
Hands	touching object	.68	.75
	touching self	.20	.20
	touching other	.01	.0
		N = 930	N = 785
Face	smiling	.03	.14
	straight (looking)	.71	.61
	staring	.22	.14
	pursed	.01	.0
	downcast	.02	.08
	frowning	.01	.02
		N = 1037	N = 948
Body	standing	.26	.11
	sitting	.25	.35
	walking	.04	.03
	3'-5' proximity to other target	.55	.52
		N = 1016	N = 976
Head	up	.03	.12
	level	.35	.46
	down	.63	.42

Findings Regarding Level #1, "Behavior Description"

The data shows that, during mutual encounters:

1. Both teachers and the target child most often were touching an object, looking straight and in 3 to 5 feet proximity from the other target with head down;

2. Children were more frequently downcast and less frequently staring than were teachers; and

3. Teachers were standing more frequently than students and the students sitting more frequently than teachers. This is most probably an effect of role expectation upon the behavior of subjects as students and teacher. A surprisingly low occurrence of touching child were recorded out of 915 behavior recordings at level one for the teachers; only 18 of child touching teacher out of 726 for the child. This was an unexpected finding considering the age of the child population. In light of the reliability which was noted regarding judgements in the Hands channel, it was concluded that little or no touching occurs during teacher-child mutual encounters.

TABLE 15

(LEVEL #1A) Behavioral Frequency Table

Channel	Item	Teacher Frequency	Child Frequency
		*	*
Hands	toward	.12	.04
	away	.88	.06
		*	*
Face	toward	.27	.18
	away	.73	.82
		*	*
Body	toward	.47	.33
	away	.53	.67
		*	*
Head	toward	.63	.53
	away	.37	.47

*the number of judgements from which the frequency scores were tabulated. T=teacher, C=child

*N(Hands)=915, *N(Face)=930, *N(Body)=1037, *N(Head)=1016
C=726 C=785 C= 948 C= 976

Findings Regarding Level #1a, "Direction of Behavior"

At level 1a of the coding system the data showed:

1. In the Hands, Face and Body channels, both teacher and students are more frequently "away" from each other during encounters, than "towards" each other. Students have a higher frequency of "away" behavior in each of these channels than do teachers.

2. The data suggests that during encounters, the Head is more frequently toward than away from the other target, for both teacher and student. The findings in both the Head and Body channels are not as strong as those in the other two channels however; .63, .53 and .53, .67 as opposed to .88, .96 and .73, .82. Given the reliability information regarding the Head channel judgements, this finding is questionable.

TABLE 16

(LEVEL #2) Behavioral Frequency Table

Channel	Item	Teacher Frequency	Child Frequency
Hands	unattentive	.56	.59
	being used to communicate	.15 (.34)	.08 (.19)
	not being used to communicate	.29 (.66)	.33 (.81)
Face	unattentive	.03	.13
	being used to communicate	.27 (.28)	.28 (.32)
	not being used to communicate	.70 (.72)	.59 (.68)
Body	unattentive	.06	.08
	being used to communicate	.28 (.30)	.21 (.23)
	not being used to communicate	.66 (.70)	.71 (.78)
Head	unattentive	.05	.13
	being used to communicate	.31 (.33)	.32 (.37)
	not being used to communicate	.64 (.68)	.54 (.63)

Findings Regarding Level #2, "Nature of Signal"

The reliability studies indicated that judgements at level #2 of the coding system were made least reliably of all the category levels. The directions of the data at this level are only suggested therefore. When the "unattentive" category was taken out, the remaining frequencies suggested that, in all channels, teacher and students are more frequently "not using a particular channel to communicate a message" than the opposite. In the light of this and the reliability data, two possible explanations are suggested.

1. The category items at this level are not well defined or
2. The items can not be judged when only one channel is being coded, extracted by selective attention, from the others.

TABLE 17

(LEVEL #2a) Behavioral Frequency Table

Channel	Item	Teacher Frequency	Child Frequency
Hands	open	.17	.19
	closed	.83	.81
Face	open	.94	.80
	closed	.06	.20
Body	open	.95	.80
	closed	.05	.20
Head	open	.87	.72
	closed	.13	.28

Findings Regarding Level #2a, "Openness to Communication"

At this level:

1. All channels except Hands were judged to be more frequently "ready and open to further communication with the other target" than "closed" to furth communication.

2. Hands were judged most frequently as being "closed to further communication with the other target" for both teacher and child. It is interesting that in all of the seemingly negative e.g. items, away, rejecting, closed, the students showed higher frequencies than the teachers. The reverse is true of the more positive items such as accepting, open toward. This is seen particularly in the Hands, Face and Body channels.

TABLE 18

(LEVEL #3) Behavioral Frequency Table.

Channel	Item	Teacher Frequency	Child Frequency
Hands	accepting	.01 (.27)	.0 (.0)
	neutral	.97	.98
	rejecting	.02 (.73)	.02 (.0)
Face	accepting	.04 (.49)	.03 (.15)
	neutral	.84	.79
	rejecting	.13 (.77)	.18 (.85)
Body	accepting	.21 (.82)	.06 (.34)
	neutral	.74	.83
	rejecting	.05 (.18)	.11 (.67)
Head	accepting	.06 (.42)	.06 (.30
	neutral	.85	.81
	rejecting	.09 (.58)	.13 (.70)

Findings Regarding Level #3, "Inferred Attitude"

At this level, the most frequently judged attitude was "neutral" for both teachers and children, at each chan-

nel. When this neutral response was partialled out, and the resulting percentages examined, (these figures appear in parentheses , next to the items where frequencies were high enough to warrant such calculations), the children, in judgements of Face, Head and Body, were judged more frequently rejecting. This is taken as only a suggested direction since the selection of the neutral category so often occured.

In summary, the data seems to suggest that, there is very little touching behavior between teachers and children during mutual encounters. Students have a higher frequency of negative type behaviors than teachers during these encounters. The concept of signalling is not appropriate for the judgement of nonverbal data or is not appropriately reflected in judgements which are made from the selective observations of single channels. The readiness or openness of behaviors may be judged and seem to be positive during mutual encounters except in the hands channel.

The Existence of Sets of Nonverbal Signals

This study was based on the assumption that reciprocal nonverbal encounters between teacher and child exist and that they are observable as cohesive sets of nonverbal behaviors. The questions stimulated by this issue and analyzed in the study were the following: (1) Can observers identify nonverbal encounters between teachers and children? and (2) Can they identify the beginning and ending of such encounters? Two measures of the validity of this issue

were noted.

One informal observation, an indication of face validity, was provided by the members of the research team. During the taping of the subjects, the researcher observed that without being instructed as such the cameramen responded from time to time when the teacher and a particular child began an encounter by saying: "here we go again". The researcher was interested in identifying sets of behaviors, rather than isolated behavioral contacts between a teacher and a child. The cameramen were discriminative in identifying the same units of behavior between teacher and child that the researcher identified as cohesive sets or mutual encounters.

The second validity observation regarding these sets was obtained more formally. The researchers identification of the beginnings and endings of nonverbal sets was indicated on audio recorder. A comparison with two other independent observers was undertaken to provide a measure of the percentage of agreement. The mean percentage of agreement when two pairs of observers were taken at a time, was 73%. This percentage of agreement indicated that all three persons were probably judging basically the same behavioral phenomenon.

The data seem to indicate that observers can identify reciprocal nonverbal encounters between teacher and child. It suggests that observers may be able to identify the occurrences of cohesive sets of behaviors as well.

Suggestions

At the time of data collection, these informal and formal procedures indicated the existence of cohesive sets of signals. As the researcher gathered data regarding encounters, suggestions for further research were formulated. The issue as seen in the developmental stages of this study was incomplete. The author believes that there are two parts to the question of the existence of cohesive mutual encounters. Terminology contributed to the lack of clarity of this issue. A researcher should: (1) determine if the identification of nonverbal encounters between teacher and child can be agreed upon by observers, and (2) determine if reciprocal cohesive units of signals exist and can be identified. In the present study, these two were not clearly separated in concepualization and became mixed during validity and reliability measurement. One way in which this analysis of nonverbal encounters might be accomplished involves the use of full screen recordings of teacher-child behaviors. A researcher should obtain judgements and percentages of agreement on both, the existence of nonverbal encounters between teacher and child and the existence of chains of nonverbal signals between teacher and child from these recordings prior to the gathering of split screen data for the more intensive analysis of individual behaviors.

The Conditional Quality of Aggressiveness vs. Active Signalling

Another issue instrumental to this study was reflected by the researchers assumption that, the more

aggressive boys within a classroom group would be the most active nonverbal signallers; engaging the teacher most often in nonverbal exchanges. At least one important question follows this issue related closely to the data collection methodology of this study. Do the instruments which measure aggressiveness identify children who are active nonverbal signallers?

The discussion of the study instruments appeared in chapter III. Two indications of the validity of this issue were noted. The high agreement between the two instruments, one representing teacher's judgements of aggressiveness and the other, peer judgements, indicate that the two are measuring the same concept; both are selecting out the same children on the basis of particular behaviors. It appeared that the instruments were reliable in selecting children who displayed behaviors identified with the concept of aggression.

Two informal measures which indicated a valid conceptual relationship between aggressiveness as represented by the two instruments and "active nonverbal signalling" as conceptualized by the researcher, were noted during the study. During the desensitization procedures in each classroom, the entire research team attempted to identify the target children by inspection of their nonverbal behaviors. At this point in time, the children were unknown to the researchers by appearance. When a consensus was reached among the members of the team as to which of the children

were the most active signallers, and the children's names had been identified, the researcher obtained from the research materials, the names of the target children which had been selected on the basis of the instruments. In a large number of the cases, the team, researcher and two cameramen, selected by inspection of nonverbal behaviors as "active signallers", the same boys who had been identified as "aggressive" by the Peer Nomination Inventory and the Teacher Problem Behavior Checklist. Though no formal measurement was calculated, the agreement of these procedures indicated strongly, the validity of the issue; that aggressiveness and activeness of nonverbal signalling are conceptually related.

A second indication of this relationship occurred in conjunction with the administration of the Peer Nomination Inventory, during Pre-Data Collection Procedures. The researcher administered the inventory to each of the classes involved in the study. During this process, at times even before the instructions were completed, one or more children became particularly noticeable. The behaviors of these children indicated to the researcher, a need for special assistance, controls, attention, behavioral limits, and/or increased gratification.

