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## Differences in Encoding and Decoding of Emotion via Facial Expressions among Normal and Mildly Emotionally Handicapped Boys

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DIFFERENCES IN ENCODING AND DECODING OF EMOTION  
VIA FACIAL EXPRESSIONS AMONG NORMAL AND  
MILDLY EMOTIONALLY HANDICAPPED BOYS

by

Thomas M. Reed

A Dissertation  
Submitted to the  
Faculty of The Graduate College  
in partial fulfillment  
of the  
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Thomas M. Reed

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REED, THOMAS MACMILLAN, II

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*Western Michigan University*

Ed.D.

1979

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DEDICATION

To Marsha, light of my life.

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## CHAPTER I

### INTRODUCTION TO THE STUDY

#### Problem

Because special education services are expanding as a result of the passage of mandatory federal and state laws, more children within the regular classroom setting are being identified as emotionally handicapped (EH). To determine eligibility for EH services, certain behavioral characteristics of the children must be exhibited over an extended period of time. One of the major characteristics of EH children is their inability to deal satisfactorily with peers and teachers. Extremely withdrawn children do not relate to other people and disruptive children are in repeated conflict with others. Therefore, one goal to be addressed in providing services for EH children should be the improvement of interaction between these children and their peers and teachers.

To achieve the goal of improved interaction, an EH child's current abilities in interaction skills must be assessed. This assessment would include examining the child's skills in communicative processes. Communications between individuals can be accomplished through both verbal and nonverbal channels. Within each channel, an individual must develop expression and recognition skills in order to accurately send and interpret particular messages. After assessing the child's abilities in both channels, services can be designed to

improve the needed skills.

The nonverbal channel is of particular interest when assessing communicative skills. With EH children experiencing difficulty in the area of emotional development, skills used to express and recognize emotion need to be examined. Galloway (1972) expressed the viewpoint that nonverbal behaviors are the primary vehicles for expressing emotion in educational settings. Several authors (Bremme & Erickson, 1977; Johnson & Myklebust, 1967) have investigated children's ability to express and recognize nonverbal behaviors. They discovered that children having difficulty in these nonverbal behaviors frequently misinterpreted feelings, emotions, and attitudes. These errors affected teachers' perceptions of these children and the children were considered to have behavior problems in the classroom setting.

While the above authors observed a relationship between nonverbal skills and classroom behavior, they did not refer to any specific nonverbal behavior. There is controversy about which specific behaviors should be included in the nonverbal category (Birdwhistell, 1952). Nonetheless, researchers have generally agreed that body and head movements, facial expressions, and paralanguage can be classified as nonverbal behaviors. A major portion of research in this field has focused on the relationship between expression and recognition of emotion through facial expressions. Theories of emotion have primarily been substantiated through investigations requiring adults to recognize emotional states by viewing photographs of posed facial expressions.

In 1972 Ekman, Friesen, and Ellsworth reviewed research on the recognition of emotions and concluded that facial expressions accurately communicate emotion. More recently, two investigators have refined methodological procedures in order to assess children's abilities to recognize and express emotions via facial expressions. Izard (1971) assessed children's abilities to recognize emotional states from facial expressions and found that as children grow older, their recognition abilities improve. He indicated that his assessment instrument could be utilized to assess children's problems in emotional development and social perception. Buck (1975) assessed four to six year olds' ability to express emotion using facial expressions. He correlated the results with a behavior checklist and determined that children with disruptive characteristics expressed themselves more accurately than children who did not possess those characteristics.

The assessment of children's abilities in expressing and recognizing emotion from facial expressions has shown that individual differences in these abilities do exist. Both Izard (1971) and Buck (1975) found that children with behavioral characteristics similar to EH children possess skills in the nonverbal area which are different from those of normal children.

The purpose of the present study is to examine the ability of children with EH-like behavior problems to express and recognize emotions from facial expressions. The following questions are explored:

1. Are there significant differences in the abilities of disruptive, withdrawn, and normal boys in expressing emotion from facial

expressions?

2. Are there significant differences in the abilities of disruptive, withdrawn, and normal boys in recognizing emotion from facial expressions?

3. Does a relationship exist between boys' abilities to express emotion from facial expressions and their abilities to recognize emotion from facial expressions?

The general procedure of the present study was to assess and compare the nonverbal expression and recognition skills of three groups of boys: normal, disruptive, and withdrawn. Also, the boys' expression skills were correlated with their recognition skills.

Expression data were obtained by videotaping each boy's face as he viewed 20 slides designed to elicit varying degrees of pleasantness. The child's reaction to each slide were then rated by five judges as to the degree of pleasantness expressed. The combination of the judges' ratings provided the child's score on expression ability. Recognition data were obtained by requiring each child to rate the degree of pleasantness of three unfamiliar boys' facial expressions. The expressions of these three boys were videotaped in the same manner as used in the expression assessment of the experimental subjects. The subjects' ratings of each of the three boys provided the subjects' scores on recognition ability.

#### Definition of Terms

The following terms are defined as having special meaning for the purposes of the present study:



1. Affect is an individual's awareness of feeling(s), emotion(s), and/or attitude(s).

2. Decoding is an individual's ability to recognize facial expressions of others and to understand their meaning as measured by responses to the decoding videotape.

3. Disruptive is the teacher's perception of a child who has tendencies toward causing disorder in school as indicated on the Pupil Behavior Rating Scale (PBRs).

4. Encoding is an individual's ability to use facial expressions to express one's emotional state as measured by judges' responses to expression assessment videotapes.

5. Normal is the teacher's perception of a child who is exhibiting no behavior problems at school as indicated on the PBRs.

6. Sender is a boy appearing on the decoding videotape.

7. Withdrawn is the teacher's perception of a child who has tendencies toward avoiding contact with others as indicated on the PBRs.

#### Preresearch Limitations

Generalizations based on the findings of the present study are limited by the following factors which were identified prior to the collection of research data:

1. Only Caucasian boys are included in the study and they reside in middle-class neighborhoods.

2. The study collects data on only one element of the communicative process--facial expressions.

3. All behavior is assessed in an experimental setting within the school and not in the regular school environment.

4. In assessing emotional recognition, an interactive process does not occur. Feedback is not given to the boys regarding the correctness of their responses.

#### Significance of the Study

Children identified as emotionally handicapped frequently experience difficulty in interactions with peers and teachers. Researchers have found a relationship between several elements of the interactive process, that is, nonverbal encoding and decoding skills, and perceived appropriateness of behavior in an educational setting. Assessment of nonverbal skills of EH children and comparison of these skills with normal children's skills could substantiate and extend earlier research with similar subjects. Also, this study could support the need to address nonverbal skills in providing educational or therapeutic services to EH children.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

The following review of literature is divided into five sections. The first group of studies is concerned with the characteristics of children identified as emotionally handicapped in regular educational settings. The second section examines nonverbal behaviors and their relationship to the communication of affect. The third segment presents studies on facial expressions which substantiate theories of emotion. Recent studies on encoding and decoding emotions via facial expressions comprise the fourth section. The chapter concludes with a review of methodological procedures used by researchers in the assessment of nonverbal encoding and decoding skills.

#### Characteristics of Emotionally Handicapped Children in the Regular Education Setting

The definition of emotionally handicapped (EH) used in many instances across the country utilizes a quantitative system of classifying behavior disorders of children. The quantitative system views behaviors as classifiable into several dimensions which are determined through factor analysis. Data are collected by observers utilizing a checklist comprised of a number of descriptive phrases. Responses to these items are correlated and items that are statistically interrelated are clustered together to isolate a pattern of behavior. This pattern of behavior is then labeled as one category

or dimension within the system.

Investigators employing the method of determining categories described above have generally obtained similar results. This has occurred even when different observers have been used and different groups of children have been observed. This has also held true despite the fact that the method of developing an instrument has differed across studies with each investigator using different sources to identify valid checklist items.

Quay (1972) reviewed studies designed to determine categories for describing behavior disorders. He concluded that patterns of aggression, withdrawal, and immaturity emerged from the studies. Several studies examined samples of elementary age students. Since the current study is concerned with students of this age group, these studies and their identified categories are described.

Peterson (1961) inspected over 400 case folders from a child guidance clinic in developing a checklist which consisted of 58 items descriptive of deviant behavior. This checklist was completed by elementary teachers for 831 kindergarten through sixth grade students in six schools. By factor analyzing these data, two independent dimensions emerged which Peterson labeled as conduct and personality problems. Behaviors within the conduct problem category included disobedience, disruptiveness, boisterousness, fighting, attention-seeking, and restlessness. Items within the factor labeled personality problems included feelings of inferiority, lack of self-confidence, social withdrawal, proneness to become flustered, self-consciousness, shyness, and anxiety. He concluded that most elementary school

students with behavior problems display a greater frequency of inappropriate behaviors than normal children. These behaviors illustrated the students' inability to deal satisfactorily with peers and teachers.

In 1960 Bower reported results of procedures used to validate a screening instrument. This instrument was designed to identify children with tendencies toward emotionally handicapping conditions. Bower compared one section of the instrument, teacher ratings, with clinicians' identification of emotionally handicapped fourth, fifth, and sixth graders. He found that 87% of those clinically labeled emotionally handicapped were rated by their teacher as poorly adjusted in the school setting. Thus, he concluded that teachers' judgments of emotional disturbance were very similar to judgments of clinicians.

The teacher rating instrument used by Bower (1960), the Pupil Behavior Rating Scale (PBRS), was modified by Lambert, Bower, and Hartsough in 1979. The modified version of the instrument consisted of 11 items on which the teacher compared students in the class to each other. Factor analyses of the 11 items or attributes on the PBRS have provided three dimensions of classroom functioning (Lambert & Nicoll, 1977). The first dimension measured the children's learning performance. The second dimension included items related to fighting or arguing, becoming distracted, and behaving dangerously. This dimension assessed children's interpersonal or social skills and was used to identify children considered disruptive. The third dimension identified intrapersonal or psychological factors. Items included immaturity, unhappiness, and avoidance of peers. This

dimension was used to select students who were considered to be withdrawn.

Both reliability and validity results of the PBRS have been considered to be very good. Interrater reliability of the PBRS, as stated in the Administration and Use Manual by Lambert et al. (1979), ranged from .74 to .91. Test-retest reliability over a four-month period ranged from .71 to .83. The manual reported that three types of validity were investigated: construct, concurrent, and predictive. While construct validity was not reported specifically, an earlier version of the PBRS was valid in predicting independently derived clinical assessments of school adjustment (Bower, 1960). The PBRS, along with peer and self-ratings, was related to long term academic achievement as well as adjustment problems in adolescence (Lambert, 1972).