The issue of the connection between this signalling of particular children and the concept of aggression, was recognized only after the researcher re-entered the room to begin the study. Without knowing the names of these children and only informally recognizing them as particular

types of nonverbal signallers, the researcher found them to be, in the majority of cases, the target children as selected by the two study instruments. It can not be determined at this time if these children were most noticeable because of the intensity of their signals, the type of the signals they were sending, or the frequency of their signals. No formal measurement was performed. However, the incidence of these children being identified in relation to their nonverbal signals, first during the administration of the P.N. Inventory and later as "aggressive" by the study instruments, again suggests a possible relationship between these two.

Suggestions

The two indications of validity previously discussed were not designed into this study but were noted during its progress. More research should focus solely upon this issue. A researcher should document formally, the percentage of agreement between various instruments measuring aggression and various procedures of identifying, "active signallers" by inspection. Further, this study has emphasized only, the behaviors of "active signallers". Therefore the generalizability of this data is limited to this population. Other research is needed which focuses upon children with various types of nonverbal patterns of communication; with less obvious modes of communication.

Summary of Analysis of Data

In any effort to glean conclusions from analyzed

data, the researcher must first determine the soundness or strength of the data being analyzed. When judge coding is an integral part of a study, the reliability of the judgements is first examined. In this study, three degrees of analysis were performed.

One set of judges coded the entire data sample and one-third of the sample was coded by two additional judges. This allowed the calculation of percentages of agreement between each pair of these judges; three coding each designated nonverbal expressive channel. Agreement was examined for the judgements which were made by the judges assigned to each channel, for each level of the coding system; level #1 - behavior descriptions, level #2 - nature of the signal, and level #3 - inferred attitudes. The analysis showed that this "overall system reliability" of judges was acceptable in all but level #2 of the coding system; weakest for the Head channel.

An unequal number of coding items in the levels of the coding system necessitated further examination of judge agreement. The data were adjusted for the effects of probability. The calculation of kappa (k) provided an indication of agreement without one level of the coding system drawing a higher percentage of agreement on the basis of probability alone. The analysis showed that the agreements between pairs of judges were each significant at the $P = <.001$ level. Further, that the trends shown by overall percentages of agreement were supported in this analysis also; level #2 was

least reliably judged, Head and Body channel most reliably judged at level 1 and 1a, and Hands and Body channels most reliably judged overall.

A third degree of analysis was performed to determine the degree to which judges could agree on the coding of each item of the coding system. This item-by-item analysis was examined taking into account the frequency with which each coding item was seen and judged. These calculations, alpha (a) and balanced alpha (a'), showed that no single channel of this coding system was found to contain a reliably judged set of category items. The coding of some items seemed to be appropriate for some channels but not well conceptualized and/or appropriate for other channels.

On the basis of these findings regarding the ability of judges to agree in coding nonverbal data, and the reservations stemming from these findings the data were analyzed to gain information regarding the nature of nonverbal communication between teacher and selected children. Descriptive statistics were employed to determine the percentage of all behaviors which were of particular types designated according to the coding system. Regarding teacher-child nonverbal communication, the data showed the following:

1. very little touching behavior accompanied mutual encounters between teacher and child.
2. teacher and child were frequently within 3 to 5 feet of each other during encounters.
3. teachers and children touch objects rather than self or others most frequently.

4. teachers and children look straight most frequently during encounters.

In accordance with this coding system, the data showed that more negative type behaviors were judged for students than for teachers. Regarding the specific channels, the Hands, Face and Body channels were judged to be away from the other target for both teacher and child most frequently, though Face, Body and Head channels were judged most frequently open and ready for further communication with the other target.

This study focused upon the process of the collection of nonverbal data as well as upon the content of the nonverbal data which was collected. The researcher asked if observers are able of identify nonverbal encounters between teacher and child. During this study, the data showed that independent observers can agree upon the beginnings and endings of mutual nonverbal encounters between teacher and child. That they are able to identify and agree upon cohesive sets of signals between teacher and child was not satisfactorily evaluated.

Child subjects for this study were identified on the basis of a conditional quality of aggressiveness due to the researcher's assumption that the most aggressive children would also be the most active nonverbal signallers in each classroom. Whether aggressive children as selected by the study instruments were able to be identified by inspection also was due to the quantity of the nonverbal signals as implied by the term "active", or by the quality and/or

intensity of their behaviors was not determined. The data suggests a relationship between these two concepts: aggressiveness and active nonverbal signalling, but the content of that conceptual relationship is left unclear.

CHAPTER VI

SUMMARY, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

For this study an analytical review of the literature was reported which indicated the need for research.

1. which explored the nature of nonverbal communication from data which included the integration of more than one expressive channel,

2. to develop a methodology which would allow for the gathering of spontaneous nonverbal data within a natural setting,

3. which would contribute information regarding the nature of teacher-child nonverbal behavior through the development of instruments which measure both the affective and behavioral components of the interaction.

The study was designed from this analysis of the literature in conjunction with the authors beliefs regarding the nature of nonverbal communication.

Summary and Conclusions Regarding Method

Several methodological and theoretical questions were focused upon. The methodological questions were:

1. Can a reliable method be devised to record the nonverbal behaviors of two persons simultaneously?

2. To what extent can data gathering be accomplished within the classroom setting without contaminating the spontaneity of the interaction between teacher and child?

3. Can an instrument be devised to allow for the codification of data from more than one expressive body channel of the teacher and of the child?

4. Do judges agree on the codification of behaviors which occur during these interactions?

The study was exploratory; designed to gain information regarding nonverbal communication between teachers and children. The participants of the study included four volunteer female teachers at the third and four at the fourth grades from two local school districts. Eighteen boys from these classrooms were selected for participation on the basis of the degree of their aggressiveness as measured by the Peterson-Quay "Teacher Behavior Problem Checklist" and the Walder et al "Peer Nomination Inventory".

Perhaps the most significant contribution which this study made is the method which was used to obtain a record of the continuous nonverbal behavior of teacher and child simultaneously within the natural classroom setting. The method employed two video tape cameras, one to record teacher behavior and one to record child behavior. A special effects generator was used to produce a split screen image of the simultaneous behaviors of teacher and child on the video tape monitor.

Procedures were developed to minimize and to evaluate the effects of research personnel and equipment upon the spontaneity of the classroom behavior. Interactions were recorded. The taped records were edited into a data sample which contained 250 segments of nonverbal communication between the eight teachers and eighteen selected children.

Results indicated that a valuable method had been devised to record the nonverbal behaviors of two persons simultaneously. It is also evident that the method could be

employed within the regular classroom setting without disrupting the spontaneity of the interaction between teacher and child.

A coding system was developed to organize the nonverbal behavioral data. The literature indicated a need for a system to code data from more than one expressive body channel. The system which was developed allowed the assignment of nonverbal behaviors into one of four expressive channels; head, body, face and hands. Judges coded the data on the basis of only one of these channels at a time. Since the literature also indicated the need for a system which would facilitate judgements at several conceptual levels, the coding system which was used consisted of a variable number of items for each of five conceptual levels; (a) behavioral descriptions; (b) direction of the signal; (c) nature of the signal; (d) indication of openness to communication and (e) inferred attitude.

Twelve judges were selected and trained to decode the segments in accordance with the category system. Each was assigned to judge the behaviors in only one of the four selected expressive channels, resulting in three judges per channel. One judge was designated as "major" coder and required to code the entire data sample. The other two judges, in each group, coded one-third of the sample to provide material for reliability studies. The data were then analyzed to determine: (a) the degree to which judges could agree on the coding of nonverbal data and (b) the nature of nonverbal communication between teacher and child.

This study involved a more extensive examination of judge agreement, reliability, than has been used before. Judge responses were analyzed for percentage of agreement in regard to each channel and level of the coding system. The responses were then adjusted for the effects of probability and missing data. Percentages of agreement were again analyzed. Finally, responses were analyzed and percentages of agreement calculated for each item of the coding system.

Results of the coding procedures and analysis of judge agreement indicated:

1. An instrument was devised to allow for the codification of data from more than one expressive body channel of the teacher and of the child.

2. Judges agree on coding of nonverbal data in regards to this overall coding system. The judges are least in agreement when "nature of the signal" is coded. When item-by-item analysis of the coding system was done, the percentages of agreement between judges showed that no one level of this coding system contains a reliably judged set of items.

It is impossible to determine from the data, the extent to which judge disagreement on the coding of nonverbal data is a function of the inappropriateness and cloudiness of coding items or is a function of the judges inability to agree on the meaning of all nonverbal behaviors. Some data suggest that in fact, the judges were confused regarding their judgements of the "nature of the signal". This seemed to indicate that the coding system was particularly weak at this level, Level 2.

Implications and Recommendations Regarding Method

Perhaps most of the implications of this study for

further research into nonverbal communication are obvious, i.e. a method can be devised to collect reciprocal spontaneous nonverbal data within a natural setting and judges do agree, overall, on the coding of nonverbal data. One significant, less obvious issue was recognized during this study. It concerns the task of separating the researcher from the research.

The study has provided information regarding this interactive process within nonverbal research. It is a research variable which is inherent in the very process of nonverbal communication itself. It has been stated by other researchers as a classic issue of research; the task of separating the researcher from the research, the observer from that which is being observed. In research of nonverbal communication data, however, this issue is more intensified. During attempts to examine the nonverbal elements of an interaction, objectively, the researcher frequently realizes that he has, at some point in time, dropped out of the objective attempts of his study and into a reactive sphere; "feeling about" what he is seeing.

This combination of objective and reactive elements, appears to be, at one time, the most challenging and the most defeating characteristic of research in the area of nonverbal communication. The researcher conceptualizes behavioral processes which are familiar in their character yet remain elusive. While trying to be more objective, the researcher may nonverbally communicate disinterest, aloofness, rejection, or intensified interest to the subjects, further con-

taminating the very data he was trying to free from influence.

In the present study, this human aspect of the research was identified as appearing most obviously at two points in the study. First, it was noticed during the desensitization procedures within the classrooms. The research team found that attempts to maintain a strict non-participant observer role, retarded the desensitization process. When this role was maintained, the children and teachers seemed to continue their curiosity about the experiment and their awareness of the activities of the research team. Conversely, if the researchers became nonverbally involved in the classroom, i.e. if something happened which caused the children to laugh, and the researchers also acknowledge the humor of the situation or at times simply showed interest in the activities, the desensitization procedures were more rapid and effective. It appeared in these instances that a particular level of involvement somehow signalled to the subjects a "safe, predictable, normal, comfortable" situation, one in which they could dismiss the novelty of the experimental equipment and the experimentors from their minds and become involved in their classroom activities. An observer role which restricted this expected exchange of nonverbal cues, seemed to create a degree of dissonance in the subjects which prolonged their alertness and sensitivity to the experimental variables.

Second, the effects of nonverbal involvement of the experimentors was seen during the data collection procedures.

The nonverbal behaviors of the subjects towards the researchers seemed to have a "drawing out" quality. That is, the research team observed a difficulty in remaining in an observer role, and this difficulty appeared to be a function of nonverbal communications from both the teachers and children. The members of the research team were often drawn into conversations in this way by the children who would first signal them nonverbally and then eventually draw out some type of verbal response. This interaction had even more subtle effects on the research than seem evident at first consideration. It effected the interest and involvement of the researchers.

It must be noted that, in the generated data, reciprocal encounters between teacher and child averaged one to three minutes in length. Therefore, long periods of time passed when no data were identified for collection. The cameramen stated that they found it important that the children "liked" their presence and "showed it". This caused them to feel more successful in their roles and more invested in the data gathering process. They were less easily bored in the rooms where this interaction occurred and became less noticeably fatigued. It follows that if interest of the researchers is more continuous, the data gathering would be more complete, with fewer interactions missed during the recording. It appears that a certain level of interaction between the researchers and the subjects allows for comfort in the situation. The naturalness of the data collected from human subjects within a "natural" setting may not so much be

a function of the amount the researcher is able to restrict his interactions with the subjects, but rather, the degree to which the experimentor meets the interaction expectations of the subjects; the degree to which a normal, predictable exchange is available between the humans involved in the study, subjects and researchers.

The researcher who recognizes this human aspect of nonverbal research has two options: (1) to perform such research activities behind one-way-vision mirrors, solely, an option which also has its own inherent problems; or (2) to establish a series of monitoring procedures to check the effects of such interactions throughout the research. The latter approach was taken in the present study. The nonverbal interactions of researchers with subjects were increased to accomplish some tasks and decreased to accomplish other tasks through this monitoring technique.

During the desensitization procedures of the study, the members of the research team purposively showed nonverbal interest and involvement in the activities of the teacher and children. Later, during the data collection procedures, the team, by means of the intercom headsets, assisted each other in limiting interaction with children or teachers. When the reactions of one of the team were felt to have a potential negative effect upon the naturalness of the data collection, this was called to the individual's attention and the behavior limited or terminated.

Summary and Conclusions Regarding Theory

In response to the review of the literature regarding nonverbal communication and the author's beliefs regarding the nature of nonverbal communication, several theoretical questions were focused upon. They were:

1. Are the teacher and child mutually involved in nonverbal behavior?
2. Can nonverbal mutual encounters between teacher and child be recognized by an observer?
3. Is there a natural grouping or cohesiveness to a set of these signals which can be agreed upon by observers?
4. What is the nature of nonverbal communication between teacher and child?

During data collection procedures, the researcher and two other persons, independently judged and recorded the beginnings and endings of nonverbal interactions which they observed between the teachers and specific children. These notations were auditorally recorded and electronically synchronized for later analysis. In this way analyses of percentages of agreement were accomplished with the assurance that the notations were in response to the same observed behaviors.

Results of the analysis of these recordings showed that:

1. Nonverbal mutual encounters between teacher and child were recognized by observers, as they occurred during spontaneous interactions.
2. Independent observers agree upon the beginnings and endings of teacher-child mutual encounters. Sufficient evidence was not available to determine if natural groupings or choesive sets of signals could be identified and agreed upon. However, the data sug-

gest that these sets were seen in order for judgements of beginnings and endings to be noted.

Researchers must consider the importance of this concept of sets or cohesive units of signals between two persons in a communication. If this concept can be substantiated in research, it might have predictive value for education as well as other fields in which human interaction plays a crucial role.

Finally, the coded data were examined to gain some information regarding the nature of teacher-child nonverbal interactions. The frequency of occurrence of each behavior and type of behavior, as designated by the coding system, was calculated for the teachers and also for the children. The data indicated that during mutual encounters, teachers and children were most frequently near each other, not touching each other, looking straight, and turned away from each other yet judged to be open to communication with each other. Children's nonverbal behaviors were judged to be more frequently negative than were the teacher's nonverbal behaviors.

Implications and Recommendations Regarding Theory

From the review of the literature, a need was identified for the collection of data from more than one expressive channel at one time to allow comparison of information from each of the channels. The researcher took this to indicate a need for a coding system to judge behaviors in more than one channel on comparable items. Items were selected which were identical for each channel for judgements of

direction of behavior, nature of the signal, openness to communication and inferred attitude, in order that comparisons of data across channels might be accomplished. The data shows, however, that judgements cannot be reliably made for all channels utilizing the same items; that some items seem to be appropriately judged for one channel but not for another. Head and body for example, are not reliably judged in terms of the items regarding Inferred Attitude. Perhaps this type of information is not available from observations of these channels in isolation.

Examination of the data showed that some levels of the coding system were not clearly conceptualized. However, another issue exists. Is it possible that Inferred Attitude was not reliably judged due to the fact that judges were required to concentrate upon the individual channels and separate them from the Gestalt of the interaction event? Do the individual channels require unique coding items? Do some of the coding levels require more than observations of the behaviors of isolated channels? Do they require combinations of channels, as the levels of meaning become more abstract.

The judges stated that they had difficulty concentrating their attention upon the behaviors of one channel. As a group, they created rules to assist them in this process. The data show that the more neutral categories were most frequently selected. The judges ruled that only in the cases where the behavior from their assigned channel could

be judged without other channels being observed, would they code other than the neutral category. These high frequencies show the few occasions when the channel alone could be judged in regard to the nature of the signal and inferred attitude category. Perhaps such judgements require observation of more than one channel. Perhaps they require that the entire impact of the interaction be observed in order to be judged. The data indicate that the whole interaction, the impact of the Gestalt, is greater than the sum of the parts, namely, the behaviors in each of four channels. When the coders were questioned regarding this issue, following data coding, the researcher found that they could not recall the interaction events which had occurred in the data. Their concentration upon an individual channel had caused them to entirely miss the events as a whole.

Research in the area of nonverbal communication take into account two significant theoretical issues which were suggested from this study. First, it is important that the total event, the Gestalt of the contact between two persons be observed and judged. Kalter (1971) referred to a process of reliability testing in which judges agreed upon the number of units within a behavior segment, as "unitizing". This is a more satisfactory method of determining the parts of the data which will be coded than the time sampling method. It allows for the natural grouping of sets of signals, for the concentration of judges upon the entire exchange rather than some perhaps insignificant segment of the interaction, and it seems to guard against the loss of data which occurs when

the parts are separated from the interaction of the parts within the whole.

Second, it is important that the research allow for the comparison of data which is produced from each of the expressive channels, without predetermining or distorting the data which might be available from those channels. A coding system with identical items for each channel, seems to distort the information which is available from each channel. A unique system seems needed for each channel. The research design must consider how it is possible to obtain this type of information, when separating the channels seems to destroy a part of the information which is available. This is a critical methodological concern.

Periodically throughout this study the researcher felt that the process of studying this phenomenon contributes in some way to the destruction of the phenomenon itself. The model presented in Figure 3 offers an alternative process for the coding of nonverbal data. It suggests that the person experiencing, recording, viewing, or encoding the nonverbal behavior should not be the person who will be responsible to code the meaning of the behavior in verbal terms. The judging process is, at this point in time, potentially destructive since inadequate verbal tools are available to describe the nonverbal phenomenon which is experienced. Instead, the encoder should simply register the impact of the nonverbal communication so that another person may examine the patterns and decode the meaning of particular behaviors. The register which is recommended may consist of various modes of

communication sensations ranging from an assortment of odors, textures, sounds, sights, to a semantic differential instrument from which the encoder might select to register his response to the nonverbal encounter. The encoder might in this way (1) experience a nonverbal interaction and (2) register it by simply indicating it sensually. A decoder would then be responsible for determining the patterns between the interaction and the registered sensation. It appears that such a process would allow for judgements of more intact interactions with less distortion by the judgement process. It appears that patterns of information would emerge from the various channels without dissecting them prior to the judgement process by predetermined verbal coding system categories.

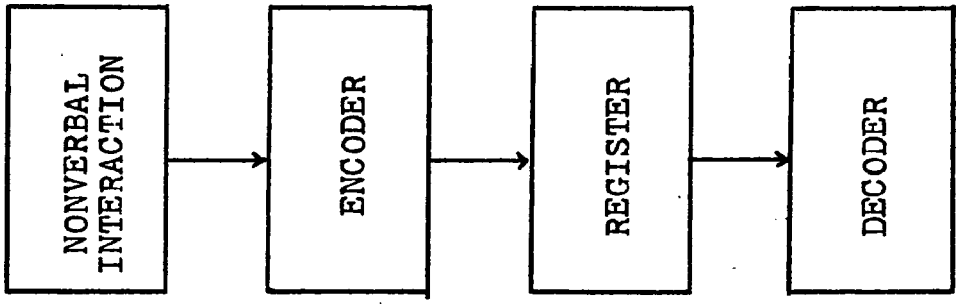


Fig. 3. Model for alternative coding of nonverbal communication.

APPENDIX I

BEHAVIOR PROBLEM CHECKLIST

Donald R. Peterson, Ph.D. and Herbert C. Quay, Ph.D.

Children's Research Center
University of Illnois
Campaign, Illinois

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Donald R. Peterson, 1967

Please complete items 1 to 6 carefully.

1. Name (or identification number) of child

_____

2. Age (in years) _____

3. Sex _____ (Male-1; Female-2)

4. Father's Occupation _____

_____

5. Name of person completing this checklist

_____

6. Relationship to child (circle one)

   a. Mother
   b. Father
   c. Teacher
   d. Other _____
      (Specify)

Behavior Problem Checklist (continued)

Please indicate which of the following constitute problems, as far as this child is concerned. If an item does not constitute a problem, encircle the zero; if an item constitutes a mild problem, encircle the one; if an item constitutes a severe problem, encircle the two. Please complete every item.