A review of the studies relating to characteristics of emotionally handicapped children indicate that EH children seem to exhibit behaviors considered as conduct problems or personality problems. The PBRS was developed to identify such children through the use of teacher ratings. If children displayed frequent approach behaviors, teachers reported them as disruptive (conduct problems). If children displayed frequent avoidance behaviors, teachers reported them as withdrawn (personality problems). The results of teacher ratings on the PBRS were similar to clinicians' assessments of elementary age students' behavioral problems.

Nonverbal Behaviors and Their Relationship  
to the Communication of Affect

Researchers have examined the relationship between nonverbal behaviors and the communication of affect. Unfortunately, investigation into the effects of specific nonverbal skills on the communication process within the educational setting has been sparse. Schusler (1971) stated that the nonverbal area has been relatively neglected in educational research. Reasons for this neglect could be found in the paucity of nonverbal research in general. Rudden and Switzer (1978) argued that lack of theoretical grounding and methodological flaws inhibit sound conclusions. However, nonverbal communication research, as stressed by Harrison and Knapp (1972), has made significant strides since the 1950's and the application of findings to man's communication problems is increasing. This section presents studies substantiating the relationship between nonverbal behaviors and the communication of affect and then describes studies which relate the effect of nonverbal skills on the communication process within the educational setting.

Hall, Rosenthal, Archer, DiMatteo, and Rogers (1978) defined nonverbal communication as the sending and receiving of nonverbal cues which indicate feeling and attitude. Argyle (1972) stated that some nonverbal communication is used to convey attitudes and emotions. Galloway (1972) found that individuals use nonverbal cues to express their attitudes toward others, whether those attitudes be intimacy, aloofness, concern, or indifference. Authors examining specific nonverbal behaviors (Birdwhistell, 1970; Davitz, 1964; Ekman, 1965;

Izard, 1971) also support the notion that a relationship between non-verbal communication and the expression of feelings, emotions, and attitudes does exist.

Researchers studying the effects of nonverbal skills on interpersonal communications have obtained similar results. Johnson and Myklebust (1967), in describing school age children who were experiencing difficulties in nonverbal communication, stated that these children had deficiencies in social perception. Social perceptions can be defined as an awareness of others' feelings, attitudes, and emotions. Johnson and Myklebust hypothesized that this deficiency caused children to inadequately comprehend their social world. Their conclusion was that these children were misjudged and considered emotionally disturbed because their behaviors were inappropriate in certain situations.

Bremme and Erickson (1977) identified certain situation-specific nonverbal rules in the elementary classroom. The authors recorded both teacher and student behaviors and, after thorough analysis, several nonverbal rules were identified. For example, during teacher's time, which was identified by the teacher's body orientation toward the center of the student group, two rules were followed. First, all students were to be relatively quiet. Second, students were required to sit facing the teacher. The authors discussed the difficulties students would have if they did not recognize these rules. They felt that students unaware of the rules would display inappropriate behaviors. Consequently, these students may be considered as having behavior problems in the classroom setting.



In summary, nonverbal behaviors communicate feelings, attitudes, and emotions. Children with insufficient nonverbal skills have been observed to display inappropriate behaviors and have been identified as emotionally disturbed. Rollman (1976) expressed the urgency of studying specific nonverbal behaviors, i.e., vocal cues, posture, gesture, facial expressions, and distance, and their effects on interpersonal communication. By delineating these variables, he felt salient evidence would emerge. One area of investigation could well focus on the assessment of specific nonverbal skills of normal and emotionally handicapped children.

Studies of Facial Expression and  
Theories of Emotion

One element of nonverbal behavior that has evoked a great deal of interest from researchers is facial expressions. Studies in the area of facial expression have been conducted primarily to test theories of emotion. Emotion occurs when an individual reacts to a stimulus which elicits several processes which are both overt and covert. The overt processes include the muscular movements of the face and other motor behavior. The covert processes include physiological changes in the autonomic nervous system and a conscious awareness of the emotion or change in the inner state of the individual (Izard, 1971). Theorists agree that facial expressions are overt behaviors indicating a person's feelings or emotions. However, when investigating the covert aspects of emotion, theorists are divided and support two major approaches.

### Dimensional Approaches

One approach to the concept of emotion is "dimensional." Theorists supporting this view of emotion consider emotional behavior to be located on a continuum. The dimensions oftentimes coincide with Duffy's (1962) dimensions of direction and intensity. Behaviors along the direction dimension are approach-avoidance behaviors of an individual toward or away from a stimulus. The intensity dimension describes the level of arousal of the individual. Generally, theorists using the dimensional approach integrate emotions into a comprehensive theory of behavior such as activation theory or cognitive theory (Izard, 1971). In this section, dimensional studies are reviewed and their identified dimensions are compared.

In 1938 Woodworth presented a scale for judging facial expressions. The Woodworth scale had the following six categories of emotions: (a) love, happiness, mirth; (b) surprise; (c) fear, suffering; (d) anger, determination; (e) disgust; and (f) contempt. Woodworth hypothesized that this scale was linear. This linearity meant that when a subject was judging a facial expression for its emotional meaning, the emotion chosen would be the intended pose or the pose for the emotion appearing next to it on the scale. To test this hypothesis, 100 subjects were given 86 poses and requested to sort them into six emotional categories. The correlation between the intended pose and judged emotion, accounting for neighboring emotions, was .92. Later, other sets of poses were used to test the same scale with similar results (Woodworth, 1938).

Schlosberg (1941) tested the Woodworth scale using a series of 72 pictures. Forty-five subjects sorted this series three times into the six categories listed in the preceding paragraph. Schlosberg found that subjects could not discriminate between posed photographs intended to convey "love, happiness, and mirth" and those intended to convey "contempt." Based on this evidence, that is, that subjects could not discriminate photographs at each end of Woodworth's scale, he concluded that the scale was circular as opposed to linear.

Schlosberg (1952) further theorized that the circular surface on which all emotions could be placed had two axes. The major axis was the pleasantness-unpleasantness (PU) dimension with the minor axis being attention-rejection (AR) dimension. Four experiments were conducted to substantiate this theory. Results indicated that correlations with the Woodworth scale were high (Experiment 1:  $r = .76$ ; Experiment 2:  $r = .94$ ; Experiment 3:  $r = .92$ ; Experiment 4:  $r = .96$ ). Schlosberg stated that facial expressions could be located on a two dimensional, circular surface. He cautioned that recognition of finer shades of emotion needed knowledge of the stimulus situation.

In 1954 Schlosberg added another dimension to his theory of emotion, a sleep-tension (ST) dimension. This inclusion was influenced by Lindsley's (1951) activation theory which primarily has been supported by empirical physiological data, particularly measures from electroencephalographic studies. The ST dimension incorporates the level of arousal or intensity of emotion. Schlosberg explained that this dimension may be expressed by a different nonverbal element such as gestures.

Engen, Levy, and Schlosberg (1957, 1958) developed a new series of 16 photographs to support the three dimensional theory of emotion. In supporting this three dimensional theory of emotion, the authors found the pleasant-unpleasant dimension most stable and the ST dimension almost as stable. While the attention-rejection dimension did exist, its stability was weak.

Triandis and Lambert (1958) replicated the Engen et al. (1958) study using city (n = 15) and village (n = 15) Greeks as subjects. The authors concluded that Schlosberg's method could be used in non-Western countries. The results varied somewhat from the Engen et al. study however. While the PU dimension remained most stable, the AR and ST dimensions were reversed in the replication study.

Schlosberg and his associates supported an activation theory of emotion with emotional behavior appearing as a continuum that includes all other behavior (Plutchik, 1962). Besides the intensity (ST) dimension, two qualitative dimensions (PU and AR) are presented. Empirical evidence indicated that the PU dimension was most stable with results on the AR dimension being inconsistent. While a new series of photographs was designed to recognize the ST dimension, results varied as to the stability of this dimension also. Schlosberg indicated that perhaps other nonverbal elements besides facial expressions could best convey the accuracy of the ST dimension.

A major criticism of the results of Schlosberg and his associates has centered around their construction of the studies in that the pictures were placed along preconceived dimensions (Frijda, 1969; Izard, 1971). Other investigators stated that in allowing subjects a

choice in recognizing emotions, different dimensions could emerge. Frijda and Philipszoon (1963) tested this hypothesis by presenting 30 photographs to 12 college undergraduate students. Students were to rate each picture on 27 bipolar seven point scales. In factor analyzing these data, four factors accounting for 80% of the variance emerged. Two factors, pleasant-unpleasant and intensity of emotional expression versus control of expression (IC), were similar to Schlosberg's PU and ST dimensions. The other two factors identified by Frijda and Philipszoon were a naturalness-submission (NS) dimension and an attentional activity-disinterest dimension (AD). The NS dimension lacked clarity and the authors expressed difficulty interpreting it. The AD dimension was similar to Schlosberg's AR dimension. Thus, with dimensions emerging from Frijda and Philipszoon's study similar to Schlosberg's dimensions, the criticism of pre-conceived dimensions was not supported.

Frijda (1969) reported a reanalysis of the 1963 data and a study similar in design to the 1963 study that used Schlosberg's photographs. Both studies identified six factors which accounted for over 90% of the variance with the first four factors accounting for 80%. Besides the PU, IC, NS, and AD factors of the 1963 study, a surprise factor and a simple-complicated factor were mentioned by Frijda. Therefore, Frijda's studies have identified at least four dimensions of emotion, three of which were similar to those proposed by Schlosberg. Of those four dimensions, the pleasant-unpleasant and intensity-control dimensions accounted for the greatest percentage of variance. He concluded that expressive behavior, like behavior in

general, has an approach-avoidance and intensity dimension.

Dittman (1972) reviewed the majority of the studies herein reported and others as well. In conclusion, he stated that the pleasantness-unpleasantness dimension was the first dimension identified in most studies. The second dimension identified was the level of activation. He felt that more data were necessary before other dimensions could be supported. This conclusion relates closely to dimensions of behavior in general. That is, the PU dimension corresponds to the approach-avoidance dimension of Duffy (1962) and the level of activation dimension corresponds to Duffy's level of arousal dimension. Table 1 on page 19 presents the major findings of the dimensional studies discussed in this section.

#### Typological Approaches

The other major approach to the study of emotion is the "typological." Theorists supporting this concept of emotion contend that discrete emotions do exist and that different inner states occur when different emotions are elicited. Theorists believe that these discrete emotions can be recognized by facial expressions. To lend credence to that assumption, they have collected empirical evidence through cross-cultural studies which support hypotheses that these discrete emotions are innate in human beings.

The conceptualization of discrete emotions had its impetus in 1872 with the publication of Darwin's The Expression of the Emotions in Man and Animals. Darwin maintained that man's reaction to a certain stimulus created an association between the behavioral act and

the state of mind. As the act and state of mind occurred frequently together, the bond between facial expression and the emotion was strengthened. This bond eventually was genetically transmitted from generation to generation.