0	1	2	1.	Oddness, bizarre behavior
0	1	2	2.	Restlessness, inability to sit still
0	1	2	3.	Attention-seeking, "show-off" behavior
0	1	2	4.	Stays out late at night
0	1	2	5.	Doesn't know how to have fun; behaves like a little adult
0	1	2	6.	Self-consciousness; easily embarrassed
0	1	2	7.	Fixed expression, lack of emotional reactivity
0	1	2	8.	Disruptiveness; tendency to annoy and bother others
0	1	2	9.	Feelings of inferiority
0	1	2	10.	Steals in company with others
0	1	2	11.	Boisterousness, rowdiness
0	1	2	12.	Crying over minor annoyances and hurts
0	1	2	13.	Preoccupation; "in a world of his own"
0	1	2	14.	Shyness, bashfulness
0	1	2	15.	Social withdrawal, preference for solitary activities
0	1	2	16.	Dislike for school
0	1	2	17.	Jealousy over attention paid other children
0	1	2	18.	Belongs to a gang
0	1	2	19.	Repetitive speech
0	1	2	20.	Short attention span
0	1	2	21.	Lack of self-confidence
0	1	2	22.	Inattentiveness to what others say
0	1	2	23.	Easily flustered and confused
0	1	2	24.	Incoherent speech
0	1	2	25.	Fighting
0	1	2	26.	Loyal to delinquent friends
0	1	2	27.	Temper tantrums
0	1	2	28.	Reticence, secretiveness
0	1	2	29.	Truancy from school
0	1	2	30.	Hypersensitivity; feelings easily hurt
0	1	2	31.	Laziness in school and in performance of other tasks
0	1	2	32.	Anxiety, chronic general fearfulness
0	1	2	33.	Irresponsibility, undependability
0	1	2	34.	Excessive daydreaming
0	1	2	35.	Masturbation
0	1	2	36.	Has bad companions
0	1	2	37.	Tension, inability to relax
0	1	2	38.	Disobedience, difficulty in disciplinary control

Behavior Problem Checklist (continued)

0	1	2	39.	Depression, chronic sadness
0	1	2	40.	Uncooperativeness in group situations
0	1	2	41.	Aloofness, social reserve
0	1	2	42.	Passivity, suggestibility; easily led by others
0	1	2	43.	Clumsiness, awkwardness, poor muscular coordination
0	1	2	44.	Hyperactivity; "always on the go"
0	1	2	45.	Distractibility
0	1	2	46.	Destructiveness in regard to his own and/or other's property
0	1	2	47.	Negativism, tendency to do the opposite of what is requested
0	1	2	48.	Impertinence, sauciness
0	1	2	49.	Sluggishness, lethargy
0	1	2	50.	Drowsiness
0	1	2	51.	Profane language, swearing, cursing
0	1	2	52.	Nervousness, jitteriness, jumpiness; easily startled
0	1	2	53.	Irritability; hot-tempered, easily aroused to anger
0	1	2	54.	Enuresis, bed-wetting
0	1	2	55.	Often has physical complaints, e.g. headaches, stomach ache

Table 2

Scoring Key for the Behavior Problem Checklist

I. Factor: Conduct Problem (Unsocialized Aggression, Psychopathy) (17 items)

Item	Average factor loading	from No. separate factor analysis
2	.60	10
3	.62	10
8	.70	9
11	.66	10
16	.35	10
17	.40	8
25	.63	7
27	.51	8
33	.57	9
38	.70	10
40	.62	9
44	.51	10
46	.57	7
47	.59	7
48	.57	10
51	.48	7
53	.59	8

II Factor: Personality Problem (Neurotic-Disturbed) (14 items)

5	.41	10
6	.55	10
9	.60	10
12	.33	7
14	.51	10
15	.50	10
21	.60	10
23	.53	9
28	.38	8
30	.50	8
32	.53	8
37	.34	6
39	.48	8
41	.33	10

Continued on following page.

Table 2

Item	Average factor loading from	No. separate factor analysis
Factor:	**Inadequacy-Immaturity (8 items)**	
13	.48	5
20	.40	5
31	.41	5
34	.46	5
35	.31	4
42	.34	5
49	.36	10
50	.32	4
Factor:	**Socialized Delinquency (Subcultural delinquency) (6 items)**	
4	.50	2
10	.49	2
18	.68	2
26	.48	2
29	.23	1
36	.61	2

The above items were obtained from the analysis of case history materials, not from the direct ratings of behavior. However, when such behavior is observable first hand it can be directly rated.

APPENDIX II

PEER-RATING OF AGGRESSION

PEER RATINGS OF AGGRESSION, AGGRESSION ANXIETY, POPULARITY AND REJECTION

The peer ratings are obtained in the classroom by an examiner, E. and his assistant.

Materials

1. A response booklet consisting of sheets of colored paper stapled together. The color of the pages follows a standard repeating sequence: blue, yellow, red, green, white, blue, yellow, etc. The pages are numbered consecutively from 1, each page being the response sheet for a correspondingly numbered peer-rating item. The first two items are, respectively, identification and practice questions: 1. Who are you?, and 2. Who are the children who always sit around you? All pages are mimeographed with two lists of names in primary type. One list contains the names of all the boys in the class plus NO BOY (and EVERY BOY); the other list contains the names of all the girls in the class plus NO GIRL (and EVERY GIRL).

Anyone using this technique is cautioned to check on the accuracy of the class list shortly before the scheduled testing time and it is suggested that colloquial rather than legal names be used--if there is a difference between the two. This is because third-grade children are often not known to their classmates by their legal names.

2. A beginner's pencil with no eraser (e.g., Dixon #307 or #312).

3. A prize for each S. The prizes for this session as well as for all others were one piece of penny candy for each person who "followed the rules." With very few exceptions all Ss earned a prize and received it following each of the four testing sessions.

Procedure

Reseat class, alternating rows of boys and girls. "I am going to give each of you a pencil and a booklet with a lot of pages in it." (E distributes pencils and response booklets.)

"Look at the front page. It is a colored page. What color is it?" (Class response: blue.) "That's right, it's

a blue page. Does everybody have a blue frontpage?" (Pause) "Look at the bottom of this blue page. There's a number at the bottom written in pencil. What number is it?" (Class response: one.) Does everybody have a number one on the blue front page?" (Pause)

"I'll read you the question that goes with the number one, blue page: (1) Who are you? Who are you?

"On the front page there are two lists of names. Your name is in one of these two lists. The first list has girls' (boys') names. I'll read all the names in the list for you. First the girls' (boys') list." (E reads the names in the order in which they appear in the list to the right.)

"Now look for your own name. Find you name and put your finger on your own name. Put your finger on your own name.

"Keep your finger on your own name and watch what I do at the blackboard." (E prints his own name on the board.) "Here is my name, Mr. _____. I'm going to draw a line through my name like this." (E draws a horizontal line through his name on the blackboard.) "Now you draw a line through your own name. Remember, you have a first name and a last name so make sure you draw a line through your whole name, your first name and your last name." (Check carefully! E goes to every child and reads the crossed-out name loud enough so that other children can hear the name.)

"Now fold back the front page. The next page is yellow. Does everybody have a yellow page?" (Pause) "What is the number of the yellow page?" (Pause) "That's right, it's number two. It's a yellow two. Soon I will read you the question that goes with yellow two. Listen, from now on, do not draw a line through your own name. Remember, it's against the rules of the game to mark your own name.

"Now I will read you the yellow question, the number two question: (2) Who are the children who always sit around you? Who are the children who always sit around you?

"You are sitting in different places now. Look through the names in both lists and find the children who always sit around you. Draw a line through the names of the children who sit around you every day. Make sure you find names in both lists. First look at the names in the first list and draw a line through the names of all the children in that list who sit around you. Then look at the second list and draw a line through the names of all the children in that list who always sit around you." (Pause) "Remember, 'No boy' is a name, so if no boys sits around you, draw a line through NO BOY; and 'No girl' is a name, so if no girl sits around you, draw a line through NO GIRL."

"We'll play this game the same way from now on. I'll read you the question for each page. You find the names in both lists that you think are right for the question. First look at all the names in the first list and draw a line through all the names that fit. Then look at all the names in the second list and draw a line through all the names in that list that fit. Here are the rules of the game. First rule, make a line through at least one name in each list. Do not make a line through your own name. Second rule, look only at your own game. Never look at your neighbor's game. Third rule, if you want to change your mark, make a wavy line through it." (E demonstrates with a horizontal wavy line.) "Fourth rule, do not answer out loud. Everybody who follows the rules gets a prize. Mark names in each list, don't mark your own name, don't answer out loud, don't look at your neighbor's game."

"Remember, for every question make sure that you look at every name in the two lists and make sure that you draw a line through any name that fits the question. Remember to look at the person's first name and last name. Do not mark your own name."

"In question number two, the yellow question, not everybody made lines through the same names. This is because the answer depends on where you always sit. So, what was the right answer for you was not the right answer for somebody else. On the other questions I'll ask you, different children will draw lines through different names because there are no answers that are the same for everybody. On each page you will have to decide for yourself what name to make a line through.

"Do not cross out your own name.

"When we get finished, the two of us, Mr. _____ and I, will take the papers and we won't show them to anybody else.

"Now turn the page so that the pink page is on top. What number is it? That's right, number three. I'll read the question that goes with the pink three and you be sure to draw a line through the names in the two lists--all the names that fit the question."

See Tables 1a and 1b for the items used in Study II and Tables 16 and 20 for the Study III items. Each item is read and then repeated after a momentary pause. E encourages the children to turn to the next page so that "I can tell when you are ready for the next question."

PEER RATING ITEMS

No.*		Item
		Socially Undesirable Aggression
1.	(6)	Who does not obey the teacher?
2.	(9)	Who is always getting into trouble?
3.	(11)	Who starts a fight over nothing?
4.	(16)	Who is rude to the teacher?
5.	(19)	Who takes other children's things without asking?
6.	(26)	Who gives dirty looks or sticks out their tongue at other children?
7.	(28)	Who makes up stories and lies to get other children into trouble?
8.	(30)	Who uses bad words when another child bothers them?
		Socially Undesirable Nonaggression
9.	(4)	Who has a messy desk?
**10.	(7)	Who is a hog?
11.	(12)	Who tells other children what to do?
**12.	(17)	Who dresses sloppy?
13.	(22)	Who always wants things done their way?
**14.	(24)	Who picks their nose?
**15.	(27)	Who is always dirty?
16.	(32)	Who acts like a baby?
		Socially Desirable Aggression
17.	(5)	Who always fights back if someone has been asking for it?
18.	(10)	Who pushes when some child has been asking for it?
19.	(13)	Who grabs things from someone who grabs things from them?
20.	(15)	Who gets very, very mad at a bully?
21.	(20)	Who bothers someone who has been asking for it?
22.	(25)	Who says mean things to someone who says mean things to them?
23.	(33)	Who will always fight back if someone else hits them first?
24.	(34)	Who pushes someone who pushes them first?
		Socially Desirable Nonaggression
25.	(3)	Who keeps their promises?
26.	(8)	Who sings nicely?
27.	(14)	Who has a nice smile?
28.	(18)	Who is good at games?
29.	(21)	Who gets the best marks?

*The number in parentheses tells the item's order of administration.

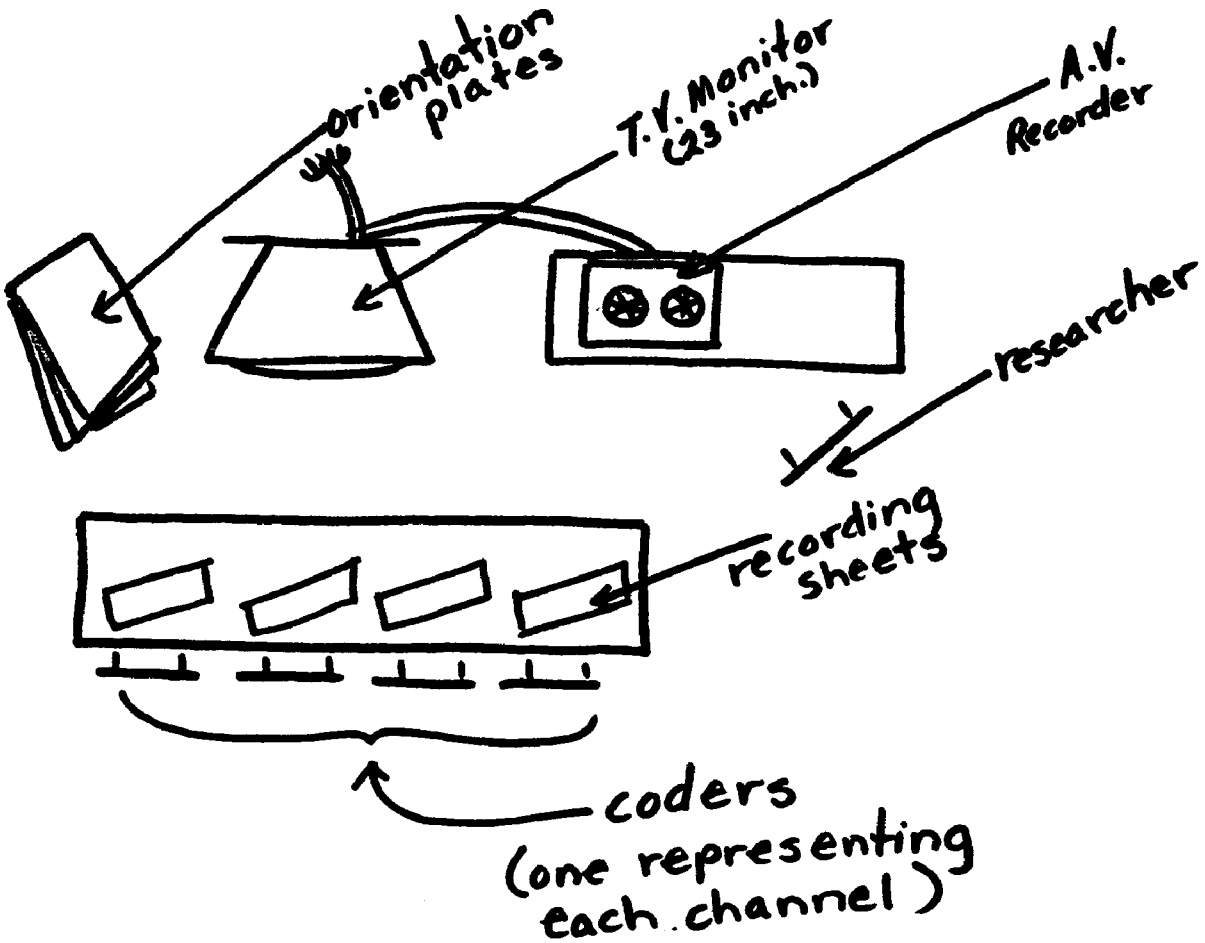
**Items omitted from administration for purposes of the present study.

PEER RATING ITEMS--Continued

No.		Item
30.	(23)	Who helps others?
31.	(29)	Who is ready on time?
32.	(31)	Who reads well?
		Rejection
33.	(37)	Who are the children that you wish were not in your class at all?
		Popularity
34.	(35)	Who are the children that you would like to have for your best friends?
35.	(36)	Who do you know best of all?
36.	(39)	Who would you like to sit next to in class?
37.	(38)	Who would you like to play with?
		Warm Up
38.	(2)	Who are the children who always sit around you?

APPENDIX III

ARRANGEMENT OF EQUIPMENT AND PERSONNEL FOR CODING



APPENDIX IV

GROUP CODING RULES

The following are the group rules which were established by judges representing each of the nonverbal channels, HANDS, FACE-EYES, BODY, and HEAD.

HANDS

1. Coding items "up" or "down" will be judged using the waist and joint of elbow as the midpoint.
2. "Toward" would be indicated by distinct reaching out of subject; any other behavior will indicate "away".
3. If both hands are involved in different motions, the more dominant action should be judged.

FACE

1. "Downcast" would be indicated by a sad appearance in eye and cheek area.
2. "Frowning" would be indicated in mouth area.
3. "Staring" would be indicated by a glare or focus with strain evidenced in forehead and eye area.

BODY

1. "Body being used to communicate" would be indicated by direction and movement toward other subjects.
2. "Neutral" would be indicated regarding "inferred attitude" unless the body made a direct movement for or against the other subject such as moving toward, leaning against, pulling and back from.

HEAD

1. "level" would be indicated by a plane parallel with the floor.
2. "down" or "up" would be indicated by movements out of the plane parallel with the floor.
3. "turned" would be indicated by a plane perpendicular with the floor and parallel to body line.

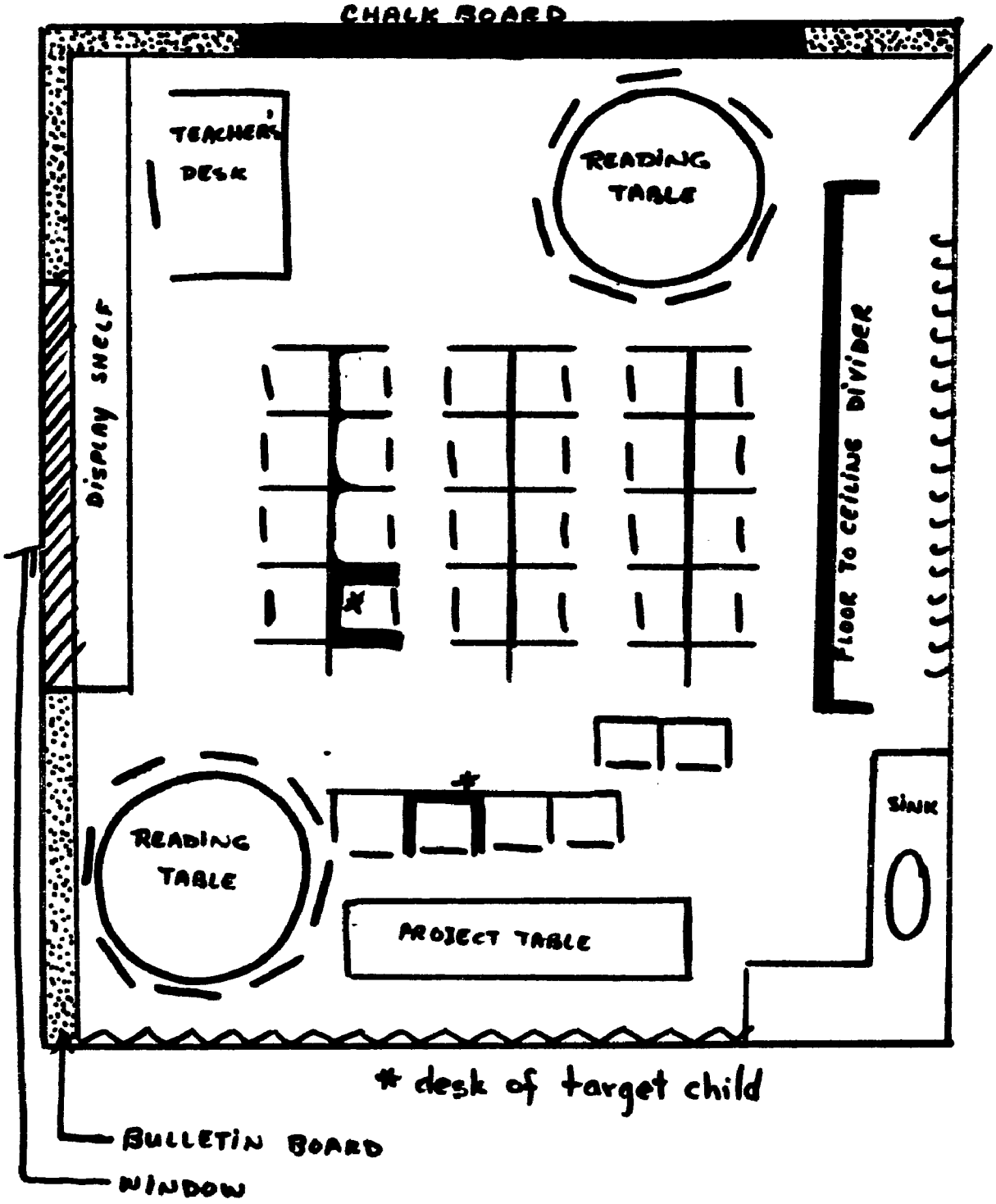
APPENDIX V



R

* overlay shows teacher facing rear of room and starting toward child who is also facing rear of room