Table 1  
Summary of Dimensional Studies in Chapter II

Study and Year	Dimensions Identified					
	Pleasant- Unpleasant	Intensity- Control	Attention- Rejection	Naturalness- Submission	Surprise	Simple- Complicated
	PU	IC	AR	NS	S	SC
Schlosberg, 1952	x		x			
Schlosberg, 1954	x	x	x			
Engen, Levy, & Schlosberg, 1957	x	x	x			
Engen, Levy, & Schlosberg, 1958	x	x	x			
Triandis & Lambert, 1958	x	x	x			
Frijda & Philipszoon, 1963	x	x	x	x		
Frijda, 1969	x	x	x	x	x	x

Note. x = Identified dimension.

Contemporary theorists, using the typological approach to study emotion have been influenced by Darwin's theory of evolution of facial expressions. They formulated theories to support the innateness of discrete emotions. To validate this, they often conducted cross-cultural studies. If similar discrete emotions, conveyed by particular facial expressions, did exist in many different cultures, then the possible innateness of these would be supported.

One major investigator, Izard (1971), conducted a number of studies to investigate the existence of discrete fundamental emotions via the study of facial expressions. He developed three instruments to identify emotions from facial expressions. He administered these instruments to American, European, African, and Oriental university students. Izard found that variance in the labeling of emotion due to cultural differences was not significant. He concluded that there was significant evidence to support the universality of fundamental emotions, but cautioned that intercultural differences could exist in the frequency with which individuals experience particular emotions. On the emotion-recognition task, Izard found 78% agreement among cultures in identifying expressions. When presenting photographs of more complex emotions, he found significant differences among participants in the study. Since everyday life usually consists of complex expressive cues, he concluded that differences in emotional recognition among adults could result in communication difficulties in conveying feelings and emotions.

After completing cross-cultural studies with university students, Izard adapted his methodology to assess the development of emotional



recognition (ER) and emotional labeling (EL) of children. The ER and EL tasks were given to 140 French and 286 American children ranging in ages from two to nine years old. Growth curves presented by Izard indicated similarities between the two cultures in the recognition of emotion. Computing analysis of variance on ER data showed a strong positive relationship between improved recognition abilities and increasing age. The author stated that the relationship was so significant that the ER techniques could be utilized to assess problems in emotional development and social perception.

In comparing the typological and dimensional approaches in relation to the study of interpersonal communication, Dittman (1972) concluded that a social participant uses both dimensions and categories in expressing and recognizing emotions. In studies involving decoding of nonverbal behaviors, the stimuli used for assessing these skills would influence the choice of dimensional and/or typological approaches. If the subject's facial expressions were to be recorded within the context of daily experiences, the dimensional approach is feasible. Most researchers who support the conception of discrete emotions agree that emotions in their purest form rarely occur in daily life (Tomkins, 1962). They also agree that if the researcher is attempting to determine a subject's ability to recognize discrete emotions by discriminating between posed photographs, the typological approach can be utilized.

Recent Studies on Encoding and Decoding  
Emotions via Facial Expressions

Recent research on encoding and decoding of emotions has examined the effects of certain independent variables. Zuckerman, Lipets, Koivumaki, and Rosenthal (1975) compared college undergraduates' abilities to encode and decode both vocal and facial cues. Results indicated that students performed somewhat better than chance in all areas. Also, the authors investigated the relationship between students' abilities to encode and decode emotion via facial expressions. They found that students who were able to express a particular emotion could not recognize that emotion with any consistency. This finding supported earlier studies on the encoding-decoding relationships. Both Osgood (1966) and Zaidel and Mehrabian (1969) found no correlation between a subject's encoding and decoding skills. Lanzetta and Kleck (1970) found a significant negative correlation which would indicate that if a subject did well in expressing one emotion, he would perform poorly in the recognition of that emotion and vice versa.

In 1976 Zuckerman, Hall, DeFrank, and Rosenthal extended the Zuckerman et al. (1975) study. The independent variables in the 1976 study included the mode of expression (spontaneous, talking, and posed) and the sex of the sender and responder. They sought to determine the effects of modes of expression on the accuracy of decoding nonverbal cues. In comparing different modes of encoding, the authors found a significant relationship between enacted and spontaneous encoding with the former a somewhat more accurate mode (enacted,

$\bar{x} = .77$ ; spontaneous,  $\bar{x} = .67$ ). Examination of the encoding-decoding relationship across all types of emotion showed that the correlation between total encoding and decoding scores was positive, but low ( $r = .14$ ). The correlation between encoding and decoding the same scene or emotion was also low, but negative ( $r = -.09$ ). This supports the results reported in the Zuckerman et al. (1975) study.

Hall et al. (1978) developed an instrument for assessing an individual's ability to decode nonverbal messages. This instrument, the Profile of Nonverbal Sensitivity (PONS), consisted of 220 filmed segments of various combinations of facial, body, and vocal cues. Various poses conveyed emotions along two dimensions, a positive-negative dimension and a dominant-submissive dimension. The investigators' purpose was to collect data on an individual's strengths and weaknesses in decoding nonverbal cues and provide nonverbal sensitivity training. They stated that such training will enhance an individual's interpersonal communication.

Bryan (1977) used the PONS to compare learning disabled students (LD) with nondisabled students in nonverbal decoding skills. She conducted this study after discovering that LD students were less socially acceptable and had poorer interpersonal relationships than nondisabled peers (Bryan, 1974, 1976; Bryan, Wheeler, Felcan, & Hinek, 1976). The results indicated that LD students were less accurate in nonverbal decoding skills than nondisabled students.

Several studies by Buck and his associates have investigated individual differences in the ability to encode emotion through facial expression. The research paradigm used to assess encoding

ability, as described in the following methodological section on page 27, was validated by Buck, Savin, Miller, and Caul in 1972. The authors found that college students were able to communicate their emotions accurately by using facial expressions. In addition to this overall finding, a statistically significant negative relationship between encoding ability and physiological responding was discovered. Students who were more accurate encoders were shown to have less frequent skin conductance responses. Students scoring low in encoding measurements had more frequent skin conductance responses. Based on these correlational findings the authors used Jones' (1960) terms "externalizers" and "internalizers" to connote encoding differences among students. The authors defined externalizers as students having greater overt expression, but as being physiologically nonreactive. Internalizers inhibited overt expression, but were physiologically reactive.

In a similar study Buck, Miller, and Caul (1974) classified subjects as internalizers, externalizers, or unclassified based on responses required in the experiment. When correlated with personality measures, findings indicated that internalizers showed lower self-esteem and greater sensitization than externalizers. In reporting the effects of the subject's sex on communication accuracy, females were significantly better encoders. Also, females outnumbered males in subjects classified as externalizers and males outnumbered females in subjects classified as internalizers. The authors hypothesized that this sex difference was the result of the influence of socialization processes on emotional expression.

By comparing encoding abilities of four to six year old boys and girls in his 1975 study, Buck found no differences between the two sexes as to the number of externalizers and internalizers. Since the 1974 study by Buck et al. found differences between males and females in encoding abilities, Buck interpreted the 1975 results as indicating that there is a variance in the influence of socialization processes on boys as compared to girls. He stated that boys are expected to inhibit overt emotional expression. Girls can more freely express their emotions and thus become better encoders than boys as they mature.

Buck correlated the children's encoding scores with teacher ratings. He developed a teacher rating form by incorporating items from previous investigators' (Buck et al., 1974; Jones, 1960; Lanzetta & Kleck, 1970) descriptions of externalizers and internalizers. Encoding ability was positively related to high activity level and direct expression of hostility. A negative relationship was found between encoding ability and emotional control and solitary play. Thus, children with disruptive behavioral characteristics (high activity level and direct expression of hostility) are better encoders than children with withdrawn behavioral characteristics (emotional control and solitary play).

Research studies investigating nonverbal encoding and/or decoding skills of emotionally disturbed individuals has been relatively sparse. In the two studies reviewed here, one (Muzekari & Bates, 1977) had adult subjects and the other (Izard, 1971) had child subjects. In the former study, the investigators sought to determine

the ability of schizophrenic adults to make accurate judgments of emotion from posed and videotaped scenes. Results indicated that 32 normal adults were significantly better than 32 schizophrenic adults in recognizing the correct emotion in both videotaped and posed pictures. In correlating the recognition scores of the schizophrenic adults with length of institutionalization, Muzekari and Bates found that the longer patients had been institutionalized, the lower their recognition scores. Thus, the authors maintained that differences in recognition of emotion among normal and schizophrenic adults may be more closely related to length of institutionalization than degree of mental illness.

Izard (1971) conducted a pilot study with 29 emotionally disturbed children ranging in ages from 6 to 12. Twenty normal children comprised the comparison group. All subjects were given an emotion-recognition task and an emotion-labeling task. Izard found that emotionally disturbed children at age 10 were significantly less accurate in emotion recognition than normal 10 year old children. On the emotion-labeling task, no significant differences were found between various age groups of emotionally disturbed and normal children.

The studies reviewed in this section have reported the effects of a number of variables on nonverbal encoding and decoding processes. Regarding decoding processes, researchers have found that both posed and spontaneous facial expressions were equally recognized. As to personality attributes, adult schizophrenics were less accurate in judging emotion than normal adults. Learning disabled and nondisabled

children were assessed in several nonverbal areas with the former obtaining poorer scores. In assessing encoding skills, children with disruptive behavioral characteristics are more accurate encoders than children with withdrawn behavioral characteristics.

With the development of more sophisticated equipment such as videotape recorders, methodological limitations which were experienced by earlier researchers have been reduced. The majority of studies reported in this section used such equipment in collecting their data. The concluding section describes methodological considerations as they influenced the present study.

#### Methodological Procedures Used by Researchers

Ekman and Friesen (1969) categorized two levels of nonverbal communication based on the intention of the expresser or encoder. At the first level, the informative level, the person is not aware of the messages conveyed by his nonverbal cues. An adaptation of the cooperative conditioning experiments, designed by Miller, Cauti, and Mirsky in 1967, provided procedures for assessing encoding and decoding skills at this level. The researchers presented a rhesus monkey with an electric shock stimulus, however no apparatus was provided for the monkey to make a response. A second monkey viewed the first monkey's reaction on a videotape monitor and responded on apparatus which was available to that second monkey. Buck et al. (1974) adapted these procedures for use with humans by showing subjects a series of emotionally loaded color slides and videotaped their reactions without them knowing about it. Observers were

required to identify the types of slides viewed by the subjects and how the subjects would have indicated they felt while viewing the slides. The results provided both encoding and decoding measurements at the informative level.

For purposes of the present study, the informative level more closely resembles the interaction process in an educational setting. Both teachers and students unknowingly convey many nonverbal messages throughout each school day (Bremme & Erickson, 1977). A second level of nonverbal communication is the communicative level. At this level the encoder is aware of his expression of nonverbal cues. This level would be represented by studies using photographs of posed expression, i.e., the studies of Schlosberg and his associates (1941, 1952, 1957, 1958) and of Izard (1971).