SAMPLE ORIENTATION PLATE FOR CODING



APPENDIX VI

SAMPLE CODING SHEET WITH DATA CODES INSERTED

IDENTIFICATION CODE		SEVEN SECOND INTERVALS 1	2	3	4	5	6
04129162 01		5-7-13	5-7-13	5-7-13	5-7-13		
07	2	6-7-13	6-7-13	6-7-13	6-7-13		
11	3	6-7-13	5-7-13	5-7-13	5-7-13		
04129162 02		0					
07	5	0					
11	6	3+7-13					
04129162 03		6-7-13	6-7-13	6-7-13	3-7-13	5+9+12	
07	8	4+7-13	4+7-13	6-7-13	3-7-13	6+7-13	
11	9	4-7-13	6-7-13	5-7-13	3-7-13	5-7-13	
04129162 04		5-7-13	5-7-13	6-7-13			
07	12	4-7-13	6-7-13	3-7-13			
11	12	5-7-13	5-7-13	6-7-13			
04129162 05		6-7-13	6-7-13	6-7-13	6-7-13		
07	14	6-7-13	5-7-13	5-7-13	5-7-13		
11	15	6-7-13	6-7-13	6-7-13	6-7-13		
04129162 06		5-7-13	5-7-13	5-7-13	5-7-13	5-7-13	5-7-13
07	17	5-7-13	6-7-13	5-7-13	5-7-13	5-7-13	5-7-13
11	18	5-7-13	6-7-13	6-7-13	5-7-13	5-7-13	6-7-13
04129162 07		5-7-13	5-7-13	5-7-13	6-7-13	5+7-13	5+7-13
07	20	3-7-13	3-7-13	3-7-13	6-7-13	6+8+12	6+7-13
11	21	3-7-13	1-7-13	1-7-13	6-7-13	5+9+12	5+9+12
04129162 08		0	0	5+7-13	1+7-13		
07	22	0	3+7-13	3+9+13	3+9+13		
11	24	0	0	3+7-13	4-7-13		

* Identification code includes, number of coder, child, teacher, data set, school, grade, and subject number

* Five data codes inserted every seven seconds, e.g. 5, -, 7, -, 13

APPENDIX VII

		#1	#1a	#2	#2a	#3
HANDS C01:C06	po	.77	.92	.67	.81	.92
	pc	.25	.82	.40	.76	.78
	k	.69	.56	.45	.21	.64
	km	.84	.67	.83	.25	.77
	σ_k	.029	.074	.037	.077	.057
	95%	.63↔.75	.42↔.71	.38↔.52	.06↔.36	.53↔.75
	99%	.62↔.77	.37↔.75	.36↔.55	.01↔.41	.49↔.79
	σ_{ko}	.028	.105	.040	.086	.091
	z	24.6	5.3	11.25	2.4	7.0
	N=560-	427				

HANDS C01:C12	po	.55	.88	.50	.80	.92
	pc	.20	.83	.44	.72	.86
	k	.44	.29	.11	.29	.43
	km	.66	.71	.63	.64	.57
	σ_k	.030	.092	.044	.069	.09
	95%	.38↔.50	.13↔.47	.02↔.20	.16↔.43	.25↔.61
	99%	.36↔.52	.05↔.53	.004↔.22	.11↔.47	.20↔.66
	σ_{ko}	.024	.107	.043	.080	.118
	z	18.33	2.71	2.56	3.63	3.64
	N=	430				

FACE C02:C05	po	.58	.46	.49	.82	.67
	pc	.38	.36	.31	.78	.53
	k	.32	.16	.26	.18	.30
	km	.55	.19	.35	.64	.51
	σ_k	.042	.042	.038	.090	.052
	95%	.24↔.40	.08↔.24	.19↔.33	.01↔.36	.20↔.40
	99%	.21↔.43	.05↔.27	.16↔.36	.05↔.41	.17↔.43
	σ_{ko}	.042	.039	.034	.099	.056
	z	7.62	4.10	7.65	1.82	5.36
	N=	367				

FACE C02:C09	po	.55	.64	.46	.75	.79
	pc	.44	.52	.33	.69	.68
	k	.13	.25	.19	.19	.34
	km	.65	.42	.33	.39	.72
	σ_k	.045	.050	.037	.069	.065
	95%	.08↔.26	.15↔.35	.12↔.26	.06↔.33	.21↔.47
	99%	.05↔.29	.12↔.38	.10↔.29	.01↔.37	.17↔.51
	σ_{ko}	.045	.032	.035	.074	.072
	z	3.78	7.81	5.43	2.57	4.72
	N=	406				

		#1	#1a	#2	#2a	#3
BODY C03:C08	po	.86	.81	.66	.94	.74
	pc	.49	.51	.45	.93	.64
	k	.72	.61	.38	.14	.28
	km	.88	.98	.67	.29	.94
	σ_k	.030	.035	.038	.15	.053
	95%	.66↔.78	.54↔.68	.31↔.45	.15↔.43	.18↔.38
	99%	.64↔.80	.52↔.70	.28↔.48	.24↔.53	.14↔.42
	σ_{KO}	.044	.045	.040	.51	.058
	z	16.36	13.56	9.5	.275	4.83
	N=	517				

BODY C03:C10	po	.90	.75	.50	.94	.80
	pc	.40	.51	.42	.94	.75
	k	.83	.49	.14	.14	.20
	km	.92	.57	.47	.17	.36
	σ_k	.023	.04	.039	.122	.073
	95%	.79↔.88	.41↔.57	.06↔.22	-.20↔.48	.06↔.34
	99%	.77↔.89	.39↔.59	.04↔.24	-.30↔.58	.01↔.39
	σ_{KO}	.036	.046	.038	.176	.077
	z	23.1	10.7	3.68	.795	2.60
	N=	507				

HEAD C04:C07	po	.49	.75	.38	.73	.59
	pc	.20	.55	.26	.69	.47
	k	.36	.44	.16	.13	.23
	km	.75	.76	.42	.84	.58
	σ_k	.028	.044	.03	.063	.042
	95%	.31↔.42	.35↔.53	.10↔.22	.01↔.25	.15↔.31
	99%	.29↔.43	.33↔.53	.08↔.24	.03↔.29	.12↔.34
	σ_{KC}	.023	.05	.027	.067	.042
	z	15.65	8.8	5.93	1.94	5.48
	N=	497				

HEAD C04:C11	po	.50	.72	.37	.61	.76
	pc	.23	.50	.33	.53	.70
	k	.35	.44	.06	.17	.20
	km	.78	.76	.52	.38	.67
	σ_k	.029	.04	.032	.046	.062
	95%	.29↔.41	.36↔.52	-.003↔.12	.08↔.26	.08↔.32
	99%	.28↔.43	.34↔.54	-.02↔.14	.05↔.29	.04↔.36
	σ_{KO}	.025	.045	.044	.047	.022
	z	14.0	9.78	1.36	3.62	9.09
	N=	511				

BIBLIOGRAPHY

BIBLIOGRAPHY

Amidon, Peggy. "Non-Verbal Interaction Analysis." Paper read at American Education Research Association Convention, Minneapolis, 1970.

Andrew, R. J. "Evolution of Facial Expression." Science 142 (1963), 1034-41.

Argyle, M., and Dean, J. "Eye-Contact, Distance and Affiliation." Sociometry, 28 (1965), 289-304.

Attman, R.; Swartz, J. D.; and Cleland, C. C. "Differential Sensitivity of Profound Retardates to Adults Steady Gaze." Psychological Reports, Vol. 27(1), (August 1970), 30.

Barbara, D. A. "The Value of Non-Verbal Communication in Personality Understanding." Journal of Nervous Mental Disorders, 123 (1956), 286-291.

Beuhler, R. E. and Richmond, J. F. "Interpersonal Communication Behavior Analysis, A Research Method." Journal Communication, 13, 3 (1963), 146-155.

Birdwhistell, Ray L. "Body Signals: Normal and Pathological." Paper presented to the American Psychological Association, September, 1963.

Birdwhistell, Ray L. "Communicative Signals and Their Clinical Assessment." Voices: The Art and Science of Psychotheapy, 1(2), (1965), 37-42.

Birdwhistell, Ray L. Kinesics and Context. University of Pennsylvania Publications, 1970.

Boring, E. G. and Titchener, E. B. "A Model for the Demonstration of Facial Expression." American Journal of Psychology, 34 (1923), 471-486.

Bugental, Daphne E.; Kaswan, J.; and Love, L. "Perception of Contradictory Meanings Conveyed by Verbal and Non-Verbal Channels." Journal of Personality and Social Psychology, Vol. 16(4), (December 1970), 647-655.

Buzby, D. E. "The Interpretation of Facial Expression." American Journal of Psychology 35, (1924) 602-604 (Note: Used Boring and Titchener Model)

Cartwright, D. S. "A rapid non-parametric estimate of multi-judge reliability." Psychometrika 21 (1956), 17-29.

Champness, V. G. "Mutual Glance and the Significance of the Look." Advancement of Science 26 (1970), 309-12

Cobin, M. "Response to Eye-Contact." Quarterly Journal of Speech, 48:415-18 (December 1962).

Cohen, J. "A Coefficient of Agreement for Nominal Scales." Education and Psychology Measurement, Vol. 20, #1 (1960) 37-46.

Cohen, J. "Weighted Kappa: Nominal Scale Agreement With Provision for Scaled Disagreement or Partial Credit." Psychological Bulletin, Vol. 70, #4, (October 1968) 213-220.

Coleman, J. C. "Facial Expressions of Emotions." Psychology Monogr. 296 (1949).

Cosper, Wilma Baker. "An Analysis of Sex Differences in Teacher-Student Interaction as Manifest in Verbal and Non-Verbal Behavior Cues." Unpublished Dissertation, 1970.

Davis, R. C. "The Specificity of Facial Expression in Emotion." Journal of Genetic Psychology X (1934), 42-58.

Davitz, J. Communication of Emotional Meaning. New York: McGraw-Hill, 1964.

Davitz, J. and Davitz, L. "Non-Verbal Communication of Feeling." Journal of Communication, XI (June 1961), 81-86.

Delaney, D. J. and Heinmann, R. A. "Effectiveness of Sensitivity Training on the Perception of Nonverbal Communications." Journal of Counseling Psychology. Vol. 13, #4, (Winter 1966) 436-440.

Dittman, A. T. "The Relationship Between Body Movements and Moods in Interviews." Journal of Consulting Psychology. 26, (1962) 480.