As mentioned earlier, the dimensional approach of assessing emotional recognition is more appropriate for communications occurring at the informative level. Two major dimensions identified in the studies reviewed in that section were a pleasantness-unpleasantness (PU) dimension and a level of activation dimension, whether it be sleep-tension (ST) or intensity-control (IC). The PU dimension requires qualitative discriminations and the IC dimension requires quantitative discriminations. Buck and his associates measured the PU discriminations by the observer's identification of the type of slide viewed by the sender. The IC discriminations were measured by the observers' indication on a scale from one to nine of how the sender felt. To assess both dimensions and still not confuse the children participating in the current study, a scale was adapted from



Buck (1975) which can measure both the PU and the IC dimensions with one response.

### Summary of the Chapter

The chapter has presented a review of the literature relevant to the present study. Two categories of mildly emotionally handicapped children were identified and the behavioral characteristics of these children described. Since many of the characteristics were concerned with the children's inability to interact appropriately with teachers and peers, communicative processes were examined. This examination led to studies in nonverbal communication and its relationship to the communication of feelings, emotions, and attitudes. Studies addressing elements of nonverbal communication, more specifically facial expressions, provided empirical support for the assumption that there is a relationship between facial expressions and emotions. Research presenting assessment of expression and recognition of emotion via facial expressions concluded that individual differences in these skills do exist. However, no specific research was found that determined differences in encoding and decoding skills among mildly emotionally handicapped and normal elementary age children at the informative level of nonverbal communication (facial expression).

## CHAPTER III

### DESIGN AND METHOD

Students who experience difficulty in developing nonverbal communication skills are sometimes perceived as having behavior problems by their teachers. The purpose of the present study is to compare the encoding and decoding of emotion via facial expressions of disruptive, withdrawn, and normal boys. An investigation of past studies, as reported in Chapter II, suggested that disruptive boys might be better encoders, but that normal boys might be better decoders. Further information seems to be required about the relationship between students' encoding and decoding skills.

#### Design

Three research hypotheses were formulated based on the problem statements and literature review. These hypotheses and their rationale are:

1. Disruptive boys' skills in expressing emotion through facial expressions are greater than normal and withdrawn boys' skills.

Rationale: Children with behavioral characteristics considered disruptive are more accurate encoders than children not possessing these characteristics (Buck, 1975).

2. Normal boys' skills in recognizing emotion through facial expressions are different from disruptive and withdrawn boys' skills.

Rationale: Izard (1971) found emotionally disturbed children's emotional recognition scores to be significantly lower than normal children's scores.

3. No relationship exists between boys' abilities to express emotion using facial expressions and their abilities to recognize emotion from facial expressions.

Rationale: Zuckerman et al. (1975) and Zuckerman et al. (1976) found no significant relationship between an individual's encoding and decoding skills.

Subjects were selected from regular third and fourth grade classes. Their tendencies toward disruptive or withdrawn behavior patterns were identified by teachers completing the Pupil Behavior Rating Scale by Lambert et al. (1979). Thus, one independent variable in the present study was a boy's particular behavior pattern exhibited in school (normal, disruptive, or withdrawn).

The general plan of the study was to assess the encoding and decoding skills of normal, disruptive, and withdrawn boys. Instruments selected to measure these skills were adapted from Buck (1975). The dependent variables were the scores obtained from encoding and decoding assessments.

Several moderator variables (Tuckman, 1972) were identified which could influence the relationship between the independent and dependent variables. First, the intensity of emotion expressed by the subject could vary due to experiential reaction to stimuli. Thus, stimuli were divided into four categories: two pleasant--one mild and one more pleasant and two unpleasant--one mild and one more

unpleasant. This division allowed the investigator to examine the interaction effect between the degree of pleasantness elicited by stimuli categories and the three groups of boys.

The second moderator variable was the degree of expressiveness of the sender in the decoding assessment procedures. To determine differences in decoding abilities of normal, disruptive, and withdrawn boys, the boys rated a highly expressive, a moderately expressive, and inexpressive boy, with each serving as a sender of facial expression. Interaction between decoding ability and type of sender for the three groups of boys was then determined.

After encoding and decoding scores were obtained for all boys, the skills of the three groups were compared using analysis of variance, chi square, and correlational techniques. The results of these analyses either supported or rejected null hypotheses. Based on this decision, the research hypotheses were then supported or rejected.

The .05 level of significance was used to test all null hypotheses. This level was chosen for two reasons. First, it is considered an acceptable level in behavioral research (Tuckman, 1972). Second, the encoding and decoding ratings were high inference scales. Consequently, if more stringent levels of significance were selected, such as  $\alpha = .025$  or  $.01$ , a Type II error of rejecting true research hypotheses could occur. Thus, differences in the three groups of boys in encoding and decoding abilities could exist but not be found because of measurement sensitivity or stringent levels of significance. The .05 level of significance helps avoid this type of error.

## Method

### Selection of Subjects and Judges

Subjects were 54 third and fourth grade Caucasian boys selected from three elementary schools in Madison, Indiana. The total enrollment for the third and fourth grades in these schools was 395 students. Parental permission letters (see Appendix A) were sent home with all boys from nine randomly selected regular education classes. Those boys whose parents agreed to allow their son's participation were included in the original sample.

The rationale for selecting only third and fourth grade regular elementary school boys came from several sources. (a) Bates (1976), Buck (1975), and Buck et al. (1974) have determined that interaction between sexes affects nonverbal assessment scores. (b) Boys were chosen because they make up 83% of the general EH population (Morse, Cutler, & Fink, 1964). (c) In determining a specific age range of the population, the studies of Izard (1971) and Bryan (1976) have found differences in decoding skills among boys whose ages range from 9 to 11. Therefore, the author decided to investigate encoding and decoding skills of third and fourth grade boys.

Teachers were requested to complete the PBRS on all boys in their classrooms. The PBRS scores were computed by dimensions. Therefore, in the interpersonal dimension, all boys in each class were ranked from most to least disruptive. In the intrapersonal dimension, the boys were ranked from most to least withdrawn. Those ranking high in a dimension were considered to have tendencies toward those behavior

patterns. Those students ranking low in all three dimensions were considered normal for the purpose of this study. Based on the number of students in each of the three categories, 54 students were randomly selected from those allowed to participate, with 18 boys in each category: normal, disruptive, and withdrawn.

Selection of the judges for rating the expressiveness of the subjects and senders was based on three criteria. First, unfamiliarity with the subjects was important. Thus, not teaching in the subject's elementary school was the first criterion. Second, the judges needed to be attentive and respond as consistently as possible through the rating sessions. Third, they needed to be available to view four hours of videotaping over a period of several weeks. The five adult judges were special educators employed by the Special Services Unit, a special education cooperative located in Madison, Indiana.

### Materials

Slides. One adaptation of Buck's (1975) study was the selection of slides designed to elicit emotion. Thirty-six slides in four content categories were chosen originally. In an intended "very happy" category, slides of children playing in various activities were selected. The second category, "a little happy," consisted of scenic landscapes. The third category was designed to elicit "a little unhappy" responses. Slides in this category included photographs of monsters and sharks and drawings of dragons. The final category, "very unhappy," was comprised of photographs of skin diseases on

arms, legs, and on the face.

To determine which slides were most successful in eliciting the desired emotional response, the 36 slides were shown to a trial group of 22 third and fourth grade boys. Each boy was requested to view the slide and indicate how it made him feel. This information was obtained by having each boy circle a number from one to seven, with one indicating that the slide made him feel very happy and seven indicating very unhappy.

The 36 slides were reduced to 20 slides by selecting five slides in each of the four categories of very happy, a little happy, a little unhappy, and very unhappy. Those slides with means nearest the desired mean were chosen. The desired mean and actual mean of the five slides in each category are presented in Table 2.

Table 2  
Desired and Actual Means Ranked on the PU  
Dimension of Each Slide Category

Category	Desired Mean	Actual Mean
Kids	1	1.9
Landscapes	3	2.2
Monsters	5	4.0
Skin Diseases	7	5.9

Note. 1 = Most pleasant; 4 = no feeling; 7 = most unpleasant.

Decoding videotape. A videotape of three students viewing the slides was developed. This videotape was shown to the third and fourth grade boys chosen as subjects for the present study. The purpose of the videotape was to determine the boys' ability to recognize emotion via facial expressions. Preparation of the decoding videotape is described in Appendix B.

Rating form. The rating form used by subjects in the decoding assessment and by judges in the encoding assessment was adapted from Buck's (1975) investigation. As discussed in Chapter II, two major dimensions, pleasantness-unpleasantness (PU) and intensity-control (IC), have been most accurately recognized by adults in decoding studies. The PU dimension required qualitative discriminations by the respondents, while the IC dimension required quantitative discriminations. The rating form, as presented in Appendix C, allowed the respondents to combine both discriminations. Circling between one and three indicated pleasantness and circling between five and seven indicated unpleasantness. Responding toward the extremes of the scale would indicate that the sender expressed greater intensity than responding toward the middle of the scale, with an answer of "four" signifying no feeling elicited.

### Procedures

Overview. As explained in Chapter II, Buck's (1975) method of measuring encoding and decoding skills was most congruent with the interactive processes in an educational setting. While several adaptations were made to address the population of the present study,



Buck's general procedures were used. To assess encoding skills, each subject viewed 20 emotionally loaded color slides with a concealed camera recording his facial reactions. Judges then viewed the videotape recording of each subject and judged the subject's reaction to each slide by responding on the rating form. The judgments were combined and these became the subject's encoding scores. To assess decoding skills, each subject viewed a videotape of each of three unfamiliar boys viewing the 20 slides. The subject rated each boy's reactions to the slides by responding on the rating form. Combining these ratings provided the subject's decoding scores.

Encoding assessment procedures. The assessment of encoding skills was carried out in each school using the following procedures. The videotape equipment was set up in a free area. Each student was individually introduced to the experimental setting by the examiner. The student was seated in a chair facing a backlighted screen which measured 5' x 5'. Figure 1 on page 38 presents the arrangement of equipment, subject, and examiner. The instructions given to the student were to sit back and enjoy watching the slides. The type of slides was also mentioned to the student. Then the examiner left the student, turned on the videotape recorder and the slide projector, and returned to a chair located next to the student. The slide projector was set at 5-second intervals with a blank space between each slide. The 20 slides were randomly sequenced and three different sequences were used throughout the study.

While each student viewed the slides, the videotape camera recorded the student's facial reaction to the slides. Upon completion

of the 20 slides, the examiner showed the student the camera and a portion of the videotape. Permission was obtained to show the tape to adults "to see if they could tell how you felt watching the different slides."

S - Subject

E - Examiner

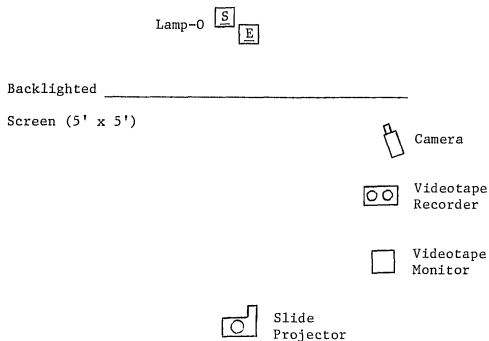


Figure 1. Arrangement of encoding assessment setting.

To complete the encoding assessment, the videotape of each student was shown to five judges. A brief inservice session was conducted with the judges before they viewed the videotapes. This session included an overview of the study and a description of particular facial expressions and their relationship to the pleasantness-unpleasantness and intensity-control dimensions. Then, the judges viewed the videotapes and completed a rating form for each subject.

The ratings of the five judges were combined to provide each boy's encoding score. Four encoding scores were compiled for each boy, that is, one for each slide category.

Both intrarater and interrater reliability coefficients were computed to determine the consistency of the judges' ratings. Intrarater reliability was measured with Flanders' modification of  $\pi$  as described by Frick and Semmel (1978) and ranged from .55 to .77. Interrater reliability measured observer agreement in each slide category. Pearson Product-Moment correlation coefficients ranged from .49 to .94 (kids: .57 to .94; landscapes: .49 to .66; monsters: .56 to .78; skin diseases: .54 to .85). To offset individual rating differences, the encoding scores were a combination of the five judges, as recommended by Torgerson (1958).

Decoding assessment procedures. The decoding assessment followed the encoding assessment. Again, procedures were carried out in a free area of each school. The students were shown the decoding videotape in groups of four to six. Instructions to the students are presented in Appendix D. Each student completed a rating form on each of the three senders. The decoding ratings from the forms were then sorted into 12 scores: one for each slide category and one for each of the three degrees of expressiveness of the sender.

Data analysis procedures. The encoding assessment scores were analyzed through the use of a two factor analysis of variance with repeated measures on one factor (Winer, 1971). A three factor analysis of variance with repeated measures on one factor procedure (Winer, 1971) was used to determine if differences existed on the

intensity-control dimension of the decoding scores. When main effects were identified in the analysis of variance procedures, the multiple comparison method by Tukey (Glass & Stanley, 1970) was used to determine specific differences among group means. The pleasantness-unpleasantness dimension scores were analyzed using chi square (Siegel, 1956) procedures. The relationship between encoding and decoding scores was determined by using the Pearson Product-Moment correlation coefficient (Glass & Stanley, 1970).

#### Summary

Third and fourth grade boys were classified as normal, disruptive, or withdrawn. Each boy's encoding and decoding skills were assessed using instruments adapted from Buck (1975). The skills of the three groups of boys were compared for the purpose of supporting or rejecting the present study's research hypotheses. The results of these comparisons are presented in Chapter IV.

## CHAPTER IV

### RESULTS

The purpose of the present study was to compare normal, disruptive, and withdrawn boys' abilities to encode and decode emotion from facial expressions. The assumption that disruptive and withdrawn boys differ from normal boys in nonverbal skills was the basis for the hypotheses generated for the study. This chapter presents the hypotheses, their corresponding null hypotheses, and the results derived from the procedures described in the previous chapter.

#### Hypothesis 1

Hypothesis 1 is concerned with the comparison of encoding skills among normal, disruptive, and withdrawn boys. It states:

H<sub>1</sub>. Disruptive boys' skills in expressing emotion through facial expressions are greater than normal and withdrawn boys' skills.

Three null hypotheses based on the research hypothesis were tested. These are:

H<sub>1ao</sub>. Disruptive boys' encoding skills are equal to normal boys' encoding skills.

H<sub>1bo</sub>. Disruptive boys' encoding skills are equal to withdrawn boys' encoding skills.

H<sub>1co</sub>. An interaction between the boys' classifications and the slide categories designed to elicit emotion does not exist.

Table 3 presents the results relevant to testing the null hypotheses  $H_{1ao}$ ,  $H_{1bo}$ , and  $H_{1co}$ . The main effect, classification of the boys into normal, disruptive, or withdrawn categories, does not yield significant differences at the  $p < .05$  level. Therefore, the first two null hypotheses,  $H_{1ao}$  and  $H_{1bo}$ , are accepted. However, an interaction effect between the boys' classifications and slide categories exceeds the critical value at the  $p < .001$  level, thus rejecting  $H_{1co}$ . Figure 2 on page 43 illustrates the interaction between the independent and moderator variables.

Table 3  
Analysis of Variance of Encoding Scores  
by Boys' Classifications (A) and  
Slide Categories (B)

Sources	df	MS	F
A (Classification)	2	141.25	1.05
Error (A)	51	135.05	
B (Slides)	3	6498.46	60.23**
A x B	6	1173.60	10.88*
Error (B)	153	107.89	
Total	215		

\* $p < .001$

\*\* $p < .0001$

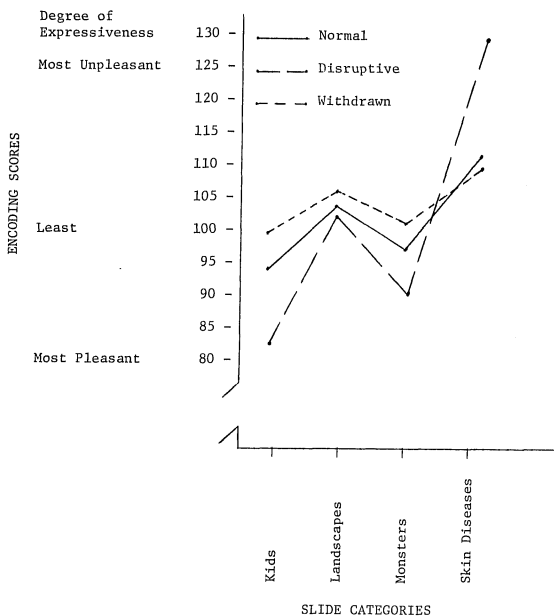


Figure 2. Interaction between boys' classifications and slide categories.

To accurately interpret the interaction between boys' classification and slide categories, an explanation of the boys' encoding scores is provided. Because five judges rated each boy viewing five slides on a one to seven scale, encoding scores for each slide category could range from 25 to 175. If all judges rated the boy as being inexpressive on all five viewings, then the boy's score was 100. The five viewings in this instance are of the videotape of the boy's facial reactions to five slides in the same slide category. Thus, as a score deviates from 100, it is interpreted as the boy being more expressive. Low encoding scores indicate a high degree of expressiveness toward the pleasant or very happy end of the continuum. High encoding scores indicate a high degree of expressiveness toward the unpleasant or very unhappy end of the continuum.

Table 4 on page 45 displays the means and standard deviations for the boys' encoding scores on each slide category. The data indicate that disruptive boys have lower encoding scores on the kids and monsters slide categories and higher encoding scores on the skin diseases category. Thus, disruptive boys' facial reactions were more expressive than normal and withdrawn boys in three categories.

#### Hypothesis 2

Hypothesis 2 is concerned with the comparison of decoding skills among normal, disruptive, and withdrawn boys. It states:

H<sub>2</sub>. Normal boys' skills in recognizing emotion through facial expressions are different from disruptive and withdrawn boys' skills.



Table 4  
Encoding Means and Standard Deviations

Slide Category	Measure	Normal (n = 18)	Disruptive (n = 18)	Withdrawn (n = 18)
Kids	$\bar{x}$	94.22	83.11	99.83
	sd	10.14	9.82	7.94
Landscapes	$\bar{x}$	103.61	103.33	105.11
	sd	7.69	9.73	6.93
Monsters	$\bar{x}$	96.94	90.28	99.83
	sd	11.75	16.22	11.59
Skin Diseases	$\bar{x}$	111.33	128.89	110.78
	sd	12.27	11.32	9.86

With decoding skills divided into quantitative and qualitative discriminations, null hypotheses were generated to test both types of skills separately. Null hypotheses concerned with the intensity-control (IC) dimension or quantitative discriminations are:

$H_{2ao}$ . Normal boys' decoding skills on the IC dimension are equal to disruptive boys' skills.

$H_{2bo}$ . Normal boys' decoding skills on the IC dimension are equal to withdrawn boys' skills.

$H_{2co}$ . An interaction between the boys' classification and the degree of expressiveness of the sender does not exist.

$H_{2do}$ . An interaction between the boys' classification and the slide categories designed to elicit emotion does not exist.

$H_{2eo}$ . An interaction between the boys' classification, the degree of expressiveness of the sender, and the slide categories designed to elicit emotion does not exist.

Table 5 on page 47 shows the results obtained from the three factor analysis of variance with repeated measures on one factor. The main effect (A), boys' classification, is significant at the  $p < .001$  level. The Tukey method is performed on the normal, disruptive, and withdrawn boys' decoding scores and presented in Tables 6, 7, and 8 on pages 48, 49, and 50, respectively. Results indicate that normal boys' decoding scores on the IC dimension are significantly lower than either disruptive or withdrawn boys' scores and not affected by the degree of expressiveness of the sender or type of emotion elicited. Therefore, null hypotheses  $H_{2ao}$  and  $H_{2bo}$  are rejected and the research hypothesis supported. As seen in Table 5, an interaction effect exists between the boys' classification, the degree of expressiveness of the sender, and the slide category at the  $p < .05$  level. Null hypotheses  $H_{2co}$  and  $H_{2do}$  are accepted and  $H_{2eo}$  is rejected without affecting the support of  $H_2$ .

Null hypotheses concerned with decoding skills on the pleasantness-unpleasantness (PU) dimension are:

$H_{2fo}$ . Normal boys' decoding skills on the PU dimension are equal to disruptive boys' decoding skills.

$H_{2go}$ . Normal boys' decoding skills on the PU dimension are equal to withdrawn boys' decoding skills.