Dittman, A. T. and Llewellyn, Lynn. "Body Movement and Speech Rhythm in Social Conversation." Journal of Personality and Social Psychology. Vol. 11, #2 (1968) 98-106.

Dittman, A. T. and Llewellyn, Lynn. "Relationship Between Vocationalizations and Head Nods as Listener Responses." Journal of Personality and Social Psychology, Vol. 9, #1, (1968), 79-84.

Dittman, A. T.; Parloff, M. B.; and Boomer, D. S. "Facial and Bodily Expression: A Study of Receptivity of Emotional Cues." Psychiatry, 28 (1965), 239-244.

Dodge, Vincent J. "Verbal and Related Non-Verbal Interaction of Teachers." Unpublished Dissertation, 1970.

Dunning, G. B. "Research in Nonverbal Communication." Theory Into Practice, Vol. X, #4, (October 1971) 250.

Efron, D. Gesture and Environment. New York: King's Crown Press, 1941.

Ekman, P. "A Comparison of the Information Communicated by Head and Body Cues." Paper read at APA Convention, 1964.

Ekman, P. "A Methodological Discussion of Non-Verbal Behavior." Journal of Psychology, 43 (1957) 141-149.

Ekman, P. "Body Position, Facial Expression and Verbal Behavior During Interviews." Journal of Abnormal and Social Psychology, 68 (1964) 295-301.

Ekman, P. "Differential Communication of Affect by Head and Body Cues." Journal of Personality and Social Psychology, 2, 5, 727.

Ekman, P., and Friesen, W. V. Emotion in the Human Face. New York: Pergamon Press, 1972.

Ekman, P., and Friesen, W. V. "Head and Body Cues in the Judgement of Emotion: A Reformulation." Perceptual and Motor Skills, Vol. 24 (1967) 718.

Ekman, P., and Friesen, W. V. "Nonverbal Behavior in Psychotherapy Research." Research in Psychotherapy. Vol. 3 (1968).

Ekman, P. and Friesen, W. V. "Non-Verbal Leakage and Clues to Deception." Psychiatry, 32 (1), (1969) 88-105.

Ekman, P. and Friesen, W. V. "The Repertoire of Non-Verbal Behavior: Categories, Origins, Usage and Coding." Semiotica, Vol. 1, #1 (1969) 50-98.

Ekman, P.; Sorenson, E. R.; and Friesen, W. V. "Pan-Cultural Elements in Facial Displays of Emotion." Science. Vol. 164, #3845, (April 4, 1969).

Engen, T.; Levy, N.; and Schlosberg, H. "A New Series of Facial Expressions." American Psychologist, (1957) 264-266.

Engen, T.; Levy, N.; and Schlosberg, H. "The Dimensional Analysis of a New Series of Facial Expressions." Journal of Experimental Psychology, 55 (1958) 454-458.

Eron, C. D. "Application of Role and Learning Theories to the Study of the Development of Aggression in Children." Psychology Repertoire, 9 (1961), 292-301.

Eron, C. D. "Does T.V. Violence Cause Aggressive Behavior?" American Psychologist, (April 1972).

Eron, C. D.; Walder, L. O.; and Lefkowitz, M. Learning of Aggression in Children. Boston: Little Brown and Co., 1971.

Evans, Thomas P. "An Exploratory Study of the Verbal and Non-Verbal Behaviors of Biology Teachers and Their Relationships to Selected Personality Traits." Unpublished Doctoral Dissertation, Ohio State University of Columbus, 1968.

Exline, R. V. "Explorations in Process of Person Perception: Visual Interaction in Relation to Competition, Sex, and Need for Affiliation." Journal of Personality, 32, 1, (1963).

Exline, R. V. and Winters, L. C. "Affective Relations and Mutual Glance in Dyads." In S. Tomkins and C. Izard eds. Affect, Cognition and Personality, New York: Springer, 1965, 319-350.

Exline, R. V.; Gray, D.; and Schuette, D. "Visual Behavior in a Dyad as Affected by Interview Content and Sex of Respondent." Journal of Personality and Social Psychology, 1, (1965), 201-209.

Fast, J. Non-Verbal Communication Body Language, 1970

Feleky, A. M. Feelings and Emotions. New York: Pioneer, 1922.

Feleky, A. M. "The Expressions of the Emotions." Psychology Review, 21 (1914) 33-41.

Frahm, John H. "Verbal-Non-Verbal Interaction Analysis: Exploring a New Methodology for Quantifying Dyadic Communication Systems." Unpublished Dissertation, 1971.

French, R. A Study of Communication Events and Teacher Behavior: Verbal and Non-Verbal. Doctoral Dissertation, Columbus: The Ohio State University, 1970, 111.

French, Russell L. and Galloway, C. M. "A Description of Teacher Behavior: Verbal and Nonverbal." Unpublished paper. Columbus: The Ohio State University, 1968.

Freud, S. The Basic Writings of Sigmund Freud. New York: Modern Library, 1938.

Frijda, N. H. "Facial Expression and Situational Cues." Journal of Abnormal and Social Psychology, 57, (1958), 149-154.

Frijda, N. H. and Philipszoon, E. "Dimensions of Recognition of Expression." Journal of Abnormal and Social Psychology, 66, 1, (1963), 45-51.

Frois-Whittman, J. "The Judgement of Facial Expression." Journal of Expressive Psychology, 13, #2, (1930), 113-151.

Frymier, J. R., ed. "A Workshop in the Analysis of Teaching; Interaction Analysis, Non-Verbal Communication, Microteaching and Simulation." Theory Into Practice. Columbus, Ohio 43210, 1968.

Frymier, J. R., ed. "The Challenge of Non-Verbal Awareness." Theory Into Practice, Vol. X, (4) (1971).

Galloway, C. M. An Exploratory Study of Observational Procedures for Determining Teacher Non-Verbal Communication. Unpublished Doctoral Dissertation. Gainsville: University of Florida, 1962.

Galloway, C. M. "Analysis of Theories and Research in Non-Verbal Communication." Reprint from author. 1/22.

Galloway, C. M. "Non-Verbal Communication." The Instructor, Vol. 77, #8, (April 1968) 37-42.

Galloway, C. M. "Non-Verbal Communication." Theory Into Practice, Vol. 7, #5, (December 1968), 172-175.

Galloway, C. M. "Non-Verbal Language in the Classroom." Unpublished paper, 1-18.

Galloway, Charles. "Nonverbal: The Language of Sensitivity." Theory Into Practice, Vol. X, #4, (October 1971), 227.

Galloway, C. M. "Teacher Non-Verbal Communication." Educational Leadership, Vol. 24, (October 1966), 55-63.

Galloway, C. M. "Teaching is Communication." Association for Student Teachers, Washington, D.C. Report Bulletin #29, (1970) National Education Association, Washington, D.C. 20036.

Galloway, C. M. "The Challenge of Nonverbal Research." Theory Into Practice, Vol. X, #4 (October 1971), 314.

Garner, C. W. "Non-Verbal Communication and the Teacher." School and Social, 98:363-4 (October 1970).

Gibson, J. J. and Pick, A. D. "Perception of Another Person's Looking Behavior." American Journal of Psychology, 76, (1963), 386-394.

Gitter, A. George and Guichard, M. "Looking Behavior: First Lookers Direction and Focus of Gaze." CRC Report, Boston University, (July 1968) #23.

Gladstones, W. H. "The Multidimensional Study of Facial Expressions of Emotions." Australian Journal of Psychology, XIV, #2 (1962) 95-99.

Goffman, Erving. The Presentation of Self in Everyday Life. Doubleday Anchor, 1959.

Grant, Barbara M. "A Method for Analyzing the Non-Verbal Behavior (physical motions) of Teachers of Elementary School Language Arts." Unpublished Dissertation, 1970.

Guilford, J. P. "An Experiment in Learning to Read Facial Expression." Journal of Abnormal and Social Psychology, XXIV, (1929) 191-202.

Hahn, Milton and MacLean, M. (1955) in Koch, Robert. "Nonverbal Observables." Theory Into Practice, Vol. X, #4, (October 1971), 289.

Hall, E. T. The Silent Language. Garden City: Doubleday, 1959.

Halpin, Andrew W. "Muted Language." School Review, 68, (Spring 1960), 85-104.

Hanawalt, N. G. "The Role of the Upper and Lower Parts of the Face as the Basis for Judging Facial Expressions." I. Journal of General Psychology, 27, (1942), 331-346.

Hanawalt, N. G. "The Role of the Upper and Lower Parts of the Face as the Basis for Judging Facial Expressions." II. Journal of General Psychology, 31, (1944), 23-36. (refers to Boring and Titchener and Frois-Whittman).

Harman, R. C. "Non-verbal Behavior in Counseling." School Counsel, 18 (January 1971) 189-192.

Heger, H. "Verbal and Non-Verbal Classroom Communication; The Development of an Observational Instrument." Unpublished Doctoral Dissertation, Ohio: University of Ohio, 1969.

Heron, J. "The Phenomenology of Social Encounter: The Gaze." Philosophical and Phenomenological Research, Vol. 31 (2) (December 1970), 243-264.

Hutt, C. and Hutt, S. J. "Biological Studies of Autism." The Journal of Special Education, 3, 1 (1969) 3-11.

Island, D. "The Development and Analysis of Categories of Non-Verbal Behavior of Counselors in Filmed Interviews." Unpublished Doctoral Dissertation. Minneapolis: University of Minnesota, 1966.

Izard, C. The Face of Emotion. New York: Appleton, 1971.

Jenness, A. "The Effects of Coaching Students in the Recognition of Facial Expressions." Journal of Genetic Psychology, VII, (1932), 163-178.

Kalter, N. "The Comparison of Sequential and Nonsequential Data Analysis of Classroom Interaction: A Methodological Study." Dissertation, University of Michigan, 1971.

Kendon, A. "Some Functions of Gaze Direction During Social Interaction." Acta Psychological, 26 (1), (1967), 1-60.

Kline, L. W. and Johannsen, D. E. "Comparative Role of the Face and of the Face-Body-Hands as Aids in Identifying Emotions." Journal of Abnormal and Social Psychology, XXIX, (1935) 415-426.

Knapp, Mark. "The Role of Nonverbal Communication in the Classroom." Theory Into Practice, Vol. X, #4, (October 1971), 243.

Koch, Robert. "The Teacher and Nonverbal Communication." Theory Into Practice, Vol. X, #4, (October 1971), 288.

Korvola, Allan E. "An Exploratory Study of Teacher Verbal and Non-Verbal Communication Incorporating the Cognitive Domain." Unpublished Dissertation, 1970.

Kounin, J.; Friesen, W.; and Norton, A. E. "Managing Emotionally Distrubed Children in Regular Classrooms." Journal of Educational Psychology, 57, #1 (1966), 1-13.

Kretschmer. Physique and Character. New York: The Humanities Press, 1936.

Krim, Alaine. "A Study of Non-Verbal Communication: Expressive Movements During Interviews." Smith College Studies in Social Work XXIV, (1953), 41-80.

Lail, Sue S. "The Model in Use." Theory Into Practice, Vol. 7, #5, (December 1968), 176-180.

Landis, C. "Studies of Emotional Reactions II, General Behavior and Facial Expression." Journal of Comp Psychology, 4, (1924), 447-509.

Landis, C. "The Interpretation of Facial Expression in Emotion." Journal of Genetic Psychology, 11 (1929), 59-72.

Langfield, Herbert S. "The Judgement of Emotions from Facial Expressions." Journal of Abnormal Psychology XIII, (1918), 172-184.

Leary, T. "The Theory and Measurement Methodology of Inter-Personal Communication." Psychiatry, 18, (1955), 147-61.

Lefkowitz, M.; Eron, L.; Walder, L.; and Huesmann, L. R. "Television Violence and Child Aggression: A Followup Study." Television and Social Behavior, A Technical Report to the Surgeon General's Scientific Advisory Committee on Television and Social Behavior, N.I.M.H., 1972.

Leventhal, H. and Sharp, E. "Facial Expressions as Indicators of Distress." Affect, Cognition and Personality, Tomkins and Izard, 1965, 296-315.

Lewis, W. W. "Selected Concepts of Communication as a Basis for Studying Mental Health in the Classroom." Journal of Communication, XI, (September 1961), 157-162.

Lewis, W. W.; Newell, J. M.; and Withall, J. "An Analysis of Classroom Patterns of Communication." Psychology Reports IX, (October 1961), 211-219.

Light, Richard. "Measures of Response Agreement For Qualitative Data: Some Generalizations and Alternatives." Psychology Bulletin, Vol. 76, #5, (1971), 365-375.

Lipton, A. "Classroom Behavior: Messages from Children." Elementary Scholastic Journal, 71, (February 1971), 254-261.

MacCoby, N.; Vecker, J. D.; and Breitrose, H. S. Improving Accuracy in Interpreting Non-verbal Cues of Comprehension, 1964.

McCarthy, Jeanne McRae and Paraskevopoulos, J. "Behavior Pattern of Learning Disabled, Emotionally Disturbed, and Average Children." Exceptional Children, 36, (1969), 69-74.

McCarthy, Jeanne McRae and Paraskevopoulos, J. "Behavior Patterns of Children with Special Learning Disabilities." Psychology in the Schools, 7, (1970), 42-46.

Mead, George H. Mind, Self and Society. Chicago: University of Chicago Press, 1934.

Mehrabian, A. "A Semantic Space for Nonverbal Behavior." Journal of Consulting and Clinical Psychology, Vol. 35, (2), (October 1970), 248-257.

Mehrabian, A. "Communication Without Words." Psychology Today, 276 in Readings in Psychology Today.

Mehrabian, A. "Inference of Attitudes From the Posture, Orientation, and Distance of a Communicator." Journal of Consulting and Clinical Psychology, 32, 3 (1968), 296-308.

Mehrabian, A. "Nonverbal Betrayal of Feeling." Journal of Expressed Research in Personality, Vol. 5 (1), (March 1971), 64-73.

Mehrabian, A. "Orientation Behaviors and Non-Verbal Attitude Communication." Journal of Communication, 17 (1967), 324-332.

Mehrabian, A. and Ferris, S. "Inference of Attitudes from Non-Verbal Communication in Two Channels." Journal of Consulting and Clinical Psychology, 31, 3, (1967), 248-252.

Modigliani, Andre. "Embarrassment, Facework and Eye Contact: Testing a Theory of Embarrassment." Journal of Personality and Social Psychology, Vol. 17 (1), (January 1971), 15-24.

Munn, N. L. "The Effect of Knowledge of the Situation Upon Judgement of Emotion From Facial Expressions." Journal of Abnormal and Social Psychology, 35, (1940), 324-338.

Ogden, A. "Looks and Glances." Harper Bazaar, 84, (1961), 109-110.

Pancrazio, Sally B. and Johnson, William D. "Comparison of Three Teacher Training Approaches in Non-Verbal Behavior Which Encourage Classroom Interaction." ERIC, (TE001800), (1971) 049198.

Peterson, D. R. "Behavior Problems of Middlechildhood." Journal of Consulting Psychology, 25, (1961), 205-209.

Peterson, D. R., et al. "Child Behavior Problems and Parental Attitudes." Child Development, 32, (1961), 151-162.

Quay, H. C. "Personality Dimensions in Delinquent Males as Inferred from the Factor Analysis of Behavior Ratings." Journal of Research in Crime and Delinquency, 1 (1964a), 33-37.

Quay, H. C. "Personality Patterns in Preadolescent Delinquent Boys." Educational and Psychological Measurement, 26, (1966), 99-110.

Quay, H. C. and Levinson, R. B. "The Prediction of the Institutional Adjustment of Four Subgroups of Delinquent Boys." Unpublished Manuscript, 1969.

Quay, H. D.; Morse, W.; and Cutler, R. "Personality Patterns of Pupils in Special Classes for Emotionally Disturbed." Exceptional Child, 32, (1966), 297-301.

Quay, H. C. and Quay, L. "Behavior Problems in Early Adolescence." Childhood Development, 36, (1965), 215-220.

Reich, Leo H. "Nonverbal Communication of Emotions: A Study of the Relations Between Training Experience and Recognition of Emotions." Unpublished Dissertation, 1970.

Richmond, J. F. and Buehler, R. E. "Interpersonal Communication: A Theoretical Formulation." Journal of Communication, Vol. XII, Ma#1, (1962), 3-10.

Richmond, J. F. and Buehler, R. E. "Interpersonal Communication: Its Bio-Social Origins and Socio-Cultural Use." OJCJA Research Foundation, 1960.

Riemer, M. D. "Abnormalities of the Gaze--A Classification." Psychiatric Quarterly, 29, (1955), 659-672.

Robson, K. "The Role of Eye to Eye Contact in Maternal-Infant Attachment." Journal of Childhood Psychology and Psychiatry and Allied Disciplines, 8, (1967), 13-27.

Rosenfeld, H. "Facial and Gestural Expression." Interpersonal Communication: Survey and Studies, Boston, 1968.

Rowe, Frederick; Brooks, S.; and Watson, B. "Communication Through Gestures." American Annual of the Deaf CV, (1969) 232-237.

Ruesch, J. Disturbed Communication. The Clinical Assessment of Normal and Pathological Communicative Behavior,

New York: Norton, 1957.

Ruesch, J. "Nonverbal Language and Therapy." Psychology, 18, (1958), 323-330.

Ruesch, J. and Kees, W. Non-Verbal Communication. Berkeley: University of California Press, 1969.

Scheflen, A. E. "Human Communication." Behavioral Science, Vol. 13, (1968).

Scheflen, A. E. "Non-Language Behavior in Communication." New York Chapter of American Academy of Pediatrics, September 2, 1969.

Scheflen, A. E. "The Significance of Posture in Communication Systems." Psychiatry, 27, (1964), 316-331.

Schlosberg, H. "A Scale for the Judgement of Facial Expressions." Journal of Experimental Psychology, 29, (1941), 497-510.

Schlosberg, H. "The Description of Facial Expression in Terms of Two Dimensions." Journal of Experiemental Psychology, 44, (1952), 229-237.

Schlosberg, H. "Three Dimensions of Emotion." The Psychology Review, 61, (1954), 81-88.

Scott, William. "Reliability of Content Analysis: The Case of Nominal Scale Coding." Public Opinion Quarterly, 19, (1955), 321-325.

Shaw, M. E.; Bowman, J. T.; and Haemmerlie, F. M. "The Validity of Measures of Eye Contact." Educational and Psychological Measurement, Vol. 31, #4, (Winter 1971), 919-926.

Speer, D. C. "The Behavior Problem Checklist (Peterson-Quay): Baseline Data From Parents of Child Guidance and Nonclinic Children." Journal of Consulting and Clinical Psychology, (1971).

Sweeney, D. R.; Tinling, D. C.; and Schmale, A. "Dimensions of Affective Expression in Four Expressive Modes." Behavioral Science, Vol. 15 (5), (September 1970), 393-407.

Teresa, Joseph. "The Measurement of Meaning as Interpreted by Teachers and Students in Visuo-Gestural Channel Expressions Through Nine Emotional Expressions." Dissertation, University of Michigan, 1971.

Thompson, D.F. and Meltzer, L. "Communication of Emotional Intent by Facial Expression." Journal of Abnormal and Social Psychology, LXVIII, (1964), 129-135.

Victoria, Joseph J. "The Development of a Typology of Non-Verbal Behavior and Observational Procedures for the Identification of Non-Verbal Behavior of Student Teachers of Art." ERIC 71-6369.

Walder, L., et al. Educational Psychology Measurement. 22, (1), (1962),

Walder, L., et al. "Examiner Effect in the Use of a Near Sociometric Procedure in the Third Grade Classroom." Psychologocal Report, 11 (3), (1962), 785-790.

Wardwell, Elinor. "Childrens Reactions to Being Watched During Success and Failure." Unpublished Ph.D. Dissertation, Cornell University, 1960.

Wiggins, J. C. and Winder, C. L. "The Peer Nomination Inventory:..." Psychology Reprints, 9, (1961), 643-677. (peer nominations and related sociometric devices.)

Williams, F. and Tolch, J. "Communication by Facial Expression". Journal of Communication, 15, (March 1965) 17-27.

Winder, C. L. and Wiggins, J. S. "Social Reputation and Social Behavior: A Further Validation of the Peer Nomination Inventory." Journal of Abnormal and Social Psychology, 68 (6), (1964), 681-684.

Winick, C. and Holt, H. "Eye and Face Movements as Non-Verbal Communication in Group Psychiatry." American Journal of Psychology, 15 (1961) 56-62 and Psychiatry 24, (1961), 171-182.