Tables 9, 10, and 11 on pages 52, 53, and 54, respectively, present the results which compare normal, disruptive, and withdrawn boys'

Table 5  
 Analysis of Variance of Decoding Scores on  
 IC Dimension by Boys' Classification (A),  
 Expressiveness of Sender (B), and  
 Slide Categories (C)

Source	df	MS	F
A (Classification)	2	176.83	9.07**
Error (A)	51	19.50	
B (Expressiveness)	2	188.93	24.86**
A x B	4	7.07	0.93
Error (B)	102	7.60	
C (Slides)	3	22.43	5.87**
A x C	6	3.88	1.02
Error (C)	153	3.82	
B x C	6	16.30	5.06**
A x B x C	12	6.75	2.10*
Error (BC)	306	3.22	
Total	647		

\* $p < .05$

\*\* $p < .001$

Table 6

Tukey Method on Decoding Differences on the Intensity-Control  
Dimension Between Boys' Classifications With Most  
Expressive Sender When Slide Category Varied

Slide Category	Measure	Classification			Differences Between Means
		Normal (n = 18)	Disruptive (n = 18)	Withdrawn (n = 18)	
Kids	$\bar{x}$	6.44	7.60	6.56	$\bar{x}_N - \bar{x}_D = -1.16^*$
	sd	2.00	2.80	2.30	$\bar{x}_N - \bar{x}_W = -0.12$
					$\bar{x}_D - \bar{x}_W = 1.04^*$
Landscapes	$\bar{x}$	4.50	7.16	5.83	$\bar{x}_N - \bar{x}_D = -2.66^{**}$
	sd	2.15	3.37	2.62	$\bar{x}_N - \bar{x}_W = -1.33^{**}$
					$\bar{x}_D - \bar{x}_W = 1.33^{**}$
Monsters	$\bar{x}$	4.72	7.28	6.83	$\bar{x}_N - \bar{x}_D = -2.56^{**}$
	sd	1.93	2.00	2.59	$\bar{x}_N - \bar{x}_W = -2.11^{**}$
					$\bar{x}_D - \bar{x}_W = 0.45$
Skin Diseases	$\bar{x}$	5.61	7.10	7.55	$\bar{x}_N - \bar{x}_D = -1.49^{**}$
	sd	2.78	1.84	1.79	$\bar{x}_N - \bar{x}_W = -1.94^{**}$
					$\bar{x}_D - \bar{x}_W = 0.45$

\* $p < .05$ , Critical value = 0.91

\*\* $p < .01$ , Critical value = 1.16

Table 7

Tukey Method on Decoding Differences on the Intensity-Control  
Dimension Between Boys' Classifications With Moderately  
Expressive Sender When Slide Category Varied

Slide Category	Measure	Classification			Differences Between Means
		Normal (n = 18)	Disruptive (n = 18)	Withdrawn (n = 18)	
Kids	$\bar{x}$	3.61	4.83	6.56	$\bar{x}_N - \bar{x}_D = -1.22^{**}$
	sd	2.06	1.98	3.03	$\bar{x}_N - \bar{x}_W = -2.95^{**}$
					$\bar{x}_D - \bar{x}_W = -1.73^{**}$
Landscapes	$\bar{x}$	4.83	5.67	6.61	$\bar{x}_N - \bar{x}_D = -0.84$
	sd	1.98	2.14	3.05	$\bar{x}_N - \bar{x}_W = -1.78^{**}$
					$\bar{x}_D - \bar{x}_W = 0.94^*$
Monsters	$\bar{x}$	4.89	6.44	5.05	$\bar{x}_N - \bar{x}_D = -1.55^{**}$
	sd	2.25	2.43	2.51	$\bar{x}_N - \bar{x}_W = -0.16$
					$\bar{x}_D - \bar{x}_W = 1.39^{**}$
Skin Diseases	$\bar{x}$	5.83	6.38	7.28	$\bar{x}_N - \bar{x}_D = 0.55$
	sd	2.15	2.12	3.14	$\bar{x}_N - \bar{x}_W = -1.45^{**}$
					$\bar{x}_D - \bar{x}_W = -0.90$

\* $p < .05$ , Critical value = 0.91.

\*\* $p < .01$ , Critical value = 1.16.

Table 8

Tukey Method on Decoding Differences on the Intensity-Control  
Dimension Between Boys' Classifications With Least  
Expressive Sender When Slide Category Varied

Slide Category	Measure	Classification			Differences Between Means
		Normal (n = 18)	Disruptive (n = 18)	Withdrawn (n = 18)	
Kids	$\bar{x}$	2.94	5.10	4.78	$\bar{x}_N - \bar{x}_D = -2.16^{**}$
	sd	1.50	2.37	2.34	$\bar{x}_N - \bar{x}_W = -1.84^{**}$
					$\bar{x}_D - \bar{x}_W = 0.32$
Landscapes	$\bar{x}$	3.00	4.05	2.93	$\bar{x}_N - \bar{x}_D = -1.05^*$
	sd	2.00	1.83	2.26	$\bar{x}_N - \bar{x}_W = -1.67^{**}$
					$\bar{x}_D - \bar{x}_W = -0.62$
Monsters	$\bar{x}$	4.22	6.11	5.80	$\bar{x}_N - \bar{x}_D = -1.89^{**}$
	sd	1.98	2.49	2.26	$\bar{x}_N - \bar{x}_W = -1.58^{**}$
					$\bar{x}_D - \bar{x}_W = 0.31$
Skin Diseases	$\bar{x}$	3.56	5.17	5.50	$\bar{x}_N - \bar{x}_D = -1.61^{**}$
	sd	2.06	2.41	2.09	$\bar{x}_N - \bar{x}_W = -1.94^{**}$
					$\bar{x}_D - \bar{x}_W = -0.33$

\* $p < .05$ , Critical value = 0.91.

\*\* $p < .01$ , Critical value = 1.16.

responses on the PU dimension. The responses were divided into three categories: pleasant, no feeling, and unpleasant. These responses are compared on 12 conditions with combinations of the most, moderate, and least expressive sender and kids, landscapes, monsters, and skin diseases slide categories. The chi square values for four of the 12 conditions exceeds the critical value at the  $p < .05$  level. With eight of 12 comparisons not obtaining significance, the null hypotheses  $H_{2fo}$  and  $H_{2go}$  are accepted. This acceptance combined with the rejection of  $H_{2ao}$  and  $H_{2bo}$  indicates that disruptive and withdrawn boys perceived emotion more intensely than normal boys, but the three groups did not differ in the direction of that intensity.

### Hypothesis 3

Hypothesis 3 deals with the relationship between the boys' encoding and decoding skills. It states:

$H_3$ . No relationship exists between a boy's ability to express emotion via facial expressions and his ability to recognize emotion from facial expressions.

Two null hypotheses were tested based on  $H_3$ . These are:

$H_{3ao}$ . A relationship exists between boys' encoding skills and their decoding skills on the IC dimension.

$H_{3bo}$ . A relationship exists between boys' encoding skills and their decoding skills on the PU dimension.

Table 12 on page 55 presents the Pearson Product-Moment correlation coefficients between encoding and decoding scores of the subjects. Encoding scores are based on the combination of judges' ratings and

Table 9

Chi Square Analysis of Decoding Differences on the PU Dimension  
Between Boys' Classifications With Most Expressive  
Sender When Slide Category Varied

Slide Category	Student Classification	Rating Form Response			$\chi^2$
		Pleasant	No Feeling	Unpleasant	
Kids	Normal	58	22	10	2.40
	Disruptive	53	20	17	
	Withdrawn	53	21	16	
Landscapes	Normal	21	39	30	9.80*
	Disruptive	22	21	47	
	Withdrawn	23	33	34	
Monsters	Normal	39	33	18	13.46**
	Disruptive	52	16	22	
	Withdrawn	43	17	30	
Skin Diseases	Normal	55	24	11	6.84
	Disruptive	56	16	12	
	Withdrawn	59	12	19	

\* $p < .05$ , Critical value = 9.49 (df = 4).

\*\* $p < .01$ , Critical value = 13.28 (df = 4).



Table 10

Chi Square Analysis of Decoding Differences on the PU Dimension  
Between Boys' Classifications With Moderately Expressive  
Sender When Slide Category Varied

Slide Category	Student Classification	Rating Form Response			$\chi^2$
		Pleasant	No Feeling	Unpleasant	
Kids	Normal	28	47	15	10.17*
	Disruptive	45	27	18	
	Withdrawn	39	33	18	
Landscapes	Normal	30	47	13	8.96
	Disruptive	32	37	21	
	Withdrawn	39	32	19	
Monsters	Normal	43	39	8	5.27
	Disruptive	45	32	13	
	Withdrawn	51	34	5	
Skin Diseases	Normal	39	40	11	4.91
	Disruptive	46	32	12	
	Withdrawn	46	27	17	

\* $p < .05$ , Critical value = 9.49 (df = 4).

Table 11

Chi Square Analysis of Decoding Differences on the PU Dimension  
Between Boys' Classifications With Least Expressive  
Sender When Slide Category Varied

Slide Category	Student Classification	Rating Form Response			$\chi^2$
		Pleasant	No Feeling	Unpleasant	
Kids	Normal	31	48	11	16.60**
	Disruptive	35	35	20	
	Withdrawn	35	25	30	
Landscapes	Normal	38	35	17	4.00
	Disruptive	41	26	23	
	Withdrawn	42	24	24	
Monsters	Normal	44	30	16	1.59
	Disruptive	46	25	19	
	Withdrawn	40	32	18	
Skin Diseases	Normal	60	22	8	1.96
	Disruptive	60	17	13	
	Withdrawn	58	20	12	

\*\* $p < .01$ , Critical value = 13.28 (df = 4).

Table 12  
Correlations Between Encoding and Decoding Skills of  
Normal, Disruptive, and Withdrawn Boys

Student Classification	Encoding Correlates	Decoding Correlates			
		Kids	Landscapes	Monsters	Skin Diseases
All Subjects (N = 54)	Kids	ns	ns	ns	ns
	Landscapes	ns	ns	ns	ns
	Monsters	ns	ns	ns	.34**
	Skin Diseases	ns	ns	ns	ns
Normal (n = 18)	Kids	ns	ns	ns	ns
	Landscapes	ns	-.47*	ns	ns
	Monsters	ns	ns	ns	ns
	Skin Diseases	ns	ns	ns	ns
Disruptive (n = 18)	Kids	ns	.48*	.48*	ns
	Landscapes	ns	ns	ns	ns
	Monsters	.47*	.51*	.53*	.55*
	Skin Diseases	ns	ns	ns	ns
Withdrawn (n = 18)	Kids	ns	ns	ns	ns
	Landscapes	ns	ns	ns	ns
	Monsters	ns	ns	ns	ns
	Skin Diseases	ns	ns	ns	ns

Note. ns = No significance at  $p < .05$  level.

\* $p < .05$ .

\*\* $p < .02$ .

are separated by slide categories. Decoding scores are obtained from boys' IC or quantitative discriminations in the decoding assessment and are divided by slide categories. Correlations are computed to determine encoding/decoding relationships among normal, disruptive, and withdrawn boys as well as being computed for the three groups combined. Only one of 16 correlation coefficients exceeds significance at the  $p < .05$  level for the boys as a group. The correlations range from  $-.10$  to  $.34$  with the median correlation being  $.11$  for all three groups of boys.

When testing the significance of the coefficients of normal and withdrawn boys' encoding/decoding scores, one of 32 coefficients exceeds the  $p < .05$  level. Of the 16 coefficients of the disruptive boys, six exceed the  $p < .05$  level of significance. These data tend to reject the null hypothesis  $H_{3ao}$  and support  $H_3$ . Thus, a statistically significant relationship between boys' abilities to express emotion using facial expressions and their abilities to recognize emotion from facial expressions does not exist except in a particular category of emotion for disruptive boys.

Pearson Product-Moment correlation coefficients between encoding skills and decoding skills on the PU dimension of all subjects do not exceed the  $p < .05$  level of significance. The range of the 16 correlation coefficients for encoding scores and qualitative decoding scores is  $-.15$  to  $.10$  with the median coefficient of  $-.02$ . These data provide support to reject  $H_{3bo}$  and accept  $H_3$ . Therefore, with both sets of correlations, the relationship between encoding and decoding skills is low and statistically insignificant. These data

would indicate that a relationship does not exist between boys abilities to express emotion using facial expressions and their abilities to recognize emotion from facial expressions.

## CHAPTER V

### SUMMARY AND DISCUSSION

#### Summary

The present study was designed to determine if differences exist in the ability of children to encode and decode emotion via facial expressions. From a population of regular third and fourth grade boys, 18 boys were classified as normal, 18 were classified as disruptive, and 18 were classified as withdrawn. The boys' ability to encode and decode emotion from facial expressions was assessed using procedures adapted from Buck's (1975) cooperative conditioning experimentation. The boys classified as normal, disruptive, and withdrawn were compared using the assessment results. In addition, the relationship between the boys' encoding and decoding skills was investigated. Conclusions of the comparisons, their relationship to previous studies, the weaknesses of the study, implications of the findings within the classroom setting, and recommendations for future research are now presented.

#### Discussion

#### Conclusion

Encoding. Encoding scores of normal, disruptive, and withdrawn boys were not found to be different. However, significant interactions were found between the groups of boys and slide categories or

type of emotion. Two conclusions can be stated. First, normal and withdrawn boys exhibit similar encoding skills for the four types of emotion studied. Second, disruptive boys' encoding skills differed from normal and withdrawn boys in the types of emotion: "very happy," "a little unhappy," and "very unhappy." With each type of emotion, the disruptive boys expressed themselves with greater intensity than normal and withdrawn boys. Both conclusions support Buck's (1975) findings. He reported that four to six year old children with behavioral characteristics similar to disruptive children were more expressive than children not possessing these characteristics.

Decoding. The decoding skills of the boys in the present study were assessed by examining their quantitative and qualitative discriminations of facial expressions of other children their age. Quantitative discriminations concerned the boy's ability to measure intensity of the emotion expressed. Qualitative discriminations were concerned with the child's ability to categorize observed emotions as pleasant, unpleasant, or no feeling. Both types of discriminations were measured by each boy completing a rating form on three unfamiliar boys viewing the 20 emotionally loaded color slides.

Significant differences were found among normal, disruptive, and withdrawn boys for quantitative decoding skills. Normal boys always rated emotional intensity lower than either disruptive or withdrawn boys. The differences were statistically significant in 20 of 24 comparisons between normal boys and the other two groups of boys. It can be concluded that disruptive and withdrawn boys perceived emotion conveyed by facial expressions more intensely than normal boys.

While quantitative discriminations were found to vary among the three groups of boys, qualitative discriminations did not. Only four of 12 comparisons were found to be significantly different in the groups' abilities to make qualitative decoding discriminations. Thus, it was concluded that normal, disruptive, and withdrawn boys were not different in their abilities to discriminate between pleasant, unpleasant, and no feeling facial expressions.

Encoding and decoding relationships. The relationship between encoding and decoding skills was investigated with two sets of correlations reported. Correlations between encoding skills and quantitative decoding skills ranged from  $-.10$  to  $.34$  for all boys. Correlations for encoding skills and qualitative decoding skills ranged from  $-.15$  to  $.10$ . Therefore, it is concluded from both sets of correlations that no significant relationships exist between encoding and decoding skills. This conclusion suggests that a boy's ability to express emotion via facial expressions is not related to his ability to recognize emotion via facial expressions. Other studies (Zaidel & Mehrabian, 1969; Zuckerman et al., 1976) examining the encoding/decoding relationship have obtained similar results.

In summary, the present study found four differences in encoding and decoding skills among normal, disruptive, and withdrawn third and fourth grade boys. First, disruptive boys expressed themselves with more intensity than normal and withdrawn boys. Second, disruptive and withdrawn boys perceived emotion conveyed through facial expressions as more intense than normal boys. Third, no differences among the groups existed concerning whether the emotion viewed was pleasant



or unpleasant. Fourth, the relationship between a boy's ability to express emotion and recognize emotion was found to be statistically insignificant. Before discussing the implications of the conclusions, the accuracy of the data and generalizability of the findings are addressed in terms of the study's internal and external validity.

#### Weaknesses of the Study

To assure that differences among normal, disruptive, and withdrawn boys actually existed as reported, internal validity is examined by presenting reliability and validity data of encoding and decoding assessment procedures. Interrater reliability coefficients for the five judges in the encoding assessment ranged from .49 to .94 with a median coefficient of .65. Frick and Semmel (1978) indicated that this range is below appropriate reliability levels with an acceptable lower limit being .80. However, this lower limit was based on trained observers responding to low inference categories. Ekman, Friesen, and Ellsworth (1972) stressed the need for judges to be relatively untrained to obtain more generalizable results. Thus, the present study provided only a brief inservice session for the judges and specific training on correct responses was avoided. The rating form categories ranging from "very happy" to "very unhappy," can be considered highly inferential. Kerlinger (1973) stated that acceptable reliability coefficient ranges can be lowered when high inference categories are used.

When examining the content validity of encoding assessment procedures, the slide categories elicited varying degrees of

pleasantness-unpleasantness in the intended directions. Only the monsters slide category deviated from its intended "a little unhappy" emotion. The emotion elicited for this category was "a little happy." The differences between intended and elicited emotion can be attributed to the pleasant reaction to several monster photographs by many of the boys.

Decoding procedures on the intensity-control (IC) dimension produced significant differences in recognizing emotion among the types of sender and slide categories. Intensity of expression decreased from the most expressive sender ( $\bar{x} = 6.43$ ) to the least expressive sender ( $\bar{x} = 4.57$ ). Regarding intensity elicited from slide categories, the intended intensity was evoked from the expected categories, except for the monster slides, which were more intense than predicted.

Decoding procedures on the pleasantness-unpleasantness dimension did not produce the predicted pattern of pleasant-unpleasant responses. With no pattern occurring, the content validity of the decoding videotape could be questioned. Two explanations for the inconsistent pattern are the limited range of expressiveness of the senders and their possible inhibition of emotional expression (Ekman & Friesen, 1969).

In summary, both reliability and content validity data do not empirically support sound conclusions. Reliability coefficients were below acceptable limits and expected patterns of expression on the PU dimension were not recognized by the boys. While explanations were provided for these deficiencies, procedural refinements appear to be

needed before further research is conducted.

Regarding external validity, generalizing any conclusions drawn from this study beyond the population studied is cautioned. First, as determined by Achilles and French (1977), cultural differences influence both verbal and nonverbal communication among students. Nonverbal communication patterns vary according to social class and race with children from verbally deprived backgrounds developing astute nonverbal skills. Second, nonverbal skills improve with age (Izard, 1971). While this improvement appears gradual, a longitudinal study investigating the effects of individual differences on this improvement has not been reported by Izard or his colleagues. Third, Buck et al. (1974) have determined that the socialization process may influence encoding and decoding skills of boys and girls differently. Fourth, boys selected for the present study were in regular elementary classrooms and not diagnosed as emotionally handicapped. Thus, the population on which conclusions are based should be third and fourth grade Caucasian boys in regular classrooms from middle-class neighborhoods.

In assuring internal validity of a study, external validity is weakened, and vice versa (Tuckman, 1972). Assessment of encoding and decoding skills in an experimental setting limits the generalizability of conclusions to the classroom settings. As discussed previously in Chapter II, this study assessed the informative level of intent of the sender (Ekman & Friesen, 1969). The interactive level of intent was not investigated and consequently conclusions cannot extend to that level of communication. Frijda (1969) addressed the interactive

process in describing the recognition of emotion. He theorized that in decoding emotions, an individual first perceives a facial expression and weighs that with situational cues. Based on that information, he responds accordingly. If this response receives negative feedback and is considered inappropriate, the individual reweighs the facial expression and situational cues and responds again.

The present study only measures the first process, that of perceiving a facial expression. While situational cues are available to a degree, no feedback is provided in terms of the appropriateness of the subject's response. This feedback on the communicative process could influence earlier perceptions. Thus, this study's conclusions should remain within the perceptual domain and not be interpreted as interactive either in expression or recognition of emotion.

Experimenter bias could also affect findings. The experimenter conducted all phases of data collection and data analyses. Various procedures were followed to reduce the experimenter's effect on the results. Research and null hypotheses were generated and statistical procedures selected before data collection. During assessment procedures, the experimenter was unaware of the boys' classifications. Nonetheless, experimenter bias, combined with previously mentioned weaknesses in the study's internal and external validity, could influence findings. Therefore, generalizing conclusions to the classroom setting is cautioned. The following section presents implications of the study's findings and recommendations for future research.

### Implications and Recommendations

In assessing encoding abilities, it was found that disruptive boys express their emotions through facial expressions more intensely than normal or withdrawn boys. Buck (1975) and Izard (1971) have observed the tendency of adults to discourage overt expressions of many emotions among boys in certain cultures. Young (1973) contrasted child and adult emotional behavior and identified five differences among them. Included in these differences were the child becoming emotionally upset more frequently and to a greater degree and displaying more overt emotional manifestations. Thus, frequent and intense overt expressions of emotion are not considered adult-like behavior. Consequently, children expressing themselves in this manner could be considered emotionally immature, depending on their age and on related action of peers.

Brophy and Good (1974) examined the affect of individual student's behaviors on their teachers. They found that extroverted boys interacted with their teachers more frequently than their classmates. The interaction of low achieving extroverted boys with their teachers were predominately of a negative nature. Interactions of a conflicting type such as this can be reduced by changing the behavior of the interactants, especially the teachers. Brophy and Good stressed the need for teachers to accept individual differences in the classroom. Perhaps a teacher's awareness of a disruptive boy's inability to control his emotional expression to the same degree as his peer's ability and acceptance of this difference would reduce negative

interactions. In reducing the intensity of emotions conveyed by the student, Ekman and Friesen (1969) discussed the need for such individuals to learn display rules. These rules govern the particular overt emotional reaction via facial expressions of an individual. The authors stated that individuals experiencing difficulty in interpersonal communication may not have learned the appropriate display rules. While Ekman and Friesen discussed the need to teach these rules during psychotherapy sessions, perhaps identifying display rules and reacting appropriately could be taught by teachers providing services to emotionally handicapped students. Furthermore, an awareness of display rules by classroom teachers may reduce negative interactions between teachers and students.

The assessment of decoding skills on the intensity-control (IC) dimension revealed that boys with tendencies toward emotionally handicapping conditions perceive emotion conveyed through facial expressions more intensely than normal boys. The implications of more intense perceptions can be considered within the framework of Frijda's (1969) model of emotional recognition as follows. In his theoretical model, an individual perceives an emotional message conveyed by facial expressions more intensely than the sender intended. Even weighing this information with situational cues may still not produce a more accurate recognition of intended emotion. Consequently, the individual responds to the message inappropriately in the terms of the original sender's perceptions. Reweighing based on feedback from the sender could be decoded more intensely than intended and another inappropriate response elicited. This cyclical behavior

could continue to produce inappropriate responses from the individual perceiving emotion more intensely than the sender's message intended.

Training in nonverbal communication could assist the teachers in becoming aware of their nonverbal behaviors and reduce expression in this area when necessary. Strother, Ayres, and Orlick (1971) trained teachers in recognizing nonverbal cues of their students. While hypotheses were not supported concerning the positive effects of the training, the authors indicated that extended training sessions could enhance the teacher-student relationships.

Another implication of disruptive and withdrawn boys perceiving emotion from facial expressions more intensely than normal boys could be in learning social behaviors. Bandura (1965, 1973) has stressed the influence of modeling on learning new behaviors. He stated that most human learning, especially in learning new behaviors, involves modeling. From a phenomenological perspective, the child who perceives emotion conveyed by facial expressions more intensely than others may learn to express emotion more intensely. The data in Table 12 on page 55, where significant correlations of encoding/decoding skills were found only among disruptive boys, lend credence to this statement.

In providing educational services to help emotionally handicapped students address their more intense perceptions of emotion conveyed by facial expressions, several strategies appear appropriate. First, verbalization and discussion of emotions and feelings by students and teachers could reduce inaccurate perceptions. Second, training in emotional recognition and emotional labeling could

increase accurate associations between facial expressions and emotions. Both strategies could be implemented to make EH children's emotional perceptions more congruent with normal children's perceptions.

The finding of no relationship between a boy's ability to express emotion and his ability to recognize emotion could imply that the learning of appropriate methods of expressing emotion and feeling in general is left to incidental learning and not specifically addressed by educators and parents. The necessity of attending to the affective domain has been reported by Read and Simon (1975). They stressed the importance of affective education within the classroom in their handbook on humanistic education. By incorporating the affective domain into present curricula in schools, students can become more aware of their emotions, the emotions of others, and the interrelationship between the two.

Future research should involve the validation of the decoding instrument. By refining assessment procedures and materials, more reliable and valid data should be collected to support the instrument's ability to provide accurate information. Next, normative data based on a school population including boys and girls from varying socioeconomic backgrounds should be collected. With such information, the decoding assessment results from students diagnosed as emotionally handicapped could be studied and compared with the normative data. If conclusions were congruent with the present study in regard to quantitative decoding skills, several areas of research appear feasible.



Besides the nonverbal element of facial expressions, other elements such as paralanguage and gestures should be investigated as to their influence on the perceptions of emotionally handicapped children. The perceptual processes of EH and normal children could also be compared when recognizing emotion via these nonverbal elements. Odom and Lemond (1974) investigated particular perceptual processes used by children to recognize facial expressions. Their study might well provide direction in identifying specific differences between emotionally handicapped and normal children in the perception of emotion via facial expressions.

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## APPENDICES



Appendix A  
Parental Permission Letter

Dear Parent,

I am presently conducting a research study in Madison schools with approval from (principal's name), principal of E. O. Muncie. This study is to determine if third and fourth grade boys differ in their ability to express and recognize facial expressions. The results of the study will assist teachers and myself in improving instructional technique.

I am requesting permission for your son to be included in the study. He and other classmates will be viewing twenty slides of kids playing, landscapes, monsters, and people with skin diseases. His face will be videotaped by a hidden camera and after he has seen all slides he will be shown the camera. The tape will be shown to five adults who will attempt to recognize the facial expressions of your son. Throughout this activity, your son's name will not be mentioned and his identity kept confidential.

In addition, your son will watch a videotape of another third or fourth grade boy watching the same slides. He will try to recognize the facial expressions expressed by the boy.

While the slides of skin diseases are unpleasant, they should not effect the students beyond the viewing period. If you grant permission for your son to participate in the study, I would request that you don't tell him about the videotaping since this could influence his reactions to the slides.

While participating in the study, your son may withdraw at any time. If you have any further questions, please feel free to contact me at 265-3499 in the evenings or (principal's name) at E. O. Muncie.

Sincerely yours,

Thomas M. Reed  
Special Services Unit Consultant

Appendix B  
Preparation of Decoding Videotape

## Preparation of Decoding Videotape

### Selection of Senders

Seven third and fourth grade Caucasian boys from a neighboring school district were selected to participate in the phase of the study concerning development of the decoding videotape. All seven students were classified as possessing no major learning or behavior problems. After obtaining parental permission, each boy was individually introduced to the experimental setting by the examiner.

### Procedures for Videotaping

The student was seated in a chair facing a backlighted screen which measured 5' x 5'. Figure 1 on page 38 presents the setting from a top view. Instructions given to the student were to sit back and enjoy watching the slides. The type of slides was also mentioned to the student. Then the examiner left the student, turned on the videotape recorder and the slide projector, and returned to a chair located next to the student. The slide projector was set at five second intervals with a blank space between each slide.

The 20 slides were randomly sequenced and three different sequences were used throughout the study. With the seven boys, two saw sequence 1, three saw sequence 2, and two saw sequence 3. This prevented subjects viewing the decoding tape from anticipating certain facial expressions due to one particular sequence. Only the judges were shown a special decoding videotape in a particular order as explained in the next section.

While each student viewed the slides, the videotape camera recorded the student's facial reaction. Upon completion of the 20 slides, the examiner showed the student the camera and a portion of the videotape. Permission was obtained to show the tape to other students "to see if they could tell how you felt watching the different slides."

Selection of the Most, Moderate,  
and Least Expressive Sender

Having videotaped all seven boys, the next procedure in the development of the decoding videotape was for the judges to select three of the seven who were most, moderate, and least expressive. A special videotape of the senders was edited, with the slides viewed in the same sequence, as follows:

1. Each of the boys was assigned a fictitious name.
2. The videotape first displayed the fictitious name of the boy, then his viewing of slide number 1 (kids playing baseball). The second boy's name appeared, followed by his viewing of the same slide. This process continued for the next five boys (name, viewing slide number 1).
3. The videotape of the seven boys was reshown and the judges rated the students by their fictitious names from one to seven as to their degree of expressiveness with one being highly expressive and seven being very inexpressive. Judges were allowed to use ties when they could not discriminate between two or more students.

4. The boys were shown viewing slide numbers 2 through 20 in the same manner as stated in 2 and the judges rated them as stated in 3.

5. The boy with the lowest mean on all twenty slides was selected as the most expressive sender and the boy with the highest mean on all twenty slides was selected as the least expressive sender. The boy whose mean ranked fourth when compared to all seven means was selected as the moderately expressive sender.

#### Preparation of Decoding Videotape

After selecting the most, moderate, and least expressive senders, the decoding videotape was prepared for presentation to the subjects. The decoding videotape presentation included:

1. A thirty-second segment of the most expressive sender talking to the examiner. Only the sender could be seen on the television monitor.

2. The word "BEGIN" appeared on the monitor.

3. The most expressive sender viewing the first slide was shown for five seconds then the number 1 appeared for ten seconds.

4. The most expressive sender viewing the second slide was shown for five seconds and then the number 2 appeared for ten seconds. This sequence continued for slides 3 through 20.

5. Next, the moderately expressive sender and then the least expressive sender were presented on the videotape following the steps 1 through 4.

6. Six decoding videotapes were prepared using the six possible combinations of the most, moderate, and least expressive sender.

Appendix C  
Rating Form



STUDENT \_\_\_\_\_ STUDENT NUMBER \_\_\_\_\_

## "HOW DOES THE STUDENT FEEL?"

	Very Happy	Happy	A Little Happy	No Feeling	A Little Unhappy	Unhappy	Very Unhappy	
( 1 )	1	2	3	4	5	6	7	( 1 )
( 2 )	1	2	3	4	5	6	7	( 2 )
( 3 )	1	2	3	4	5	6	7	( 3 )
( 4 )	1	2	3	4	5	6	7	( 4 )
( 5 )	1	2	3	4	5	6	7	( 5 )
( 6 )	1	2	3	4	5	6	7	( 6 )
( 7 )	1	2	3	4	5	6	7	( 7 )
( 8 )	1	2	3	4	5	6	7	( 8 )
( 9 )	1	2	3	4	5	6	7	( 9 )
(10)	1	2	3	4	5	6	7	(10)
(11)	1	2	3	4	5	6	7	(11)
(12)	1	2	3	4	5	6	7	(12)
(13)	1	2	3	4	5	6	7	(13)
(14)	1	2	3	4	5	6	7	(14)
(15)	1	2	3	4	5	6	7	(15)
(16)	1	2	3	4	5	6	7	(16)
(17)	1	2	3	4	5	6	7	(17)
(18)	1	2	3	4	5	6	7	(18)
(19)	1	2	3	4	5	6	7	(19)
(20)	1	2	3	4	5	6	7	(20)

Appendix D

Instructions Presented to Subjects  
for Decoding Assessment

Instructions Presented to Subjects  
for Decoding Assessment

(Students are requested to sit at the table so that they can see videotape monitor. The examiner passes out one rating form and pencil to each student.)

I'll be showing you a videotape of three third and fourth grade boys from Southwestern Elementary School looking at the same slides you saw today. If you remember, you saw a slide, a blank, a slide, a blank, and so on. Well, each time the boy sees a slide, I want you to tell me how you think he feels by circling one number on the rating form. You'll see the boy's face and then a number will be shown. This is the line number. (Examiner points to numbers one through twenty down both margins of the rating form.) Always circle a number from one to seven on the line with the same number that is appearing on the television. Remember, circle one number for each line.

If you think the boy looks "very happy," what number would you circle, Ss name ? What if he looked "a little happy," what number would you circle? (Examiner continues the questioning until he feels the Ss understand the response.)

Please look closely at the television while the boy is watching the slides. If you cannot decide what number or you would like to see a part again, I'll be back. Please do not say your answers out loud.

We'll start by watching Butch. Please write his name on the line next to student. You can write your name next to student number. Are there any questions?

(Examiner turns on videotape recorder. As decoding assessment progresses, each S is monitored to insure that all are responding with one circle per line on the correct line. If an S requests a second viewing, the recorder is reversed and the viewing is repeated. At the end of the decoding tape the Ss are thanked for their help in the study.)